Evaluation of the Academy for College Excellence:

Report on Implementation and Student Outcomes

Prepared under contract to
Academy for College Excellence,
Cabrillo College through funding by the
Bill and Melinda Gates Foundation

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December 2012

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Executive Summary

In recent years, an issue dominating debates about community college programs has been the need for remediation for entering students and the limited effectiveness of such programs in helping them succeed. Considerable effort has been expended in searching for programs or strategies that will ensure student success in persisting to degree completion. One model that has shown promise in a number of initial studies is the Academy for College Excellence (ACE), founded at Cabrillo College in Aptos, California, in 2002. MPR Associates, Inc. (MPR) of Berkeley, California, is conducting an evaluation of the ACE model as it is implemented at community colleges within and outside of California, including Cabrillo College (Los Aptos, CA), Hartnell College (Salinas, CA), Los Medanos College (LMC) (Pittsburg, CA), Las Positas College (Livermore, CA), Berkeley City College (Berkeley, CA), and Delaware County Community College (Media, PA). Four of the six colleges contributed extensive quantitative data to this evaluation (Cabrillo, Hartnell, Los Medanos, and Berkeley City College). The other two colleges (Las Positas and Delaware County Community College), contributed data on the measure of psychosocial factors developed for this study as well as qualitative data collected during site visits. This report is the third in a series that will document the results of a longitudinal evaluation of the model.

Model

A primary objective of ACE is to accelerate student progress by providing a program that conveys a vision of academic life that often differs from that which is commonly held by disadvantaged students and an understanding of what it will take to succeed. Currently, ACE program designers discuss four models of implementation. This study focuses primarily on the fourth model, referred to as the Accelerated Academic Learning model. It combines several key components, including a two-week Foundation course, a Team Self Management course, and a Social Justice Research course, which are linked to a set of accelerated academic classes.

The ACE program was built on a foundation of research on effective strategies to use with students who exhibit high-risk factors, have faced significant challenges, or reflect characteristics that place them at high risk of failing educational programs. ACE's curriculum and pedagogical approach reinforces the behaviors and habits required for college success while making the culture of professional careers explicit and tangible. For all participating students, the goal of the program is to develop professional career skills and the ability to navigate the professional work culture that includes the organizational and study skills, motivation and

self-confidence, and academic skills needed for college success. Based on this goal, MPR researchers and ACE staff jointly designed and developed an instrument—the College Student Self Assessment Survey (CSSAS)—that provides a measure of self-efficacy and other related attributes. This evaluation of the ACE model included an analysis of key academic outcomes (e.g., credits earned, credit accrual, retention, persistence, attendance, successful completion of accelerated courses) for students participating in the ACE program, as well as an analysis of psychosocial factors that are key aspects of the ACE model.

Methods

The academic outcomes in this report are based on cohorts of California students starting in the fall 2010, spring 2011, and fall 2011 semesters at four of the six colleges for which we had administrative and placement data—Cabrillo College in Aptos, Hartnell College in Salinas, Los Medanos College in Pittsburg (California), and Berkeley City College in Berkeley. Comparison groups for these participating cohorts were drawn from the administrative data for each college using propensity score matching, i.e., each ACE participant was matched to the most similar non-participant in a given college and semester. The population of students analyzed in this report consisted of 894 ACE participants and 123,631 non-participants. The students were tracked longitudinally from the first semester of participation in ACE (the "ACE semester") through the end of fall semester 2011. There were 698 ACE students with complete data. These 698 ACE students were matched to 698 control students. These students (N=1,396) were used in the majority of the quantitative analyses of student outcomes.

Outcomes related to psychosocial factors measured by the CSSAS were analyzed for all six participating colleges across the same semesters. In addition to the analysis of academic outcomes and psychosocial factors, qualitative data on implementation were collected through interviews, focus groups, and observations conducted during site visits to the six campuses.

Findings

The findings in this report on the longitudinal study are drawn from three sets of data collection: (1) academic achievement indicators extracted from administrative data from four of the six participating colleges; (2) administration of a measure (CSSAS) of psychosocial factors for students participating in an ACE program at six separate colleges; and (3) qualitative data from site visits to all six colleges. For the most part, the results reported here complement and extend findings from previous reports that documented findings at earlier points in time.

Results from the analyses of academic outcomes reveal that ACE participants in accelerated programs were considerably more likely to pass degree-applicable English in the ACE semester, and this difference is still apparent two semesters later, although the difference attenuates

somewhat as non-ACE students slowly improve their outcomes. They are also more likely than comparable non-participants to complete transfer-level English, and they earn 7 to 10 more degree-applicable credits than comparable non-participants. Accelerated ACE participants were more likely than comparable non-participants to enroll full time in the semester following the ACE semester, but the results varied somewhat across semesters and colleges. While ACE participants persisted by enrolling in the semester following the ACE program at a greater rate than comparable non-participants, this rate varied from one semester to the next and across colleges.

The academic outcomes analyzed in this report show similar results to the outcomes published in the Columbia University Community College Research Center (CCRC) study of the ACE program, which analyzed the ACE implementation at Cabrillo College when it only served 25 students per semester. This current study is building the evidence that the ACE model, curriculum, faculty development, and train the trainer approach can reproduce similar academic results at multiple colleges, some of which are serving between 250 and 350 students per year.

The results on the CSSAS provide strong indicative data that ACE students reflect lower levels of performance on psychosocial factors than do students in general and that they show consistent improvement in performance over the three point-in-time measures. Overall, students improved in their mean scores over the course of their ACE experience.

ACE participants were also asked to rate the extent to which they changed in specific areas in ways that improved their college experience. Overall, more than half of participants reported making positive changes in all 21 behaviors listed in the survey, suggesting that ACE is succeeding in its efforts to help students change their behavior in ways that will enable them to succeed in college. They were also asked about the impact of the program on their lives and about new decisions they had made about their future. Nearly half of respondents reported that they had made new decisions about their future and more than three-quarters indicated that they had changed as a result of being in ACE.

Finally, administrators, faculty, and students reported generally positive effects on teaching and on the behaviors, attitudes, and academic outcomes of those students who participated in ACE. While faculty and administrators point to the demands placed on them because of teaching in the program, they also report positive effects on teaching approaches and dramatic effects on student behaviors and achievements. Students report significant positive effects both on their academic and personal lives, on their preparation for continuing in college, and on their confidence and communication ability. Students often speak poignantly about how the program had transformed their lives.

The analyses of three types of data documented in this and previous reports provide strong evidence that the ACE model has very positive effects on those students who participate and contributes strongly to their persistence and achievement rates. The report documents results across three semesters of the model from fall 2010 to fall 2011 and includes measures for students at the end of the ACE semester and one and two semesters following participation, comparing ACE participants to comparable non-participants. The findings provide evidence that a program like ACE can result in much more positive outcomes for high-risk students who are at risk of failing to complete the standard remedial math and English sequences.

Introduction

The number of underprepared students entering the nation's community colleges every year is substantial, and significant resources are dedicated to remedial education programs that seem to be ineffective and do little to inspire students to pursue further education. Understanding how effective programs work, and how such practices can be shared, is critical. One model that has shown promise in a number of initial studies is the Academy for College Excellence (ACE), founded at Cabrillo College in Aptos, California, in 2002. MPR Associates, Inc. (MPR) of Berkeley, California, is conducting an evaluation of the ACE model as it is implemented at community colleges within and outside of California, including Cabrillo College (Los Aptos, CA), Hartnell College (Salinas, CA), Los Medanos College (Pittsburg, CA), Las Positas College (Livermore, CA), Berkeley City College (Berkeley, CA), and Delaware County Community College (Media, PA). Four of the six colleges contributed extensive quantitative data to this evaluation (Cabrillo, Hartnell, Los Medanos, and Berkeley City College). The other two colleges (Las Positas and Delaware County Community College), contributed data on the measure of psychosocial factors developed for this study as well as qualitative data collected during site visits.

The goal of the ACE program is to develop a national model for recruitment, preparation, retention, and acceleration of underprepared community college students. Centered on the belief that underprepared students, especially disadvantaged young adults, often enter community colleges with the desire to better their lives but without the academic qualifications, professional skills, and personal behaviors necessary to succeed, ACE has intentionally served a majority of students who face multiple challenges related to poverty and discrimination.[1] For all participating students, the goal is to develop professional career skills and the ability to navigate the professional work culture that includes the organizational and study skills, motivation and self-confidence, and academic skills needed for college success.

A primary objective of ACE is to accelerate student progress by providing a program that conveys a vision of academic life that often differs from that which is commonly held by disadvantaged students and an understanding of what it will take to succeed. The approach of the program integrates team management strategies, movement classes, primary research

[1] In this document, we refer to the type of students served by ACE as underprepared or high-risk. These terms conflate two different ways of characterizing them: They are high-risk students because of environmental factors—poverty, history of involvement with the judicial system, immigration status, drug abuse, etc., but they are also highly vulnerable or exhibit low levels of self-efficacy and self-esteem (See Diego Navarro, Supporting the students of the future. *Change: The Magazine of Higher Learning*, January/February 2012.)

tasks, and academic and computer courses. ACE has been successful at accelerating student progress because of its unique features. It is an intensive, full-time program that immerses students in a new vision of what academic life entails and how they can succeed in higher education and professional careers.

ACE Program Structure

The ACE program is typically one semester long and is divided into a two-week intensive Foundation course that focuses on personal development and prepares students to be successful in college, and a 12–16 week Bridge semester of accelerated academic courses, including a project-based research course (most often the Social Justice course). A Team Self-Management course builds on the self-awareness, self-esteem, and communication lessons of the Foundation course, continues to build the ACE cohort's peer-support network, and helps students manage the challenges that accompany their lives as college students. The program is also unique in that the students move through both portions of the program as a cohort, with a program design that consciously creates and develops, through curriculum in the classroom, a peer-support network that also facilitates their persistence and success in the program. At the end of the ACE Bridge semester, students typically accumulate a full-time load of college credits (12–16.5 credits), a larger number than the typical remedial program entails, propelling them down the road to completion.

This basic structure is implemented in various permutations or models, which depend on the needs of the colleges that embrace it. Currently, ACE program designers discuss four models of implementation: (1) one that includes a Foundation course in front of a specific program, such as a nursing program; (2) one that combines Foundation and Team Self-Management courses with a Career and Technical Education (CTE) program; and (3) one that combines Foundation and Team Self-Management courses with a set of linked courses in a particular area (learning community "booster" model). This study is focusing primarily on a fourth model, referred to as the Accelerated Academic Learning model, which combines the Foundation and Team Self-Management courses with a project-based Social Justice Research course linked to a set of accelerated academic classes. The acceleration in English is fairly consistent across the college programs we have been studying, but the acceleration in math occurs only at Los Medanos College.

ACE Participants

The ACE program was built on a foundation of research on effective strategies to use with students who exhibit high-risk factors, have faced significant challenges, or reflect characteristics that place them at high risk of failing educational programs. The students for whom the

model was designed and who have participated in the program to date have largely come from neighborhoods and schools with a history of violence and underperformance. They are the students who are not served well by the institution, who remain outside the doors of the academic environment, and who are unable to contribute to the improvement of the economy. They are individuals who have survived and persisted in life despite the difficulties they have faced, but the survival or persistence behaviors and habits they have developed are not necessarily well suited to the academic environment or to professional careers. The neighborhoods and school environments in which they were raised have created symptoms in the students that are not unlike those of post-traumatic stress disorder (PTSD), which leads to hyper-sensitivity, hyper-vigilance, and other conditions that make performing at school difficult. They have typically not had role models to learn from, and the behaviors and habits they rely on to survive are counterproductive in an academic setting. These students require customized recruitment strategies because they often do not independently take the steps needed to access education, nor were they encouraged to attend college by high school teachers or counselors. They may be confident about their ability to survive in tough environments or when confronted by significant life challenges, but they often do not feel the same level of confidence about surviving an academic environment. The ACE program builds on and redirects the strengths of these students into the skills and behaviors they need to succeed in an academic setting. ACE's curriculum and pedagogical approach reinforces the behaviors and habits required for college success while making the culture of professional careers explicit and tangible. Table 1 displays the risk statistics for ACE students from each of the four colleges that participated in the primary quantitative analysis. These statistics were drawn from student intake forms for the ACE program.[2]

Table 1. Risk factor statistics for ACE participants, based on ACE intake forms: F10–SP12

	Berkeley City College (N=43)	Cabrillo College (N=314)	Hartnell College (N=193)	Los Medanos College (N =84)	Total (N=634)
Risk Indicator					
First Generation College (A)	72%	60%	68%	62%	64%
Difficulty Learning (A)	28%	51%	36%	35%	43%
Receives Government Benefits (A)	42%	40%	39%	45%	40%
Unstable Home (H)	53%	39%	37%	32%	39%
Has Been Arrested (H)	33%	33%	41%	21%	34%
Parent is Agricultural Worker (A)	9%	29%	52%	6%	32%
Has Been on Probation (H)	16%	28%	42%	12%	29%
Parent with Dependent Children (A)	35%	23%	33%	31%	27%

[2] Data available only from four of the six colleges.

Table 1. Risk factor statistics for ACE participants, based on ACE intake forms: F10–SP12—continued

	Berkeley City College (N=43)	Cabrillo College (N=314)	Hartnell College (N=193)	Los Medanos College (N =84)	Total (N=634)
Working while in School (A)	26%	24%	24%	26%	24%
Homeless (H)	33%	26%	22%	19%	24%
Substance Abuse (H)	9%	23%	30%	5%	22%
Gang Association (H)	16%	19%	31%	14%	22%
Domestic Violence (H)	26%	21%	17%	15%	19%
Currently on Probation (H)	7%	12%	35%	7%	18%
Child Abuse (H)	16%	16%	12%	10%	14%
Medical Condition (H)	21%	8%	5%	7%	8%
Foster Care History (A)	7%	6%	8%	7%	7%
Mental Condition (H)	5%	6%	4%	7%	5%
Risk Level					
High Risk	81%	79%	80%	61%	77%
At Risk	19%	21%	20%	37%	23%

A=At-risk indicator; H=High-risk indicator.
Intake forms were not available for all ACE participants. Percentages are based on the number of participants with intake forms.

Theoretical Underpinnings

A large body of research supports the theoretical architecture of the ACE program. Research has shown that factors within the affective dimension play an important role in the success of all students and, in fact, all individuals. This includes research on motivation, self-efficacy, socio-emotional learning, mindfulness and hope.

Three decades have passed since Bandura (1977) first introduced the construct of self-efficacy, and more recently (1997) he published *Self-efficacy: The Exercise of Control,* in which he situates self-efficacy within a theory of personal and collective agency that operates in concert with other sociocognitive factors in regulating human wellbeing and attainment. Self-efficacy beliefs have received increasing attention in educational research, primarily in studies of academic motivation and of self-regulation (Pintrich & Schunk, 1995). In this domain, self-efficacy researchers have focused on three areas: the link between efficacy beliefs and college major and career choices (Lent & Hackett, 1987); the efficacy beliefs of teachers related to their instructional practices and to various student outcomes (Ashton & Webb, 1986); and the correlation of students' self-efficacy beliefs with other motivation constructs and with students' academic performances and achievement. Much of this work has focused on clarifying the structure of the motivational system, although this work has also begun to

examine the influence of motivation on preference, choice, and learning (Markman, Maddox, & Baldwin, 2005).

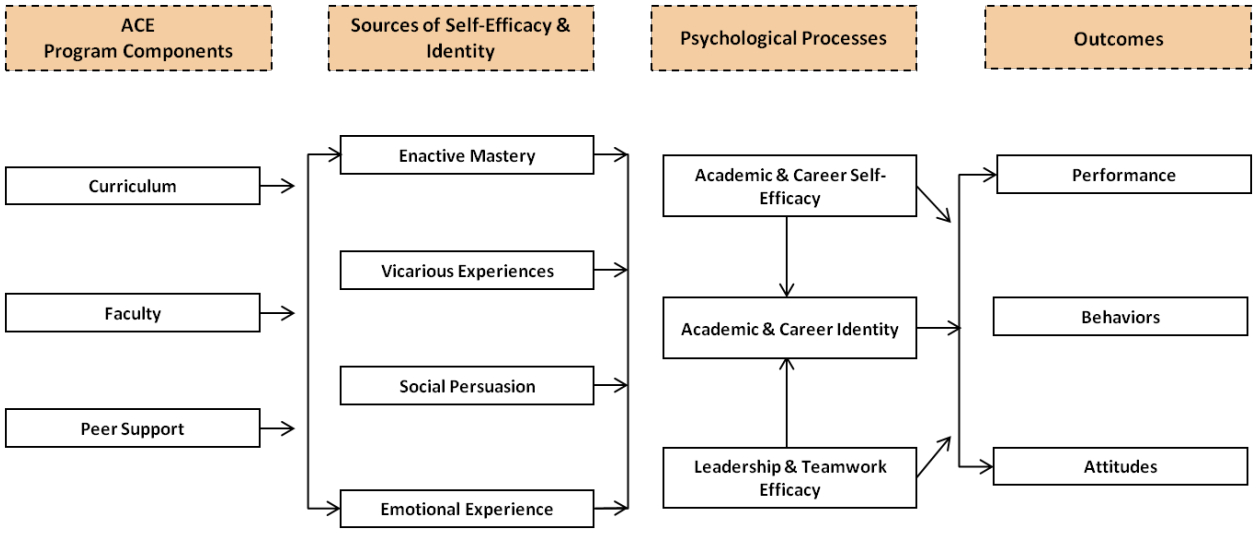
The influence of social and emotional factors on learning is confirmed by a large number of studies as well. Based on evidence from 61 educational researchers, 91 meta-analyses, and 179 handbook chapters, Wang, Haertel, and Wallberg (1997) found that social and emotional factors were among the most influential factors on student learning. Among those that were particularly high-ranking social and emotional components were classroom management, parental support, student-teacher social interactions, social-behavioral attributes, motivational-affective attributes, the peer group, school culture, and classroom climate. Through a review of these studies, the authors concluded that directly influencing the psychological components of learning is an effective way of changing how much and how well students learn.

The ACE model also focuses on the development of hope in its students. Recently, the construct of hope has been receiving increasing research attention and in one study, hope was shown to be more closely related to academic achievement than intelligence, personality, or previous academic achievement (Day, Hanson, Maltby, Proctor, & Wood, 2010).

To develop a research framework for this study, it was essential to understand the theoretical underpinnings of the model, or the theory of action, that we could take into account in developing data collection methods and instruments and in developing an analysis plan. In collaboration with Martin Chemers, professor emeritus of psychology at the University of California Santa Cruz and ACE staff, MPR developed an approach to an analysis and interpretation of the data related to self-efficacy and the use of educational practices that support development of self-efficacy. Chemers' research focuses specifically on psychological factors that affect the commitment and success of underrepresented students in science, technology, education, and mathematics (STEM) education. Early studies (Chemers, Hu, & Garcia, 2001) showed clearly that academic self-efficacy plays an important role in student success. Employing a longitudinal design with first-year students at UC Santa Cruz, one study conducted by Chemers indicated that measurements of academic self-efficacy taken in the first quarter of the school year predicted student outcomes eight months later, at the end of the year, including academic goals, grades, and adjustment and health. In subsequent studies, supported by the National Institutes of Health and the National Institute of General Medical Sciences, findings have replicated those results and demonstrated that "research self-efficacy" and "identity as a scientist" predicted commitment to a career in STEM and satisfaction with the educational experience. Research on self-efficacy and identity fully mediated the effects on commitment of student experiences with authentic research, positive mentoring, and networking with professional scientists and other science students.

Chemers proposed a model (Figure 1) for factors within the ACE model that would serve as a framework for understanding relationships between ACE program components, latent psychological mediators, and student outcomes. Based on this model, MPR researchers and ACE staff jointly designed and developed an instrument, the College Student Self Assessment Survey (CSSAS), which provides a measure of self-efficacy and other attributes such as mindfulness. The use of this measure at various data points allows us to conduct analyses of growth in these attributes and ultimately will allow for correlational analyses of relationships between growth in these attributes and student outcomes.

Figure 1. Model of factors related to ACE program



Purpose of the Study

The goal of the study is to conduct a rigorous longitudinal evaluation of the Academy for College Excellence (ACE) and of the various implementations of the model on the campuses noted above. The ACE Center, located in Santa Cruz, California, supports the ACE program at all six colleges.

The evaluation of the Academy for College Excellence includes an analysis of key academic outcomes (e.g., credits earned, credit accrual, retention, persistence, attendance, and successful completion of accelerated courses) for students participating in the ACE program,[3] as well as an analysis of psychosocial factors that are key aspects of the ACE model. The aca-

[3] For this part of the study, we have aimed to replicate the findings of a study conducted by Columbia University's Community College Research Center (CCRC) in 2007. That study did not include an analysis of psychosocial factors. Note that the CCRC study evaluated the Digital Bridge Academy (former name of ACE).

demic outcome data included in this report represent the four colleges from which we received transcript, placement, and CSSAS data (Table 2). Previous studies on the ACE model have provided results that indicate the model is promising for ensuring retention of students who are under-prepared for college and for accelerating their progress through a community college program. In this study, a principal goal is to ascertain whether previous findings can be replicated and expanded to reflect various cohorts of students at a larger number of colleges. The specific objectives of the study and the research questions that were used to frame the data analyses in the current report are presented below.

Evaluation Objectives

1. Assess the impact of the ACE program on student outcomes.
2. Assess the elements of the program that are associated with desired outcomes.
3. Identify the types of students who benefit from the ACE program.
4. Assess fidelity of implementation at each participating college.
5. Provide the ACE staff, funders, and participating colleges with data and information that will support ongoing program improvement.
6. Contribute knowledge to the community college field about features of the ACE model that are most promising for enabling high-risk students to persist in college.

Research Questions

1. What are the effects of participation in the ACE program on student achievement indicators?
2. What are the effects of participation in the ACE program on personal growth outcomes, such as self-efficacy, interaction with others, and college identity?
3. What is the evidence at the end of the Bridge semester and one and two semesters after a student participates in the program that participation has positive effects on students' self-efficacy, college persistence, and career aspirations?

Table 2. Years of study and cohorts

	Data Collection and Analysis		
Year/Cohort	**End of Bridge Semester – Transcript and CSSAS Data for ACE Students**	**2 Semesters Post Bridge Semester**	**Academic Transcript Data, Including Comparison Groups Drawn from MIS Database**
Fall 2010/Cohort 1	Cabrillo, Hartnell, Berkeley, and Los Medanos	December 2011	Cabrillo, Hartnell, Berkeley, and Los Medanos
Spring 2011/Cohort 2	Cabrillo, Hartnell, Berkeley, and Los Medanos	June 2012	Cabrillo, Hartnell, Berkeley, and Los Medanos
Fall 2011/Cohort 3	Cabrillo, Hartnell, Berkeley, and Los Medanos	December 2012	Cabrillo, Hartnell, Berkeley, and Los Medanos
Spring 2012/Cohort 4	Cabrillo, Hartnell, Berkeley, and Los Medanos	June 2013	Cabrillo, Hartnell, Berkeley, and Los Medanos

The general design of the study as reflected in the current report includes three major analyses of data: (1) comparison of ACE students on achievement indicators to other students in each of the colleges using comparison groups constructed from the institutional and program data both at the end of each semester and two semesters subsequent to the Bridge semester; (2) analyses of ACE student performance on the CSSAS before participation in the ACE program, after the Foundation course, and after the Bridge semester; and (3) analyses of open-ended survey items and qualitative data collected through interviews, focus groups, and observations.

Methods

Collection and Analysis of Achievement Data

In order to achieve balance between the "treatment" (ACE) group and the "control" group, the evaluation team collected institutional (administrative) data elements from both ACE participants and non-participants that are suspected to have some association with student success. Most of these data are collected on the college application form and include demographic variables such as gender, race, age, nationality, and income as well as veteran status, dependency status, and indicators of previous academic achievement (e.g., type of degree or GED or type of high school attended). Where possible, these data included measures implemented during the application process, such as academic placement tests, non-academic intake surveys (such as the Self-efficacy Assessment administered to all ACE students), the student's risk level (provided by the ACE intake application), and quantity and type of coursework completed in the first term (e.g., remedial or college-level).

Institutional data also provided the intermediate outcomes, such as persistence to the second term and second year and academic milestones such as completion of a given number of transferable units, as well as longer term outcomes such as completion of degrees and credentials and transfer to four-year institutions. Finally, the data were used to disaggregate the results over specific subgroups, cohorts, and campuses to help identify specific methods and techniques that are particularly effective and worthy of more detailed investigation.

Conceptual framework

This analysis is motivated by the counterfactual model of causal inference, which defines the true causal effect of an intervention as the difference in outcomes in the presence of the intervention and in the absence of that intervention (Neyman, 1990 [1923]; Rubin, 1974; Holland, 1986; Morgan & Winship, 2007; Sekhon, 2009). The fundamental problem of causal inference, though, is that it is impossible to simultaneously observe both outcomes at once. Instead, the evaluation must try to approximate as closely as possible the answer to the question "What would have happened to these individuals if they had not had the intervention?" Randomized controlled trials (RCTs), or experiments, are generally considered the gold standard in establishing causality of interventions. Under most conditions, random assignment ensures that the group receiving the intervention is the same as the group not receiving the intervention, even on variables that cannot be adequately measured such as ability and motivation. RCTs are often infeasible, however, because of resource limitation and ethical concerns. In this situation, an RCT would have required the ACE program to

turn away a proportion of interested students even if space were available, contravening the program's stated goal of helping underprepared students succeed in community college.

Where random assignment is ruled out, researchers must use other methods to control for factors that affect both participation in the intervention and the outcomes of interest. One quasi-experimental method that is increasingly used in evaluation and social science research is matching, where participants are matched to non-participants with similar background characteristics. In particular, propensity score matching achieves this objective by statistically estimating each individual's propensity to participate in the intervention based on pre-intervention measures and then matching participants and non-participants with the most similar propensity scores. Propensity score matching has been shown under certain conditions to produce estimates of program effects equivalent to estimates based on random assignment even where other methods such as regression fail (Dehejia & Wahba, 1999; LaLonde, 1986; Agodini & Dynarski, 2004; Peikes, Moreno, & Orzol, 2008). The primary limitation of matching is that it cannot control for unobservable factors, but this is equally true of regression methods and most other multivariate statistical techniques.

Propensity score matching

The estimated effects in this report are based on propensity score matching using a 1:1 nearest neighbor match without replacement. A student's propensity score is the estimated likelihood that the student would participate in the ACE program, regardless of whether he or she actually did, as a function of the student's background characteristics. Propensity scores were generated using logistic regression and calculated as the predicted probability of participation in ACE. A student with a propensity score of .15, for example, has an estimated 15 percent probability of participating in ACE.

In plain language, each ACE participant is matched to the single non-participant with the most similar propensity score, and that non-participant is removed from the pool of available matches. In cases of ties, where two or more non-participants with identical propensity scores were the closest matches to an ACE participant, the matched non-participant is selected randomly. ACE participants are only matched to non-participants within the same college, program model[4] (e.g., accelerated, green building, etc.), and semester. ACE participants with placement scores and without placement scores were matched separately to non-participants with and without placement scores, respectively.

[4] ACE program model variations are discussed on the bottom of page two and are typically determined by the inclusion of particular courses (e.g., CTE courses) above and beyond the "canonical" ACE model that includes the Foundation course, Team Self-Management course, the behavior system, and accelerated coursework—in English and/or math.

To illustrate the process, an ACE participant with a propensity score of .15 would be matched with a non-participant with the propensity score closest to .15. That non-participant would not be matched to a participant again. If there were no available non-participants with a propensity score exactly equal to .15, the process would seek out a non-participant with a score of .14 or .16, and so forth. If there were multiple available non-participants with propensity scores of .15, then one would be selected at random.

To ensure common support, ACE participants with a propensity score larger than the largest score for a non-participant or smaller than the smallest score for a non-participant were excluded from the analysis. This requirement excluded very few students. A very small number of ACE participants and a small number of non-participants were excluded from analyses where a propensity score could not be estimated. For example, there were no students who did not complete high school among ACE participants in Cabrillo College in fall 2010 with placement scores, making it mathematically impossible to include dropout as a factor in the equation to estimate the propensity score. As a result, about 200 high school dropouts out of about 15,000 non-participants were excluded from the comparison group.

To test balance between the ACE and comparison groups, the mean value for each variable was calculated for each group before and after matching. Balance was maximized by iterated adjustments to the propensity score model. The matching was implemented by the *psmatch2* module in Stata/SE 12.1 for Windows (Leuven & Sianesi, 2003; StataCorp, 2012).

As a check on the robustness of these results to other forms of estimation, a separate analysis, not reported here, used ordinary least squares and logistic regression to compare a similar set of outcomes for a similar set of ACE participants and non-participants while controlling for the same background factors. The total sample sizes for each regression, including participants and non-participants, ranged from 2,994 to 12,760 depending on the outcome and the particular subset of students included. By and large the results of the regression mirrored the substantive results of the matching analyses reported here.

Cohorts

The outcomes in this report are based on four cohorts of California students starting in the fall 2010, spring 2011, and fall 2011 semesters at Cabrillo College in Aptos, Hartnell College in Salinas, Los Medanos College in Pittsburg (California), and Berkeley City College in Berkeley. The students were tracked longitudinally from the first semester of participation in ACE (the "ACE semester") through the end of fall semester 2011. Consequently, the fall 2010 cohort has outcomes for the ACE semester and the two semesters that follow (spring 2011 and fall 2011), the spring 2011 cohort has outcomes for the ACE semester and the following semester (fall 2011), and the fall 2011 cohort has outcomes only for the ACE semester.

Participation in ACE was operationally defined as the successful completion of the short Foundation course with a grade of A, B, C, or P. The first or "Bridge" semester immediately following the Foundation course is referred to as the ACE semester. Depending on the college, enrollment in the Foundation course (DMCP 110 at Cabrillo College, EDU 110 at Hartnell College, HMSRV 110 at Los Medanos College, and LRNRE 220, LRNRE 248, or LRNRE 248UQ at Berkeley City College) was recorded as either occurring during the ACE semester or during the abbreviated summer or winter term immediately prior to the ACE semester.

Data

The transcript, demographic, course, and placement data used in this report were obtained by ACE program staff directly from the four colleges. Except for the placement data, these data come from a standard set of information that all California Community Colleges submit to the California Community Colleges Chancellor's Office Management Information Systems (MIS).[5] These data contain an extensive set of enrollment behaviors and a more limited set of demographic and other background characteristics.

The population of students analyzed in this report is based on 894 ACE participants and 123,631 non-participants enrolled in Cabrillo College, Hartnell College, Los Medanos College, and Berkeley City College in the fall 2010, spring 2011, and fall 2011 semesters. Table 3 summarizes enrollment by college, semester, and participation. Within each college and semester, ACE participants are identified as those who successfully completed the Foundation course immediately prior to that semester, and non-participants consist of all other enrolled students. As described previously, each ACE participant is matched to the most similar non-participant in a given college and semester. For example, the 165 Cabrillo College participants starting in fall 2010 would be matched to 165 non-participants from a total pool of 15,145 non-participants. Because of statistical limitations inherent to the logistic models used to predict the propensity to participate in ACE, propensity scores could not be calculated for ACE participants or non-participants with missing values for one or more of background characteristics used for matching (described in the next section) or in cases where a characteristic perfectly predicted participation or non-participation (such as the example of high school dropouts at Cabrillo College in fall 2010 mentioned above). Consequently, the matching results are based on 720 participants (658 accelerated participants and 62 non-accelerated participants) and an equal number of non-participants.

[5] For more information on the California Community Colleges Chancellor's Office MIS, please visit http://datamart.cccco.edu.

Table 3. Enrollment by college, semester, and ACE participation

	Cabrillo College			Hartnell College			Los Medanos College			Berkeley College			All Colleges		
Semester	Non-ACE	ACE	Total	Non-ACE	ACE	Total	Non-ACE	ACE	Total	Non-ACE	ACE	Total	Non-ACE	ACE	Total
Fall 2010	15,145	165	15,310	9,639	99	9,738	9,835	25	9,860	6,935	29	6,964	41,554	318	41,872
Spring 2011	14,628	153	14,781	11,010	60	11,070	10,196	24	10,220	7,061	18	7,079	42,895	255	43,150
Fall 2011	14,398	118	14,516	9,302	103	9,405	9,012	25	9,037	6,470	75	6,545	39,182	321	39,503
All Semesters	44,171	436	44,607	29,951	262	30,213	29,043	74	29,117	20,466	122	20,588	123,631	894	124,525

Background characteristics

Following Jenkins et al. (2009), this report uses the following background characteristics derived from MIS data elements as the basis for constructing a matched comparison group (Table 4):

- Gender
- Race/ethnicity (indicators for white, African American, and Hispanic, with other categories and missing treated as a reference category)
- Socioeconomic status, operationalized as whether the student's home ZIP code has 20 percent or more of households below the poverty line
- Student's age in years as of December 31 of the year of the ACE semester
- Whether the student graduated from high school
- Whether the student earned a GED or other type of high school equivalency
- Whether the student did not complete high school
- Number of credits earned at current community college prior to ACE semester
- The student's placement level in English, in terms of levels below the college level
- For Los Medanos College only, the student's placement level in math, in terms of levels below the college level

Most of the elements were measured dichotomously, but squared terms for the student's age and prior credits earned were included to account for extreme values. Matching on age and prior units earned further reduces the already small probability, for example, that an otherwise similar non-participant with many prior credits (who most likely has already overcome any initial obstacles to college success) would match to an ACE participant with few, if any, prior credits.

To further refine the comparison group, non-participants who completed transfer-level English in the ACE semester and, at Los Medanos College only, transfer-level math, were excluded from the analyses regardless of their propensity scores. Because of these exclusions, results are not reported for completion of transfer-level English and math in the ACE semester for non-participants.

Table 4. Descriptive statistics for background variables used in this report by college and overall

	Spring 2010, Fall 2010, Spring 2011									
Variable	**Cabrillo**		**Hartnell**		**Los Medanos**		**Berkeley City**		**All Four Colleges**	
	Pct	**N**	**Pct**	**N**	**Pct**	**N**	**Pct**	**N**	**Pct**	**N**
All ACE participants	100%	436	100%	262	100%	74	100%	122	100%	894
Male	60.1%	262	69.1%	181	43.2%	32	47.5%	58	59.6%	533
White	32.6%	140	7.4%	17	22.2%	16	1.9%	2	20.8%	175
African American	3.3%	14	4.8%	11	31.9%	23	56.1%	60	12.9%	108
Hispanic	58.4%	251	82.7%	191	29.2%	21	28.0%	30	58.7%	493
From high poverty ZIP code	5.2%	22	34.2%	88	0.0%	0	38.5%	45	18.0%	155
High school graduate	73.4%	309	58.3%	148	79.2%	57	76.3%	87	69.8%	601
Completed GED	16.2%	68	11.4%	29	13.9%	10	7.0%	8	13.4%	115
High school dropout	6.2%	26	20.1%	51	6.9%	5	10.5%	12	10.9%	94
Has placement data	94.0%	410	49.6%	130	86.5%	64	59.0%	72	75.6%	676
Placed at degree-applicable[6] English*	11.5%	47	6.9%	9	7.4%	5	8.3%	6	9.9%	67
Placed one level below degree-applicable English*	47.6%	195	24.6%	32	70.6%	48	0.0%	0	40.4%	275
Placed two or more levels below degree-applicable English*	41.0%	168	68.5%	89	22.1%	15	91.7%	66	49.7%	338
Placed at degree-applicable math*	–	–	–	–	0.0%	0	–	–	–	–
Placed one level below degree-applicable math*	–	–	–	–	14.1%	9	–	–	–	–
Placed two or more levels below degree-applicable math*	–	–	–	–	85.9%	55	–	–	–	–
	Mean		**Mean**		**Mean**		**Mean**		**Mean**	
Age	24.7		23.5		22.6		23.8		24.0	
Prior college credits earned	2.6		2.7		4.6		2.5		2.8	

* Results exclude ACE participants with missing placement data.

[6] Degree-applicable or college-level are one level below transfer-level courses that transfer to University of California and California State University institutions.

Limitations on matching

The MIS data used here lack several key items related to students' background characteristics that are typically used in studies of college student success. Intake forms completed by ACE participants show that high percentages of them have background factors that put them at risk of not completing college (Jenkins et al., 2009). These risk factors include past substance abuse, participation in gangs, and having a criminal record. Regrettably, none of these risk factors are collected in the MIS data, and thus they were not available as selection parameters for non-participants. A concerted effort was made to identify students who attended alternative or continuation high schools, but high school codes were missing for over half of ACE participants and non-participants.

Similarly, no direct measures of students' socioeconomic status, such as parental income and education, were available. Receipt of financial aid was considered and rejected because it is not considered a valid or reliable indicator of financial need for California community college students for a number of reasons, including relatively low fees, the high administrative burden of completing financial aid paperwork, restricted eligibility for the large proportion of students who enroll part time, and the limited English proficiency of many students (TICAS, 2007; Berkner & Woo, 2008). Instead, following Jenkins et al. (2009), a high percentage of households in poverty in the student's home ZIP code was used as a proxy for socioeconomic status, recognizing that using ecological measures to infer individual-level correlations may be problematic (Robinson, 1950).

The matching analysis of student achievement also does not control for the fact that ACE participants were required to enroll full time in the Bridge semester, whereas the comparison group includes both full-time and part-time students. Students who enroll full time, defined as at least 12 credit hours, have the potential to earn more credits and complete more courses in a given term than students who enroll part time. Numerous studies have shown that community college students who initially enroll full time are more likely to complete certificates and degrees and to transfer to four-year institutions (Calcagno et al., 2006; Clery, 2010; Skomsvold et al., 2011; Topper & Lee, 2010). Yet only about half of first-time community college students enroll full time in the first term (Horn & Radwin 2012, p. 35).

It would be possible to match ACE participants only to non-participants who enrolled full time, but since probably half or more of ACE participants would have enrolled part time had they not participated in ACE, excluding part-time students from the comparison group would fail to account for this aspect of the ACE program and would surely underestimate the program's effect on student achievement. ACE participants were asked on both the CSSAS and the ACE intake form whether they intended to enroll full-time. Over 80% of ACE students indicated on the CSSAS that they intended to enroll full-time. However, the CSSAS survey was administered to ACE students after the students had already registered for the

ACE Foundation course and interacted with ACE program personnel. The CSSAS question was abandoned as a control after an analysis of the ACE intake form (for Cabrillo) indicated that about 50% of ACE students intended to enroll full-time. The ACE intake form is completed prior to starting the ACE program. Confidence in this finding is bolstered by the aforementioned finding that approximately half of community college students nationally actually enroll full time (Horn and Radwin, 2012). And, in fact, approximately 50% of the Cabrillo comparison group did enroll full-time. This finding gives some confidence that the propensity matching is doing a reasonable job of controlling for full-time/part-time status. Efforts are continuing to expand the enrollment intention analysis to the other colleges in the study. It is hoped that this exploration will allow us to control more definitively for full time/part time status in future reports.

Outcome data

This report uses the following indicators of student progress and success:

- Percentage of students who passed degree-applicable English (one level below transfer-level) during the ACE semester, by one semester following the ACE semester, and by two semesters following the ACE semester;
- Percentage of students who passed transfer-level English (applicable toward an associate's degree and toward transfer to a University of California [UC] or California State University [CSU] campus) by one semester following the ACE semester and by two semesters following the ACE semester;
- Percentage of students enrolled full time (12 credits or more) at the same college one semester following the ACE semester;
- Percentage of students enrolled at the same college in the semester following the ACE semester (full time or part time);
- Mean cumulative number of degree-applicable credits (applicable toward an associate's degree) earned during the ACE semester, by one semester following the ACE semester, and by two semesters following the ACE semester;
- Mean cumulative number of transferable credits (applicable toward an associate's degree and toward transfer to a UC or CSU campus) earned during the ACE semester, by one semester following the ACE semester, and by two semesters following the ACE semester;

- Percentage of students (Los Medanos College only) who passed degree-applicable math (one level below transfer-level) during the ACE semester, by one semester following the ACE semester, and by two semesters following the ACE semester; and

- Percentage of students (Los Medanos College only) who passed transfer-level math (applicable toward an associate's degree and toward transfer to a UC or CSU campus) by one semester following the ACE semester and by two semesters following the ACE semester.

These intermediate outcomes, while arguably meaningful in their own right, are important because they have been shown to correlate with ultimate success in community colleges (as defined by completion of certificates and degrees and transfer to four-year colleges) (Horn & Radwin, 2012; Offenstein, Moore, & Shulock, 2010; Offenstein & Shulock, 2010; Moore, Shulock, & Offenstein, 2009; Leinbach & Jenkins, 2008; Calcagno et al., 2006; Adelman, 2005). For example, California Community College students typically need at least 60 degree-applicable and transferable credits to transfer to a University of California or California State University campus with upper-division standing (Moore, Shulock, & Offenstein, 2009), and most associate's degrees require at least 60 degree-applicable credits (McCormick, 1999). The identification of certain factors—educational goals, enrollment patterns, and course-taking patterns, for example—have also been shown in the Transfer Velocity Research Project (TVP) conducted through the Research and Planning Group of the California Community Colleges to be significant in ensuring college transfer and completion. The TVP is a comprehensive study of two-to-four-year transfer in California. Awarded in 2007 by the California Community College State Chancellor's Office, the study investigates the full spectrum of factors, interventions, strategies, and practices that have a positive impact on transfer (Hayward, 2011). Early accumulation of credits is the first step in the path to transferring and earning an associate's degree. Likewise, because completion and transfer almost always require at least two years of full-time enrollment, persistence across semesters is all but necessary to achieve either of these goals.

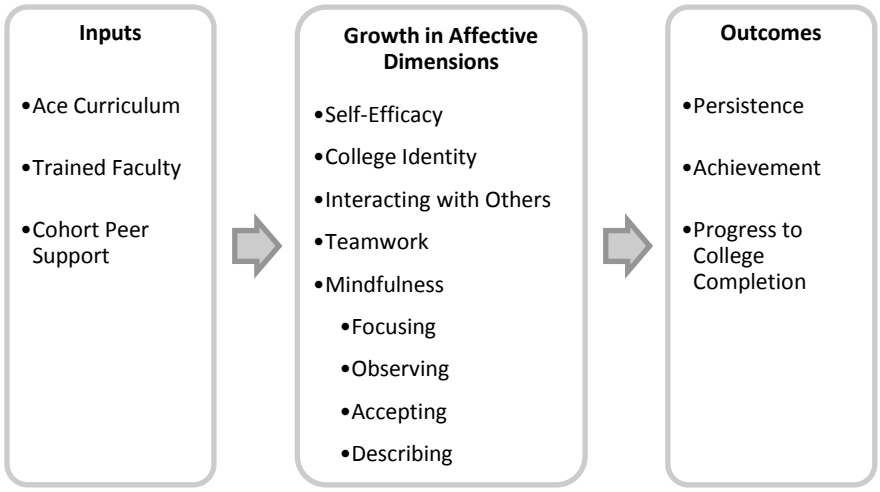
These interim measures of student progress provide early feedback on the efficacy of the ACE program long before most students would be expected to graduate or transfer to a four-year college with upper-division standing. For instance, even the minority of community college students who earn an associate's degree within six years still take over three years on average to complete (Green & Radwin, 2012). Delaying this analysis for three or more years while students progress through college would compromise the timeliness of this evaluation.

Collection and Analysis of Data from the College Student Self-Assessment Survey (CSSAS)

The collection and analysis of student achievement indicator data are of primary importance in describing the effects of participation in the ACE program on academic outcomes. However, achievement indicators do not tell the full story of ACE. ACE posits that its program leads to transformational changes in factors represented in the affective dimension and that it is these changes in students' increased understanding of themselves and others that leads to student success. The underlying theory that in large part prompted the design of the ACE model—as described by the founder, Diego Navarro—is that factors associated with the affective dimension are an instrumental part of being a success in school and life and that students who enroll in the ACE program typically have not developed these skills due to the negative circumstances of their lives and their prior negative experiences as students.

To understand what effect the ACE program has on student growth in the affective dimension factors of self-efficacy, college identity, mindfulness, interaction with others, and teamwork, MPR designed, in collaboration with Martin Chemers and ACE Staff, a survey instrument called the College Student Self-Assessment Survey (CSSAS). Figure 2 provides a conceptual model of the ACE process, illustrating how mediating factors related to affective dimensions emerging from the ACE curriculum contribute to specific student outcomes.

Figure 2. Conceptual model of how affective dimensions measured by CSSAS fit into the ACE process



The CSSAS is administered electronically to ACE students at three points in time: prior to the Foundation course, at the end of the Foundation course, and again at the end of the ACE semester. To date, it has been fully administered to four cohorts of ACE students at all of the colleges implementing the ACE model (including spring 2012). CSSAS data collected from the fall 2010, spring 2011, fall 2011, and spring 2012 cohorts are analyzed in this report.

The CSSAS was designed to identify and measure growth in important psychological constructs that are theorized to be critical facets of college success for ACE students. The CSSAS is based on several validated survey instruments used in other research studies to measure factors related to the affective dimension that are addressed in the ACE program. Table 5 provides an overview of the factors measured by the CSSAS and the sources for the survey items. Appendix Table A1 provides a detailed list of research literature associated with each factor.

Table 5. CSSAS constructs and sources

Affective Dimension	Section and Description of Items	Sources[1]
Self-Efficacy	Items relating to one's confidence in successfully completing school-related tasks and in one's ability to regulate learning and study behaviors. Also includes items related to student's hope regarding their academic future. Respondents rate the extent of their agreement on each statement using a five-point scale (1 = Strongly disagree; 5 = Strongly agree).	Academic Self-Efficacy Scale by Chemers, Hu, & Garcia (2001); Efficacy for Self-Regulated Learning Scale by Zimmerman, Bandura, & Marinez-Pons (1992); Domain Specific Hope Scale by Shorey & Snyder (2004)
College-Identity, Teamwork, and Interacting with Others	Items relating to identifying as a college student, communication skills, and aspects of personal responsibility that affect interaction with others. Respondents rate the extent of their agreement on each statement using a five-point scale (1 = Strongly disagree; 5 = Strongly agree). Also includes two items on anticipated stress and ability to handle challenging stress levels, measured on a five-point scale.	Drafted by Dr. Martin Chemers based on previous survey research in each domain (2010); Personal Responsibility Questionnaire by Merger, Spencer, & Patton (2004)
Mindfulness, including Focusing, Accepting, Observing, and Describing	Items relating to being mindful of one's ability to focus on tasks, and one's inner state, through observing, describing, and accepting one's actions, thoughts, and behaviors. Respondents rate how true specific statements are about themselves on a five-point scale (1 = Never or rarely true; 5 = Very often or always true).	Kentucky Inventory of Mindfulness Skills by Baer (2004)

[1] See list of References for full citations.

Validation of CSSAS Survey Instrument

To determine the validity of the CSSAS instrument, MPR used a multi-step process:

1. Piloted initial survey with sample of ACE students in spring 2010.
2. Used Exploratory Factor Analysis on pilot results to determine items to retain or drop from the survey.
3. Administered streamlined survey to all ACE students in fall 2010 and spring 2011. Additional items from a prior self-efficacy survey developed by Cabrillo College were added before the Time 3 administration in fall 2010 to broaden the self-efficacy measure.
4. Continued to check validity of survey and factors using Time 1 results from fall 2010 and spring 2011. No items were dropped from the survey.
5. In fall 2011, the CSSAS was administered during student assessment periods to all incoming students at Cabrillo College and Hartnell College in addition to all ACE students at the six participating colleges.
6. A final Exploratory and Confirmatory Factor Analysis was run on the entire sample of Time 1 surveys, including those from ACE and non-participants. The original 10-factor model was changed to the final 8-factor model based on the results of the Confirmatory Factor Analysis.
7. All analyses of change over time in CSSAS factor scores were rerun for all terms using the final 8-factor model and those results are reported in this paper.

Findings from the Exploratory and Confirmatory Factor Analysis are presented later in this report.

Analysis of Change in ACE Student Scores on the CSSAS

For this report, MPR used data collected from ACE students in fall 2010, spring 2011, fall 2011, and spring 2012. Because the study examines change over time, the sample is limited to ACE students who had survey results for all three CSSAS administrations, including Time 1 before beginning ACE, Time 2 after completing the Foundation course, and Time 3 after the end of the first ACE semester. It is necessary to have a matched sample of students if analysis of change over time is to be valid. The total N for this analysis is 535 students from six colleges participating in the ACE program. A breakdown of respondents by college is presented in Table 6. To measure change over time, we created a scale score for each of the affective dimension factors and then calculated the mean score for each factor at each time point. We used a matched-samples *t*-test to determine if the mean score changes were statistically significant between Time 1 and Time 2 and also between Time 1 and Time 3. Mean scores and significance results are reported in the Findings section (p. 23). In addition to

mean scores, we also calculated the percentage of students scoring in the top quartile of each factor scale at each time point[7]. These findings provide a complement to the mean scores and are also presented in the Findings section.

Table 6. CSSAS respondents by college, F10-SP12 (N = 535)

	N	%
Berkeley City College	57	11%
Cabrillo College	276	52%
Delaware County Community College	57	11%
Hartnell College	69	13%
Las Positas College	11	2%
Los Medanos College	65	12%
Total	535	100%

Limitations of CSSAS Results

The change-over-time survey results may not be representative of the change for all ACE students because of the limited sample size. The sample size for the change analysis is limited to 535 students, though the combined number of ACE students from fall 2010 to spring 2012 is much higher (N=894). This sample is 535 students because the analysis required a matched sample of students who had taken the CSSAS at all three time points during the ACE semester. ACE experienced challenges in ensuring that ACE students at six different campuses took the CSSAS at three time points each semester, leading to the reduced sample size.

Collection and Analysis of Qualitative Data on Implementation of the ACE Program

One of the most challenging aspects of implementation of ACE programs is integrity with the basic components of the ACE model. As noted in the Introduction, the ACE model is implemented in a Bridge semester that includes a two-week Foundation course, a Team Self-Management (TSM) course, a project-based course focused most often on Social Justice, and an intensive, accelerated, and integrated set of academic courses. The Social Justice course is often the pivot point around which the other courses cluster, in part because it includes a culminating presentation for the semester, and in part because it focuses on an in-depth

[7] The scale is based on the number of items contained within each factor. For example, self-efficacy consists of 11 items, for a total scale score of 55 (5-points per item). Students who scored 41 or above would be in the top quartile for self-efficacy. On the other hand, identity consists of 3 items, for a total scale score of 15. Students who scored 11 or above would be in the top quartile for identity.

research project. The Foundation, TSM, and Social Justice courses are very tightly structured and are designed to be fast-paced. The curriculum is carefully laid out, and all the necessary materials are provided in kit form. Documenting how colleges and faculty implement the program is an important undertaking for the evaluation, as is the study of how the program develops and matures at a college. The preliminary data we collected informed the focus of future areas of study, i.e., elements to discern during observations and questions to pursue in interviews. These data helped to substantiate findings from the results of the CSSAS administrations and provided contextual data on students' opinions, beliefs, and experiences.

Site visits were conducted at colleges implementing the ACE program between 2010 and 2012. For each visit, protocols were developed for conducting interviews, focus groups, and observations. The protocols were developed based on a set of constructs derived from background interviews, review of documentations, and meetings with ACE staff. They were refined as more information was gathered about how implementation varied across sites.

Table 7 presents the qualitative data that were collected from April 2010 to April 2012. Evaluators conducted 18 interviews with ACE program designers (2) and college administrators (16); engaged 36 ACE faculty either in individual interviews or in focus groups; conducted interviews or focus groups with 85 students, and conducted 32 classroom observations. Site visit data were collected at all six of the colleges implementing the ACE program that are the focus of this study. All of the responses were coded for major themes, and the results are reported in the Findings section on implementation.

Table 7. Qualitative data collection during site visits

Year	College	Program Designer Interview	Administrator Interview	Faculty Interview or Focus Group (number of faculty)	Student Interview or Focus Group (number of students)	Classroom Observation
2010	Cabrillo College	2		9	10	4
2011	Berkeley City College		1	2	8	2
	Cabrillo College		2		16	6
	Delaware County Community College		1	4	9	4
	Hartnell College		3	6	10	3
	Las Positas College		1	4	5	1
2012	Berkeley City College		1	1	8	2
	Cabrillo College		1	3	9	5
	Hartnell College		3	6	8	3
	Los Medanos College		3	1	2	2
TOTALS		2	16	36	85	32

Findings

Effects of ACE Program on Academic Achievement Indicators

Tables 8 to 15 and Figures 3 to 8 show findings related to the outcome measures for the applicable ACE cohorts and the matched comparison group. The results are disaggregated by program type where possible. To reflect the variation in implementation (see section on Implementation), results are disaggregated by program type within college and semesters, but overall totals include results from accelerated programs only.[8] Detailed results by term and tests of statistical significance are available in Appendix Tables A5 to A12.[9]

Each row in each table includes the number of ACE participants. The number of non-participants is the same because they are matched 1:1 to participants. Each row also shows the difference in mean values between ACE participants and comparable non-participants, the standard error of the difference, and an indication if the difference is statistically significant at the .05 or .01 level.

Completion of degree-applicable English

Overall, ACE participants in accelerated programs were considerably more likely to pass degree-applicable English in the ACE semester, although this difference attenuates over the next two semesters as non-ACE students slowly begin to catch up. As shown in Table 8, 49 percent of accelerated ACE participants completed degree-applicable English by the end of the ACE semester compared with 17 percent of the comparison group, a difference of 32 percentage points (p<.01). By the end of the first semester after the ACE semester, 64 percent of ACE participants completed transfer-level English compared with 30 percent

[8] Results are not reported for ACE participants in non-accelerated programs at Cabrillo College in fall 2010, but these students are included in descriptive statistics in Tables 3 and 4. Starting in spring 2011, all Cabrillo College ACE participants were in accelerated programs.

[9] Statistical significance measures the probability that a sample would have yielded a difference of a given magnitude due to random sampling error if the true value of the difference in the population were zero—that is, if by chance the groups in the sample had different outcomes even though the outcomes were the same in the population. A typical standard for statistically significant is a less than 5 percent probability that the difference could have been caused by chance ($p < .05$), and differences with a less than 1 percent probability of being caused by chance ($p < .01$) are even more highly statistically significant. A difference that does not reach statistical significance at the .05 level does not necessarily imply that there is no difference in the population but only indicates that there is at least a 5 percent probability that the difference could be due to chance.

of comparable non-participants, and by the end of the second semester after the ACE semester, 67 percent of these ACE participants and 45 percent of comparable non-participants completed transfer-level English (both differences $p < .01$).

There is no consistent or statistically significant difference between non-accelerated ACE participants and matched comparable non-participants, however, during the ACE semester or the two following semesters. This finding is hardly surprising considering that non-accelerated programs do not require participants to enroll in degree-applicable English.

Table 8. Degree-applicable English completion by semester

	Maximum Number of Students	In ACE Semester			By End of First Semester after ACE			By End of Second Semester after ACE		
		ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.
Accelerated	658	49.1	17.0	32.1 **	63.8	30.2	33.6 **	66.5	45.1	21.4 **
Non-accelerated	62	22.5	3.8	18.8	42.6	23.4	19.1	13.8	24.1	-10.3

*$p < .05$; **$p < .01$; two-tailed test.

NOTE: The apparent drop in non-accelerated participants' rate of completing degree-applicable English by the second semester after ACE is due to the fact that this result is based on the fall 2010 cohort only. For detailed results, see Appendix Table A5.

Figure 3. Degree-applicable English completion by semester, fall 2010 accelerated cohort

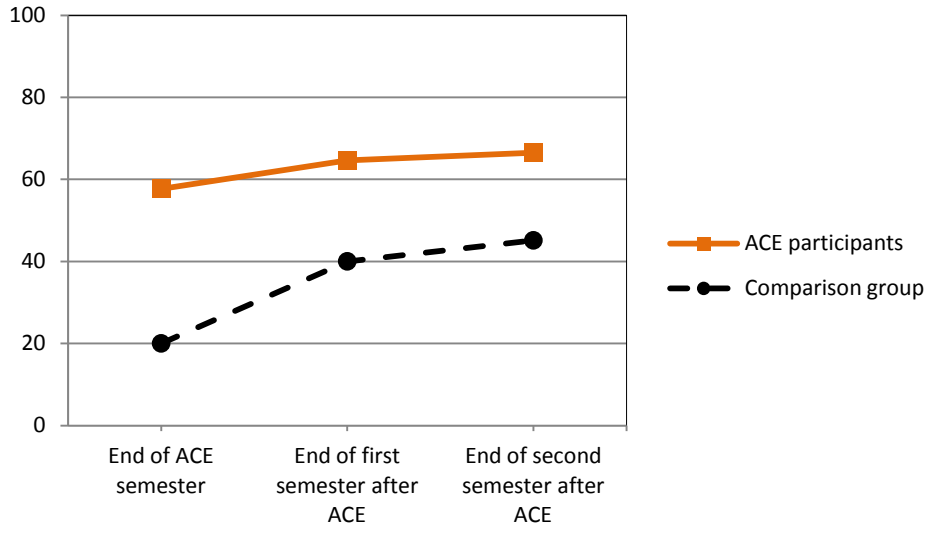
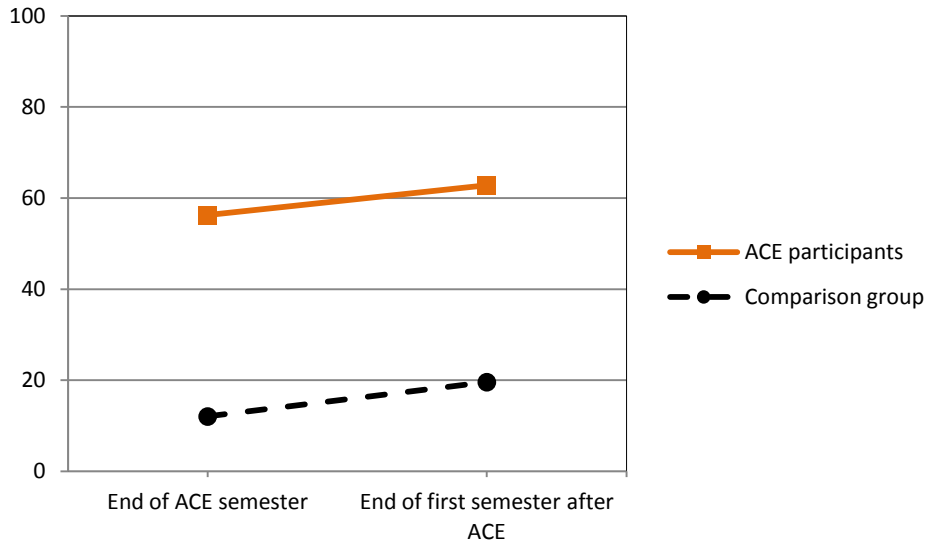


Figure 4. Degree-applicable English completion by semester, spring 2011 accelerated cohort



Completion of transfer-level English

ACE participants in accelerated programs are also more likely than comparable non-participants to complete transfer-level English, on the whole, though the completion rate is lower than for degree-applicable English, and there is an understandably greater lag time between the ACE semester and passing transfer-level English. Only 3 percent of accelerated ACE participants completed transfer-level English in the ACE semester, almost all of whom were enrolled at Berkeley City College (Appendix Table A6). (Figures are not reported for the comparison group because comparable non-participants who completed transfer-level English were excluded from the comparison group.) This very low completion rate is not surprising given that the ACE participants were enrolled in English courses one level below transfer-level in the ACE semester. The 79 percent completion rate for Berkeley City College is remarkably high, in contrast, although it is important to note that this outcome is not strictly comparable to completing other transferable English courses at other colleges. While the English 101A course taken by this cohort is technically a transferable course, in that it is accepted by the California State University, it is only two units, is not accepted by the University of California, and is not considered the college's gateway English course for transfer students. Berkeley City College ACE participants starting in spring 2011 and fall 2011 took a different course, English 201A/B, which is not classified as transfer level. By the end of the first semester after the ACE semester, 23 percent of accelerated ACE participants had completed transfer-level English compared with 9 percent of comparable non-participants, a difference of 15 percentage points calculated before rounding ($p < .01$). Two semesters after the ACE semester, 41 percent of accelerated ACE participants and 16 percent of comparable

non-participants completed transfer-level English, a difference of 24 percentage points before rounding ($p < .01$). These results are reported in Table 9. Results were mixed for the non-accelerated ACE participants, but relatively few participants or comparable non-participants completed transfer-level English.

Table 9. Transfer-level English completion by semester

	Maximum Number of Students	In ACE Semester			By End of First Semester after ACE			By End of Second Semester after ACE		
		ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.
Accelerated	658	3.2	–	–	23.4	8.5	15.0 **	40.5	16.3	24.2 **
Non-accelerated	62	0.0	–	–	4.3	8.5	-4.3	3.4	10.3	-6.9 *

*$p < .05$; **$p < .01$; two-tailed test

NOTE: Analyses exclude all non-participants who passed transfer-level English in the ACE semester and all LMC non-participants who passed transfer-level math in the ACE semester.

Credit accrual

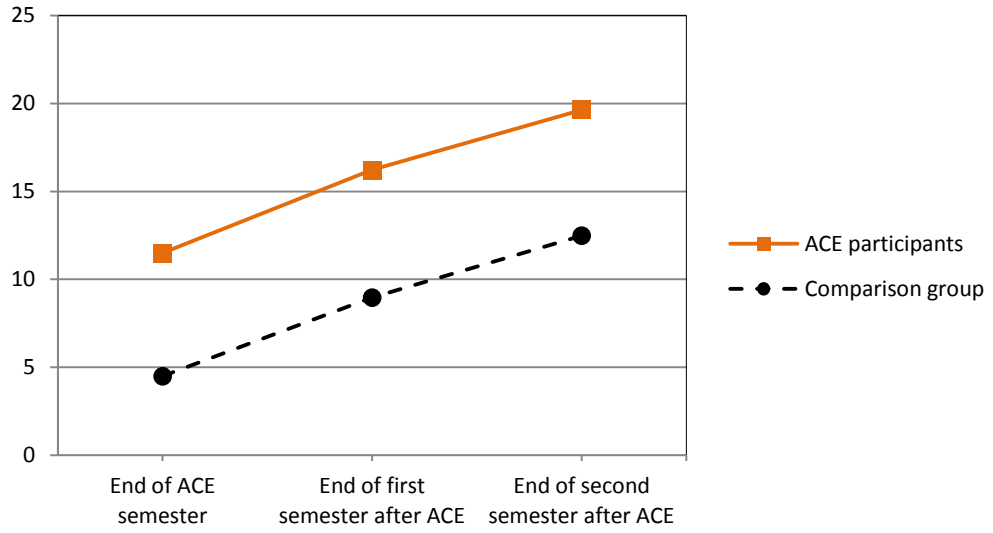
Table 10 reports the mean values of the cumulative number of degree-applicable college credits (applicable to an associate's degree or CTE certificate but not necessarily transferable to a four-year college) earned during the ACE semester and the two semesters that follow. Associate's degrees typically require 60 college credits, and certificate programs require anywhere from 12 to over 100 credits (Moore, Jez, Chisolm, & Shulock, 2012). Overall, accelerated ACE participants earned 7 more degree-applicable credits than comparable non-participants, and the difference is statistically significant at the .01 level for every college and term save one (Appendix Table A7). Accelerated ACE participants earned 11 degree-applicable credits in the ACE semester on average, while comparable non-participants earned 4 credits on average, a difference of 7 credits. Participants earned 16 degree-applicable credits by the end of the next semester and 20 credits by the end of the second semester after the ACE semester, compared with comparable non-participants' 7 and 13 credits in the respective semesters, maintaining the difference of 7 to 9 degree-applicable credits. There is also no evidence that the non-participants were catching up to participants in accumulation of degree-applicable credits over the following semesters. Among the non-accelerated program types, ACE participants generally earned more degree-applicable credits than comparable non-participants, though the difference of 1 to 5 credits is much smaller in magnitude. Figure 5 shows the progression in degree-applicable credit accumulation for the accelerated ACE participants starting in fall 2010 and their matched non-participants.

Table 10. Cumulative degree-applicable credits earned by semester

	Maximum Number of Students	In ACE Semester			By End of First Semester after ACE			By End of Second Semester after ACE		
		ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.
Accelerated	658	11.1	3.9	7.3	15.8	7.3	8.5	19.6	12.5	7.1
Non-accelerated	62	8.4	3.2	5.1	11.1	7.4	3.8	12.3	11.0	1.2

NOTE: For tests of statistical significance, see Appendix Table A7.

Figure 5. Cumulative degree-applicable credits earned by semester, fall 2010 accelerated cohort



The story is quite different for earning credits that are transferable to an in-state public university (UC or CSU), which are also applicable to a degree or certificate. Neither ACE participants nor comparable non-participants earn very many such credits, typically averaging 1 to 3 credits per semester, and ACE participants tend to lag 1 to 2 credits behind comparable non-participants. 10 As reported in Table 11, accelerated ACE participants earned 1 transferable credit compared with 3 such credits earned by comparable non-participants, a difference of 2 credits. By the end of the next semester, ACE participants averaged 4 credits and comparable non-participants averaged 5 credits, and by the semester after that, ACE participants had earned 8 credits and comparable non-participants had

[10] At Delaware County Community College, the ACE model is implemented as transfer-level courses, so in future reports—when we have transcript data from them—we will be able to examine this variable.

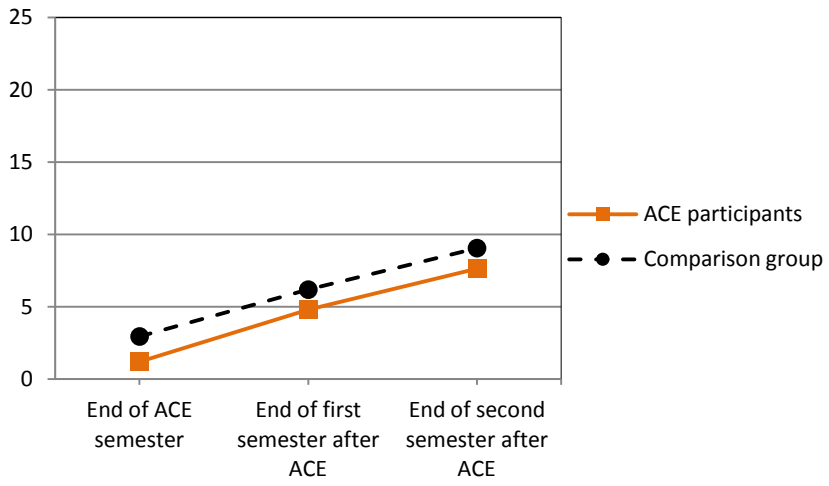
earned 9 credits.[11] Figure 6 plots the progression of transferable credits earned for the fall 2010 cohort of accelerated participants and its comparison group. The most important implication of these results may be that even after three semesters, no group of ACE participants in any college or program type earned over 12 cumulative transferable credits on average (nor, for that matter, did any comparison group) (Appendix Table A8), which means the average student is still a long way from the 60 credits needed to transfer with upper-division standing. This finding related to the amount of time it takes community college students to accumulate sufficient units to graduate and/or transfer is well known among community college educators and researchers.

Table 11. Cumulative transferable credits earned by semester

	Maximum Number of Students	In ACE Semester			By End of First Semester after ACE			By End of Second Semester after ACE		
		ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.
Accelerated	658	1.0	2.5	-1.5	4.0	5.1	-1.1	7.6	9.1	-1.4
Non-accelerated	62	2.0	2.7	-0.7	3.7	6.0	-2.3			

NOTE: For tests of statistical significance, see Appendix Table A8.

Figure 6. Cumulative transferable credits earned by semester, fall 2010 accelerated cohort



[11] An earlier version of this report found slightly larger mean values of degree-applicable and transferable credits for non-participants and therefore slightly larger differences between the two groups. The most likely reason for this disparity is that the earlier report did not exclude non-participants who completed transfer-level English and math (and therefore earned degree-applicable and transferable credits) in the ACE semester.

Full-time enrollment after ACE semester

Full-time enrollment in the first semester after the ACE semester is reported in Table 12 for the fall 2010 cohort and spring 2011 cohort combined. Overall, accelerated ACE participants were more likely than comparable non-participants to enroll full time in the semester following the ACE semester, but the results varied somewhat across semesters and colleges. Some 44 percent of accelerated ACE participants and 27 percent of comparable non-participants enrolled full time in the subsequent semester, a difference of 17 percentage points ($p < .01$). The percentage of accelerated ACE participants enrolling full time in the following semester ranged from 21 percent of the Berkeley City College cohort starting in fall 2010 to 77 percent of the Los Medanos College cohort starting in fall 2010 (Appendix Table A9).

Table 12. Percent enrolled full time in first semester after the ACE semester

	Maximum number of students	In first semester after ACE		
		ACE	Comp. group	Diff.
Accelerated	658	44.0	26.6	17.4 **
Non-accelerated	62	21.3	29.8	-8.5

*$p < .05$; **$p < .01$; two-tailed test.

Persistence

Table 13 reports one-semester persistence, defined as full-time or part-time enrollment at the same college in the semester after the ACE semester. Overall, 70 percent of accelerated ACE participants persisted to the next semester compared with 59 percent of comparable non-participants, a difference of 11 percentage points ($p < .05$). Even more so than with full-time enrollment, one-semester persistence varied considerably for ACE participants across colleges and accelerated program types, from a low of 28 percent in Hartnell College's spring 2011 non-CTE cohort to a high of 94 percent in Los Medanos College's fall 2010 cohort (Appendix Table A10). The differences between accelerated ACE participants and comparable non-participants were generally positive, ranging from 10 percentage points less likely to persist (Hartnell College non-CTE spring 2011 cohort) to 67 percentage points more likely to persist (Los Medanos College spring 2011 cohort).

Table 13. Percent persisted to first semester after the ACE semester

	Maximum number of students	To first semester after ACE		
		ACE	Comp. group	Diff.
Accelerated	658	70.0	59.2	10.9 *
Non-accelerated	62	38.3	53.2	-14.9

*p < .05; **p < .01; two-tailed test.

Completion of degree-applicable math and transfer-level math

As noted above, the Los Medanos College ACE program includes degree-applicable math (one level below transfer level) as part of the curriculum in the ACE semester (even though few if any participants place at the college level in math) and prepares them to enroll in transfer-level math in the following semester. Tables 14 and 15 and Figures 7 and 8 compare degree-applicable math and transfer-level math completion for Los Medanos ACE participants and comparable non-participants matched by characteristics including placement in mathematics. Non-participants who completed transfer-level math in the ACE semester were excluded from the analyses. It should be noted at the outset that these analyses of math completion are based on a very small number of ACE participants (17 to 56, depending on the outcome) and an equal number of comparable non-participants at a single college, so the results should be interpreted with an appropriate degree of caution.

Table 14. Degree-applicable math completion by semester, Los Medanos College

	Maximum Number of Students	In ACE Semester			By End of First Semester after ACE			By End of Second Semester after ACE		
		ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.
Los Medanos College	56	25.0	5.4	19.6 **	54.3	11.4	42.9 **	64.7	29.4	35.3 *

*p < .05; **p < .01; two-tailed test.

Table 15. Transfer-level math completion by semester, Los Medanos College

	Maximum Number of Students	In ACE Semester			By End of First Semester after ACE			By End of Second Semester after ACE		
		ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.	ACE	Comp. Group	Diff.
Los Medanos College	56	0.0	–	–	51.4	2.9	48.6 **	64.7	5.9	58.8 **

*p < .05; **p < .01; two-tailed test.

NOTE: Analyses exclude all non-participants who passed transfer-level English in the ACE semester and all LMC non-participants who passed transfer-level math in the ACE semester.

Figure 7. Degree-applicable math completion by semester, Los Medanos College fall 2010 cohort

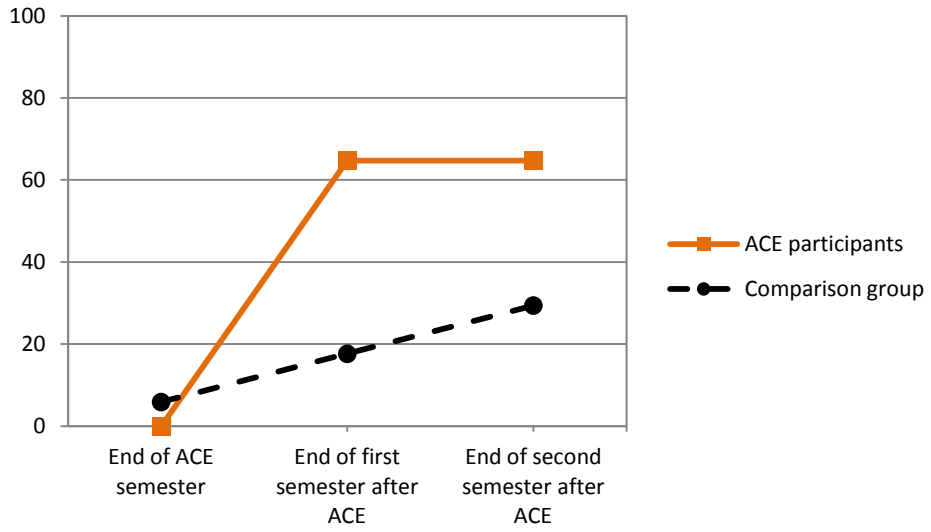
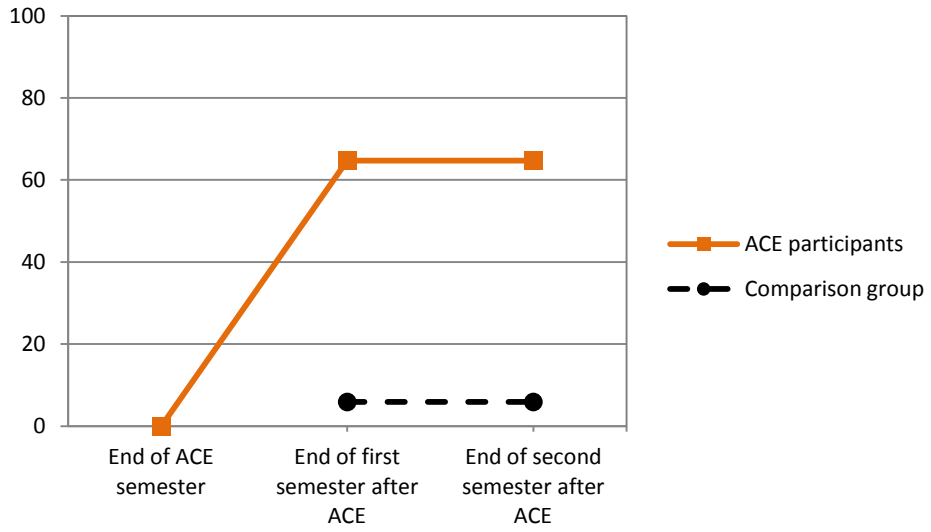


Figure 8. Transfer-level math completion by semester, Los Medanos College fall 2010 cohort



Overall, the results suggest that the Los Medanos College program does lead to greater completion of both degree-applicable math in the ACE semester and transfer-level math in the following semester.[12] The results show a substantial difference in degree-applicable math completion for all Los Medanos College ACE participants. Some 25 percent of ACE participants completed degree-applicable math in the ACE semester, compared with 5 percent of comparable non-participants, a difference of 20 percentage points ($p < .05$). By one semester after the ACE semester, 54 percent of ACE participants completed degree-applicable math, compared with 11 percent of comparable non-participants ($p < .01$). By the second semester after the ACE semester, 65 percent of ACE participants and 29 percent of comparable non-participants completed degree-applicable math ($p < .05$).

In the ACE semester, 0 percent of ACE participants completed transfer-level math. In the first semester after the ACE semester, 51 percent of participants and 3 percent of comparable non-participants completed transfer level-math ($p < .01$). Some 65 percent of ACE participants passed transfer-level math by the end of the second semester after the ACE semester compared with 6 percent of comparable non-participants ($p < .01$). All in all, though they are based on a very small number of students, these results suggest that math acceleration does cause students to complete both degree-applicable math and transfer-level math at a significantly higher rate than an otherwise comparable group.

Summary of Student Achievement Findings

Table 16 summarizes the results for the eight outcomes described above. ACE participants were substantially more likely to complete degree-applicable English than a matched group of non-participants by the end of the ACE semester or the following semester, although by two semesters after the ACE semester the gap narrowed. Likewise, although fewer ACE participants completed transfer-level English, they did so at an appreciably higher rate than comparable non-participants. ACE participants earned about 10 to 12 degree-applicable credits on average during the ACE semester, considerably more than the 2 to 5 credits earned by the comparison group, and this difference persisted over the following two semesters. But ACE participants lagged slightly behind non-participants in accumulating transferable credits, though even after three semesters, neither group earned very many credits on average toward the 60 transferable credits needed to transfer with upper-division standing. These results may change once Delaware County Community College (DCCC) data is included in the study. DCCC provides transfer-level credits for the ACE courses offered.

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[12] Notably, no fall 2010 or spring 2011 ACE participants apparently completed degree-applicable math in the ACE semester, but in the next semester 65 percent and 39 percent, respectively, completed transfer-level math (Appendix Tables A11 and A12). This anomalous result appears to be an artifact of incorrect coding of the degree-applicable math course taken by ACE participants at Los Medanos College in the ACE semester in fall 2010 and spring 2011 that was corrected in fall 2011.

Some 42 to 46 percent of ACE participants enrolled in college full time in the next semester compared with 18 to 34 percent of comparable non-participants. Including part-time enrollment yielded a less pronounced difference, with 68 percent to 72 percent of ACE participants persisting to the next semester, and 48 percent to 68 percent of comparable non-participants persisting. At Los Medanos College, which offers accelerated math as part of the ACE curriculum, 44 percent to 65 percent of ACE participants completed degree-applicable math or higher by the end of the first semester after the ACE semester compared with 6 percent to 18 percent of comparable non-participants. Also, 39 percent to 65 percent of ACE participants completed transfer-level math by the end of the semester following the ACE semester, compared with 0 percent to 6 percent of comparable non-participants.

Table 16. Summary of outcomes

Outcome	ACE Accelerated Participants	Comparison Group
Passed degree-applicable English by end of ACE semester	49.1%	17.0%
Passed degree-applicable English by end of first semester after ACE semester	63.8%	30.2%
Passed degree-applicable English by end of second semester after ACE semester	66.5%	45.1%
Passed transfer-level English by end of first semester after ACE semester	23.4%	15.0%
Passed transfer-level English by end of second semester after ACE semester	40.5%	16.3%
Mean degree-applicable credits earned during the ACE semester	11.1	3.9
Mean degree-applicable credits earned by end of first semester after ACE semester	15.8	7.3
Mean degree-applicable credits earned by end of second semester after ACE semester	19.6	12.5
Mean transferable credits earned during the ACE semester	1.0	2.5
Mean transferable credits earned by end of first semester after ACE semester	4.0	5.1
Mean transferable credits earned by end of second semester after ACE semester	7.6	9.1
Full-time enrollment in first semester after ACE semester	44.0%	26.6%
Persistence to the first semester after ACE semester	70.0%	59.2%
Passed degree-applicable math by end of first semester after ACE semester (Los Medanos College)	54.3%	11.4%
Passed degree-applicable math by end of second semester after ACE semester (Los Medanos College)	64.7%	29.4%
Passed transfer-level math by end of first semester after ACE semester (Los Medanos College)	51.4%	2.9%
Passed transfer-level math by end of second semester after ACE semester (Los Medanos College)	64.7%	5.9%

NOTE: Results are combined for all accelerated ACE participants unless otherwise noted. Maximum N = 658 participants and 658 non-participants.

Effects of ACE Program on Non-Cognitive Indicators

The CSSAS results indicate that the ACE program leads to student growth in affective dimensions over the three time points. Before discussing the specifics of these results, however, it is important to understand how the CSSAS was created and validated based on the research literature and the use of factor analysis.

Exploratory and Confirmatory Factor Analysis of CSSAS

The creation of the CSSAS was based on a pilot survey jointly designed and developed by MPR and ACE staff and given to a small sample of ACE students in the spring of 2010. The pilot survey measured factors within the affective dimension similar to those that appear in the CSSAS, but the survey was much longer and needed to be streamlined. Exploratory Factor Analysis (EFA) was used to determine which underlying constructs emerged from the survey data and which items could be dropped from the survey. Exploratory Factor Analysis reveals the number of factors produced by a survey and measures how well the items in the survey measure each of the factors. As expected, the EFA revealed the affective dimensions theorized to be measured by the survey, including self-efficacy, interaction with others, teamwork, college identity, and several aspects of mindfulness.

Items with low factor loadings on a construct were eliminated because they did not provide a good measurement indicator for that construct. Also, items that cross-loaded on to more than one factor were eliminated because they did not do a good job of differentiating between factors. Items with the highest loadings on each factor were retained, while lower scoring items were dropped to decrease the length of the survey. EFA allows for parsimony in measurement of factors because items can be removed without sacrificing reliability or validity. Each identified factor was also subjected to a reliability test using Cronbach's Alpha, and scores for each factor were good, ranging from .71 to .92. After low-performing items were removed, the revised CSSAS was administered in fall 2010 to all ACE participants at the beginning of the ACE semester. It was administered again two weeks later and then again at the end of the ACE semester. Exploratory and Confirmatory Factor Analysis (CFA) of these administrations of the CSSAS confirmed the validity of the instrument. Confirmatory Factor Analysis revealed high overall measurement scores for each factor, plus high factor loadings for each measured item. Cronbach's alpha reliability scores also were good, in the .70 to .95 range for each dimension.

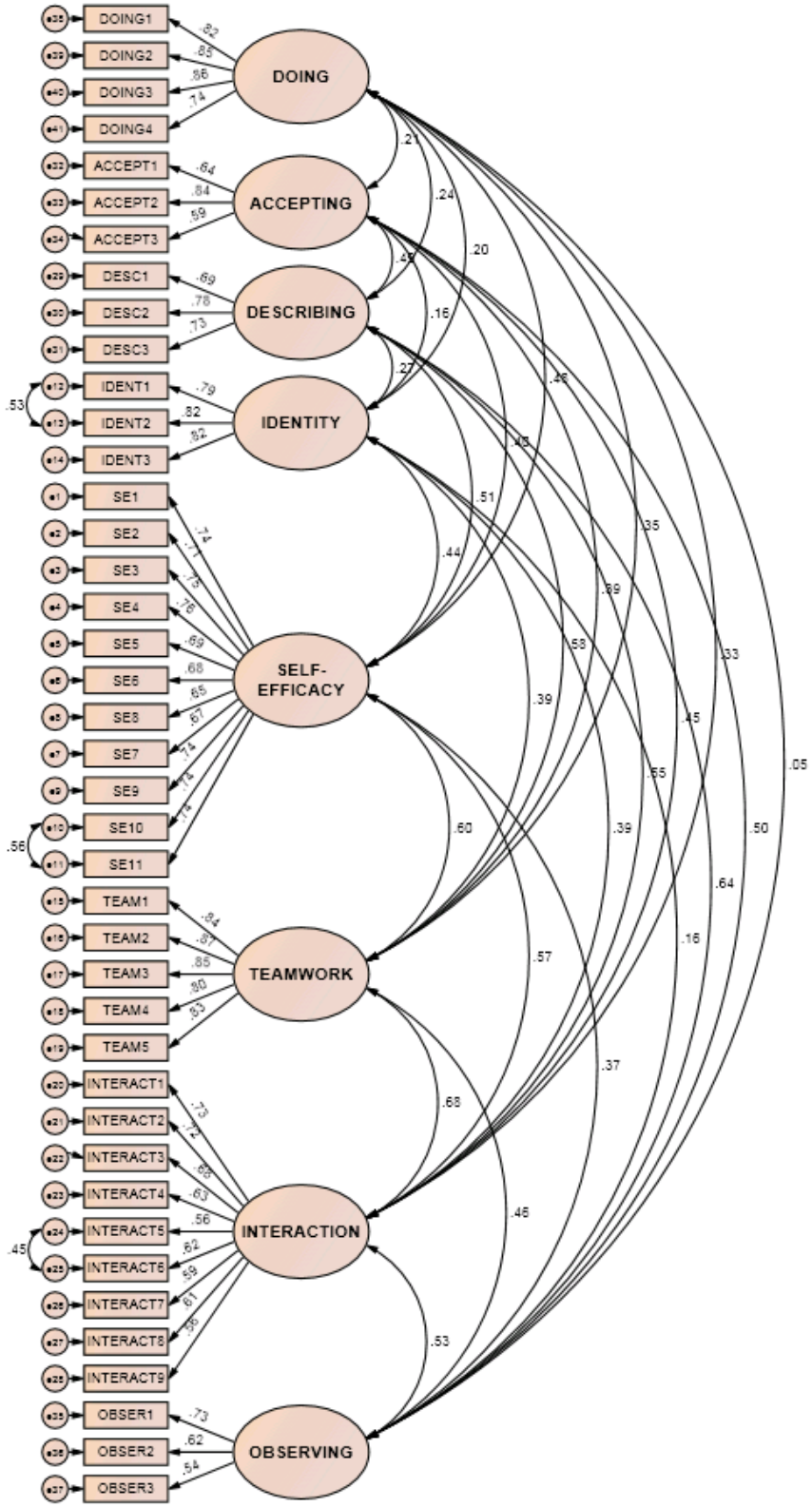
MPR and ACE staff continued to pilot the CSSAS instrument in spring 2011 with students participating in ACE. Exploratory and Confirmatory Factor Analysis were used after each administration to examine the validity of the instrument and determine if items were performing poorly. Confirmatory Factor Analysis follows Exploratory Factor Analysis in the research process. In CFA, the researcher specifies which items load on to identified factors,

instead of allowing the computer software (Mplus 6.0) to determine which items hang together as factors based on statistical characteristics.

Final factor analyses of the CSSAS were conducted using the combined survey results from administration of the Time 1 Survey to ACE participants in fall 2011, as well as the schoolwide CSSAS administered to non-participants in fall 2011. Exploratory and Confirmatory Factor Analysis are large-sample techniques, so using all the survey results provided additional validity for the results. The final sample size was 1,369. Appropriate analysis techniques also require that the EFA and CFA be conducted on different random samples pulled from the entire dataset. Use of the same data for both analyses may yield unreliable results. Having a large sample size allowed MPR to use a random sample of 40 percent of the survey takers for the EFA and 60 percent of the survey takers for the CFA. Items were dropped from the CSSAS model if the EFA or CFA revealed that items had low factor loadings or loaded on to more than one construct.

The results for the Confirmatory Factor Analysis of the model are shown in Figure 9. This model provides the factor loadings for each of the items on each affective dimension factor as well as the correlation between each factor. Ideally, in Confirmatory Factor Analysis, factor loadings will be above .40 and correlations of latent factors (the affective dimensions in the large circles) will be less than .70. The figure shows that the CSSAS meets both of these criteria. The factor loadings are all above .50 and the factor correlations are less than .70. The correlation between factors is used to determine if factors are measuring separate constructs or if they should be collapsed into one smaller factor (generally if the correlation is higher than .80). These results suggest that the CSSAS is a valid instrument.

Figure 9. Confirmatory Factor Analysis Model of CSSAS



Another way to measure the validity of an instrument is to use CFA to generate fit statistics for the model. These fit statistics measure the model as a whole, while the size of the factor loadings measure the validity of each individual construct and item. Standard fit statistics reported in the research literature include the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR). All fit statistics for the data tested here met the criteria required to claim that a survey is a valid and reliable instrument (Table 17). A RMSEA score below .05 is considered necessary to indicate a well-fitting model. Scores between .05 and .07 are adequate, between .08 and .10 are poor, and any score above .10 indicates that the model is not acceptable. In addition, a 90 percent confidence interval for the RMSEA score should not exceed .10 on the upper-bound level. The model tested using the fall 2011 survey data had an excellent RMSEA score (.042), and the confidence interval had an upper-bound level below .05. Scores above .90 on the CFI indicate a good model, and scores above .95 indicate excellent model fit. The CFA of the model tested here and depicted in Figure 9 produced CFI results of .948, indicating that the model is very strong. The final fit statistic, the SRMR, should provide values as close to 0 as possible. The score for this analysis was .038, again indicating excellent fit of the model. Reliability scores are reported along with survey items and factor loadings in Appendix Table A2. Correlations among the latent factors are reported in Appendix Table A3.

Table 17. Fit statistics for Confirmatory Factor Analysis of fall 2011 CSSAS (N = 821)

	RMSEA	RMSEA 90% Confidence Interval	CFI	SRMR
School CSSAS (n = 821)	0.042	0.039 to 0.044	0.948	0.038

To further confirm the validity of the instrument, Cronbach's Alpha reliability scores were calculated along with the EFA and CFA analyses. Cronbach's Alpha is widely used in the research community to determine the validity of survey instruments, with .90 indicating excellent fit and scores above .70 indicating adequate fit for a model to be accepted as a reliable indicator of the constructs being measured. The Cronbach's Alpha score for the overall instrument was .94, considered excellent. Individual reliability scores were also conducted on each construct and generated scores ranging from .66 to .95, again indicating that each construct is reliable in addition to the survey in its entirety being a reliable measure.

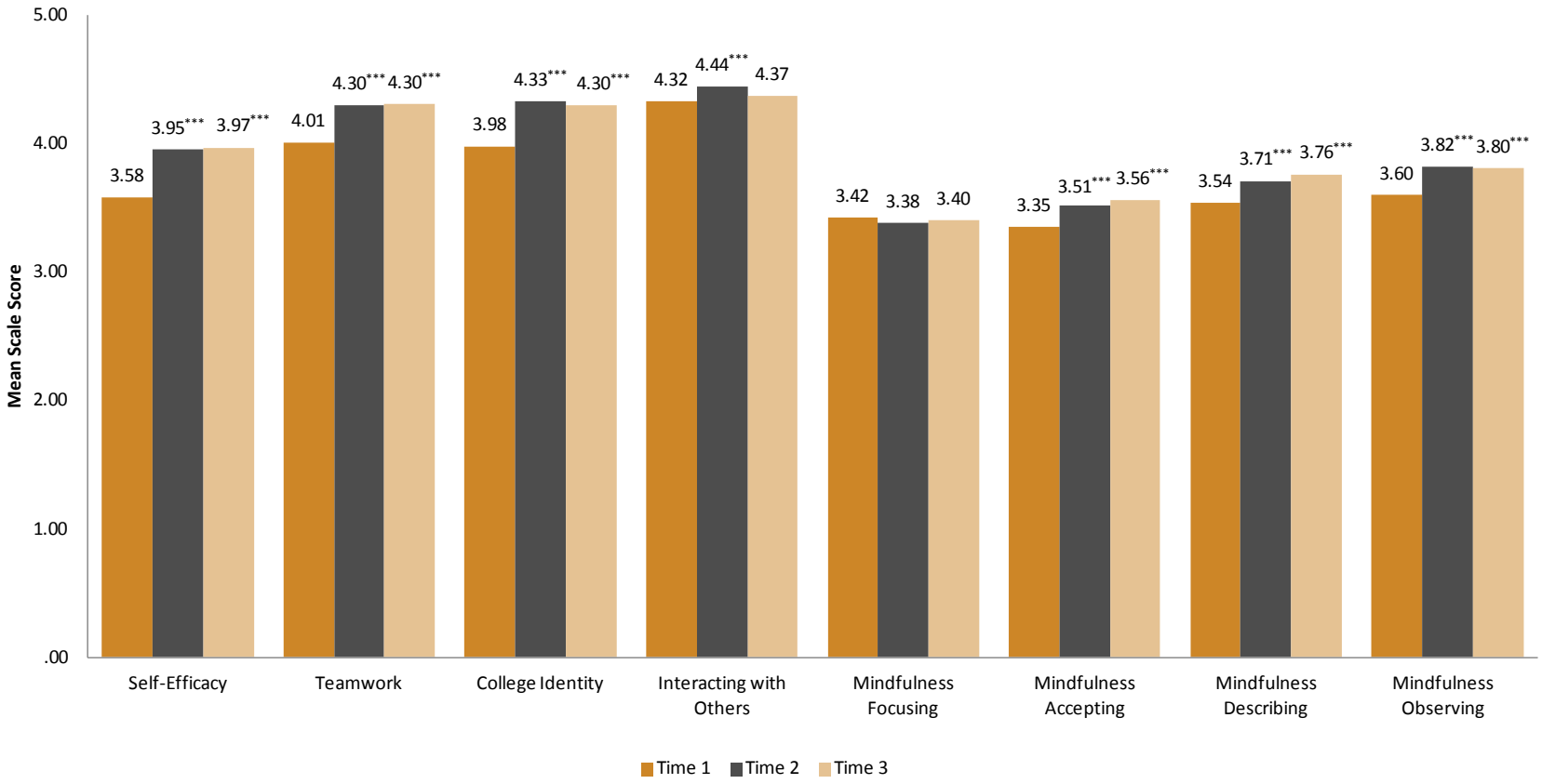
Based on these findings, MPR determined that the CSSAS had high validity and reliability, and the instrument was considered final as of fall 2011. The final instrument consists of 41 items measuring affective dimension factors as well as two items measuring students' response to stress.

Findings from Analysis of CSSAS Scores over Time

To analyze the CSSAS findings, scale scores were created for each factor. Each survey item consisted of a scale from 1 to 5. Items in each factor were added together and divided by the number of items to arrive at a standardized scale of 1 to 5 points for each factor, regardless of the number of items included. Mean scores were derived for each time point the CSSAS was administered: Time 1 before the Foundation course, Time 2 after the Foundation course, and Time 3 at the end of the ACE semester. Figure 10 shows the mean scores for each factor at each of the time points. Results were tested using a matched samples *t*-test to determine if the change over time from Time 1 to Time 2 and from Time 1 to Time 3 were statistically significant. Significance results are indicated by asterisks in Figure 10. Details of the *t*-test results are provided in Appendix Table A4.

Overall, students improved in their mean scores over the course of their ACE experience. The biggest growth is seen between Time 1 and Time 2, which makes sense given that the two-week Foundation course focuses on building students' capacity in each of the affective areas. The only factor that does not show a significant mean score increase over this time period is Mindfulness – Focusing. The change from Time 2 to Time 3 either remains consistent or improves slightly over the course of the ACE semester, with the exception of the Focusing factor, which is not significantly different from Time 1. This result indicates that students are maintaining the gains they made during the intensive Foundation course.

Figure 10. Mean scores on CSSAS factor scales of ACE participants, by time: F10-SP12 (N=535)



NOTE: Survey responses were based on a five-point scale, from "strongly disagree" to "strongly agree" for the non-mindfulness items and from "never or very rarely true" to "always or almost always true" for the mindfulness items. Each factor consisted of different numbers of items. Individual scores on each item in a factor were added together and divided by the number of items to arrive at a standardized scale of 1 to 5 points for each factor, regardless of the number of items included. The Y-axis represents the mean (average) score for each factor.

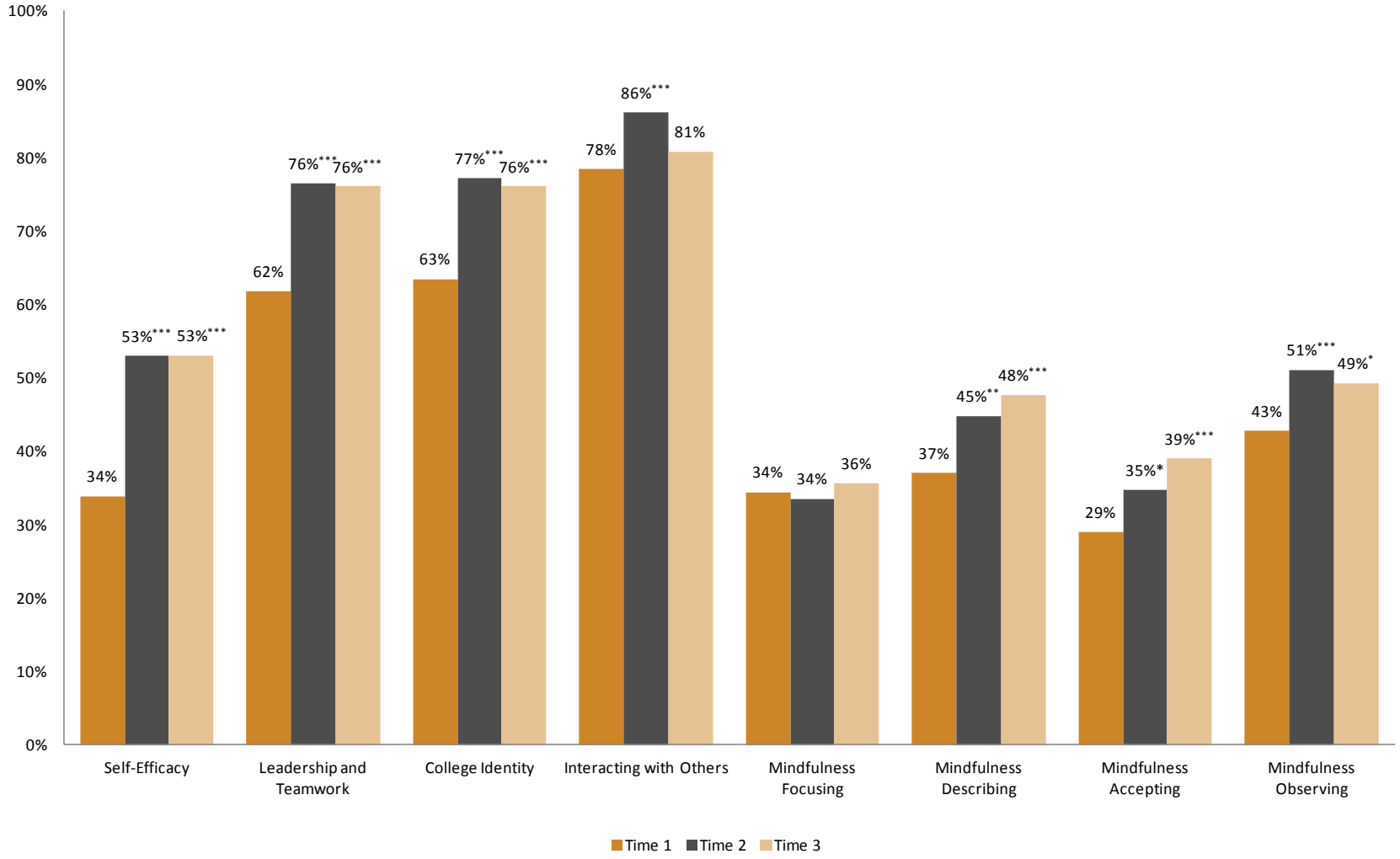
Analysis of CSSAS change results among colleges participating in the study show that there is variation in school populations on the affective dimension factors measured by the CSSAS, even within the ACE program. Table 18 shows mean factor scores at each time point broken out by college. The differences indicate that the CSSAS is able to detect differences among varying student populations and suggests that the CSSAS could be a useful instrument for evaluating students' need for support programs based on their affective dimension profile. The colleges are not identified by name because the sample size for some of the colleges is very small and might compromise the personal privacy of students at those schools or create unfair comparisons between campuses. Also, these results are presented for illustrative purposes to indicate the ability of the CSSAS to distinguish between different student populations and should be taken in the context that some of the sample sizes are quite small and may not be representative of the college or the ACE program as a whole. Future analysis of these results will include correlations with student outcomes from the MIS data analysis of achievement indicators to explore the relationship between each of the affective dimensions and student outcomes.

Table 18. Mean scores on CSSAS factors, by time point and college

		College 1	College 2	College 3	College 4	College 5	College 6
Self-Efficacy	Time 1	3.83	3.43	3.70	3.54	3.13	3.92
	Time 2	3.97	3.89	4.05	3.94	3.51	4.14
	Time 3	4.02	3.91	4.02	3.82	3.45	4.23
Teamwork	Time 1	4.19	3.90	4.21	3.97	3.64	4.21
	Time 2	4.42	4.25	4.47	4.23	3.89	4.37
	Time 3	4.39	4.26	4.36	4.13	4.05	4.54
College Identity	Time 1	4.25	3.82	4.22	4.03	3.88	4.16
	Time 2	4.54	4.24	4.39	4.39	4.06	4.49
	Time 3	4.44	4.25	4.30	4.19	3.52	4.58
Interacting with Others	Time 1	4.42	4.22	4.46	4.46	3.93	4.49
	Time 2	4.47	4.41	4.51	4.42	4.14	4.56
	Time 3	4.50	4.31	4.35	4.40	4.08	4.55
Mindfulness Focusing	Time 1	3.38	3.32	3.67	3.22	3.02	3.83
	Time 2	3.43	3.36	3.53	3.18	2.91	3.48
	Time 3	3.42	3.38	3.30	3.35	3.25	3.64
Mindfulness Accepting	Time 1	3.45	3.30	3.34	3.27	3.00	3.57
	Time 2	3.50	3.49	3.58	3.56	3.27	3.54
	Time 3	3.41	3.59	3.43	3.43	3.45	3.82
Mindfulness Describing	Time 1	3.70	3.47	3.64	3.55	3.27	3.68
	Time 2	3.74	3.69	3.84	3.57	3.36	3.82
	Time 3	3.73	3.77	3.71	3.58	3.42	4.02
Mindfulness Observing	Time 1	3.56	3.58	3.66	3.69	3.15	3.63
	Time 2	3.68	3.84	3.82	3.88	3.36	3.89
	Time 3	3.64	3.88	3.75	3.70	3.09	3.91

To supplement the analysis of mean scores, MPR also calculated the percentage of students who scored in the top quartile of each factor scale for each of the time points. These percentages give an indication of the overall trend in student scores over the course of the ACE experience. Figure 11 shows the findings from this analysis. The trends mirror those shown by the mean scores analysis. Large gains occur between Time 1 and Time 2 in self-efficacy, teamwork, and college identity. These gains are maintained over the course of the ACE semester. Scores on the mindfulness dimensions are uniformly lower than the other four affective dimensions. Statistical significance test results are shown with asterisks and are also similar to those found in the analysis of mean factor scores.

Figure 11. Percent of ACE students scoring in top quartile of CSSAS factor scales: F10-SP12 (N = 535)



***$p < .001$; **$p < .01$; *$p < .05$.

NOTE: The Y-axis represents the percentage of students who scored in the top quartile of the CSSAS factor scale. The scale is based on the number of items contained within each factor. For example, self-efficacy consists of 11 items, for a total scale score of 55 (5-points per item). Students who scored 41 or above would be in the top quartile for self-efficacy. On the other hand, identity consists of 3 items, for a total scale score of 15. Students who scored 11 or above would be in the top quartile for identity.

Implementation of the ACE Program: Variations, Strengths, and Challenges

It is the intent of the designers that the ACE Program include certain features that are considered part of a "canonical model" or that conforms to certain general principles. These include the inclusion of 2-week Foundation Course in which students are given tools to support their identity as a college student; a behavior management system that is supported through weekly Faculty Cohort meetings; a Team Self Management course that supports the peer support network, and set of academic content courses that includes a social justice research course. In addition, the student load during the Bridge Semester is to be at least 12 units. However, there has been some variation within these key elements. The ACE program designers describe four distinct models that they consider to be acceptable variations (see p. 2 under Program Structure). In addition to those variations, the social justice course is sometimes taught in one course and sometimes in two; the English course was not accelerated in all cohorts during the early years of implementation; some programs include a movement course and career planning class, and some do not; most include a computer class; while a full load of courses is the expectation, the number of credits sometimes varies. The focus of this study was principally on the fourth model or the Academic Acceleration Model.

Implementation of the ACE program has sometimes varied across and within colleges and over time to accommodate local policy decisions (Jenkins et al., 2009). For example, in fall 2010, Hartnell College offered one academic-focused, or *accelerated*, program in which participants enrolled in college-level English in the ACE semester even if placement exams referred them to remedial English and positioned them for transfer to a four-year college. It also offered two *non-accelerated* Career and Technical Education (*CTE*) programs that included coursework concentrated in green building or agriculture, that were not focused on transfer to a four-year college, and did not include English in the ACE semester at all. Depending on their educational and career goals, CTE students may intend to earn a certificate or associate's degree as their terminal award, or they may intend to transfer to a four-year institution, or they may simply wish to learn skills that they can apply on the job. Each of these goals has different educational requirements. Transfer to an in-state public university typically requires completion of transfer-level English, as does earning an associate's degree. Earning a Career Technical Education (CTE) certificate or pursuing specific skills may not require any English coursework at all. While it would be impossible to conduct analyses that would disaggregate by all of the variations—to test the effectiveness of including certain elements—we disaggregated the outcome data by program type in a few cases where the variations were clearly distinct. This was reflected in the results presented above in the section on academic outcomes.

This section of the report includes results from survey items, interviews, focus groups, and classroom observations. These data were collected over the last three years of the program as implemented at six colleges.

Impact of the ACE program based on responses to end of ACE semester survey

To elicit information about the impact of the ACE program on students' behaviors and academic goals, MPR used selected items drawn from ACE's original end-of-semester survey. These items were added to the CSSAS for all end-of-semester administrations. Surveys were collected at the end of the ACE semester from the six colleges participating in the ACE program in fall 2010, spring 2011, fall 2011, and spring 2012. A total of 926 surveys were collected and analyzed for this section of the report. Table 19 shows the number of respondents by college and term.

Table 19. Number of ACE participants responding to ACE-specific items on the CSSAS at the end of the ACE semester, by college and term

	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Total
Berkeley City College	26	16	49	56	147
Cabrillo College	109	118	115	54	396
Delaware County Community College	26	16	25	17	84
Hartnell College	42	29	37	33	141
Las Positas College	40	8	25	0	73
Los Medanos College	16	20	15	34	85
Total	259	207	266	194	926

Behaviors

The ACE program recognizes that academic ability is just one facet of student success. Students, particularly those who have not succeeded in traditional school environments in the past, often need to learn behaviors and attitudes essential to succeeding in college. The ACE program is designed to promote student growth in such behaviors as academic habits, ability to interact with others, and personal responsibility. To measure the impact of the ACE program on developing these behaviors and attitudes, ACE participants who took the CSSAS at the end of the ACE semester were asked to rate the extent to which they changed in specific areas in ways that improved their college experience. Table 20 shows the percentage of students who agreed or strongly agreed that they had changed a behavior in positive ways that had a beneficial impact on their college experience. Approximately two-thirds of participants agreed or strongly agreed that they had made positive changes in "being ready to learn/caring about school," "being more aware of me, others, and my surroundings," and "acknowledging

others." Overall, more than half of participants reported making positive changes in all 21 behaviors listed in the survey, suggesting that ACE is succeeding in its efforts to help students change their behavior in ways that will enable them to succeed in college. Further support for this conclusion is found in student responses to other survey questions about the impact of ACE on students' lives. For example, 79 percent of respondents indicated that they had changed as a result of being in the ACE program and 51 percent indicated that they had made new decisions about their future based on their ACE experience.

Table 20. Percentage of CSSAS respondents at the end of the ACE semester who reported changing behaviors in ways that improved their college experience: F10-SP12 (N = 927)

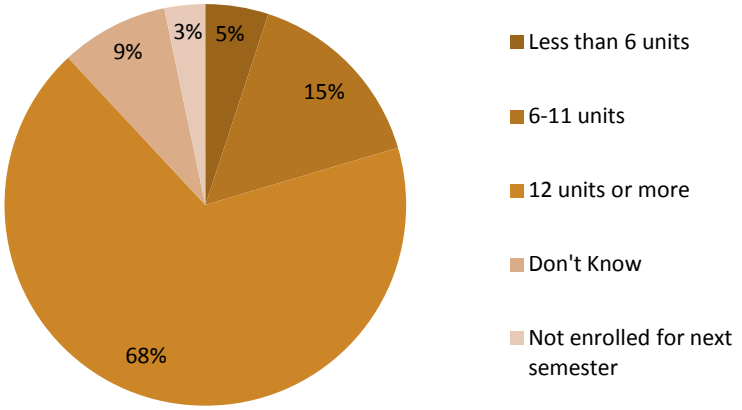
Behavior	Percent
Being ready to learn/caring about school	67
Being more aware about me, others, and my surroundings	66
Acknowledging others	65
Respecting others	64
Honoring others	64
Being responsible for choices I make in my life	64
Being more understanding of others and more compassionate	64
Being dependable	64
Knowing how to focus/stay present	64
Paying attention	64
Completing assignments	63
Speaking in front of others	63
Being prepared & organized	63
Being able to reflect on how I feel	62
Making and keeping agreements	62
Thinking before speaking	59
Sharing in class	58
Judging people less	58
Asking questions in class	58
Being on time	56
Speaking non-violently	54

Academic Plans and Goals

Survey items also provide insight into how participation in ACE has affected students' academic plans and goals. These measures are important indicators for student achievement because they demonstrate students' confidence in their ability to succeed academically and their sense of efficacy in regard to having a successful future. Two-thirds of students (68 percent) planned to enroll in 12 or more units in the term following the ACE semester, a course load generally accepted as full-time enrollment (Figure 12). Another 15 percent of students

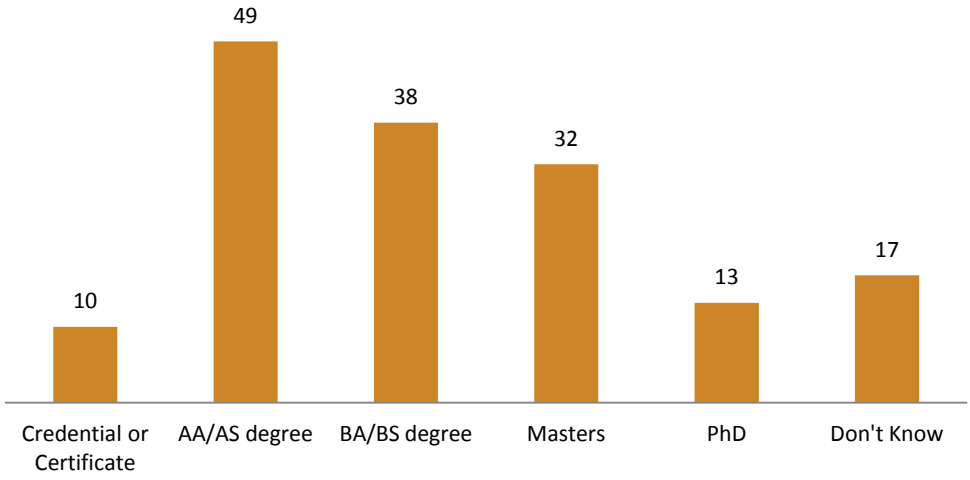
planned to take 6–11 units. Just 5 percent planned to take less than 6 units and 3 percent did not enroll for the following semester.

Figure 12. ACE respondents' plans for enrollment following ACE semester: F10-SP12 (N = 927)



ACE students also reported ambitious long-term academic goals (Figure 13). Approximately half of the students reported that they expected to earn an associate's degree and more than one-third expected to earn a bachelor's degree.

Figure 13. ACE respondents' academic goals: F10-SP12 (N = 927)



For many ACE students, the ACE semester is the first semester of college coursework that they have attended full-time. For students to complete the semester is an accomplishment in itself, but for students to also maintain a positive and ambitious outlook on the remainder of their academic career indicates a level of academic confidence that likely stems from their participation in the ACE program.

This conclusion is supported by respondents' answers to other questions about how participation in ACE affected their college experience. More than three-quarters of respondents (80 percent) agreed or strongly agreed that they were more motivated to finish college because of their experience in the ACE program. A similar percentage of students (78 percent) indicated that they were more likely to complete a credential, certificate, or degree because of the ACE program (Table 21).

Table 21. Number and percent of ACE students who agreed or strongly agreed with CSSAS statements about college

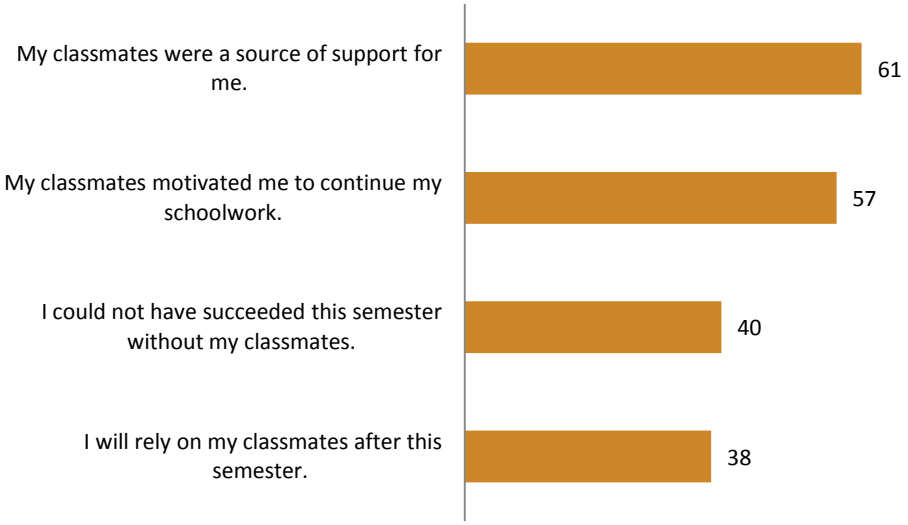
	N	Percent of total N
I am more motivated to finish college because of my experience in the program (N =882)	704	80%
I think I am more likely to graduate from this college because of my experience in the program (N = 882)	686	78%

Cohort Model

Another aspect of the ACE design that is expected to have an effect on student persistence and achievement is the cohort model. As part of the ACE model, students stay together as a cohort through the Foundation course and ACE semester. The Foundation course and the Team Self-Management courses are designed to facilitate the development and maintenance of a peer-support network in the classroom. This conscious programmatic design allows students to form a supportive network of peers that they can rely on for academic and emotional support.

On the whole, students agreed that their ACE classmates were a positive influence during the ACE semester (Figure 14). Over half of respondents agreed that their classmates were a source of support (61 percent) and motivation (57 percent) for them, while 40 percent agreed that they could not have succeeded in the ACE semester without the support of their classmates and 38 percent indicated that they will continue to rely on their cohort classmates for support after the ACE semester.

Figure 14. Percent of ACE students who agreed or strongly agreed with statements about the cohort model: F10-SP12



Impact of the ACE program based on responses to open-ended items on end of ACE semester survey

The open-ended items on the survey administered at the end of the ACE semester asked participants questions about whether they had changed as a result of being in the program and if so, in what ways. They were also asked about the impact of the program on their lives and about new decisions they had made about their future. Nearly half of the respondents reported that they had made new decisions about their future and more than three-quarters indicated that they had changed as a result of participating in the ACE program (Table 22).

Table 22. Student responses to items about impact of ACE on their lives

Number and percent of students answering "yes" to the following items	N	Percent
Have you made any new decisions about your future based on your experience in the program? (N=861)	434	47%
Do you think you have changed as a result of being in the program? (N =873)	685	79%

When asked to elaborate in what ways their lives had changed, students who responded provided answers that were coded for patterns and reflected the themes discussed below in the order of frequency with which they occurred (Table 23).

Table 23. Open-ended responses from survey on how program had changed their life

Response	Number of Responses
Increased confidence	42
Increased motivation for education or established identity as college student	41
Better understanding of self	34
Better relationships and teamwork skills	21
Improved time management skills	19
Better outlook on life	15
Improved communication skills	11
More responsible	8

Among the 243 respondents who reported that they had made new decisions, 107 specified the decisions they had made, which fell primarily into two categories: (1) further their education (73 responses); and (2) pursue a particular career (34 responses).

Implementation Findings from Qualitative Data Collection

The following section on findings includes summaries of data collected through interviews, focus groups, and observations.

Designers' Perspectives

Diego Navarro's intent was to build a program for young adults who had been through challenges in life that placed them at high risk for not being able to obtain a complete education or to succeed in a job or career. To do so, he researched educational programs that not only had the potential of making a difference for high-risk individuals, but that were able to "light a fire" within them. Without that, he realized they would have little chance of success. He wanted to figure out what a program would look like that would accomplish that. With that end in mind, he reviewed 36 different curricula and set up five pilot studies, framed by a number of questions: Does it have to be a residential program? Can it be done consistently and predictably? Can others be trained to provide the program?

In working through this process, he was using a business model known as the New Product Development (NPD) Process, whereby a company controls and monitors the flow of ideas into successful product launches. Using such a process, they encourage and facilitate the review of a large number of ideas, use rigorous analysis and decision making to prioritize those

with the highest likelihood of success, accelerate the time to market them, and allow continuous improvement of the development process.

Through this exploratory work, he began to define a program that he found quite consistently would initially "light a fire" in the students, was strengths-based, and focused on improving communication and building on community. One of the effects of building a strong sense of community was that it obviated the need for case management support services because he found that students helped one another, thus reducing the cost of the program.

Navarro has a strong sense that the program as it is designed improves students' brain functioning, which is why he prefers that some sort of movement class be included in the Bridge semester. Having reviewed and discussed brain functioning with experts, he learned that synaptic connections in the brain could be improved by education and could lead to increased integration in the brain, a lack of which results from the trauma of stressful life events. While this hypothesis is in need of much deeper and more intentional research, the research on which it is based suggests plausibility. A surge in work on neuroplasticity that occurred around 2007 supported what they were doing.

The designers see the students who have participated in ACE as survivalists, but the "street smarts" they have developed sometimes get in the way of being productive in an educational environment, e.g., hypervigilance.[13] The program focuses on their ability to persist and applies it to an educational environment. They designed the program to create situations that allow people to change, not to ensure their failure because the educational environment is not conducive to the identities they have developed.

In order to help ensure integrity of the program that was emerging and evolving, Navarro established a faculty institute and practicum that would afford instructors who were interested in teaching in the program the opportunity to experience it as students would, so that they are able to understand the type of transformative process that students would go through. He and other ACE mentors conduct it as a facilitated model, one in stark contrast with a traditional lecture and discussion format. He understood that community college faculty are most often skilled in cognitive learning but that they are much less knowledgeable of affective learning and the value it brings to the educational environment. To help ensure integrity in implementation, the designers developed integrity indicators. As the program has been initiated at other campuses, the design has allowed them to make adjustments to align with local policy and practice, while still requiring that the core elements of the model become well established.

[13] Hypervigilance is an enhanced state of sensory sensitivity that may be accompanied by an exaggerated intensity in certain behaviors of behaviors whose purpose is to detect threats.

Faculty and Administrator Perspectives

Faculty who teach in the ACE program find it to be stimulating and rewarding. They also find that it takes a lot of energy and can be emotionally draining.

In general, faculty who were interviewed reflected a very strong commitment to the program and a strong sense that it had clearly transformed the lives of many of the students who participated and, in some cases, their own lives as well. Many who were interviewed had developed a clear passion for the program and identified clear, measurable benefits for the students who participated. Some were particularly supportive of specific aspects of the model, such as the acceleration, i.e., the requirement that students take more advanced English or math and a full load of coursework during the Bridge semester. Some of the comments that were made in interviews when they were asked about their general reactions included that it gave them a "profound sense of purpose," that it encouraged them to think differently and that it "really humanizes us." At one college where they had been planning to initiate something similar to ACE, the faculty reported that they were "blown away because [ACE] was much more sophisticated than what we were trying to do at the time." Most also reported feeling part of a community of practice and that it affected their teaching in significant ways. One who reported that she had spent a semester teaching outside of ACE said that she found herself to be much more innovative in her teaching. Others reported using the techniques they had learned, "Whip-its," "Light-and-Livelies," in other classes or in meetings of other groups. In comparing ACE to developmental or remedial programs, an important observation was that "ACE is bigger than remediation; the flaw with remediation is the assumption about accumulating skills." All faculty interviewed acknowledged that the intent of ACE and the outcomes associated with it are way beyond and more productive than what is accomplished in most developmental courses or programs. Administrators at one college who reported that they had a narrower definition of risk than Cabrillo did saw it as an opportunity to "satisfy the needs of developmental students, a more structured approach that didn't allow them to malinger."

As with most new and innovative programs, however, there were also comments about challenges. One faculty reported that he knew of some who were teaching "to the script," while he felt that faculty should inject some of their own thinking and be a bit more flexible about how they implemented it. Another faculty commented on how individuals were recruited to participate, feeling that they were simply recruited because they were willing, not because they possessed the appropriate skill set.

Apart from the somewhat isolated opinions expressed above, though, there were two areas where a more consistent message about the challenges involved for faculty was detected. The first had to do with the "emotional upheaval" that often occurs in the core ACE courses, especially the Foundation Course, and occasionally the Team Self Management or Social

Justice courses. Some felt that it could be difficult for faculty who "don't know how to deal with intimate knowledge and emotional upheaval." This individual reported that it "takes years to feel comfortable with this model." Some have needed to take a break from teaching in the ACE program for a semester or more. Another faculty felt that there needed to be more time for faculty and students to process their feelings, more time to debrief. "What we do in FELI and the Foundation Course is break down emotional makeup, and we may not spend enough time putting it back together."

A second area of concern was expressed in a comment about a "deteriorating level of rigor" in the ACE courses. This came from an administrator who had been very supportive of the program and observed it for many years. She wasn't sure whether the change came about because of the changing nature of student cohorts participating in the model or fears about ensuring the students could succeed. She felt strongly, however, that the high level of rigor she had observed in early cohorts needed to be sustained. This was also recorded in some of the observations conducted by MPR researchers, i.e., that there was a considerable range in the level of rigor with which courses were taught, especially across colleges. The researchers noted that clearly a strong level of rigor was possible, given what they had observed, but that it wasn't always reflected in the classes they saw. While they observed 32 classrooms, it still is not a random sample, and these classrooms were only observed one time. Thus, it is not possible to draw firm conclusions about this factor. It should be noted, though, that students in one or two of the focus groups also indicated that they would have liked a higher level of challenge. Since the cohorts even within colleges and certainly across colleges represent a wide range of ability levels, it is not surprising that there is variation in the level of rigor or challenge that faculty can maintain.

Faculty reported significant differences among cohorts and in student populations served at different colleges

The general stated intent of the ACE model is that it is designed for students who are at high risk of failure due to the circumstances of their life histories. There have been continual questions raised, however, about whether the model is appropriate for all types of students or for which types of students. These are questions that are in need of additional research, but our observations over the last three years have revealed that the cohorts within each college and across colleges have differed markedly. While the most common marker still seems to be that the cohorts include a majority of students that would be considered to be "at risk,"—Navarro has even referred to them as "ultra high-risk"—this is less true at some colleges or within some cohorts than others.

A lot of this variation depends primarily on how students are recruited. In some years, participants were recruited from drug rehabilitation centers or through probation offices. At Cabrillo College, some students were recruited from a local alternative high school. In some

locales, there is a prevalence of Latino students and in others, there are far more African American students. At one college, the faculty reported that they had a high percentage (sometimes 50%) of learning disabled students because the college had established a reputation for serving those students well. At Hartnell College, where there is a strong nursing program, they instituted an ACE model within that program.

The variation in cohorts generated many comments from faculty, without much consistency in what was said. Faculty who were interviewed reported widely varying experiences with cohorts, only noting commonly that they had had very different experiences from one cohort to another. The question about the appropriateness of the ACE Program for all types of students was the only one that led to multiple comments reflecting the perception that questioned whether ACE was appropriate for younger students and those who would be considered low-risk. Those expressing these comments felt that it was not appropriate for students just out of high school. One reported, "It works best for students who have hit a wall, are underprepared, students who have encountered real difficulty and some sort of readiness; it's not great for students right out of high school." Another faculty member noted, "Students from low risk and wealthy backgrounds might be overwhelmed by the emotional sharing, and many are young and not ready for that kind of interaction and emotional bonding. They may never have encountered people from high risk backgrounds and don't know how to respond to people talking about being in jail." This faculty member did think, however, "There might be ways to manage the mix to mitigate that issue." In fact, some reported that they liked the mixed-age cohorts and even felt that it was necessary. One other reported that participants who had done well in traditional education "were shell shocked; they complained about the experience." While these were noted as observations that were made multiple times, they were by no means unanimous conclusions.

Despite the above-reported reservations about students for whom the model didn't work as well, faculty were definitive about the benefits for certain students. One noted: "For students who have been homeless, in prison, and in gangs—you don't often hear of people coming back from that, but it happens in ACE." At the college with a high percentage of learning disabled students, the faculty interviewed reported that they often have developed problems with authority and are angry: "They come to us, and they're still angry, but that almost always goes away."

We were struck by the number of times we heard that students repeated the program (perhaps not common in ACE, but notable when considering the benefits that students gain from the program). Clearly many recognized what the program had given them, and they thought that increasing the dosage would also increase those benefits. And as one faculty reported, even those who have not been in rehab experience a transformation because they feel they're able to "address the skeletons in the closet." Perhaps one of the most poignant reports was about a student who didn't exhibit other high-risk factors, but he had a cleft palate and

had endured an abundance of teasing throughout his education. In a required piece of writing, he wrote about "embracing the part of me that's lonely."

Despite initial skepticism on the part of some participants, most faculty who participated in the Faculty Experiential Learning Institute (FELI) found the experience valuable and essential for teaching in the ACE program.

While there were a few comments from faculty that expressed reservations about particular aspects of the FELI, the vast majority reported experiences similar to those that students reported: "It transformed my life;" "It bridges intellect and affect;" and "It was deep and cathartic and revelatory." Some reported improved personal relationships, and most also reported positive effects on their teaching. As one said, "It helped me slow down. The phrase I learned was 'slow down to go fast.' I was able to see the importance of doing it." As context for this comment, he mentioned how he had always been racing through material, to make sure he covered the curriculum, without taking time to see his students as individuals with other things going on emotionally and cognitively that affect their learning in profound ways. Another faculty noted that the experiential aspect gave her knowledge about what students would be doing, gave her opportunities to reflect and look into herself more deeply.

There were a few who reported discomfort with "sharing" and that they felt they couldn't take the risk. One noted that it felt very "cult-like." At one college, the faculty interviewed noted that they had a counselor involved who had had clinical experience and that he felt that was important. (See separate evaluation report on the FELI for extensive detail.)

Faculty affirmed the need for leadership and college support for program to ensure sustainability

This was an area that was commented on frequently by faculty who were interviewed. In some cases, they spoke of the absolute need for support from the college—writ large—if the program is to be sustained, and in many cases, they expressed sadness or disappointment that there was not greater support. While they draw considerable strength from those within the ACE community, they feel the sting of others' non-support. This is sometimes in the form of inadequate funding or in the presentation of barriers to scheduling courses (since the program is multi-disciplinary) or classroom space. There were comments about losing space and feeling chastised because the numbers of students enrolled was "not meeting standards." In California, the last 4-5 years have been particularly difficult for community colleges that have experienced drastic budget reductions, so it has been a difficult climate in which to garner support for "learning community," or some would say "boutique" programs.

Other faculty reported that some of their peers were resistant to the idea of "acceleration," and others expressed serious concerns about what they saw as increased risks from having the type of students who were recruited for ACE programs on campus. The most common

expression of concern was for the stigma attached to ACE students or the way in which they were stereotyped. They knew the students felt it, and the students confirmed this in focus groups that we conducted with them.

In general, the feeling expressed by a faculty member at a college outside of California was shared by others: [Installation of ACE] "could not have been done without upper administrative support." Another administrator noted, "You really need an energetic champion who can figure out formal and informal power levers to pull to make things happen. [That person] "needs to be tenacious." A number of others mentioned how much of a problem it presents when supportive administrators leave.

A key area in which faculty reported the need for general college support was in recruitment. While some programs assumed almost full responsibility for recruitment, others were either depending on or about to depend on the general college recruitment process. Some noted that if counselors were not "on board," did not support the program, or did not provide enough information so that potential students were fully informed, that the program suffered from low numbers or from the enrollment of students for whom the program really was not appropriate.

Faculty reported significant outcomes for students who participate in the ACE program, recognizing that success should be defined in different ways for typical students in ACE program.

Without hesitation, faculty reported notable outcomes for students, and they often commented on the need to view progress or success in different ways for these students. In some cases, it seemed that they made such comments because they really didn't know what the traditional achievement outcomes would show for their students. In fact, the results on achievement indicators in this report reflect significant academic outcomes for ACE participants. In one college where they were themselves monitoring academic indicators, the faculty member interviewed reported that "persistence and retention have been much higher; all [the results] were above college level, every way you slice it." A faculty member at another college noted that the ACE course had the same English syllabus as other classes, but "what comes back from ACE students is always better, and there's a higher completion rate."

Other faculty made the following comments when responding to questions about student outcomes as a result of participating in the ACE program:

They gain agency, writing their own script for success as a student.

Their ability to "code-switch" – not leaving behind qualities that got them this far, but gaining access to a culture that will allow them to move forward.

Getting students to understand how to work with people and work around a common goal is a really important thing.

It makes them feel like they are a part of a larger discussion in the country on change; makes them feel in control of their lives, an empowering effect.

Their behavior changes; they come to class on time, come prepared.

They see themselves as having a purpose and a part in the big picture; realizing that they have the academic ability. Through working out some of their bad habits and learning new ones, they're able to become academically successful.

They develop self-efficacy: learning how to function in a team, broaden strengths, not becoming victim to self-confidence issues.

The core elements and curriculum for the ACE program were praised by both faculty and administrators. While some felt that the Team Self Management course needed modifications, they expressed enthusiasm for the breadth and depth of the content provided in all of the core classes.

The ACE curriculum is carefully researched, planned, organized, and packaged—a fact that was universally appreciated by faculty who were interviewed. While there was a small degree of variation in whether they thought they should or could or how much they could deviate from what was provided, they generally expressed considerable respect for what was included, noting sometimes that there was so much that it was relatively easy to be flexible, given the constraints of any particular teaching situation.

Some aspects of the curriculum or the program were identified as being very strong aspects. These are discussed below.

Most liked the Social Justice course and the focus on related topics. One noted that students "leave with an understanding that society operates on a large-scale system of ownership and how inequalities are structural and historical, play out throughout our lives. I want them to have a sense that they can shape outcomes for themselves and others; that they can become historical agents; think critically, evaluate ideas, refute or substantiate ideas with data, and make sense of numbers." In one case, a faculty member expressed a desire for more cultural relevancy to her community. She felt there was a need for more topics that were suited or were of concern to her students' community.

Most faculty members reported that they had departed either a little or a lot from the Team Self Management curriculum. While they understood the intent and valued the general concepts, they indicated a strong need for revision. One faculty member noted that his college

had revised 75 percent of that curriculum. In response to these concerns, the TSM curriculum was substantially revised and released for use in the summer of 2012 for fall 2012 implementation. Many TSM faculty were involved in the review and provided materials for this major revision.

Most of those interviewed really valued the ACE behavior system. They recognized that it had provided a needed framework to help those who had not developed a system for being responsible or for self-regulation necessary for success within a college setting. On the other side of this issue, some faculty expressed concern when there was too much flexibility exercised within the system, for example, by not enforcing a college attendance policy. Students who were interviewed also expressed concerns about unbalanced or unfair treatment within classes, for example, when some students who were notoriously late or who had poor attendance were allowed to turn papers or projects in late and were still given grades equivalent to those who had observed deadlines. While this may not be considered a systemic issue, it was raised numerous times across colleges. It would seem to be another factor that would be difficult to manage given the high risk characteristics of some students and the intent of the model to help students move forward.

It seems unquestionable—based not only on interviews with faculty and administrators—but also on interviews and focus groups with students that the cohort model offers students in the ACE program a strong support system that, in effect, makes it possible for them to succeed. A faculty member noted, "They have each other to rely upon." She had heard them talk about wanting to 'surround themselves with people headed in the same direction.'"

Finally, there are three aspects of the program that are worth noting as ones that were noted by many of those interviewed. This includes the importance of regular faculty meetings at which they share accomplishments and issues or concerns and work together to address specific student needs. In some cases, students who are having trouble are invited to come to discuss what is going on and how the faculty can help.

Another aspect that is important to note is the potential for receiving transfer-level credits. While they had mounted a serious effort to accomplish this goal at Cabrillo College, it has not yet been successful. At one or two other colleges, they have managed to meet the requirements and have been able to give students such credits. Students at one of those colleges affirmed strongly that that made all the difference to them in deciding whether to participate.

Lastly, one of the colleges felt that their students were entering the program with lower level skills than some of the others, and they had added a developmental reading class to their program. It was not clear, and there were no data to provide evidence as to whether this was a successful strategy or not.

Student Perspectives

The following themes or findings were drawn from individual student interviews and student focus groups.

Students reported very positive reactions to the ACE program in interviews and focus groups.

While there were a few exceptions among the students we interviewed, the general reaction to the program was very positive. Specific reactions to the program are organized in sub-themes identified below:

Students reported great appreciation for ACE faculty, with only a few exceptions.

Students were eager to let us know about the deep appreciation they had for the faculty in the various ACE programs across the colleges. They repeatedly used terms like "awesome" and "amazing" to describe them. They reported that faculty "let students know that they can do it;" "ACE teachers made me feel the sky's the limit." The students most often commented on the faculty's caring and supportive approach. One student's comment captured what many others said: "Teachers don't care if you come in other programs or schools, but in the ACE program they really do. They call you up if you miss a day. I like that because you feel important to someone. I actually matter to someone." Regarding their supportive approach, one student noted that they "set you up for success."

There were a few faculty that one or two students complained about, but there was no accumulation of negative reports on any one faculty. The only complaint that was heard quite a number of times was with regard to a lack of fairness. Because the students in ACE programs are often immersed in difficult life situations, individual faculty members sometimes bent over backwards to be tolerant of their lack of attendance or lateness. Other students who were attending regularly and meeting deadlines felt it was unfair and inconsistent with the message of responsibility and accountability.

Students reported positive effects on their academic and personal lives.

Students consistently reported various positive effects on their lives. They spoke of their increased awareness and sense of responsibility. They mentioned improved relationships and an increase in their ability to resist responding negatively to potentially adversarial situations: "I learned to calm down, avoid conflict; you can't have a gangster mentality." Another noted, "I grew up a lot coming to ACE." They commonly reported that being in the program taught them to manage their time better as well as about themselves: "It made me realize I'm actually smart in some things." Some made strong positive comments about particular aspects of the program: "I learned a lot since being in the program, especially the first two weeks and how to work with others, learning styles. I liked it most when everybody got to

tell stories. I'm not used to people expressing themselves in front of people. That was like an inspirational thing."

Many of the students interviewed reported increased confidence and improved communication skills as the primary benefits of the program.

The most common outcome reported was an increase in their confidence and their ability to communicate with others and work in teams. This was expressed in comments about new ways to think and to learn, new outlooks on life and on school. One woman noted that her "confidence is so much higher, and I have improved vocabulary—my husband can't believe what comes out of my mouth!" A significant aspect of this was their reports of new awareness. In commenting on his experience in the Social Justice course, a student noted that it made him aware of things he hadn't thought about, that prior to the course, he didn't really concern himself with issues of social justice.

Students felt that the ACE program really prepared them for continuing in college.

It "opened doors for me" was an example of the kind of comment made regarding the potential of the program to prepare them for college. One noted that some referred to it as "college kindergarten." This preparation was reported with regard to the development of an understanding of their learning styles, learning to do research, accountability and management of time ("I'm now respectful of other people's time"), and just understanding structures and having a foundation. One stated that he "would have been terrified to walk on campus without this preparation." Another explained, "The Foundation Course helped me jump out of my seat—to get started I wouldn't have been ready without the Foundation Course, would have been far behind. They give you the tools necessary for being a successful college student. Everything I could need is right here in the program.

Perhaps the difference the program reportedly makes for students who exhibit high risk factors is best exemplified in one student's story:

In January, fresh out of prison, I enrolled at Cabrillo. I wasn't in ACE; it was overwhelming to me. I didn't understand half the things they were saying to me. So I just stopped going to school. Then I came here—through the ACE program, the next semester—now I know what I have to do, how I have to do things, taking notes, time to put into my studying.

An aspect of the program that students almost unanimously acknowledged as a positive benefit was the cohort model.

As faculty members had also noted, students consistently reported the benefits of being in a cohort and how important it was to them to build the relationships they did. Even students who stated that they didn't like the program, eagerly reported that they liked the "community" aspect of the program. They commonly stated that it "felt like family." "We had each other's backs." In one college where there was a clear difference between two cohorts that ran

concurrently, the importance of the relationship-building was evident in the fact that one cohort had clearly surpassed the other in building relationships. In a focus group that included students from both cohorts, they were able to compare their experiences, and they saw clearly that one had been much more successful in building the community, and students from the other cohort expressed strong regret that that had not been accomplished to as great an extent in their cohort. The ACE faculty at this college learned from this experience that it was essential to blend cohorts, to include a more heterogeneous group of students in each cohort.

A few students did not like particular aspects of the program or the program as a whole.

There were students who were interviewed who reported that they did not like the program. While it's not possible to generalize from the number of interviews conducted, it did seem that those who had most serious reservations were younger students, especially ones who were right out of high school. Even older students commented that the program may not be as good for younger students: "It may not be good for younger students. I don't think younger kids get it in the same way an older person does; can see that they've been in the school system for a long time and don't understand the value of it." Younger students tended to report that they liked the academic courses better than the Foundation or Team Self Management courses. One said that it "felt remedial for me." Another one of the younger students who reported having a "good upbringing," said she didn't like sharing emotional issues. She said she "didn't have the kind of story others did."

Students also expressed the fact that they didn't like that they didn't get transferable credits: "More than halfway through the semester, the counselor told me that none of my classes would benefit me at a college level." At another college, students in a focus group expressed the need for more structure, more rigor. They felt the program as it was implemented was "too loose" and reflected a lack of consistency: "We did get a syllabus, but we didn't stick to that syllabus."

Summary

Almost ten years after the first ACE program (then called the Digital Bridge Academy) was initiated in Watsonville, California, there is accumulating evidence that it does have strong effects on participants' achievement outcomes and on certain non-cognitive or affective indicators. The Academy for College Excellence (ACE) was founded on a strong theoretical framework based on a broad research base related to such psychosocial factors as self-efficacy, motivation, identity, and hope. It was designed to provide an alternative model to common developmental education programs in community colleges and to meet the needs of underserved students who are considered high risk because of their life experiences. This study was undertaken to examine the effectiveness of this model in six community colleges in California and in Pennsylvania. This report is the third in a series of reports that continue to document positive outcomes for participants in these colleges. Data was collected on implementation and on affective indicators for all six participating colleges; data on academic outcomes was available for four of the six colleges. While the program reflects some variations depending on the college in which it is implemented, and these variations result in some differences in outcomes, a majority of the outcomes show consistent results across colleges.

This report details the work on the study to date and the work that is continuing as part of a longitudinal examination of the model in a range of colleges. To study the effects on psychosocial factors, MPR researchers and ACE staff jointly designed and developed an instrument, the College Student Self-Assessment Survey (CSSAS), to be administered at three points in time: (1) before students begin the semester-long program, (2) after the first two-week Foundation course, and (3) after completion of the program at the end of the ACE one-semester intervention. In several of the colleges, a school-wide version of the CSSAS was administered to a majority of incoming students so that we would have data on non-participants. Propensity-score matching was used to form comparison groups for use in the examination of academic outcome data on credit accrual and persistence.

Results from the analyses of academic outcomes reveal that ACE participants in accelerated programs were considerably more likely to pass degree-applicable English in the ACE semester, and this difference is still apparent two semesters later, although the difference attenuates somewhat as the comparison group slowly improves its outcomes. They are also more likely than comparable non-participants to complete transfer-level English, and they earn 7 to 10 more degree-applicable credits than comparable non-participants. Accelerated ACE participants were more likely than comparable non-participants to enroll full time in the semester following the ACE semester, but the results varied somewhat across semesters and colleges. While ACE participants persisted by enrolling in the semester following the ACE program at

a greater rate than comparable non-participants, this rate varied from one semester to the next and across colleges.

The academic outcomes analyzed in this report show similar results to the outcomes published in the Columbia University Community College Research Center (CCRC) study of the ACE program, which analyzed the ACE implementation at Cabrillo College when it only served 25 students per semester. This current study is building the evidence that the ACE model, curriculum, faculty development, and train the trainer approach can reproduce similar academic results at multiple colleges some of which are serving between 250 and 350 students per year.

The CSSAS has provided a rich source of outcome data for this study, and the results have demonstrated very positive effects of the program on psychosocial factors for students who participate. The results provide strong indicative data that ACE students show consistent improvement in performance over the three point-in-time measures. Overall, students improved in their mean scores over the course of their ACE experience. The biggest growth is seen between Time 1 and Time 2, which makes sense given that the two-week Foundation course focuses on building students' capacity in each of the affective areas. The only factor that does not show a significant mean score increase over this time period is Mindfulness – Focusing. The change from Time 2 to Time 3 either remains consistent or improves slightly over the course of the ACE semester, with the exception of the Focusing factor, which is not significantly different from Time 1. This result indicates that students are maintaining the gains they made during the intensive Foundation course.

Results of the End of Bridge Semester Survey (EBS) consistently show that students report changes in college behaviors such as paying attention, completing assignments, and being prepared and organized. They also reported changes in their interactions with others. These results can likely be attributed to the camaraderie and cohesiveness that is developed and facilitated through the ACE curriculum and model. Students from diverse backgrounds and experiences learn from and about each other and, as shown both in survey responses and interviews, clearly support one another as they become acclimated to a college environment and the requirements of being a student.

To measure the impact of the ACE program on developing these behaviors and attitudes, ACE participants who took the CSSAS at the end of the ACE semester were asked to rate the extent to which they changed in specific areas in ways that improved their college experience. Overall, more than half of participants reported making positive changes in all 21 behaviors listed in the survey, suggesting that ACE is succeeding in its efforts to help students change their behavior in ways that will enable them to succeed in college. They were also asked about the impact of the program on their lives and about new decisions they had made about their future. Nearly half of respondents reported that they had made new decisions about

their future and more than three-quarters indicated that they had changed as a result of being in ACE.

From interviews and focus groups with administrators, faculty, and students, we learned about the generally positive effects teaching or participating in the ACE program has on those who do. While faculty and administrators may point to the demands of teaching in the program, they also report positive effects on teaching approaches and dramatic effects on student behaviors and achievements. Students report significant positive effects both on their academic and personal lives, on their preparation for continuing in college, and on their confidence and communication ability. Students often spoke poignantly about how the program had transformed their lives.

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Appendix

Table A1. Research literature for CSSAS, by factor

Self-Efficacy—includes academic self-efficacy, self-regulation, and hope/goal theory

Academic Self-Efficacy

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191–215.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

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Hope/Goal Theory

Covington, M. V. (2000). Goal theory, motivation, and school achievement: An integrative view. *Annual Review of Psychology, 51*, 171–200.

Day, L., Hanson, K., Maltby, J., Proctor, C., & Wood, A. (2010). Hope uniquely predicts objective academic achievement above intelligence, personality, and previous academic achievement. *Journal of Research in Personality*, *44*, 550–553.

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Self-Regulation of Behavior

Guiffrida, D. (2009). Theories of human development that enhance an understanding of the college transition process. *Teacher College Record, 111*, 2419–2443.

Park, C. L., Edmondson, D., & Lee, J. (2012). Development of self-regulation abilities as predictors of psychological adjustment across the first year of college. *Journal of Adult Development*, *19*(1), 40–49.

Teamwork/Leadership

Le, H., Casillas, A., Robbins, S., & Langley, R. (2005). Motivational and skills, social, and self-management predictors of college outcomes: Constructing the student readiness inventory. *Educational and Psychological Measurement, 65*(3), 482–508.

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Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, *130*(2), 261–288.

Interacting with Others – includes communication and personal responsibility

Communication

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, *26*, 41–54.

Pearlin, L., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, *19*, 2–21.

Porchea, S. F., Allen, J., Robbins, S., & Phelps, R. P. (2010). Predictors of long-term enrollment and degree outcomes for community college students: Integrating academic, psychosocial, socio-demographic, and situational factors. *The Journal of Higher Education*, *81*(6), 750–778.

Personal Responsibility/Self Determination

Mergler, A. G., Spencer, F. H., & Patton, W. (2007). Relationships between personal responsibility, emotional intelligence and self-esteem in adolescents and young adults. *Australian Educational and Developmental Psychologist*, *24*(1), 5–18.

Pearlin, L., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior, 19*, 2–21.

Mindfulness – includes focusing, accepting, describing, and observing

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky inventory of mindfulness skills. *Assessment, 11*(3), 191–206.

Caldwell, K., Harrison, M., Adams, M., et al. (2010). Developing mindfulness in college students through movement-based courses: Effects on self-regulatory self-efficacy, mood, stress, and sleep quality. *Journal of American College Health, 58*(5), 433–42.

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Table A2. Confirmatory Factor Analysis results and Cronbach's Alpha reliability scores for fall 2011 CSSAS (N = 821)

Factor	Survey Item	Factor Loadings	Reliability Scores
Overall Reliability Score			**0.94**
Mindfulness – Focusing/Doing			**0.89**
	DOING1	0.65	
	DOING2	0.80	
	DOING3	0.69	
Mindfulness – Accepting			**0.72**
	ACCEPT1	0.64	
	ACCEPT2	0.84	
	ACCEPT3	0.59	
Mindfulness – Describing			**0.77**
	DESC1	0.69	
	DESC2	0.78	
	DESC3	0.73	
College Identity			**0.88**
	IDENT1	0.79	
	IDENT2	0.82	
	IDENT3	0.82	
Self-Efficacy			**0.92**
	SE1	0.74	
	SE2	0.71	
	SE3	0.75	
	SE4	0.75	
	SE5	0.69	
	SE6	0.68	
	SE7	0.65	
	SE8	0.87	
	SE9	0.74	
	SE10	0.74	
	SE11	0.74	
Teamwork			**0.92**
	TEAM1	0.84	
	TEAM2	0.87	
	TEAM3	0.85	
	TEAM4	0.8	
	TEAM5	0.83	
Interacting with Others			**0.86**
	INTERACT1	0.73	
	INTERACT2	0.72	
	INTERACT3	0.68	
	INTERACT4	0.88	
	INTERACT5	0.56	
	INTERACT6	0.62	
	INTERACT7	0.59	
	INTERACT8	0.81	
	INTERACT9	0.55	
Observing			**0.66**
	OBSER1	0.73	
	OBSER2	0.62	
	OBSER3	0.54	

Table A3. Confirmatory Factor Analysis Factor Correlations

		1	2	3	4	5	6	7	8
1	Focusing	–							
2	Accepting	0.21							
3	Describing	0.24	0.49						
4	Identity	0.20	0.16	0.27					
5	Self-Efficacy	0.48	0.45	0.51	0.44				
6	Teamwork	0.35	0.39	0.58	0.39	0.60			
7	Interaction	0.33	0.45	0.65	0.39	0.57	0.68		
8	Observing	0.05	0.50	0.64	0.16	0.37	0.45	0.53	–

Table A4. *T*-tests for statistical significance of mean scores on CSSAS scales

Time 1 to Time 2

Factor	Mean Difference	Std. Deviation	Std. Error Mean	*t*-value	df	Sig. (2-tailed)
Focusing	.043	.936	.041	1.063	533	.288
Accepting	.166	.924	.040	4.148	534	.000
Describing	.170	.718	.031	5.482	534	.000
College Identity	.348	.759	.033	10.558	530	.000
Teamwork	.290	.738	.032	9.093	533	.000
Self-Efficacy	.371	.675	.034	10.870	391	.000
Interacting with others	.122	.480	.021	5.870	533	.000
Observing	.223	.877	.038	5.881	534	.000

Time 1 to Time 3

	Mean Difference	Std. Deviation	Std. Error Mean	*t*-value	df	Sig. (2-tailed)
Focusing	.018	1.005	.043	.419	536	.676
Accepting	.211	.968	.042	5.060	537	.000
Describing	.221	.826	.036	6.212	537	.000
College Identity	.311	.872	.038	8.251	533	.000
Teamwork	.294	.853	.037	7.983	536	.000
Self-Efficacy	.385	.752	.038	10.169	394	.000
Interacting with others	.044	.581	.025	1.766	536	.078
Observing	.206	.968	.042	4.931	537	.000

Table A5. Completion of degree-applicable English

Term		End of ACE Semester				End of First Semester after ACE				End of Second Semester after ACE			
Fall 2010	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo accelerated (N = 118)	47.5	25.4	22.0	6.1 **	60.2	48.3	11.9	6.5	63.6	52.5	11.0	6.4
	Hartnell non-CTE (N = 56)	62.5	17.9	44.6	8.3 **	62.5	39.3	23.2	9.3 *	62.5	44.6	17.9	9.4
	Los Medanos (N = 17)	76.5	11.8	64.7	13.3 **	76.5	23.5	52.9	15.0 **	76.5	29.4	47.1	15.6 **
	Berkeley (N = 24)	83.3	4.2	79.2	8.8 **	83.3	12.5	70.8	10.4 **	83.3	20.8	62.5	11.5 **
	Total of non-CTE program types (N = 215)	57.7	20.0	37.7	4.3 **	64.7	40.0	24.7	4.7 **	66.5	45.1	21.4	4.7 **
	Hartnell green building (N = 19)	0.0	0.0	0.0	0.0	10.5	15.8	-5.3	11.2	10.5	15.8	-5.3	11.2
	Hartnell agricultural (N = 10)	20.0	10.0	10.0	16.7	20.0	40.0	-20.0	21.1	20.0	40.0	-20.0	21.1

		End of ACE Semester				End of First Semester after ACE			
Spring 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 136)	58.1	16.2	41.9	5.3 **	64.7	25.0	39.7	5.6 **
	Hartnell agricultural (N = 18)	88.9	0.0	88.9	7.6 **	88.9	22.2	66.7	12.6 **
	Hartnell non-CTE (N = 29)	72.4	3.4	69.0	9.1 **	72.4	13.8	58.6	10.7 **
	Los Medanos (N = 18)	66.7	5.6	61.1	12.7 **	66.7	5.6	61.1	12.7 **
	Berkeley (N = 16)	0.0	0.0	0.0	0.0	25.0	0.0	25.0	11.2 *
	Total of non-CTE program types (N = 199)	56.3	12.1	44.2	4.2 **	62.8	19.6	43.2	4.4 **

		End of ACE Semester			
Fall 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 112)	38.4	31.3	7.1	6.4
	Hartnell non-CTE (N = 52)	51.9	11.5	40.4	8.3 **
	Los Medanos (N = 21)	71.4	9.5	61.9	12.0 **
	Berkeley (N = 59)	3.4	3.4	0.0	3.4
	Total of non-CTE program types (N = 244)	35.7	18.4	17.2	4.0 **
	Hartnell green building (N = 33)	0.0	6.1	-6.1	4.2

*p < .05; **p < .01; two-tailed test.

Table A6. Completion of transferable English

Term		End of ACE Semester				End of First Semester after ACE				End of Second Semester after ACE			
Fall 2010	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo accelerated (N = 118)	0.8	–	–	–	25.4	14.4	11.0	5.2 *	32.2	19.5	12.7	5.7 *
	Hartnell non-CTE (N = 56)	1.8	–	–	–	35.7	10.7	25.0	7.7 **	39.3	14.3	25.0	8.1 **
	Los Medanos (N = 17)	0.0	–	–	–	47.1	0.0	47.1	12.5 **	47.1	5.9	41.2	13.8 **
	Berkeley (N = 24)	79.2	–	–	–	79.2	4.2	75.0	9.4 **	79.2	12.5	66.7	10.9 **
	Total of non-CTE program types (N = 215)	9.8	–	–	–	35.8	11.2	24.7	3.9 **	40.5	16.3	24.2	4.2 **
	Hartnell green building (N = 19)	0.0	–	–	–	0.0	10.5	-10.5	7.2	0.0	10.5	-10.5	7.2
	Hartnell agricultural (N = 10)	0.0	–	–	–	10.0	0.0	10.0	10.0	10.0	10.0	0.0	14.1

		End of ACE Semester				End of First Semester after ACE			
Spring 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 136)	0.0	–	–	–	10.3	8.1	2.2	3.5
	Hartnell agricultural (N = 18)	0.0	–	–	–	5.6	11.1	-5.6	9.4
	Hartnell non-CTE (N = 29)	0.0	–	–	–	0.0	0.0	0.0	0.0
	Los Medanos (N = 18)	0.0	–	–	–	27.8	0.0	27.8	10.9 *
	Berkeley (N = 16)	0.0	–	–	–	6.3	0.0	6.3	6.3
	Total of non-CTE program types (N = 199)	0.0	–	–	–	10.1	5.5	4.5	2.7

		End of ACE Semester			
Fall 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 112)	0.0	–	–	–
	Hartnell non-CTE (N = 52)	0.0	–	–	–
	Los Medanos (N = 21)	0.0	–	–	–
	Berkeley (N = 59)	0.0	–	–	–
	Total of non-CTE program types (N = 244)	0.0	–	–	
	Hartnell green building (N = 33)	0.0	–	–	–

*p < .05; **p < .01; two-tailed test.

NOTE: Analyses exclude all non-participants who passed transfer-level English in the ACE semester and all LMC non-participants who passed transfer-level math in the ACE semester.

Table A7. Cumulative degree-applicable credits earned

Term		End of ACE Semester				End of First Semester after ACE				End of Second Semester after ACE			
Fall 2010	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo accelerated (N = 118)	11.7	4.4	7.3	0.6 **	16.2	8.9	7.3	1.1 **	19.5	12.6	6.9	1.5 **
	Hartnell non-CTE (N = 56)	11.6	6.0	5.5	1.0 **	17.1	11.9	5.3	1.9 **	21.0	16.3	4.7	2.7
	Los Medanos (N = 17)	13.6	4.3	9.3	1.6 **	20.9	7.4	13.5	2.7 **	26.5	9.2	17.3	3.9 **
	Berkeley (N = 24)	8.8	1.3	7.5	0.7 **	10.8	3.8	7.0	1.4 **	12.3	5.5	6.8	2.2 **
	Total of non-CTE program types (N = 215)	11.5	4.5	7.0	0.5 **	16.2	9.0	7.3	0.8 **	19.6	12.5	7.1	1.2 **
	Hartnell green building (N = 19)	8.6	2.8	5.9	1.2 **	10.0	7.2	2.8	2.2	10.8	11.0	-0.2	2.9
	Hartnell agricultural (N = 10)	7.7	4.5	3.2	2.0	12.0	8.8	3.1	3.7	15.2	11.1	4.1	5.2

		End of ACE Semester				End of First Semester after ACE			
Spring 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 136)	12.4	3.6	8.8	0.5 **	16.6	6.5	10.0	0.9 **
	Hartnell agricultural (N = 18)	9.9	4.2	5.7	1.7 **	11.9	6.8	5.2	2.6
	Hartnell non-CTE (N = 29)	10.1	2.5	7.5	1.2 **	11.3	4.5	6.8	1.8 **
	Los Medanos (N = 18)	13.1	3.2	9.9	1.5 **	18.4	3.4	15.1	2.3 **
	Berkeley (N = 16)	6.6	0.6	5.9	0.6 **	9.5	0.8	8.7	1.6 **
	Total of non-CTE program types (N = 199)	11.6	3.2	8.5	0.5 **	15.4	5.5	9.9	0.8 **

		End of ACE Semester			
Fall 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 112)	12.1	4.5	7.6	0.6 **
	Hartnell non-CTE (N = 52)	10.3	4.3	6.0	1.0 **
	Los Medanos (N = 21)	11.8	4.5	7.3	1.7 **
	Berkeley (N = 59)	6.8	2.3	4.6	0.5 **
	Total of non-CTE program types (N = 244)	10.4	3.9	6.5	0.4 **
	Hartnell green building (N = 33)	7.5	2.6	4.9	0.6 **

*p < .05; **p < .01; two-tailed test.

Table A8. Cumulative transferable credits earned

Term		End of ACE Semester				End of First Semester after ACE				End of Second Semester after ACE			
Fall 2010	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo accelerated (N = 118)	0.9	2.8	-1.8	0.3 **	4.0	6.0	-2.0	0.8 *	6.5	9.0	-2.5	1.2 *
	Hartnell non-CTE (N = 56)	1.9	4.2	-2.3	0.6 **	6.5	8.3	-1.8	1.3	10.1	12.2	-2.1	2.2
	Los Medanos (N = 17)	0.4	2.5	-2.2	0.9 *	6.9	4.6	2.2	1.8	12.0	5.7	6.3	2.8 *
	Berkeley (N = 24)	1.6	1.3	0.3	0.4	3.2	3.2	0.0	1.1	4.4	4.5	-0.1	1.7
	Total of non-CTE program types (N = 215)	1.2	2.9	-1.7	0.3 **	4.8	6.2	-1.4	0.6 *	7.6	9.1	-1.4	0.9
	Hartnell green building (N = 19)	2.8	2.3	0.6	1.1	3.9	6.2	-2.4	1.8	4.4	9.4	-5.0	2.3 *
	Hartnell agricultural (N = 10)	1.4	3.7	-2.3	1.4	5.2	6.1	-0.9	2.7	7.4	7.9	-0.5	3.9

		End of ACE Semester				End of First Semester after ACE			
Spring 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 136)	1.0	2.3	-1.3	0.3 **	3.2	4.9	-1.6	0.6 *
	Hartnell agricultural (N = 18)	1.4	4.0	-2.6	1.0 *	2.7	5.6	-3.0	1.7
	Hartnell non-CTE (N = 29)	1.6	1.8	-0.3	0.5	2.8	2.8	0.1	1.0
	Los Medanos (N = 18)	0.3	2.4	-2.1	0.7 **	4.5	2.6	1.9	1.3
	Berkeley (N = 16)	0.2	0.2	0.0	0.3	2.2	0.4	1.8	1.1
	Total of non-CTE program types (N = 199)	1.0	2.1	-1.1	0.2 **	3.2	4.0	-0.8	0.5

		End of ACE Semester			
Fall 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error
	Cabrillo (N = 112)	0.7	2.5	-1.8	0.3 **
	Hartnell non-CTE (N = 52)	1.8	2.9	-1.0	0.5 *
	Los Medanos (N = 21)	0.3	3.9	-3.6	0.9 **
	Berkeley (N = 59)	0.9	1.9	-1.0	0.5 *
	Total of non-CTE program types (N = 244)	1.0	2.6	-1.6	0.2 **
	Hartnell green building (N = 33)	2.0	2.0	0.0	0.5

*p < .05; **p < .01; two-tailed test.

Table A9. Full-time enrollment in first semester after ACE semester

Term		End of ACE Semester				
Fall 2010	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	
	Cabrillo accelerated (N = 118)	47.5	35.6	11.9	6.4	
	Hartnell non-CTE (N = 56)	42.9	44.6	-1.8	9.5	
	Los Medanos (N = 17)	76.5	41.2	35.3	16.2	*
	Berkeley (N = 24)	20.8	0.0	20.8	8.5	*
	Total of non-CTE program types (N = 215)	45.6	34.4	11.2	4.7	*
	Hartnell green building (N = 19)	10.5	26.3	-15.8	12.7	
	Hartnell agricultural (N = 10)	30.0	50.0	-20.0	22.6	

		End of ACE Semester				
Spring 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	
	Cabrillo (N = 136)	47.1	19.9	27.2	5.5	**
	Hartnell agricultural (N = 18)	27.8	22.2	5.6	14.8	
	Hartnell non-CTE (N = 29)	24.1	20.7	3.4	11.1	
	Los Medanos (N = 18)	38.9	16.7	22.2	14.9	
	Berkeley (N = 16)	37.5	0.0	37.5	12.5	**
	Total of non-CTE program types (N = 199)	42.2	18.1	24.1	4.5	**

*p < .05; **p < .01; two-tailed test.

Table A10. Persistence to first semester after ACE semester

Term		End of ACE Semester				
Fall 2010	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	
	Cabrillo accelerated (N = 118)	73.7	68.6	5.1	5.9	
	Hartnell non-CTE (N = 56)	64.3	73.2	-8.9	8.8	
	Los Medanos (N = 17)	94.1	70.6	23.5	12.8	
	Berkeley (N = 24)	62.5	54.2	8.3	14.5	
	Total of non-CTE program types (N = 215)	71.6	68.4	3.3	4.4	
	Hartnell green building (N = 19)	31.6	57.9	-26.3	16.0	*
	Hartnell agricultural (N = 10)	60.0	80.0	-20.0	21.1	

		End of ACE Semester				
Spring 2011	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	
	Cabrillo (N = 136)	75.7	58.8	16.9	5.6	**
	Hartnell agricultural (N = 18)	33.3	33.3	0.0	16.2	
	Hartnell non-CTE (N = 29)	27.6	37.9	-10.3	12.5	
	Los Medanos (N = 18)	72.2	5.6	66.7	12.2	**
	Berkeley (N = 16)	75.0	37.5	37.5	16.8	*
	Total of non-CTE program types (N = 199)	68.3	49.2	19.1	4.9	**

*p < .05; **p < .01; two-tailed test.

Table A11. Completion of degree-applicable math

		End of ACE Semester				End of First Semester after ACE				End of Second Semester after ACE			
Term	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
Fall 2010	Los Medanos (N = 17)	0.0	5.9	-5.9	5.9	64.7	17.6	47.1	15.3 **	64.7	29.4	35.3	16.5 *

		End of ACE Semester				End of First Semester after ACE			
	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
Spring 2011	Los Medanos (N = 18)	0.0	5.6	-5.6	5.6	44.4	5.6	38.9	13.3 **

		End of ACE Semester			
	College (number of participants)	ACE	Comp. Group	Diff.	Std. error
Fall 2011	Los Medanos (N = 21)	66.7	4.8	61.9	11.6 **

*$p < .05$; **$p < .01$; two-tailed test.

Table A12. Completion of transferable math

		End of ACE Semester				End of First Semester after ACE				End of Second Semester after ACE			
Term	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
Fall 2010	Los Medanos (N = 17)	0.0	–	–	–	64.7	5.9	58.8	13.3 **	64.7	5.9	58.8	13.3 **

		End of ACE Semester				End of First Semester after ACE			
	College (number of participants)	ACE	Comp. Group	Diff.	Std. error	ACE	Comp. Group	Diff.	Std. error
Spring 2011	Los Medanos (N = 18)	0.0	–	–	–	38.9	0.0	38.9	11.8 **

		End of ACE Semester			
	College (number of participants)	ACE	Comp. Group	Diff.	Std. error
Fall 2011	Los Medanos (N = 21)	0.0	–	–	–

*$p < .05$; **$p < .01$; two-tailed test.

NOTE: Analyses exclude all non-participants who passed transfer-level English in the ACE semester or passed transfer-level math in the ACE semester.