Assessing the Effectiveness of a Summer Success Academy: A Theory-Based, Mixed-Methods Approach

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RESULTS HIGHLIGHTS

- A total of 179 first-time, full-time conditionally admitted students completed the 2010 Summer Success Academy (SSA), compared to 169 in 2009.
- SSA participants have had notably higher one-year retention rates (not available yet for 2010) compared to non-participating conditionally admitted cohorts.
- The 2009 SSA full-time, conditionally admitted participants had a 70% one-year retention rate and 62% completed their first year successfully (earned cumulative first-year GPAs of 2.00 or above).
- The 2010 participants showed significant improvements in their levels of Sense of Belongingness, Academic Self-Efficacy, Math Self-Efficacy, and Written Communication Self-Efficacy.
- Students with High levels of Post-Program Written Communication Self-Efficacy performed better in their English courses compared to students with Moderate or Low levels of Written Communication Self-Efficacy.
- The 2010 participants had very positive reactions to the program and the learning environment. A total of 84% would recommend the program to other students and 78% had high levels of overall satisfaction.
- The 2010 SSA participants did not perform at acceptable levels academically during the fall semester. A total of 36% earned overall Fall GPAs below a 2.00, 38% earned GPAs below a 2.00 in their Fall Math courses and 28% earned GPAs below a 2.00 in their Fall English courses.
- The 2010 SSA participants performed as well as predicted [based on High School GPAs, SAT Total scores, SAT Math scores (used to predict Math course grades) and SAT Verbal scores (used to predict English course grades)] in their first semester overall and in their Math and English courses.
- Students who entered college in 2010 with SAT scores below 800 or high school GPAs below 2.70 performed poorly academically, even with the intensive summer intervention.
- The 2009 SSA participants who entered with the lowest levels of academic preparation did considerably better academically compared to the 2010 SSA participants who entered with the lowest levels of academic preparation.
- The overall Math DFW rate for the 2010 SSA participants was 32% and the overall Math DFW rate for the 2009 SSA participants was 25%. The SSA conditionally students who enrolled in Math 153 courses in the fall semester did not perform well, suggesting that the current summer math instruction may not be rigorous enough to ensure successful completion of this course.
- Results are being used to make substantial improvements in the program to ensure that students are academically integrated. The faculty members plan to provide more rigorous math and writing instruction as well as more time-on-task in these areas.

INTRODUCTION AND LITERATURE REVIEW

Conducting rigorous evaluations of programs designed to enhance the academic success and learning outcomes of students has become a necessity in higher education. The present study examined the effectiveness of an academic support initiative designed for at-risk first-year students attending Indiana University-Purdue University Indianapolis: a Summer Success Academy. The program was designed to help students perform better in their math and writing courses; feel an enhanced sense of belongingness; improve readiness to begin college; improve levels of math, writing, and academic self-efficacy; clarify expectations; and introduce students to general education outcomes and high impact practices. A theory-based evaluation methodology was utilized. This approach included linking program goals with theory and evaluating the program based on those theories using a mixed-method approach.

Summer bridge programs have been designed to address the transitional educational needs of a wide range of first-year students. According to the early intervention literature, academic support programs should be viewed as processes or intentional sets of programs designed to assist incoming students with their transitions to the institution. Additionally, content should be designed to meet the diverse needs of incoming students (e.g., Jacobs, 1993; Smith and Bracklin, 1993). Fox, Zakely, Morris, and Jundt (1993) contend that effective early intervention programs should assist students in becoming academically and socially integrated into new and unfamiliar university environments. They also contend that well-designed support programs may serve as catalysts for improved retention of students from the freshman to the sophomore year.

Maples (2003) found that students who participated in a summer bridge program had higher academic achievement during the first semester than students who did not participate, even while controlling for background characteristics and academic preparation variables. Additionally, he found that students who participated in the summer program had higher one-year retention rates and graduation rates compared to students who did not participate. Adelman's (2006) investigations emphasize that there are several factors that enhance the likelihood that a student will persist in college (completing a rigorous high school curriculum; immediate full-time attendance, preferably at a four-year college; no stopping out; and summer attendance). Taken together, the literature suggests that investing resources into programs that help aid students' transitions to college by exposing them to collegiate-level expectations during the summer may help promote academic success.

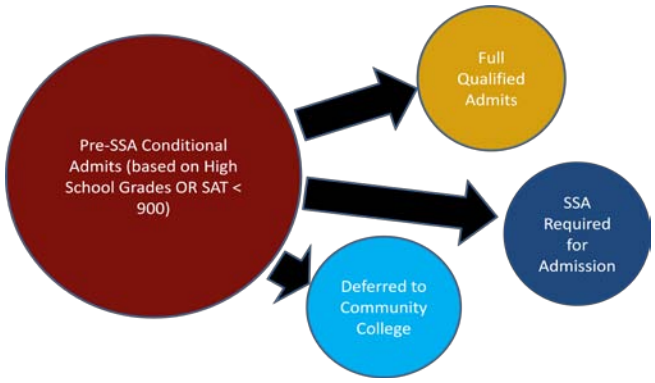
Assessment scholars recommend that a variety of qualitative and quantitative methodologies should be employed to facilitate understanding regarding "why" programs and interventions produce specific outcomes (e.g., Simpson 2002; Banta 2002; Siegel, 2003; Swing, 2001). In order to understand the impacts of the Summer Success Academy, we implemented quantitative and qualitative approaches. Several analyses were conducted in an effort to understand if students were benefiting from the intervention. We employed a theory-based evaluation approach which allows evaluators to know not simply that a program did not work, but why it did not work, and at what stages in the evaluation process the failure occurred (Bickman, 1987; Birckmayer and Weiss, 2000; D'Agostino, 2001; Tyler, 1949). As such, we began our program evaluation planning approach by clearly articulating the program theory to help guide the selection of measures and to increase understanding among researchers and practitioners regarding what internal program operations need to be improved when selected outcome measures suggest that desired program "outputs" were not achieved.

PROGRAM HISTORY AND CONTEXT

The Summer Success Academy began as a pilot developmental math program in Fall 2007. We are entering our 5th year of the program. It is a 5-6 week program beginning in early July. Beginning in 2009, the program integrated writing and college success programming. There are no tuition costs to students and books are either free or low-cost. Students have to pay for housing, if required. The program has been phased in over time to replace conditional admits. Students are required to attend and must successfully complete the program to enter fall class (unsuccessful candidates are referred to a Community College). Students who decline the SSA are referred to a Community College. The program is targeted to first-time students and is promoted as a "get started on the right foot program" and not as a "remediation program." Other students are invited to participate, but their

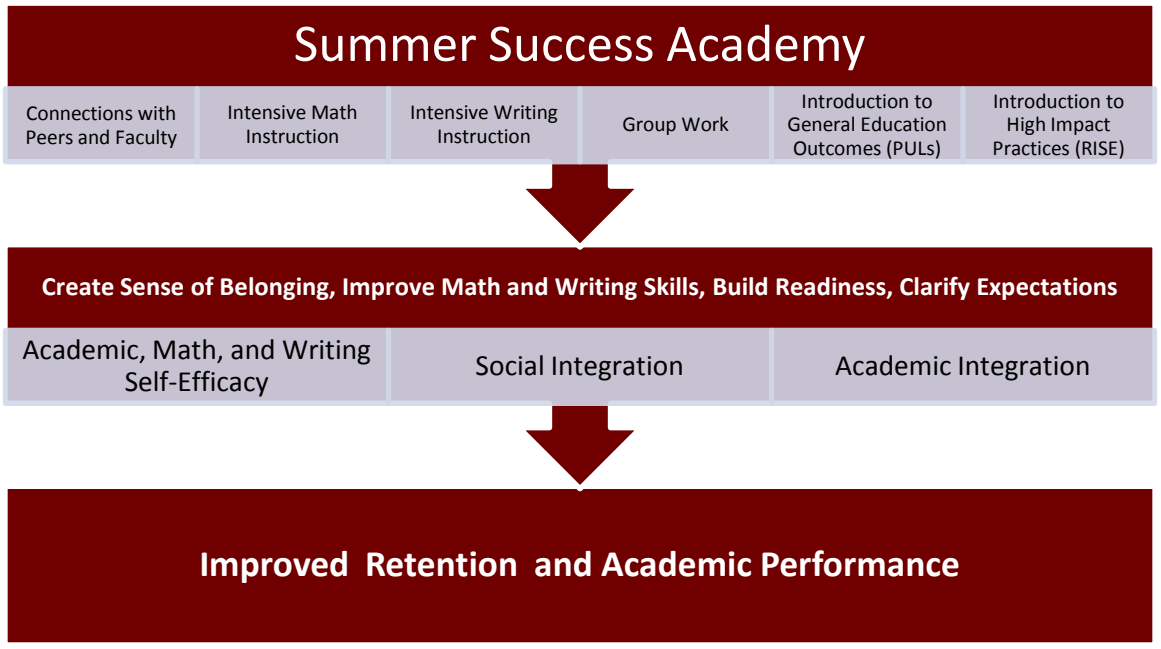
admission to the university is not contingent upon success in the program (adds an additional 5-25 students per year). Shown in Figure 1 is a representation of redefining conditionally admitted students.

Figure 1. Redefining the Conditional Admit (Analysis based on High School GPA/SAT Matrix and Chance of Success)



PROGRAM THEORY

This study examined the effectiveness of the Summer Success Academy for conditionally admitted students. The Summer Success Academy was designed to help students succeed academically (perform well in Math and English courses); learn to interact effectively in group settings; feel enhanced sense of belongingness and academic self-efficacy; gain an understanding of the general education learning outcomes (Principles of Undergraduate Learning-PULs) and learn about opportunities to participate in high impact practices (RISE to the Challenge) . The purpose of the program assessment was both summative and formative. Additionally, a theory-based evaluation (TBE) methodology was utilized. The mixed-method assessment results were used to understand the program's effectiveness and provide information to guide future program development and evaluation. Shown below is the Program Theory.



MIXED METHODS METHODOLOGY AND ANALYSES

A mixed-method design allowed for the direct measurement of students' educational outcomes as well as students' attitudes, perceptions, and intended behaviors. Methods included the following: 1) Post Program Academic Success, 2) Students' Sense of Belongingness, Self-Efficacy, and Organizational Commitment Questionnaire (Pre and Post Design with No Control Group), and 3) Student Satisfaction Questionnaire (containing qualitative open-ended items).

In order to understand the SSA program effects on the participants' educational outcomes, we examined predicted compared to actual performance levels. We also compared the SSA participants to previous cohorts who were not offered the program. Student participants' predicted GPAs were compared to their actual earned GPAs. Predicted GPAs were originally developed to assist in admission decision processes. The prediction formula was obtained by regressing actual grade point averages from previous cohorts of students on their combined SAT scores and high school grade point averages. The resulting formula was then used to calculate predicted grade point averages for this sample of students. The result was a single measure representing the best linear combination of students' academic qualifications for predicting first-year grades (Pike, 2008). The formula used to calculate predicted grade point average was: (Predicted GPA = –1.244 + 0.001 × SAT + 0.944 × High School GPA).

PARTICIPANTS

A total of 179 first-time, full-time conditionally admitted students completed the 2010 Summer Success Academy. There were 11 conditionally admitted students in 2010 who did not participate in the SSA. The 11 students had an average SAT score of 1073 (range 980-1170), notably higher than the SSA participants. Their fall-to-spring retention rate was 91%, their average Fall GPA was 2.20, and 36% earned GPAs below a 2.00 during the fall semester. There were 22 first-time, full-time students who attended the program in 2010 on an optional basis and these students were not conditionally admitted. Their average fall GPA was 2.64 and 82% earned Fall GPAs above a 2.00. The average fall Math course grade was 2.70 and average fall English course grade was 2.53 for the 22 optional participants. Listed in Table 1 below are the characteristics of the 179 full-time SSA conditional admitted participants.

Table 1. Characteristics of the 2010 Summer Success Academy Conditional Admitted Participants (n=179).

	Mean or %	Standard Deviation
Average Age	18.81	.46
SAT Total	881	115.92
SAT Math	442	66.23
SAT Verbal	434	71.98
High School GPA	2.71	.13
First-Generation	47%	N/A
Female	60%	N/A
Received Pell Grant (proxy for low income)	49%	N/A

Ethnicity	%
Caucasian	63%
African American	25%
Latino	5%
Other	7%

RESULTS

Academic Self-Efficacy, Social Integration, and Academic Integration

The 2010 SSA participants reported significantly improved levels of Sense of Belongingness, Individual Academic Self-Efficacy, Math Self-Efficacy, and Written Communication Self-Efficacy based on pre-post paired sample t-test results (shown in Table 2).

Table 2. Paired T Test Results for the Sense of Belongingness Survey (Pre-Post)

Factors	Number of Items	Reliability (Alpha)	Valid N	Mean (Pre)	Mean (Post)	Mean Diff.	P-Value	Effect Size
Sense of Belongingness	7	0.802	173	4.37	4.8	0.43	0.000	0.50
Group Work Self-Efficacy	5	0.843	171	5.04	5.05	0.01	0.823	N/A
Individual Academic Self-Efficacy	5	0.864	179	5.02	5.23	0.21	0.000	0.26
Institutional Commitment	8	0.877	174	4.67	4.74	0.07	0.244	N/A
Math Self-Efficacy	5	0.832	177	4.24	4.77	0.53	0.000	0.57
Written Communication Self-Efficacy	5	0.893	178	4.56	4.95	0.39	0.000	0.42

Note: Responses were based on a 5-Point Likert-Type scale ranging from 1=Strongly Disagree to 5= Strongly Agree

Shown in Table 3 are the results of a series of ANOVA with post-hocs analyses conducted to understand SSA participants' post-program self-efficacy levels and academic performance. Results suggest that students with High levels of post-program Written Communication Self-Efficacy performed better in their English courses compared to students with Moderate or Low levels of Written Communication Self-Efficacy.

Table 3. ANOVA With Post-Hocs Conducted To Understand SSA Participants' Post-Program Self-Efficacy Levels And Academic Performance

Academic Self-Efficacy	N	Average Fall Semester GPA	SD
Low	58	2.13	.95
Medium	33	2.39	1.07
High	67	2.25	.93
Total	158	2.24	.96

Written Communication Self-Efficacy	N	Average English Course Grade	SD
Low	33	2.00	1.19
Medium	27	2.27	1.12
High[1]	34	2.59	1.05
Total	94	2.29	1.13

Math Self-Efficacy	N	Average Math Course Grade	SD
Low	41	2.04	1.27
Medium	38	2.13	1.27
High	49	2.02	1.16
Total	128	2.06	1.22

Note[1]: Analysis is of full time conditional admits. Significantly different from the low Written Communication Self-Efficacy group in terms of average English course grade ($p < .10$).

Understanding Students' Perceptions of the Program and Their Learning Experiences

The 2010 participants had very positive reactions to the program and the learning environment (see Table 4). A total of 84% would recommend the program to other students and 78% had high levels of overall satisfaction.

Table 4. Post-Satisfaction Questionnaire Results

Item	**% Satisfied or Very Satisfied**
Classroom activities that helped me learn	81%
Opportunities to learn from other students	78%
Interactions with student mentors	69%
Overall feelings of sense of community	88%
Overall Satisfaction	78%

All students' responses to the open-ended items were content analyzed and coded using the Atlas.ti qualitative software program. The most valuable aspects of the program were the math and writing instruction components. Students also reported that the program helped them become socially integrated as they met other students and formed friendships. Many students also reported that the math instruction was not valuable and was too easy and not challenging enough.

Table 5. Most Valued Aspects of Summer Success Academy 2010 (n=194)

- **Mathematics Components**
  - "Math class."
  - "I valued the math class the most."
  - "The math review helped me the most."
  - "The pre Algebra helped me remember A LOT of stuff."
  - "The math was most valuable because that's what I struggle most with and we went back over the basics."
  - "How I understand the basic foundation with math skills that I missed during high school."
  - "The math portion was most valuable, as that's my weakest subject."

- **English Writing Components**
  - "My writing skills."
  - "The English class."
  - "The writing portion because that is where I struggle."
  - "I learned new ways to write an essay."
  - "The helpful small hints about writing."
  - "Writing portion, I feel better about going into college writing."
  - "The writing assignments because I'm not very good at writing."
  - "I found writing most valuable because it taught the tools we will need in W131."

- **Meeting New People and Developing Friendships**
  - "Meeting friends."
  - "Meeting new people."
  - "I found that meeting new friends was the most valuable thing."
  - "I learned a lot and got to meet new people."
  - "I made new friends."
  - "I think most valuable was meeting new friends. I found my best friend."
  - "The most valuable things I developed here was bonds with my fellow peers."
  - "Meeting other students in the same situation academically as ourselves."

- **College Transition Assistance**
  - "Getting ready for college."
  - "The overall experience from high school to college."
  - "Preparing you for college work."
  - "Giving you a little preview about what college will be like."
  - "The mentors preparing us for what college classes will be like."
  - "The sessions were able to get me ready for classes in the fall."
  - "The UCOL sessions helped out by giving us ways to help our transition from high school to college."
  - "Learning what to expect in college and knowing we need to spend more time on homework."

Table 6. Least Valued Aspects of Summer Success Academy 2010 (n=194)

- **University College Sessions**
  - ""UCOL."
  - "The UCOL course."
  - "UCOL. We didn't do much."
  - "I found the UCOL was least valuable."
  - "I didn't think the UCOL class was all that helpful."
  - "UCOL seemed like it could have been left out."
  - "The UCOL class really didn't do anything for me. Sorry!"
  - "UCOL at some points because we learned the main things within the first week."
  - "UCOL. The PUL's were useless and the mentor was horrible."
  - "UCOL was the least valuable because I felt like I knew most everything we learned in."

- **N/A, None, Nothing**
  - ""N/A."
  - "None."
  - "Nothing."
  - "Nothing at all."
  - "Everything was valuable."
  - "I honestly have no complaints."
  - "Nothing, everything has been benefited me."
  - "I thought everything was valuable because I learned a lot from each class."

- **Mathematics Component**
  - "Math."
  - "The math course."
  - "The math class was too easy."
  - "Pre algebra."
  - "Math mostly review just extremely easy."
  - "Math. The class I was in wasn't challenging enough."
  - "The math class because most of it was all review."
  - "Math- It was review for me so I felt it did not help at all."
  - "MATH! I took that course in like eighth grade."
  - "What I found least valuable was math. It was all review of what we learned in High School."

Retention and Academic Performance

Shown in Figures 2 and 3 are the one-year retention rates and academic performance levels of first-time, full-time conditionally admitted students prior to the implementation of the Summer Success Academy and after. Results suggest that the academic success of conditionally admitted students showed notable improvements, particularly in 2009 when all conditionally admitted students were required to participate as a condition of admission.

Figure 2. SSA Program Effects on One-Year Retention: First-Time, Full-time Conditionally Admitted Students

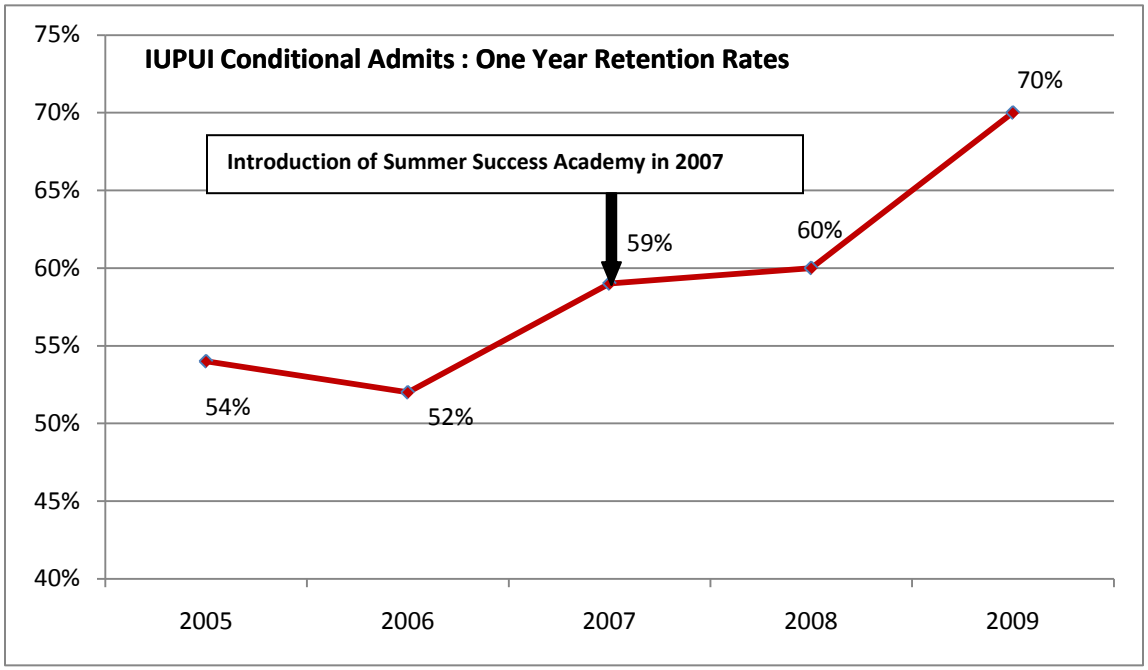
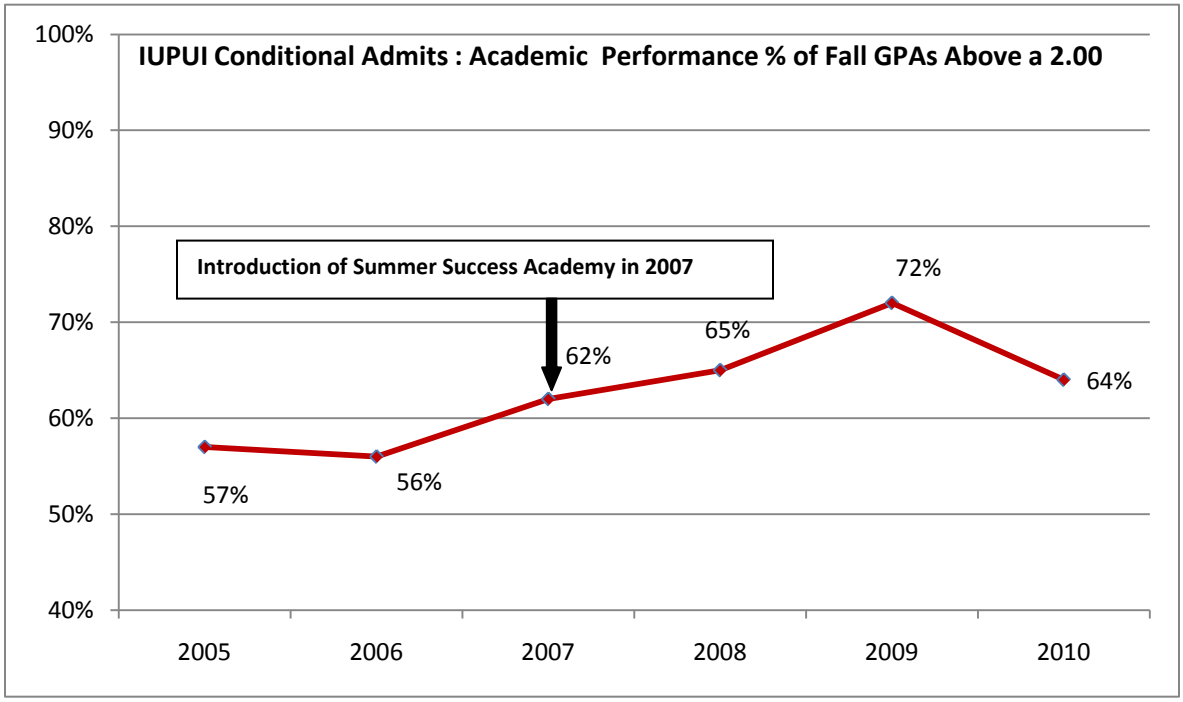


Figure 3. SSA Program Effects on Academic Success: First-Time, Full-time Conditionally Admitted Students



Predicted Compared to Actual Levels of Academic Performance

The formula used to calculate predicted fall grade point average was: (Predicted GPA = –1.244 + 0.001 × SAT + 0.944 × High School GPA). Using this formula the resulting predicted fall semester GPA yielded for the 2010 SSA participants was 2.20 with a standard deviation of 0.15. The actual fall semester GPA yielded for the 2010 SSA participants was 2.18 with a standard deviation of 1.00. Results suggest that the SSA performed as predicted. There were not significant differences between actual and predicted GPAs based on a one-sample t-test.

The formula used to calculate predicted fall math grade point average was: (Predicted GPA = –1.575 + 0.001 × SAT Math + 1.07 × High School GPA). Using this formula the resulting predicted fall Math GPA yielded for the 2010 SSA participants was 2.02 with a standard deviation of 0.16. The actual Math fall semester GPA yielded for the 2010 SSA participants was 2.03 with a standard deviation of 1.23. Results suggest that the SSA performed as predicted in their math courses. There were not significant differences between actual and predicted GPAs based on a one-sample t-test.

The formula used to calculate predicted fall English grade point average was: (Predicted GPA = –.303 + 0.0001 × SAT Verbal + 0.937 × High School GPA). Using this formula the resulting predicted fall semester GPA yielded for the 2010 SSA participants was 2.29 with a standard deviation of 0.12. The actual English fall semester GPA yielded for the 2010 SSA participants was 2.22 with a standard deviation of 1.21. Results suggest that the SSA performed as predicted in their English courses. There were not significant differences between actual and predicted GPAs based on a one-sample t-test.

Shown in Table 7 are results of how the 2009 and 2010 Summer Success Academy participants performed academically compared to a matched comparison group of conditional admits and all conditional admits from 2006 (the cohort year prior to implementation of the Summer Success Academy). The 2009 SSA participants performed notably better than the 2010 participants and matched cohorts. Table 8 displays the academic outcomes for Summer Success Academy conditional admits with the lowest levels of academic preparation. The data suggest that students who enter college with SATs below 800 or high school GPAs below 2.70 perform poorly academically even with the intensive summer intervention.

Shown in Tables 9 and 10 are the fall Math Course performance data for the first-time, full-time conditionally admitted Summer Success Academy participants in 2009 and 2010. The overall Math DFW rate for the 2010 SSA participants was 32% and the overall Math DFW rate for the 2009 SSA participants was 25%. The SSA conditionally students who enrolled in Math 153 courses in the fall semester did not perform well, suggesting that the current summer math instruction may not be rigorous enough to ensure successful completion of this course.

Table 7. Summer Success Academy Conditional Admits Compared to All 2006 First-Time, Full-Time Conditional Admits and a Matched Comparison Group

	N	Avg. H.S. GPA	Avg. SAT Score	Avg. Fall GPA	% Fall GPA below a 2.00	Fall Math GPA	Fall Math Grade below 2.00	Fall English GPA	Fall English Grade below 2.0.	Fall – Spring Retention Rate	Fall- to-Fall Retention Rate	One-Year Success Rate % Cum. GPA 2.00 or above
2006 Conditional Admits	700	2.72	889	2.04	43%	1.67	47%	2.35	27%	82%	52%	59%
2006 Matched Comparison	206	2.79	880	**2.06**	**41%**	**1.73**	**42%**	**2.41**	23%	**83%**	**56%**	**60%**
2009 SSA	169	2.69	**901**	**2.35**	**28%**	**2.07**	**33%**	**2.60**	20%	**89%**	**70%**	**62%**
2010 SSA	179	2.71	881	**2.18**	36%	**2.03**	38%	2.22	28%	82%	N/A	N/A

Note: Bolded items are significantly different compared to the 2006 matched comparison sample based on independent samples t-test results and practical significance.

Table 8. Performance of Summer Success Academy Conditional Admits With the Lowest Levels of Academic Preparation

	Total N	% Avg. H.S. GPA Below 2.70	% below 2.00 Fall GPA for Students with Avg. H.S. GPA Below 2.70	% Avg. SAT Score Below 800	% below 2.00 Fall GPA for Students with Avg. SAT Score Below 800
2009 SSA	169	47%	**28%**	21%	**26%**
2010 SSA	179	45%	**43%**	22%	**41%**

Note: Bolded items are notably and practically different.

Table 9 2010 Summer Success Academy Participants' Performance in Fall Math Courses

		Course Grade						
Math Course Taken	Total Students	W	D	F	C	B	A	DFW Rate
None	24							
Math 001	123	6	17	20	34	32	14	35%
Math 110	13	0	2	1	5	3	1	23%
Math 111	9	1	2	0	2	5	0	33%
Math 153	3	2	0	1	0	0	0	100%
Math-M 118	1	0	0	1	0	0	0	100%
Math -M 119	6	3	1	0	0	0	2	67%
Total	179	12	22	23	41	40	17	32%

Table 10. 2009 Summer Success Academy Participants' Performance in Fall Math Courses

		Course Grade						
Math Course Taken	Total Students	W	D	F	C	B	A	DFW Rate
None	23							
MATH-M 001	11	1	5	2	1	2	0	73%
Math 001	93	2	6	14	31	32	7	24%
Math 110	17	2	2	1	7	3	2	29%
Math 111	17	0	1	1	5	9	1	12%
Math 153	5	0	1	2	0	1	1	60%
Math 159	1	1	0	0	0	0	0	100%
Math 165	1	0	0	0	1	0	0	0%
Math-M 118	1	0	1	0	0	0	0	100%
Math 221	1	0	0	0	0	1	0	0%
Total	170	6	16	20	45	48	11	25%

CONCLUSION

Results suggest that students seem to react positively to early interventions that facilitate positive connections, interactions, and equip them with skills necessary to effectively adjust to college. The program enhanced students' feelings of a sense of belongingness and academic self-efficacy beliefs. The program also improved students' understandings of general education outcomes and expectations for college. Results from quantitative analyses suggested that the most recent cohort of SSA participants did not perform better than expected academically. However, past Summer Success Academy participants had notably higher retention rates compared to non-participating cohorts. The results have implications for campus leaders and assessment practitioners who are working to develop methods for understanding the effects of programs designed to enhance the undergraduate educational experiences for students on their campuses.

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