

Running Head: Effect of Student Participation in Study Abroad on Persistence, Degree Attainment, and Time-to-Degree

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ABSTRACT:

This research study used a hierarchical regression analysis to assess the predictive effect of participation in study abroad and earned credits abroad on persistence degree attainment, and time-to-degree of undergraduate students. The analysis was based on the Beginning Postsecondary Students Longitudinal Study (BPS) and the Baccalaureate and Beyond Longitudinal Study (B&B), which are national data sets maintained by the National Center for Education Statistics. The analysis accounted for student characteristics, academic preparation, social integration, and academic integration. The findings revealed that participation in study abroad and earned credits abroad positively affected persistence and degree completion of undergraduate students in the U.S., and are associated with shorter time-to-degree, thus dispels the concerns that studying abroad contributes to delay graduation.

Key words: *Participation in study abroad, persistence, degree attainment, time-to-degree, international education.*

Statement of the research problem

For nearly two decades, there has been an increase in the number of U.S. study abroad students. According to the 2011 Open Doors report, from about 50,000 students during the academic year 1985-86, the number jumped to more than 270,604 students for the academic year 2009-2010 (The IIE, 2011). This increase may be the reflection of the initiatives by many U.S. campuses to integrate global competence through international experience into their core educational mission (The IIE, 2005). Many scholars in the field of international education assert that intercultural interactions can lead to the development of intercultural competence (Deardorff, 2004). According to Hunter (2004), intercultural or global competence involves an intercultural awareness, respect and appreciation of diverse cultures, and the ability to compete globally. In other words, intercultural interactions provide an opportunity for students to move beyond comfort zones and develop a multiple perspective of the world through self-reflection (Brasskamp, 2009), which can potentially lead to intrinsic motivation for continuous enrollment in school until graduation.

Several studies have investigated perceptions of study abroad programs by higher education administrators, faculty, and students (Jean Francois, 2010; Stuart, 2007), as well as the impact of study abroad on global mindedness, and intercultural communication skills of students (Walton, 2002). However, some parents and even faculty have questioned the relevance of study abroad programs, and many students are concerned about the academic value of study abroad programs and the risk to delay their graduation (Booker, 2001; Bollag, 2004; Marcum & Roochnik, 2001). Some single institution studies have documented that students who studied abroad have higher graduation rates than those who did not (Office of Institutional Research, 2009; Posey, 2003; Sutton & Rubin, 2010; Young, 2008). However, no research has been

conducted regarding whether a nationally representative sample confirms such assertion. Given the growing attention that study abroad has received from legislators (Commission on the Abraham Lincoln Study Abroad Fellowship Program, 2005), education administrators (American Council on Education, 2008), and the public at large (Year of Study Abroad, 2006), it is important to conduct more studies exploring its academic meaningfulness with respect to its effect on persistence, degree attainment, and time-to-degree. The proposed research aimed to fill that gap.

Literature Review and Conceptual Framework

Literature Review:

The higher education community has increasingly focused on evidence-based outcomes about the academic value of study abroad programs (Gray, Murdoch, Stebbins, 2002; Hadis, 2005). Several studies argued that study abroad has positive effect on the cognitive, affective, and cultural development of participating students (Hadis, 2005; Button, Green, Tengnah, Johanson, & Baker, 2005; Ryan & Twibell, 2000). Some scholars asserted that study abroad programs contribute to increase the level of student cognition (Frish, 1990), enhance their international perspectives, global political concerns, and cross-cultural interests (Bates, 1997; Carlson & Widaman, 1988; & Ryan & Twibell, 2000), reshape their American identity (Dolby, 2004; Souders, 2006), and increase their interest in global issues, language skills, and personal growth (Hadis, 2005). Ryan and Twibell (2000) found that students who participated in study abroad programs showed evidence of enhanced international perspectives of global political and cross-cultural issues. In a quasi-experimental study on 300 undergraduate students who study

abroad (in Europe), Carlson and Widaman (1988) found increased global political concerns, cross-cultural interests, and cultural cosmopolitanism among participants who studied abroad in comparison to those who did not. However, there is an expectation among various stakeholders to provide further evidence of the effectiveness of study abroad programs (Gray, Murdock, and Stebbins, 2002). Pascarella and Terenzini (2005) have questioned the validity on research related to the effectiveness of study abroad programs, because such studies did not control for variables (full-time enrollment status, high grades, majoring in the arts and humanities, and the social sciences) that influence student participation in study abroad programs.

Conceptual Framework:

The proposed study hypothesized that student participation in study abroad programs would serve as an integrating factor and motivation for persistence, degree attainment, and time-to-degree of college students (Tinto, 1987; Pascarella & Terenzini, 2005; Laanan, 2004). Persistence, degree attainment, and time-to-degree were used in a student-centered perspective. Thus, students were considered irrespective of whether or not they have transferred from one institution to another.

Participation in study abroad: Study abroad encompasses various structured and non-traditionally structured formats, such as, for credit programs of study, internship abroad, work-abroad, volunteer or service abroad, and teaching abroad (Dwyer, 2004; Rai, 2004). The term study abroad in the proposed study refers to a structured learning experience led by a faculty member in which student participants have to live and learn in a foreign country for a long (one semester or more) or a short period of time (one to six weeks). Research on international education have documented that study abroad provides students with unique opportunities for

academic and social integration through intercultural interactions (Green, Johanson, Rosser, Tengnah, & Segrott, 2008), which can eventually contribute to persistence, degree attainment, and time-to-degree.

Persistence, degree attainment, and time-to-degree: Degree attainment is a key goal for stakeholders in higher education, because it tends to be the outcome rewarded by the labor market (Cabrera, Burkum, & Nasa, 2005). The correlation between degree attained and higher salary (Snyder, Tan, & Hoffman, 2006) stresses the value of college education as a path to social and economic opportunities for students. Persistence or continuing enrollment is considered as one of the most significant predictors of student time-to-degree and degree attainment (Adelman, 2006). Furthermore, the increase in time-to-degree over the last decades (Turner, 2004) has inspired the call for more accountability in higher education and greater interest to explore factors that can contribute to reverse the trend (Adelman, 2006).

The Tinto' student integration model is regarded as one of the most empirical tested explanations of attrition and persistence in higher education (Cabrera, Nora, & Castaneda, 1992). According to Tinto (1985), student's persistence results from their social and academic integration into the college environment. Variables related to student success recently identified by Engstrom and Tinto (2008) included commitment, expectations, support, feedback, involvement (academic integration and social integration), and learning. Tinto model has validated the consistency of the longitudinal nature of student retention as well as the role of institutional fitness on student persistence (Goel, 2002). However, critiques argued that the model failed to consider racial and ethnic minorities (Tierney 1992). Bean and Metzner (1985) found that Tinto's model posed some challenges to determine the directionality of the effects of the tested variables.

Consequently, Bean and Metzner (1985) developed the attrition model, which predicts student persistence through behavioral intentions and intent to stay. Bean and Metzner (1985) suggested that social integration is not a significant factor for the persistence of undergraduate students, and argued that their attrition result from academic integration and environmental variables (i.e. finances, hours of employment, outside encouragement, family responsibilities, and opportunity to transfer). The model asserted that environmental variables have greater influence on student attrition and retention than the academic variables. A test of the model conducted by Metzner and Bean (1987) found that environmental factors were not significant factors in student attrition. Stahl and Pavel (1992) conducted a study, using structural equation modeling, which revealed that the attrition model was not a good fit for their sample, which was constituted of students from an urban community college. A more recent study conducted by Zhai, Monzon, and Grimes (2005) found that only one environmental factors (hours worked) suggested by Bean and Metzner was a significant factor of student attrition.

Cabrera, Nora and Castaneda (1993) developed a hybrid model of student retention that combined both Tinto student integration model and Bean and Metzner's attrition model. Cabrera, Nora and Castaneda (1993) argued that environmental factors, including intent to persist and family and friend encouragement were the main factors of student persistence. Sandler (2000) insisted that persistence be approached in a systematic manner. Similarly, Atwell, Heil and Reisel (2011) found in a recent study that no single factor can explain attrition or persistence of undergraduate students. This suggests the opportunity for further studies investigating additional factors that contribute to persistence, degree attainment, and time-to-degree. Therefore, understanding the contribution of participation in study abroad to persistence, degree attainment, and time-to-degree can only strengthen existing literature.

Methods

The proposed study aimed to understand whether participation in study abroad is associated with persistence, degree attainment, and time-to-degree of U.S. undergraduate students. The research study used a hierarchical regression analysis procedure to assess the predictive effect of participation in study abroad on persistence degree attainment, and time-to-degree of undergraduate students, using the Beginning Postsecondary Students Longitudinal Study (BPS: 04/06/09) and the Baccalaureate and Beyond Longitudinal Study (B&B:08/09) maintained by the National Center for Education Statistics (NCES). Like numerous other national surveys produced by NCES, the BPS and B&B are characterized by data collection through complex survey design. As such, there are two analytical issues associated with the use of data collected through complex sampling designs: the representativeness of the sample being analyzed and the correct assessment of population variances that form the basis for the identification of statistical effects and hypothesis testing (Thomas & Heck, 2001). Because the surveys of interest were conducted using complex survey designs, involving stratification, clustering, and unequal probabilities of case selection (Cataldi, Green, Henke, Lew, Woo, Shepherd, & Siegel, 2011), analyses took into account the complex sampling designs in order to estimate variances accurately. The first step in a multistage analysis process was data cleaning, including examination of anomalous data patterns as well as missing data and distributions of the variables of interest. The statistical software PASW 18 was used. Then, variable reduction was performed in light of adequacy to answer the research questions under consideration. This step was necessary because most of NCES surveys have a large number of variables, many of which appear to measure the same construct. Also, application of sample weights and computing weight adjustment was performed.

Research Questions

1. Are there significant differences between persistence, degree attainment, and time-to-degree of students who participated in study abroad or earned credits abroad and those who did not?

Controlling for relevant student characteristics, social integration, and academic integration,

2. Is study abroad programs associated with the persistence of U.S. undergraduate students?

3. Is study abroad programs associated with the degree attainment of U.S. undergraduate students?

4. Is study abroad programs associated with time-to-degree for U.S. undergraduate students?

Data sets

As indicated earlier, the research used the restricted-use data of Beginning Postsecondary Students Longitudinal Study (BPS: 04/06/09) and the Beginning Postsecondary Students Longitudinal Study (BPS: 04/06/09) sponsored by the National Center for Educational Statistics (NCES). The BPS: 04/09 is a dataset built from a longitudinal study that tracks a nationally represented sample of students who began their postsecondary education for the first time during the academic year 2003-2004. The BPS is appropriate because it includes information that are longitudinal in structure, on U.S. undergraduate students, and provides data on demographic characteristics of students, school and work experience, persistence, transfer, and degree attainment that will enable to address the research questions in the proposed study.

The B&B:08 is a follow-up to the National Postsecondary Student Aid Study (NPSAS), which focuses on “students completing requirements for their baccalaureate degrees during the NPSAS academic year (Cataldi, Green, Henke, Lew, Woo, Shepherd, & Siegel, 2011). The B&B:08 provides data on key postsecondary issues such as access, enrollment, curricula, attainment,

educational experience, and social impact of education. The B&B:08 contains information about student participation in study abroad. The research used sample weights, as suggested by Thomas and Heck (2001).

Variables

The dependent variables in this study were (a) persistence, (b) degree attainment, and (c) time-to-degree. Persistence is a continuous variable if continuous enrollment is considered. On the other hand, persistence is a dichotomous variable that equals one if student enrollment is progressive and zero if otherwise (continuous enrollment = 1, other = 0). The proposed study used persistence as a dichotomous variable. A dummy variable represented degree attainment, indicating whether a student attained a bachelor degree or not at the last institution attended (attained a bachelor degree = 1, other = 0). Time-to-degree was used as a continuous variable, which measures the length of time students took to complete a bachelor degree after their postsecondary enrollment. The analysis accounted for delayed postsecondary entry, major, multiple institutions, and type of institution (public versus private), which were found associated to time-to-degree (Horn, Berger, & Carroll, 2005).

The independent variables in this study were participation in study abroad, student characteristics, social integration, and academic integration. Participation in study abroad is a dichotomous variable that equals one if student participated in study abroad and zero if otherwise. Student characteristics include variables such as race, family income (income percentile), parent/sibling education level (did not complete high school = 1, other = 0), major (Humanities = 1, other = 0; Social sciences = 1, other = 0), and high school educational tract (high school = 1, other = 0), which are correlated to persistence and degree attainment (Tierney,

1992). Many scholars have also validated the construct of academic integration (Sandler, 2000; Titus, 2004), and social integration as a predictor of student persistence (Braxton, Milem, & Sullivan, 2000; Titus, 2004). The academic integration index and the social integration index were used to run the statistical analyses. Other intervening variables such as academic preparation and college performance known to impact time-to-degree, graduation and retention rates were also considered. Adelman (2006) Cabrera, Burkum and LaNasa (2005), Pascarella and Terenzini (2005) argue that academic preparation is a strong predictor of persistence and degree completion. High school GPA and SAT/ACT composite scores were used to measure academic preparation. The account for academic preparation and the other aforementioned independent variables (student characteristics, social integration, and academic integration) helped isolate the specific effects of study abroad from other factors. Table 1 describes the dependent and independent variables, and their corresponding data set.

Table 1
Dependent and independent variables and the corresponding data sets

Dependent Variables			
Variable	Label	Description	Data Set
Persistence	CONTENR	Continuously enrolled at undergraduate institution	B&B
Degree attainment	MTBACH	Transcript: Attained bachelor's indicator	BPS
Time-to-degree	PSE_BA	Time to 2007-08 bachelor's degree	B&B
Independent Variables			
Sex	GENDER	SEX	B&B

Race	RACE	Race/Ethnicity	B&B
Major	MAJORS4Y	Bachelor's degree major 2007-08	B&B
Income percentile (SES)	PCTALL	Income percentile (dependents' parents and independents) in 2006	B&B
Parental education level	PAREduc	Highest education level attained by either parent as of 2007-08	B&B
Student's goal	HIGHLVEX	Highest level of education ever expected as of 2007-08	B&B
High school graduation track	HSDEG	High school degree type	B&B
Delay postsecondary enrollment	HS_PSE	Months between high school graduation and postsecondary enrollment	B&B
Number of institutions attended	NUMINST	Number of institutions attended in 2007-08	B&B
Type of institution	CONTROL	Bachelor's degree institution control in 2007-08	B&B
Enrollment status	MTSTATUS	Transcript: Enrollment intensity during term	BPS
High school GPA	HSGPA	Grade point average in high school	B&B
SAT scores	TESATDER	SAT I score	B&B
Academic integration index	ACAINX	Transcripts GPA in 4 year of attendance, multiplied by 100	BPS
Social integration index	SOCINX (n8comsrv + n8wstdy)	(Community service or volunteer in last 12 months + Work study: Community service project)/2*100	B&B

Participation in study abroad	NUSABEVR	Ever study abroad as of 2007-08	B&B
Earned credits abroad	QESABERN	Earned credits abroad	B&B

Sample Characteristics

The sample in this study included 15,050 U.S. undergraduate students, including 6,230 males (41%) and 8,820 females (59%). About 13% (1,960 students) of the participants have studied abroad, and 87% (13,090 students) did not. The mean ages of the participants were 18 at the start of their postsecondary education in 2003 ($M=18.70$, $SD=3.01$) and 26 in 2009 ($M=26.49$, $SD=6.56$). Participants were White (71%), Black (9%), Hispanics (9%), Asians (7%), two or more races (3%) and other such as American Indian (0.5%), Native Hawaiian (.3%), and other (0.2%). The participants majored in Bio/Physical Sciences/Math/Agriculture (20%), Applied Sciences (14%), Business (13%), Social Sciences (12%), Humanities (9%), Education (9%), Engineering (8%), Health Care Fields (7%), Computer and Information Sciences (5%), and General Studies (3%). Table 2 delineates the descriptive statistics for the control variables included in the analysis.

Table 2
Descriptive Statistics for Variables Included in the Analysis (N=15050)

Variable	<i>M</i>	<i>SD</i>	Min	Max
Age in 2009	26.49	6.56	19	74
Gender	1.59	.49	1	2
Race/ethnicity	1.69	1.42	1	8
Bachelor's Degree Major	5.82	2.85	1	10
Income Percentile	47.84	29.46	0	1000

Parental Education Level	5.51	2.66	0	10
Student's Goal	5.99	1.29	4	8
HS Graduation Track	1.12	.59	1	6
Delayed Postsecondary Entry	10.34	31.60	-3	524
Number of Institutions Attended	1.85	.95	1	8
Type of Institution	1.47	.59	1	3
Enrollment Status	.93	.71	-9	2
HS GPA	5.08	3.30	-3	7
SAT Score	896.35	446.79	-3	1600
Academic Integration	300.58	87.16	-9	1
Social Integration	-192.54	267.97	-9	1
Participated in Study Abroad	.13	.34	0	1
Credits Earned Abroad	.48	3.11	-9	81
Persistence	1.07	.407	-9	2
Time-to-degree	76.42	65.84	21	663
Degree Attainment	.22	.41	-9	1

Note: M = Mean SD = Standard Deviation

Data Analysis

To address research question 1, “After adjusting for student characteristics, academic preparation, college performance, social integration, and academic integration, does participation in study abroad programs predict the persistence of U.S. undergraduate students?”, a sequential or hierarchical regression analysis was used to measure the association between participation in study abroad program and persistence. Hierarchical regression enables to examine how much

study abroad adds to the prediction of undergraduate student persistence, which can be accounted for by other variables as well (Cohen, 2001). The first sequence of the regression analysis adjusted for student characteristics. According to the National Survey of Student Engagement (NSSE, 2007), study abroad students have more educated parents, better grades, are more likely to be enrolled full-time, and more likely to major in the arts and humanities and the social sciences. The second sequence added the academic preparation, college performance, academic integration index and social integration index, which are accepted in the literature as associated with persistence, degree completion, and time-to-degree (Adelman, 2006; Cabrera, Burkum, & LaNasa, 2005; Pascarella & Terenzini, 2005; Titus, 2004). The third sequence added variable for participation in study abroad. The fourth and final sequence added variable for earned credits abroad. Change in R^2 helped determine the effect of participation in study abroad program on persistence. Unstandardized regression coefficients were examined with respect to their role in the prediction equation. Standardized regression coefficients were used to assess the importance of each independent variable, especially participation in study abroad and study abroad credits earned. To avoid the effect of shared variance of correlated independent variables on B weight of other variables, structure coefficients were computed for all the independent variables, except study abroad and earned credits abroad. Squared structure coefficients of the independent variables were used to determine the percentage of variance accounted for by each independent variable in predicting student persistence. The hierarchical regression analysis used for persistence was repeated for degree attainment and time-to-degree.

Findings

Assumptions Analysis:

The relevant assumptions were tested before conducting the hierarchical multiple regression analysis. The sample size comes from a nationally represented data sets (BPS and B&), thus was adequate for the analysis (Tabachnick & Fidell, 2001). Multicollinearity diagnostics were assessed and were within an acceptable range (i.e., .78 to .91). Therefore, the assumption of multicollinearity was met (Coakes, 2005). The Mahalanobis distance scores did not indicate any multivariate outliers. The residual and scatter plots suggested that the assumptions of normality, linearity and homoscedasticity were all satisfied (Pallant, 2001).

Research Question 1:

1. Are there significant differences between persistence, degree attainment, and time-to-degree of students who participated in study abroad or earned credits abroad and those who did not?

Pairwise comparisons revealed that the persistence rate was 86% for students who studied abroad and 85% for those who did not. Similarly, the persistence rate was 71% for students who earned credits abroad and 72% for those who did not. The mean of persistence for students who participated in study abroad ($M=.09$, $SD=1.89$) was not significantly different from that of students who did not participate ($M=.11$, $SD=1.85$). However, there were no significant differences in the persistence of students who earned credits abroad ($M=.06$, $SD=.199$) and students who did not ($M=.11$, $SD=1.85$), $F(1, 27990) = 5.23$, $p < .05$. Among the students who studied abroad, 37% attained their bachelor degree, compared to 36% for those who did not.

However, 55% of students who earned credits abroad attained their bachelor degree, compared to 37% for those who did not. Table 3 includes the frequency and percentage for persistence, degree attainment, and time-to-degree in relation to participation in study abroad and earned credits abroad.

Table 3

Frequency and percentage for persistence, degree attainment, and time-to-degree in relation to participation in study abroad and earned credits abroad

	Study abroad F(%)	Did not study abroad F(%)	Earned credits abroad F(%)	Did not earn credits abroad F(%)
Persistence				
<i>Yes</i>	1400 (72%)	9350 (71%)	9180 (71%)	10900 (72%)
<i>No</i>	540 (28%)	3740 (29%)	3760 (29%)	4150 (28%)
<i>Total</i>	1940 (100%)	13090 (100%)	12940(100%)	15050 (100%)
Degree Attainment				
<i>Yes</i>	90 (37%)	660 (36%)	8200 (55%)	770 (37%)
<i>No</i>	170 (63%)	1190 (64%)	6660 (45%)	1330 (63%)
<i>Total</i>	260 (100%)	1850 (100%)	14860(100%)	2100 (100%)

Note. F = Frequency

There were no significant differences between the means of degree attainment for students who studied abroad ($M=.05$, $SD=.21$) and those who did not ($M=.06$, $SD=.24$). However, the mean of degree attainment was significantly higher for students who earned credits abroad ($M=.24$, $SD=.24$) and those who did not ($M=.06$, $SD=.42$), $F(1, 26920) = 491$, $p=.000$. The mean of

time-to-degree for the national sample that involved this study was 76.42 (SD=65.84). Time-to-degree represents the number of months it takes for students to complete their bachelor degree. The average number of months for students who studied abroad (M=56.46, SD=37.58) was significantly shorter than that of students who did not study abroad (M=79.40, SD=68.58), $F(1, 15050) = 209.64, p=.000$. The same significant difference was observed for students who earned credits abroad (M=67.67, SD=56.75) and students who did not (M=77, SD=66.37), $F(1, 15050) = 17.84, p=.000$. Table 4 presents pairwise comparisons, and mean and standard deviation for persistence, degree attainment, and time-to-degree in relation to participation in study abroad and earned credits abroad.

Table 4

Pairwise comparisons, and Mean and Standard Deviation for persistence, degree attainment, and time-to-degree in relation to participation in study abroad and earned credits abroad

	Study abroad <i>M (SD)</i>	Did not study abroad <i>M(SD)</i>	Earned credits abroad <i>M(SD)</i>	Did not earned credits abroad <i>M(SD)</i>
Persistence	.11 (1.85)	.09 (1.89)	.06 (1.99)*	.11 (1.85)*
Degree Attainment	.05 (.21)	.06 (.24)	.24 (.42)*	.06 (.24)*
Time-to-degree	56.46 (37.58)*	79.40 (68.58)*	67.67 (56.75)*	77.00 (66.37)*

Note. M=Mean SD=Standard Deviation * $p<.05$

Research Question 2:

Controlling for relevant student characteristics, social integration, and academic integration, is participation in study abroad programs associated with the persistence of U.S. undergraduate students? To test the hypothesis that participation in study abroad programs associated with the persistence of U.S. undergraduate students, a hierarchical multiple regression

analysis was conducted. The overall model was significant, $R^2 = .231$, $F(10, 230) = 3.95$, $p < .01$.

The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and squared structure coefficients for the full model are reported in Table 5.

Table 5

Unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), t-values, p-values, R square (R^2), Adjusted R Square (ΔR^2) for Variables as Predictor of Persistence of U.S. Undergraduate Students

Variables	B	β	t-value	R^2	ΔR^2
Model 1				.231**	.252**
Intercept	2.930		9.367		
Age: < 25 years	.098	.047	.656		
Gender: Male	.109	.053	.790		
Race: White	-.115	-.052	-.738		
Major: Humanities	.007	.112	.030		
Major: Social sciences	-.171	-.059	-.871**		
Income percentile	.001	.018	.262		
Parental education level	.322	.067	.962		
Student goal: Bachelor degree	-.313	-.139	-2.029*		
High school grad track: HS diploma	.059	.015	.215		
Delay postsecondary enrollment	-.001	-.039	-.570		
Attended multiple institutions	-.285	-.138	-2.055*		
Type of institution: Private for-profit	-.025	-.006	-.092		
Enrollment status: Full-time	.062	.030	.447		
Model 2				.301**	.253**
Intercept	1.296				

Academic preparation	.016	.115	1.569*		
Academic integration index	.006	.509	8.728**		
Social integration index	.000	.079	1.353		
Model 3				.303**	.255**
Intercept	1.27				
Studied Abroad	.084	.029	.472		
Model 4				.403**	.269**
Intercept	1.48				
Earned credits abroad	.155	.139	.656**		

Note. B, β , and t-value reported are those from the step at which the variable was entered into the equation. * $p < .05$. ** $p < .001$.

In the first step, twelve variables were included: income percentile, delayed postsecondary enrollment, gender (male = 1, female = 0), and dummy coding for age (less than 24 years = 1, other = 0), race (White = 1, minority = 0), major (Humanities = 1, other = 0; Social sciences = 1, other = 0), parental education (did not complete high school = 1, other = 0), student goal (professional degree or doctorate = 1, other = 0), high school graduation track (high school = 1, other = 0), attendance of multiple institutions (attended one institution = 1, other = 0), type of institution (private for-profit = 1, other = 0), and enrollment status (full time = 1, other = 0). These variables accounted for a significant amount of variance in persistence of undergraduate students, $R^2 = .231$, $F(20, 2220) = 3.95$, $p < .01$. Only student goal, $b = -.139$, $t(230) = 2.029$, $p < .05$, major in social sciences, $b = -.159$, $t(230) = -871$, $p < .01$, and attendance of multiple institutions, $b = -.138$, $t(230) = 2.055$, $p < .05$ were significant predictors of persistence in the first model.

Academic preparation composite scores (High school GPA + ACT/SAT Scores/2*100), academic integration index (First year cumulative college GPA for 2003-2004 *100), and social

integration index (community service or volunteer in last 12 months + work study service project/2 *100) were entered into the regression equation. These variables explained an additional 25% of variation in persistence of undergraduate students and this change was significant, $\Delta F(10, 220) = 38.83, p < .000$. Student goal, $b = -.140, t(220) = 2.349, p < .05$, attendance of multiple institutions, $b = -.143, t(220) = 2.457, p < .01$, academic preparation, $b = .115, t(220) = 1.569, p < .05$, and academic integration index, $b = .509, t(220) = 8.728, p < .01$ were the only significant predictors of persistence in the second model.

In the third step, study abroad (participated in study abroad = 1, other = 0) was entered in the regression analysis. The model was significant, but did not add to the variance of persistence, $\Delta R^2 = .255, \Delta F(10, 220) = 4.107, p < .001$. In the fourth and final step of the regression analysis, earned credits abroad (earned credits abroad = 1, other = 0) scores was entered, and accounted for a significant proportion of the variance in persistence of undergraduate students, $\Delta R^2 = .269, \Delta F(10, 220) = 5.557, p < .001$. In the fourth and last model, only student goal, $b = -.145, t(220) = 2.411, p < .01$, attendance of multiple institutions, $b = -.148, t(220) = 2.519, p < .01$ and academic integration index, $b = .513, t(220) = 8.728, p < .01$, and earned credits abroad, $b = .139, t(220) = 1.656, p < .01$ were significant predictors of persistence of undergraduate students in the United States.

Research Question 3:

Controlling for relevant student characteristics, social integration, and academic integration, is participation in study abroad programs associated with the degree attainment of U.S. undergraduate students? To test the hypothesis that participation in study abroad programs associated with the degree attainment of U.S. undergraduate students, a hierarchical multiple

regression analysis was conducted. The overall model was significant, $R^2 = .161$, $F(20, 640) = 3.19$, $p < .01$. The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and squared structure coefficients for the full model are reported in Table 6.

Table 6

Unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), t-values, p-values, R square (R^2), Adjusted R Square (ΔR^2) for Variables as Predictor of degree attainment of U.S. Undergraduate Students.

Variables	B	β	t-value	R^2	ΔR^2
Model 1				.161**	.142**
Intercept	.400		4.235		
Age: < 25 years	.103	.100	2.486**		
Gender: Male	-.030	-.030	-.754		
Race: White	.001	.001	.023		
Major: Humanities	.065	.037	.934		
Major: Social sciences	-.008	-.006	-.142		
Income percentile	-.001	-.078	-1.956**		
Parental education level	.012	.235	.318*		
Student goal: Bachelor degree	.028	.026	.651		
High school grad track: HS diploma	.129	.060	1.516		
Delay postsecondary enrollment	.001	.039	.991		
Attended multiple institutions	-.053	-.052	-1.340		
Type of institution: Private for-profit	-.031	-.013	-.349		
Enrollment status: Full-time	.181	.178	4.629**		
Model 2				.272**	.153**

Intercept	-.023				
Academic preparation	.706	.041	.678*		
Academic integration index	.002	.334	9.234**		
Social integration index	5.089E-5	.027	.748*		
Model 3				.272**	.156**
Intercept	-.026				
Studied Abroad	-.063	-.044	-1.162		
Model 4				.288**	.176**
Intercept	.066				
Earned credits abroad	.002	.111	.125*		

Note. Betas reported are those from the step at which the variable was entered into the equation.* $p < .05$.
 *** $p < .001$.

In the first step, twelve variables were included: income percentile, delayed postsecondary enrollment, gender, and dummy coding for age, race, major, parental education, student goal, high school graduation track, attendance of multiple institutions, type of institution, and enrollment status. These variables accounted for a significant amount of variance in persistence of undergraduate students, $R^2 = .161$, $F(20, 640) = 3.19$, $p = .000$. Age, $b = .100$, $t(640) = 2.486$, $p = .01$, income percentile, $b = -.078$, $t(640) = 1.956$, $p = .05$, parental education level, $b = .235$, $t(640) = .318$, $p < .05$, and enrollment status, $b = .178$, $t(640) = 4.629$, $p = .000$ were significant predictors of persistence in the first model.

Academic preparation scores, academic integration index, and social integration index were entered into the regression equation. These variables significantly added to the amount of variance in degree attainment of undergraduate students in the U.S., $\Delta R^2 = .153$, $\Delta F(2, 640) = 42.82$, $p = .000$. Age, $b = .140$, $t(640) = 2.73$, $p < .01$, income percentile, $b = -.078$, $t(640) = 2.08$, $p < .05$, enrollment status, $b = .166$, $t(638) = 4.56$, $p < .01$, academic preparation, $b = .041$,

$t(640)=.678$, $p<.05$, academic integration index, $b=.334$, $t(640)=9.23$, $p<.01$, and social integration index, $b=.027$, $t(640)=.748$, $p<.05$ contributed significantly to the explanation of degree attainment of undergraduate students in the U.S. in the second model.

In the third step, study abroad (participated in study abroad = 1, other = 0) was entered in the regression analysis. The model was significant, but did not add to the variance of persistence, $\Delta R^2 = .156$, $\Delta F(2, 640) = 5.255$, $p < .001$. In the fourth and final step of the regression analysis, earned credits abroad (earned credits abroad = 1, other = 0) scores was entered, which accounted for a significant proportion of the variance in degree attainment of undergraduate students, $\Delta R^2 = .176$, $\Delta F(2, 640) = 7.341$, $p = .001$. In the fourth and last model, only age, $b=.110$, $t(640)=2.86$, $p<.01$, income percentile, $b=-.072$, $t(640)=1.89$, $p<.05$, enrollment status, $b=.163$, $t(640)=4.49$, $p<.01$, academic integration index, $b=.336$, $t(640)=9.26$, $p<.01$, and earned credits abroad, $b=.111$, $t(640)=.125$, $p<.05$ accounted for a significant proportion of the variance in degree attainment of undergraduate students in the United States.

Research Question 4:

Controlling for relevant student characteristics, social integration, and academic integration, is participation in study abroad programs associated with time-to-degree for U.S. undergraduate students? To test the hypothesis that participation in study abroad programs associated with the time-to-degree of U.S. undergraduate students, a hierarchical multiple regression analysis was conducted. The overall model revealed a significant association between participation in study abroad and time-to-degree of undergraduate students in the U.S., $R^2 = .351$, $F(13, 640) = 26.58$, $p < .01$. The unstandardized regression coefficients (B) and intercept, the

standardized regression coefficients (β), and squared structure coefficients for the full model are reported in Table 7.

Table 7

Unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), t-values, p-values, R square (R^2), Adjusted R Square (ΔR^2) for Variables as Predictor of time-to-degree of U.S. Undergraduate Students

Variables	B	β	t-value	R^2	ΔR^2
Model 1				.351**	.337**
Intercept	97.172		10.403		
Age: < 25 years	-61.343	-.504	-14.994**		
Gender: Male	1.322	.011	.338		
Race: White	-13.950	-.106	-3.131*		
Major: Humanities	-8.810	-.042	-1.279*		
Major: Social sciences	-3.325	-.019	-.580*		
Income percentile	.408	.205	6.227*		
Parental education level	39.413	.134	4.020**		
Student goal: Bachelor degree	-.667	-.005	-.156		
High school grad track: HS diploma	4.522	.018	.539		
Delay postsecondary enrollment	-.038	-.023	-.699		
Attended multiple institutions	-1.075	-.009	-.277		
Type of institution: Private for-profit	-6.133	-.022	-.691		
Enrollment status: Full-time	-.212	.223	2.34*		
Model 2				.352**	.337**

Intercept	90.697				
Academic preparation	.051	.052	1.156*		
Academic integration index	.022	.040	1.251*		
Social integration index	-.002	-.009	-.278		
Model 3				.353**	.337**
Intercept	79.293				
Studied Abroad	-4.166	-.024	-.735*		
Model 4				.453**	.438**
Intercept	90.293				
Earned credits abroad	5.666	.025	.767*		

Note. Betas reported are those from the step at which the variable was entered into the equation.

* $p < .05$. *** $p < .001$.

In the first step, twelve variables were included: income percentile, delayed postsecondary enrollment, gender, and dummy coding for age, race, major, parental education, student goal, high school graduation track, attendance of multiple institutions, type of institution, and enrollment status. These variables accounted for a significant amount of variance in persistence of undergraduate students, $R^2 = .351$, $F(13, 640) = 26.58$, $p = .000$. Age, $b = -.504$, $t(640) = -14.99$, $p = .01$, race, $b = -.106$, $t(640) = -3.13$, $p = .01$, major in Humanities, $b = -.042$, $t(640) = -1.279$, major in social sciences, $b = -.019$, $t(640) = -.580$, income percentile, $b = .205$, $t(640) = 6.22$, $p < .01$, parental education level, $b = .134$, $t(640) = 4.02$, $p < .01$, and full-time enrollment status, $b = .223$, $t(640) = 2.34$, $p < .05$ were significant predictors of time-to-degree in the first model.

Academic preparation scores, academic integration index, and social integration index were entered into the regression equation. The change in variance accounted for (ΔR^2) was equal

to .33, which was statistically significant increase in variance accounted for over the step one model, $F(2, 640) = 23.82, p < .01$. Age, $b = -.503, t(640) = -14.99, p = .01$, race, $b = -.106, t(640) = -3.13, p < .01$, income percentile, $b = .205, t(640) = 6.22, p < .01$, parental education level, $b = .132, t(640) = 3.96, p < .01$, academic preparation, $b = .052, t(640) = 1.156, p < .05$, and academic integration, $b = .040, t(640) = 1.251, p < .05$ were significant predictors of time-to-degree in the second model.

In the third step, study abroad (participated in study abroad = 1, other = 0) was entered in the regression analysis. The model was significant, but did not add to the variance of persistence, $\Delta R^2 = .337, \Delta F(2, 640) = 15.255, p < .001$. In the fourth and final step of the regression analysis, earned credits abroad (earned credits abroad = 1, other = 0) scores was entered, which accounted for a significant proportion of the variance in time-to-degree of undergraduate students, $\Delta R^2 = .438, \Delta F(2, 640) = 20.55, p = .001$. In the fourth and last model, only age, $b = -.499, t(640) = 14.70, p < .01$, income percentile, $b = -.105, t(640) = -3.11, p < .05$, income percentile, $b = .207, t(640) = 6.18, p < .01$, parental education level, $b = .132, t(640) = 3.93, p < .01$, study abroad, $b = -.024, t(640) = -.735, p < .05$, and earned credits abroad, $b = .025, t(640) = .767, p < .05$ accounted for a significant proportion of the variance in time-to-degree of U.S. undergraduate students.

Conclusion and Recommendations

The findings in this study confirmed that study abroad is significantly associated with persistence, degree attainment, and time-to-degree of undergraduate students in the United States. More specifically, the findings indicated that participation in study abroad program did not negatively affect whether a student persisted or obtained a bachelor degree. However, the mean of degree attainment was significantly higher for students who earned credits abroad

compared to those who did not. Furthermore, participation in study abroad or earning credits abroad significantly shortened the time it takes for a student to obtain a bachelor degree. Previous inquiries found that participation in study abroad is associated with student's persistence. Data published by the University of Minnesota-Twin cities (Office of Institutional Research, 2009) and the University of California San Diego (Student Research Information, 2009) showed that participants in study abroad programs are more likely to remain enrolled in their institution. The data mentioned were not analyzed to confirm any statistically significant differences between participants and non-participants in study abroad. However, such data suggested a trend corroborated by Young (2003) at the University of North Texas, and Hamir (2011) at the University of Nebraska-Lincoln. While the persistence rate was slightly higher for students who participated in study abroad or earned credits abroad, our analysis suggested that the differences were not significant.

Posey (2003) conducted a study, using data from the Florida State Systems, and found statistically significant association between participation in study abroad and degree completion. Furthermore, a study at the University of Wisconsin Madison (Milner, 2006) found that studying abroad had no significant effect on delay graduation. To the contrary, a multi-year research on participation in study abroad at the University System of Georgia found that study abroad significantly contributed to shorten the time-to-degree of students (Sutton & Rubin, 2010). Our analysis confirmed the findings from Sutton and Rubin (2010). Given the nationally representativeness of the sample used in this study, the findings confirm that national data sets reflect the mediating effect of participation in study abroad on persistence, degree completion, and shorter time-to-degree, thus dispels the concerns that studying abroad contributes to delay graduation. In other words, the study revealed that studying abroad contributes to academic

performance measures, in addition to student personal growth, career development, cross-cultural competence, and global leadership skills that students acquire while staying abroad for a short or long-term period.

Over the past decades, there has been an increase in student access to higher education (NCES, 2011). However, the academic success of such students has not increased at the same pace. Since 1972, there is little change in graduation rates among U.S. undergraduate students (Adelman, 2006; Horn & Nevill, 2006). Consequently, U.S. postsecondary institutions seek to increase their rate of degree completion, because access without success is a failure for both the society and the student (Gladieux & Perna, 2005). Therefore, understanding additional factors that can increase the probability of persistence, degree completion, and shorter time-to-degree is a key to respond to the ability of postsecondary institutions to meet the educational needs of the community at large. The findings in this study provide evidence of association among persistence, degree attainment, and time-to-degree patterns of student participation in study abroad programs, and help validate the role of study abroad in shaping student postsecondary experience.

This study has serious implications for administrators of postsecondary institutions and policy makers. This research informs post-secondary institution policy-makers and administrators on the specific effect and the directionality of the effects of participation in study abroad on student persistence, degree attainment, and time-to-degree. Policy makers can rely on the findings from this study to work on policies that are more supportive of study abroad programs in colleges and universities. This study can partly serve as a basis to develop focused and targeted policies on study abroad programs to support, recruitment, and retention. Targeted participation in study abroad as an asset for persistence, degree attainment, and shorter time-to-

degree can help maximize benefits to both institutions and students. Leaders of higher education institutions may include participation in study abroad as not just an activity, but as part of their overall strategies for student persistence and success.

Finally, this study used data available as part of a long term effort by the National Center for Education Statistics to provide research databases that allow for examination of student success. This finding is relevant not only because it is based on data from national sample data sets (BPS and B&B), but also because it confirmed findings from smaller scale studies that found significant association between study abroad and persistence, degree attainment, and time-to-degree. This study supplements existing research on persistence, degree attainment, and time-to-degree, and provides further evidence of relationships between participation in study abroad and the probability to finish post-secondary degrees. However, the interpretation of the findings is limited to undergraduate students, because the study did not concern post-baccalaureate education.

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