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Are International Undergraduates Struggling Academically?

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Abstract

Are international undergraduates struggling academically, and are their struggles due to weaknesses in English as a second language? The present study showed that 1) at most 10% of these students in three cohorts (ranging in size from N=322 to N=695) at an American west coast public university struggled (quarterly grade point averages below C) in their university classes; 2) up to 63% of them struggled with English (they were required to take a local community college's English Composition and/or English as a Second Language classes, and up to 42% earned course grades of D or F in those classes); and 3) predictors shown to be statistically significant by hierarchical linear modeling each accounted for less than 5% of the total variance ("small" effect sizes). These findings suggest that only a minority of this university's international undergraduates struggle in their university classes even though a majority of them struggle with English.

Keywords: academic achievement, grade point average, international undergraduates, hierarchical linear modeling

"Our international undergraduates are struggling academically" is a generalization that some administrators, advisors, and faculty have asserted recently at a west coast public university in the United States. Administrators who have made this generalization additionally have stated that international undergraduates in general are eligible for academic probation, disqualification, or dismissal. Advisors who have made this generalization additionally have indicated that their appointments with international undergraduates in general are about academic struggles. Faculty who have made this generalization claim that international undergraduates' English writing skills generally are deficient.

This generalization drew attention and it has been repeated even though it was anecdotal (the administrators, advisors, and faculty have not collected, statistically analyzed, or reported relevant data to support their generalization, to our knowledge). Repeating this generalization increases the likelihood of decisions that will be costly and/or ineffective due to the absence of guiding data about the allegedly struggling undergraduates' numbers and characteristics such as applicant type (first-time freshman vs. transfer), class level, country of citizenship, gender, self-reported immigration (I-94) status, or major department. For example, decisions could be made to develop and implement specialized programs for all international undergraduates when, in reality, only a small percentage needs or would benefit from such programs.

In the absence of guiding data, one possible explanation for the repetition of this generalization is that an increase in the number of international undergraduates enrolled at the west coast public university has resulted in a proportional increase in the number of ones struggling academically rather than that academic struggles are a general characteristic of the university's international undergraduates. For example, the number of enrolled international undergraduates who struggle academically could change from five out of 100 during one year to 10 out of 200 during the next and the proportion of struggling international undergraduates would be stable rather than increasing. Such a scenario could give an erroneous impression that the university's international students in general are struggling academically when, in fact, only a consistently small proportion of international undergraduates struggles from one year to the next.

Many American universities have experienced increased enrollment of international undergraduates, as shown by the Institute for International Education's (IIE) recent annual Open Doors snapshot survey (IIE, 2012a). This survey's results showed that the total number of international students enrolled in fall 2012 was higher than in fall 2011 at 61% (340) of participating American universities. Moreover, academic year 2011–12 (AY1112) was the sixth consecutive year in which IIE's Open Doors report showed an increase in the total number of international students in U.S. higher education—31% more international students studied at U.S. colleges and universities in AY1112 than a decade ago. New internationals enrolling in 2011 increased 7% from 2010, and this increase was largely attributable to Chinese undergraduates studying in the U.S. whose numbers were up 31% (IIE, 2012b).

An increase in the number of international undergraduates also has occurred at the aforementioned west coast public university (cf. IIE, 2012a,b). This university is one of the Open Doors snapshot survey's 340 participants and its data in the snapshot survey show that it experienced an increase in international undergraduates in fall 2012 compared to the previous fall (IIE, 2012a). The number of new first-time international undergraduates (excluding transfers) at this university was 651 in fall 2012 which represents a 91.5% increase from the corresponding number for fall 2011—340. It stands to reason that the number of international undergraduates who seek advising about academic issues in AY1213 could be greater than in AY1112 simply because of the 91.5% increase rather than because these students, as a whole, are struggling academically.

To address administrators', advisors', and faculty's concern that the west coast public university's international undergraduates are struggling academically, the present study was conducted with the primary goal of determining what percentage of incoming international undergraduates do struggle academically as reflected by their grade point averages (GPA). Another goal was to evaluate how this percentage has changed relative to the number of these students admitted to this university; did it increase, stay the same, or decrease between years? To address administrators', advisors', and faculty's concern that international undergraduates' academic struggles are due to English weaknesses, the present study also evaluated the extent to which these students at the west coast public university showed evidence of struggling with English. Lastly, the present study investigated the potential role of other variables (such as applicant type, class level, country of citizenship, gender, self-reported immigration (I-94) status, or major department) in these students' academic struggles.

Literature Review

Our internet-based literature search found very few published articles on international undergraduates' academic struggles and/or GPAs while attending American universities (described below). Consequently, this literature review focuses primarily on recent developments that provide context for the present study's goal to determine what percentage of incoming international undergraduates do struggle academically, and whether the struggles could be attributed to English language weaknesses or other characteristics of these students.

State government funding for American public universities has decreased since 2008. It declined nationwide by 7.5% in fiscal year 2010–11 and by an additional 0.4% in the current fiscal year (Kelderman, 2013). Total funding for public universities was 10.8% lower this year than before the 2008 economic downturn according to data released by Illinois State University's Grapevine Project (2013).

To compensate for shrinking state government support, American public universities have increased their enrollment of international undergraduates as evidenced by IIE's (2012b) Open Doors data. A likely explanation for this increase is that international undergraduates pay non-resident tuition fees that are higher than the resident fees paid by in-state undergraduates. However, the financial benefit of admitting an increasing number of international undergraduates is offset by the financial cost of providing additional programs and services to meet these students' special needs regarding immigration regulations, career, academics, communication, culture, personal issues, and discriminatory treatment (Hanassab & Tidwell, 2002).

One approach that admissions offices could use to minimize costs associated with programs and services for international undergraduates' special needs would be to accurately predict each applicant's likelihood of academic success. Accordingly, research on international students historically has focused on identifying English proficiency-related indicators for evaluating applicants. Early studies measured the predictive power of international undergraduates' scores on the Test of English as a Foreign Language (TOEFL), and these studies produced inconsistent results (reviewed by Graham, 1987; Johnson, 1988; Stoyhoff, 1997)—some showed that TOEFL scores were positively correlated with international undergraduates' GPA at American universities while others showed no correlation. A more recent study on undergraduates from China, Taiwan, Kuwait, Saudi Arabia, and the United Arab Emirates at a large state university found that a passing TOEFL score was no better at predicting academic success than a passing grade in English as a Second Language (ESL) class (Chen & Sun, 2006).

Indicators unrelated to English proficiency also have been studied for their potential usefulness in predicting international applicants' future academic success. In particular, self-confidence and high school class rank (House, 2000), availability of a strong support person (Boyer & Sedlacek, 1988), self-efficacy, optimism, and academic expectations (Chemers, Hu & Garcia, 2001) were found to be significantly and positively related to international undergraduates' academic success in American universities. Previous studies have not evaluated the predictive power of international undergraduates' applicant type (first-time freshman vs. transfer), class level, country of citizenship, gender, self-reported immigration (I-94) status, or major department (cf. Hanassab & Tidwell, 2002; Nelson, Nelson & Malone, 2004; Ren & Hagedorn, 2012), to our knowledge.

Methods

Demographic and academic achievement data for three cohorts of the west coast public university's incoming (new freshman and transfer) international undergraduates were extracted from the university's student information system data tables. For the sake of consistency with U.S. Government regulations' definition of non-immigrant international students (U.S. Department of State, n.d.), the three cohorts of non-resident aliens excluded domestic undergraduates and additionally excluded amnesty-seekers, applicants for permanent residency, asylees, permanent residents, refugees, and undocumented individuals. These cohorts of international undergraduates began attending the university in fall 2009 (FA09), fall 2010 (FA10), and fall 2011 (FA11) respectively. The reasons for using these particular cohorts in the present study were 1) these fall quarters were the most recent ones for which grade point averages (GPAs) were available at the time

this study was conducted, and 2) the international undergraduates who entered in FA09 represented a “baseline” year preceding the ones who entered in FA10 for whom the Admissions Office piloted enhanced recruitment procedures (virtual outreach tools) targeting international applicants, and the ones who entered in FA11 were the first for whom these procedures were fully implemented. The Admissions Office’s enhanced recruitment procedures (attending virtual fairs, distributing recruitment materials electronically, collecting information from overseas high schools, and attending college fairs in the U.S. that provided opportunities for direct contact with foreign high school officials) were intended to increase the “yield” of international applicants accepting the offer of admission, and were in response to the university’s shortfall of state funding. Consequently, the university’s administrators had a strong need for and interest in academic achievement (GPA) data for these three cohorts of international undergraduates which the present study was designed to fulfill.

To extract longitudinal demographic and academic data plus SAT and TOEFL scores (described below) for the three cohorts of the west coast public university’s international undergraduates from the university’s student information system databases, structured query language (SQL) programs were written and executed. The SQL programs also extracted each international undergraduate’s unique campus ID and first and last names to ensure that every academic quarter’s and year’s data were correctly organized within appropriate records in data files for the statistical analyses described below. To protect confidentiality, prior to the statistical analyses, unique dummy IDs were assigned to each international undergraduate in the extraction files, then the files were duplicated and personally identifiable data (IDs; first and last names) were permanently deleted. This procedure was IRB approved.

The statistical procedures performed on these data files to determine what percentage of international undergraduates struggled academically and the degree to which their struggles were related to weaknesses in English language included descriptive and correlational analyses (using StatView software). Authentic 0.00 GPAs (e.g., all course grades of F in an academic quarter’s classes) were included, artifactual ones (e.g., all “Pass” in an academic quarter’s classes) were excluded. GPAs below 2.0 (C) are considered “struggling” and ones at or above 3.5 (between B+ and A-) are considered “excelling” at the west coast public university.

To evaluate the potential role of other variables (such as applicant type, class level, and major department) in the three cohorts of international undergraduates’ academic struggles, we also performed hierarchical linear modeling (HLM; using HLM 6 software; Raudenbush & Bryk, 2002) analyses and computed the effect sizes of all predictor variables. Each of our models was run with only one predictor at a time, and most of our predictor variables were dummy-coded. These included applicant type (first-time freshman vs. transfer), country of citizenship (China vs. all others; see explanation below), gender (male vs. female), self-reported immigration (I-94) status (F1 vs. all others), and major department (math vs. all others, economics vs. all others, engineering vs. all others, computer science vs. all others). We selected departments where weakness in English language might play more (or less) of a role in international students’ academic struggles. Class level (freshman, sophomore, junior, senior) was left as an ordinal predictor variable. The dependent variable in these analyses was quarterly GPAs.

The primary reason for using HLM to evaluate the potential role of the above variables in international undergraduates’ academic struggles rather than using other statistical tests (such as analysis of variance) which involve ordinary least squares estimation is that HLM provides better parameter estimates when data are hierarchically structured (Osborne, 2000; Raudenbush & Bryk, 2002). An additional reason is that HLM, in conjunction with maximum likelihood estimation, uniquely handles missing data, thereby precluding the need to exclude students who lack at least one academic quarter’s data (due to leave of absence, withdrawal, etc.), and precluding the need to use imputations (which can be controversial; Little & Rubin, 2002).

The HLM analyses also addressed one additional question—are permanent residents (PR) and/or undocumented (OT) undergraduates the students with academic struggles rather than internationals? To address this question, we included PR and OT undergraduates (but not domestics) in another set of record extractions from the university’s student information system similar to the three international cohorts’ records described above and included them in the HLM analyses.

Results

Descriptive Analyses

The total numbers of new international undergraduates—first-time freshmen (NFRS) and transfers (TRAN)—registering for classes at the west coast public university have increased over recent years as shown in Figure 1. The FA10 cohort is 36.4% larger than the FA09, the FA11 cohort is 56.4% larger than the FA10, and the FA12 cohort is 44.0% larger than the FA11 (the FA 12 cohort is included only in Figure 1 to demonstrate the trend; GPA data for this cohort were not yet available at the time of the present study).

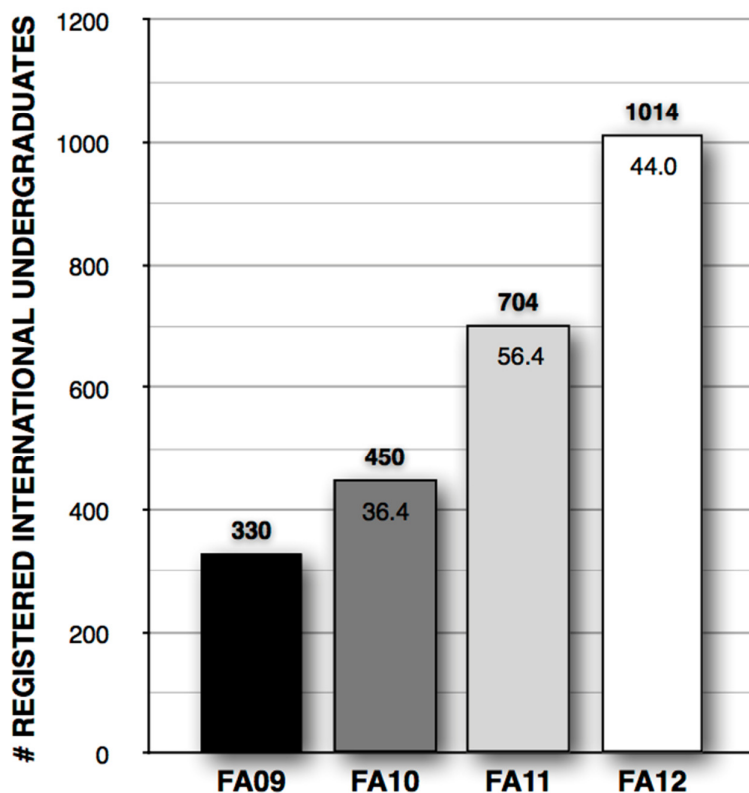


Figure 1. The number (above each bar) of and year-to-year percentage change (within the last three bars) in international undergraduates registered for classes at the west coast public university in the present study has increased consistently between fall 2009 (FA09) and fall 2012 (FA12). Abbreviations: FA10=fall 2010; FA11=fall 2011

Demographic data for the three cohorts are presented in Table 1. This study focused on comparing international undergraduates from China with counterparts from other countries (including but not limited to Hong Kong, India, South Korea, and Taiwan) because 1) China has become the predominant country of citizenship for international undergraduates attending the west coast public university in the

present study (as reflected by the dramatic increase in Chinese undergraduates between FA09 and FA11 compared with the corresponding increase in all others; Table 1), and 2) Chinese undergraduates anecdotally are perceived at this university as the ones most likely to have English weaknesses. International undergraduates majoring in the departments listed in Table 1 anecdotally are perceived on campus as the ones most likely to have English weaknesses (these majors allegedly are less sensitive to English weaknesses, hence international undergraduates with English weakness prefer them according to the anecdotes).

Table 1

Demographic Characteristics of the Three International Undergraduate Cohorts Admitted in Fall 2009 (FA09), Fall 2010 (FA10), or Fall 2011 (FA11)

Demographic		FA09	FA10	FA11	% increase from FA09 to FA11
Applicant type	new freshmen (NFRS)	69	155	337	388.4
	transfer students (TRAN)	253	286	358	41.5
	Total	322	441	695	115.8
Class level	freshman	62	147	323	421.0
	sophomore	15	10	18	20.0
	junior	243	283	350	44.0
	senior	2	1	4	100.0
	Total	322	441	695	115.8
Country	China	35	110	310	785.7
	all others ^a	287	331	385	34.1
	Total	322	441	695	115.8
Department	Computer Science and Engineering	11	17	44	300.0
	Economics	137	172	251	83.2
	Electrical and Computer Engineering	8	14	36	350.0
	Mathematics	4	15	47	1,075.0
	all others	162	223	317	95.7
	Total	322	441	695	115.8
Gender	female	157	214	303	93.0
	male	165	227	392	137.6
	Total	322	441	695	115.8

Note. ^aAll other countries include (but are not limited to) Hong Kong, India, South Korea, Taiwan, plus others for which fewer than three students attended the university.

Academic achievement data for the three cohorts are shown in Figures 2, 3, and 4. Figure 2 contains each of the three cohorts' mean GPAs for each of the three academic quarters (fall, winter, and spring) of the year in which they entered the west coast public university (AY0910 for the FA09 cohort, and so on). The international undergraduates in these cohorts, in general, earned a GPA between 2.8 and 3.1 (roughly between B- and B). Figure 3 contains the percentage of each of the three cohorts that earned GPAs below 2.0 (i.e., struggled academically) and Figure 4 contains the corresponding percentages that earned GPAs at or above 3.5 (i.e., excelled academically). The percentages show that only a tenth or fewer of international undergraduates in these cohorts struggled academically and a larger minority (between a quarter and a third) excelled academically.

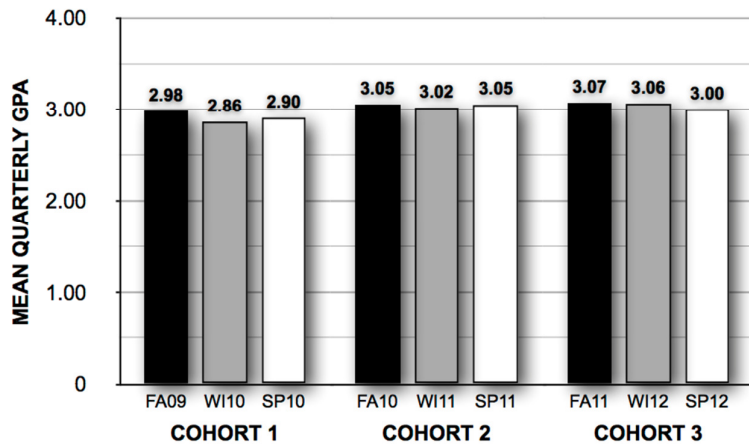


Figure 2. The mean quarterly GPA (above each bar) ranged from 2.86 (between B- and B) to 3.07 (just above B) for each of the three international undergraduate cohorts registered for classes at the west coast public university in the present study. These GPAs were higher than the value (below 2.0) considered to be “academically struggling” at this university.

Abbreviations:

FA09=fall2009; WI10=winter 2010; SP10=spring 2010; FA10=fall 2010; WI11=winter 2011; SP11=spring 2011; FA11=fall 2011; WI12=winter 2012; SP12=spring 2012.

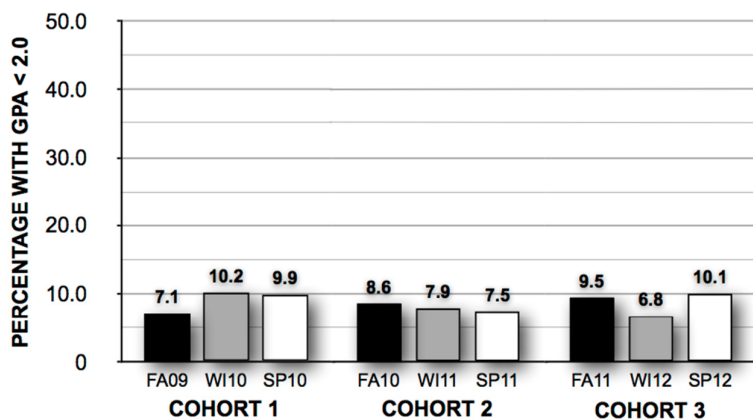


Figure 3. The percentage of each of the three international undergraduate cohorts in the present study that had a quarterly GPA below 2.0 (“struggled academically”) ranged from 6.8 to 10.2. These percentages are less than what would be expected if GPAs were distributed normally.

Abbreviations:

FA09=fall 2009; WI10=winter 2010; SP10=spring 2010; FA10=fall 2010; WI11=winter 2011; SP11=spring 2011; FA11=fall 2011; WI12=winter 2012; SP12=spring 2012.

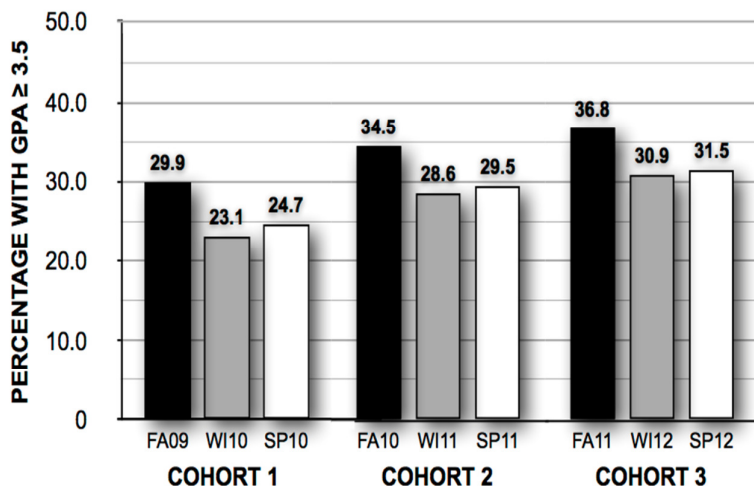


Figure 4. The percentage of each of the three international undergraduate cohorts in the present study that had a quarterly GPA at or above 3.5 (“excelled academically”) ranged from 23.1 to 36.8. These percentages exceeded the corresponding percentages that struggled academically.

Abbreviations:

FA09=fall 2009; WI10=winter 2010; SP10=spring 2010; FA10=fall 2010; WI11=winter 2011; SP11=spring 2011; FA11=fall 2011; WI12=winter 2012; SP12=spring 2012.

While the number of the west coast public university's international undergraduates who earned GPAs below 2.0 (i.e., struggled academically) amounted to a tenth or less, the percentage with demonstrable English weaknesses was higher as evidenced by the data in Figure 5. This figure shows the percentage of each of the three cohorts' F1 (self-reported I-94 status) NFRS who were required to attend a local community college's English Composition and/or ESL class (this requirement is part of the university's entry level writing requirement for undergraduates). This percentage increased across the cohorts (reaching almost two-thirds of the FA11 cohort). Further evidence of these undergraduates' English weaknesses appears in Table 2. This table includes the percentages of the three cohorts' F1 (self-reported I-94 status) NFRS who earned a D or F in these community college writing and ESL classes. Although this percentage increased across the cohorts (reaching more than a third of the FA11 cohort), these students' mean FA GPA in their university classes was between 3.24 and 3.33 (roughly between B and B+). Less than one tenth of them earned GPAs below 2.0 (Table 2).

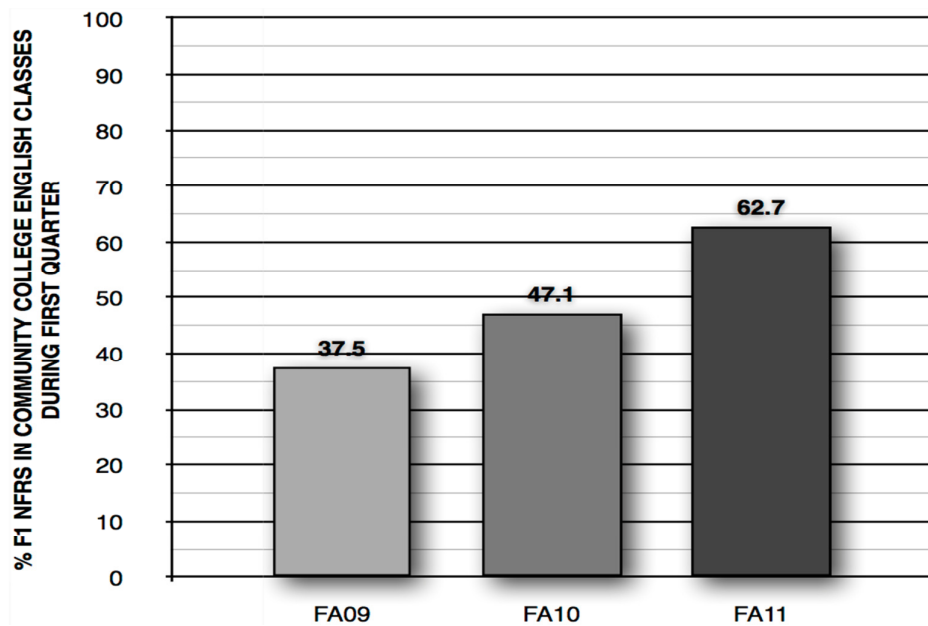


Figure 5. The percentage of international new freshman undergraduates (NFRS) in F1 I-94 status who were required to take a local community college's English Composition or English as a Second Language class has increased during the past three fall quarters at the west coast public university in the present study.

Table 2

Numbers and Percentages of International (F1 I-94 Status) New Freshmen (NFRS)

Cohort	# F1 NFRS	# (%) required to take CC classes	% who earned D or F in CC classes	Mean FA GPA in university classes of F1 NFRS required to take CC classes	# (%) who earned GPA <2.0 in university's FA classes
FA09	48	18 (37.5)	5.6	3.33	0 (0.0)
FA10	121	57 (47.1)	10.5	3.24	3 (5.3)
FA11	319	200 (62.7)	42.0	3.31	13 (6.5)

Note. Abbreviations: CC=community college; FA=fall quarter

Correlation Analyses

To evaluate the potential role of English weaknesses (especially writing) in international undergraduates' academic struggles, we performed correlation analyses between these students' scores on English proficiency tests (TOEFL, Scholastic Aptitude Test (SAT), or the west coast public university's writing exam) and corresponding AY GPAs (AY0910 for the FA09 cohort, and so on). Significant positive correlation coefficients are indicative that the test score included in the analysis is a predictor of the quarterly GPA included in the analysis—the higher the test score, the higher the quarterly GPA; the lower the test score, the lower the quarterly GPA.

Table 3 shows the statistically significant results of these correlational analyses for F1 NFRS only (these are the international undergraduates of particular concern/interest for campus policy and programming purposes). SAT math was the only one of the aforementioned scores that consistently predicted the cohorts' mean GPAs; however, these significant SAT math correlations (r between 0.15 and 0.3) fall within the range of “small” (magnitude) effect sizes (Cohen, 1988). None of the aforementioned English proficiency tests consistently correlated with mean GPAs; the only significant correlations were between the FA10 cohort's SAT writing scores and FA10 GPAs, and between the FA10 cohort's writing exam scores and FA10 GPAs (Table 3).

Table 3
Statistically Significant Predictors of Quarterly GPAs from the Correlation Analyses

Cohort	Predictor	Quarter	r	df	p
FA09	SAT math	FA09	0.27	48	0.05
	SAT math	WI10	0.30	48	0.05
FA10	SAT math	FA10	0.23	111	<.05
	SAT math	WI11	0.23	109	<.05
	SAT math	SP11	0.26	107	<.01
	SAT writing	FA10	0.32	111	<.01
	writing exam	FA10	0.29	109	<.01
FA11	SAT math	FA11	0.23	300	<.0001
	SAT math	WI12	0.21	294	0.0003
	SAT math	SP12	0.15	295	0.01

Note. Abbreviations: r = correlation coefficient, df = degrees of freedom, p = probability (significance level)

HLM Analyses

The data extracted for the HLM analyses yielded 982 undergraduates' records (including PRs and OTs, excluding domestics) for the FA09 cohort, and these undergraduates had a total of 2,894 term GPAs used in the HLM analyses. Consequently, on average, each FA09 undergraduate in the HLM analyses had about three academic quarters ($M = 2.95$) of GPA data. The corresponding values for the FA10 cohort were 1,151

undergraduates, 3,396 term GPAs, and an average of almost three academic quarters ($M = 2.95$) of GPA data per student. The FA11 cohort's values were 1,274 undergraduates, 3,752 term GPAs, and an average of almost three academic quarters ($M = 2.95$) of GPA data per student.

In the current study, all of our models were run with only one predictor at a time and primary analyses were conducted on two-level models. GPA (the dependent variable) is considered a lower-level (level-1 or time-varying) variable, whereas the various predictors are considered higher-level (level-2 or stable) variables. These included applicant type (NFRS; TRAN), class level (freshman, sophomore, junior, and senior), country of citizenship (i.e., China), gender, I-94 status (i.e., F1), and major department (e.g., Economics, Mathematics). An example model is shown below.

$$\text{Level 1: GPA} = \beta_{0j} + r_{ij}$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Class Level}) + u_{0j}$$

For each HLM model, only statistically significant results are presented in Table 4. This table shows that the FA09 cohort's class level was a significant predictor of GPA—as class level increased, GPA decreased (indicated by the negative regression coefficient). Applicant type, country of citizenship, and major department were all significant predictors of GPA—NFRS, Chinese students, and Mathematics majors had higher GPAs compared to TRAN, non-Chinese students, and all other majors, respectively. Gender and self-reported immigration (I-94) status were not significant predictors of quarterly GPAs.

Table 4
Statistically Significant Predictors of GPA from the Hierarchical Linear Modeling Analyses

Cohort	Predictor	β	$SE \beta$	p	sr^2
FA09	Applicant type	-0.129	0.039	0.001	0.012
	Class level	-0.039	0.020	0.051	0.003
	Country of origin	0.142	0.051	0.006	0.008
	Department	0.344	0.135	0.012	0.004
FA10	Applicant type	-0.096	0.036	0.008	0.007
	Country of origin	0.182	0.042	<.001	0.019
	Department	0.206	0.085	0.015	0.004
FA11	Applicant type	-0.216	0.039	<.001	0.031
	Class level	-0.083	0.020	<.001	0.018
	Country of origin	0.270	0.041	<.001	0.043
	Department	0.214	0.102	0.036	0.005
	I-94 status	-0.109	0.039	0.006	0.008

Note. Abbreviations: β = HLM model's regression coefficient; $SE \beta$ = standard error of the regression coefficient; p = probability (significance) level; sr^2 = semi-partial correlation squared (analogous to R^2), the proportion of variance accounted for in linear regression.

The FA10 cohort's results were the same with one exception—class level was not a significant predictor of GPA. The FA11 cohort's results also were the same as the FA09's with one additional predictor—self-reported immigration (I-94) status was significant (i.e., F1 visa holders had higher GPAs than the PRs, OTs, and other visa status immigrant students). With regard to the aforementioned additional question, are PR and/or OT undergraduates the students with academic struggles rather than internationals, the above results are consistent with the view that the PRs and OTs probably are not the students that administrators, advisors, and faculty at the west coast public university have referred to when repeating the generalization that “international students are struggling academically.”

Although the HLM analyses revealed that the above predictors were statistically significant, each one accounted for less than five percent of the total variance. They consequently fall within the range of “small” (magnitude) effect sizes (Cohen, 1988).

Discussion

The current study's primary goals were to 1) systematically evaluate whether international undergraduates at the west coast public university in this study actually are struggling academically, and 2) statistically determine whether the struggles could be attributed to English language weaknesses and/or related to other variables. Regarding the first goal, the present findings do not support anecdotal reports that international students at this university in general are struggling academically; at most a tenth of the FA09, FA10, and FA11 cohorts earned GPAs that met the campus definition of “struggling”—below 2.0 (C or “average”). However, regarding the second goal, the present findings do indicate that an increasing percentage of F1 NFRS has English weaknesses as indicated by required participation and course grades in community college English classes. We conclude from these findings that the majority of the west coast public university's international undergraduates are not struggling academically, that the struggling ones comprise only a small percentage of these students, and that the three cohorts generally succeeded in their university classes despite evidence of struggling with English (shown in Table 2).

If the percentage of academically struggling international undergraduates is small, then what accounts for anecdotal reports that these students generally are struggling? This west coast public university historically has provided strong support to its international undergraduates through a wide range of programs and services (e.g., orientations; academic and immigration advising; one-on-one English tutoring; social and cultural events; etc.), therefore anecdotal reports of academic struggles cannot readily be attributed to a lack of assistance and/or support. Instead, one possible explanation is that the reports are a side effect of annual increases in international undergraduates entering this university. It stands to reason that as more international undergraduates attend any American university, the number who struggle academically likely will increase also. Importantly, however, the percentages of international undergraduates who struggle academically were shown to remain relatively stable (one tenth or less) in the present study, and these percentages are less than what would be expected if GPAs were distributed normally (approximated a Bell curve). An alternative explanation is that the struggling undergraduates include immigrant (applicants for permanent residency, amnesty-seekers, asylees, permanent residents, refugees, and/or undocumented students) students rather than or in addition to non-immigrant (international) students. Because we do not have access to the identity and immigration (I-94) status of the undergraduates referenced in the anecdotal reports, we cannot presently evaluate this alternative explanation. A third possible explanation is that continuing, rather than new, international undergraduates are the ones who struggle academically. To address this possibility, the present study will follow these three NFRS and TRAN cohorts' academic performance in their continuing years at the west coast public university.

What variables account for the academic struggles of the small percentages of international undergraduates described in the present report? To evaluate the possibility that English language weaknesses (especially in writing) account for these students' struggles, we statistically analyzed three cohorts' required participation in community college English classes (English Composition; ESL) and their scores on standardized English proficiency tests. The percentage of F1 NFRS who were required to attend the community college English classes increased between the three cohorts, reaching almost two thirds of the FA11 cohort. Consistent with anecdotal reports, the percentage who struggled in these community college classes (i.e., earned course grades of D or F) increased between the cohorts, reaching 42% of the FA11 cohort (Table 2). Although these international undergraduates struggled with English writing as evidenced by their participation and course grades in the community college English classes, their mean GPA in university classes during their first (FA) quarter was between B- and B, and less than one tenth of their mean GPAs was lower than 2.0.

How could these international undergraduates have English weaknesses (as evidenced by their performance in the community college classes) while simultaneously succeeding academically in their university classes (as evidenced by their GPAs)? One possible explanation is that the community college classes (English Composition; ESL) are sensitive to English weaknesses while the university classes (e.g., Computer Science; Economics; Engineering; Mathematics) are not. Another is that the community college instructors grade these students more strictly on English (grammar, spelling, etc.) while university instructors grade less strictly on English (instead focusing on whether the students show evidence of mastering class concepts). An additional possibility is that these students invest more time and energy on their university classes than on the community college classes. Further research will be needed to evaluate these possible explanations.

If almost two thirds of the west coast public university's international undergraduates do have English weaknesses, how could they qualify for admission to that university? International applicants are required to submit TOEFL and SAT scores; applicants who take either of these exams multiple times are considered on the basis of their highest total TOEFL and highest combined SAT scores. One possibility is that international applicants attend courses in their home countries that teach to these tests without improving the applicants' English proficiency. Another is that applicants who take these tests multiple times show a practice effect. A third possibility is that at least some applicants cheat on TOEFL and/or SAT. Additional research is needed to evaluate these three possibilities. Regardless, the present study's non-significant correlation coefficients between TOEFL or SAT reading and writing scores and quarterly GPAs suggest that while these standardized tests might be useful for admissions purposes, they are not strong predictors of international undergraduates' academic struggling in their first year of university classes.

The present study's finding that TOEFL scores were not correlated with quarterly GPAs is inconsistent with a previous study's (Stoynoff, 1997) finding that TOEFL scores were significantly positively correlated with GPA. One possible explanation for the difference between these two studies' findings is that the 1990s' TOEFL differed from the modern TOEFL in at least two potentially important and related dimensions—range of the scoring scale, and mode of administration (paper-based vs. online; Educational Testing Service, 2005). Another possibility relates to a difference in statistical methodology—Stoynoff (1997) used a statistical correction to account for the narrow range of international applicants' TOEFL (and, by extension, SAT) scores due to universities' minimum requirements, we did not. In either case, Stoynoff (1997) described the correlation between TOEFL scores and international undergraduates' GPA as “modest” and thus, combined with our finding, it suggests that TOEFL's utility in predicting international undergraduates' GPAs at American universities is limited.

The present study is the first, to our knowledge, using HLM to investigate what variables affect international undergraduates' academic achievement while attending American universities (cf.

Li, Chen & Duanmu, 2010). Our HLM analyses included additional variables—applicant type, class level, country of citizenship, gender, immigration (I-94) status, and major department—and some of them were shown to be significant predictors for all three cohorts' GPAs. However, these significant predictors accounted for a low percentage of the total variability; they would be considered “small” effect sizes (Cohen, 1988). Consequently, our findings might not be sufficiently compelling for use in decision making about implementing or changing policies and programs for addressing international undergraduates' academic struggles. We instead recommend the development and implementation of a diagnostic instrument that correlates highly with quarterly mean GPAs for use in preemptively identifying which international undergraduates to target for additional support.

In conclusion, the present results taken together suggest that policies and programs intended to support newly admitted international undergraduates with weak English skills would be most cost effective if they were implemented for such students with demonstrable evidence of academic struggles and/or English weaknesses rather than for all incoming international undergraduates.

References

- Boyer, S., & Sedlacek, W. (1988). Non-cognitive predictors of academic success for international students: A longitudinal study. *Journal of College Student Development*, 29(3), 218–223.
- Chemers, M. M., Hu, L. & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology*, 93(1), 55–64.
- Chen, Y., & Sun, C. (2006). Language proficiency and academic performance. *Proceedings of the 11th Conference of Pan-Pacific Association of Applied Linguistics*, Korea, 11, 58–72.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Educational Testing Service (2005). TOEFL® internet-based test score comparison tables. Retrieved from http://www.ets.org/Media/Tests/TOEFL/pdf/TOEFL_iBT_Score_Comparison_Tables.pdf
- Graham, J.G. (1987). English language proficiency and the prediction of academic success. *TESOL Quarterly*, 21(3), 505–521.
- Grapevine Project (2013). One-year (FY12-FY13), two-year (FY11-FY13), and five-year (FY08-FY13) percent changes in state fiscal support for higher education, by state and by source of fiscal support. Retrieved from http://grapevine.illinoisstate.edu/tables/FY13/Table2_FY13.pdf
- Hanassab, S., & Tidwell, R. (2002). International students in higher education: identification of needs and implications for policy and practice. *Journal of Studies in International Education*, 6(4), 305–322.
- House, J. D. (2000). Relationships between self-beliefs, academic background, and achievement of undergraduate students in health sciences majors. *International Journal of Instructional Media*, 27(4), 427–438.
- IIE (2012a). U.S. campuses report on impact of international students from China; engagement with Brazil; students affected by Arab Spring events. Retrieved from <http://www.iie.org/Who-We-Are/News-and-Events/Press-Center/Press-Releases/2012/11-13-2012-Open-Doors-Fall-Survey-International-Students>
- IIE (2012b). Open Doors 2012: international student enrollment increased by 6 percent. Retrieved from <http://www.iie.org/en/Who-We-Are/News-and-Events/Press-Center/Press-Releases/2012/11-13-2012-Open-Doors-International-Students>
- Johnson, P. (1988). English language proficiency and academic performance of undergraduate international students. *TESOL Quarterly*, 22(1), 164–168.
- Kelderman, E. (2013). State spending on higher education rebounds in most states after years of decline. *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/article/State-Spending-on-Higher/136745/>

- Li, G., Chen, W., & Duanmu, J-L. (2010). Determinants of international students' academic performance: a comparison between Chinese and other international students. *Journal of Studies in International Education, 14*(4), 389–405.
- Little, R. J. A., & Rubin, D. B. (2002). *Statistical analysis with missing data* (2nd ed.). New York, NY: John Wiley.
- Nelson, C. V., Nelson, J. S., & Malone, B. G. (2004). Predicting success of international graduate students in an American university. *College and University Journal, 80*(1), 19–27.
- Osborne, J.W. (2000). Advantages of hierarchical linear modeling. *Practical Assessment, Research, and Evaluation, 7*(1), 1–3.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models*. Newbury Park, CA: Sage.
- Ren, J., & Hagedorn, L. S. (2012). International graduate students' academic performance: What are the influencing factors? *Journal of International Students, 2*(2), 135–143.
- Stoynoff, S. (1997). Factors associated with international students' academic achievement. *Journal of Instructional Psychology, 24*(1), 56–68.
- U.S. Department of State. (n.d.). Student visas. Retrieved from http://travel.state.gov/visa/temp/types/types_1268.html

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