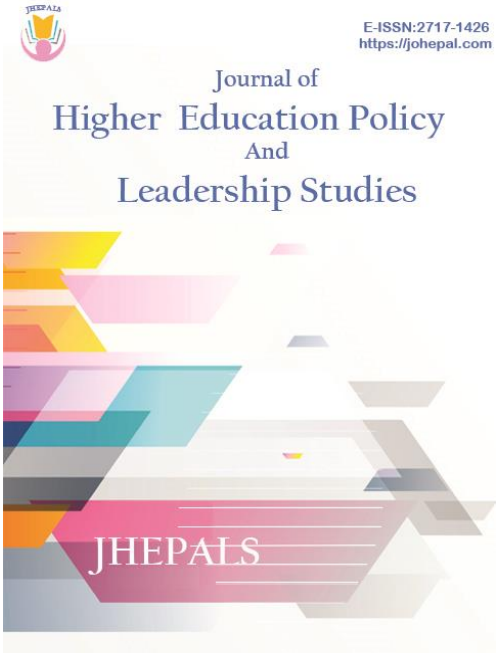
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"You Shall Not Pass": Predicting Attrition and Completion of an Iraqi Academic Preparatory Program

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Abstract

The purpose of this quantitative study is to understand the factors associated with student retention and matriculating from an Academic Preparatory Program to the undergraduate program at a university in Iraq. We used a logistic regression model to predict student's probability of retention and maturation based on demographic and academic variables. We aim to ensure that institutions are identifying and implementing strategies to improve student success by first examining if the institutional enrollment approach is the best one for our students and institution. Our logistic regression analysis model found that ethnicity, initial English language placement, the Iraqi Baccalaureate Score, and attending a private high school were all significant predictors in matriculation. We also found strong support for the importance of academic momentum in facilitating students' progress. The findings here offer private institutions in post-conflict societies such as Iraq some important insight: through identifying the different variables that predict progression into the undergraduate program, we can better understand and reduce student attrition. On a larger scale, this study contributes to the field of developmental education research by finding that U.S. theories are relevant when the curricula and programming of the education institution are modeled on those of the United States, even within post-conflict societies such as those of Iraq. Future research will need to explore if the same would be found in other institutions throughout Iraq and post-conflict settings, but the lack of available research conducted within these countries should not prevent sound research from being conducted.

Keywords: Developmental Education; Retention; Matriculation; Student Persistence; Logistic Regression; Academic Momentum

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Introduction

Developmental education is a strategy employed in higher education systems around the world in an attempt to provide additional support for students who leave secondary school ill prepared for tertiary-level academic work (e.g., Bettinger & Long, 2005; Willcoxson et al., 2011). Developmental education is distinguished from remediation in that it pairs academic coursework with additional supports such as advising and counseling (Levine-Brown & Anthony, 2017). Despite over 40 years of research on developmental education, primarily based in the United States (Boylan et al., 2017), there is still a great deal of debate over the effectiveness of developmental education in promoting student success (Levine-Brown & Anthony, 2017; Park & Ngo, 2021).

Understanding whether and for whom developmental education works is a pressing need around the world, and especially in developing and post-conflict societies like Iraq. Myriad challenges over the last 30 years have resulted in a drastic and prolonged decline in education, leaving the Iraqi educational system one of the weakest in the region. Decades of neglect, sanctions, and war have decimated higher education infrastructure and human capital, halting educational progress in Iraq (Al-Shaikhly & Cui, 2017; Issa & Jamil, 2010). Low-levels of educational financing, diminishing infrastructure, outdated curricula, and overcrowding of students have contributed to a deteriorated quality of education in Iraq (Issa & Jamil, 2010; Ranjan & Jain, 2009). The pipeline leading to higher education is also problematic; a significant percentage of school-aged children do not have access to a basic education, and the illiteracy rate of 15–24 years was 18% in 2015.

Not wanting these issues in education to continue, Iraq has dedicated more attention over the past ten years to reexamining the current status of Iraqi education and explore ways to improve it (Kaghed & Dezaye, 2009; Qasim et al., 2021; Ranjan & Jain, 2009; United Nations Children's Fund, 2017; Wali, 2019). In Iraqi Kurdistan, the Kurdish Regional Government has especially emphasized strong development in the education sector over the past 10 years by allocated 16% of the Kurdish Regional Government's 2013 budget to education and higher education sectors (World Bank, 2015). As a result, elementary and secondary school enrollments have slowly increased over the past few years (Al-Shaikhly & Cui, 2017). Though secondary school graduates in the Kurdish region may be better prepared for tertiary education than their peers in Baghdad or Basra, leveling them up to university studies still presents challenges.

American University of Iraq, Sulaimani (AUIS), the site of this study, has been working to provide college readiness to higher education in Iraq. AUIS uses the private, nonprofit, American liberal arts model; follows U.S. education standards; is working towards U.S. regional accreditation; and employs international faculty and staff. To prepare students for the rigors of a liberal arts education at AUIS, the institution offers an Academic Preparatory Program (APP), which provides developmental education to increase access for students who would not otherwise have the academic and English language skills to enter the undergraduate (UG) program at AUIS.

The purpose of this study was to understand the factors associated with student retention and matriculation from the APP to the UG program at AUIS. Using institutional data from AUIS, we developed a logistic regression model to predict an APP student's probability of entering the AUIS UG program based on demographic and academic variables.

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We aim to ensure institutions are identifying and implementing strategies to improve student success by first examining if the institutional enrollment approach is the best one for one's own student body and institution.

Literature Review

This study is grounded in U.S.-based theory and research on developmental education, social and economic capital, student retention and matriculation, and academic momentum due to the dearth of research on developmental education and student persistence in developing and post-conflict societies. Since AUIS has programmatic commonalities with and similar goals to those of universities located in the United States, it is appropriate to use the U.S.-based theories and research as a framework for this study. We will then adapt these U.S.-based theories and research to the Iraqi context while recognizing and being open to the possibility that findings in Iraq may be very different than those in the United States due to cultural, social, and economic differences.

Academic Momentum

The theoretical framework of academic momentum helped provide a basis for understanding degree completion and attrition in this study. Adelman (2016) found that excessive course withdrawals or multiple leaves of absence that disrupt accumulated momentum interfere with degree completion and foster attrition. Thus, academic momentum is maintained by the choices students make that reflect a continued desire to persist such as being continuously enrolled in classes, passing developmental classes, and achieving academic success early in the degree program (Adelman, 2016; Attewell et al., 2012). There are three central ideas that shape the theory of academic momentum. The first is an early loss of momentum greatly reduces a student's chances of graduating. Thus, the initial academic course load and its fit to a student's needs and ability strongly influence the likelihood of degree completion. Students who assimilate easily into the academic culture are more likely to graduate than their peers who do not. Second, early momentum is associated with degree completion over and above the influences of sociodemographic background and high school academic preparation. Third, the theory suggests that engagement in some activities (e.g., summer course participation) helps students maintain or increase momentum and engagement in other activities (e.g., time off after completing high school) may slow momentum (Attewell et al., 2012; Clovis & Chang, 2021; Franke & Bicknell, 2019; Martin et al., 2013).

Because one of the challenges of providing developmental education in undergraduate coursework is students' frustration with the amount of time they must spend in developmental courses, which are not credited toward their respective degrees (Eberly, 2018; Park & Ngo, 2021; Rutschow & Schneider, 2011), some scholars have argued for accelerating developmental education sequences to increase students' academic momentum (e.g., Daugherty et al., 2019; Hodara & Smith Jaggars, 2014). Schudde and Keisler (2019) and Boatman (2021), for example, both found a strong relationship between participating in accelerated developmental education and key indicators of academic momentum, including completing college-level math courses and total credit accumulation.

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However, gains in movement out of developmental coursework and into regular college-level coursework may be offset by declines in student performance in those college-level courses (Hodara & Smith Jaggars, 2014), and the benefits of accelerated developmental education may not be realized for those students who are least prepared for college-level coursework (Boatman, 2021). English language learners (ELLs), in particular, have the potential of being negatively impacted by accelerated developmental classes, as research suggests that it requires 5 to 7 years to develop academic language proficiency in a second language (Adamuti-Trache, 2013; Finn, 2011). Accelerating, which in turn shortens the time given to students to develop their language skills, has the potential to negatively impact student performance in college-level courses.

Other Factors that Affect Persistence

Student persistence towards degree completion is an ongoing concern for institutions of higher education. Multiple studies have identified the factors that contribute to student persistence: the level of academic preparedness prior to enrollment, social and economic capital, and student demographics (Attewell et al., 2011; Bouredieu, 1986; Mattern & Patterson, 2011; Murtaugh et al., 1999).

Academic Preparedness

Not surprisingly, the level of academic preparation that students bring to college has been shown to be a significant predictor of their persistence (Attewell et al.; 2011; Bowen et al., 2009; Murtaugh et al., 1999). Traditional admissions measures, such as SAT and high school GPA, measures of academic preparedness, have been shown to be valid predictors of first-year grades and retention (e.g., Hezlett et al., 2001; Kobrin et al., 2008; Mattern & Patterson, 2011), although several studies have questioned the relationship between SAT scores and degree completion, especially regarding racially minoritized students and ELLs (Inkelas et al., 2007; Zwick & Sklar, 2005).

A common solution for the education gap between high school and the university is preparatory programs (Fashola & Slavin, 1998; Knaggs et al., 2015). These programs, often called developmental education, vary in the types of courses they provide, often including math, writing, and English language skills, to provide students with the skills they need to succeed in credit-bearing courses. These programs generally have common features such as academic support, test preparation, mentoring, and counseling (e.g., Swail, 2000; Watt et al., 2007). Preparatory programs can provide high school students from lower socioeconomic and non-English language backgrounds with the resources and support they need to succeed in college (e.g., Farmer-Hinton, 2006; Knaggs et al., 2015).

Though developmental education is common, research is mixed about the benefits for students and institutions. Some studies have found negative effects of developmental education, including an increased likelihood to drop out of college, lower self-esteem, and frustration with the time it takes to complete these programs (Edmunds et al., 2016; Speroni, 2011). Other studies have found that quality developmental education programs are the best way to ensure academic preparedness and student persistence (Jones, 2013; Park, 2016).

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Social and Economic Capital

Bourdieu's (1986) social capital theory posits that the actions of individuals are largely determined by their socioeconomic status. This theory paved the way for numerous studies that have emphasized the importance of social and economic capital in understanding educational experiences and opportunity (e.g., Attewell et al., 2011; Bowen et al., 2009). Following this theory, variables reflecting students' social and economic capital have been widely used in examining educational achievement and developmental education (e.g., Crisp & Nora, 2010; Walpole, 2003). Scholars have found that students from lower socioeconomic backgrounds have lower college persistence rates and educational attainment than their peers from higher socioeconomic backgrounds (Astin, 1993; Dowd & Coury, 2006; Kim, 2007; McDonough, 1997; Tinto, 1993).

Student Demographics

Additionally, gender (e.g., Hamilton & Hamilton, 2006; Leppel, 2002; Wintre et al., 2006) and racial or ethnic identity (e.g., Bowen et al., 2009; Murtaugh et al., 1999) have both been shown to be related to college retention in the United States. Especially regarding gender, several studies have reported that not only do more women than men attend university, but more women than men are likely to graduate (Dayioğlu & Türüt-Aşik, 2007; Hyde & Kling, 2001; McDaniel, 2012). Gender and racial identity are also important factors to consider in understanding the relationship between developmental education and academic momentum (Park & Ngo, 2021). Due to the vast cultural differences between Iraq and the United States with respect to gender and ethnic identity, these two constructs received particular attention in this study.

Context of the Study

AUIS is a private, not-for-profit institution located in the Kurdish Region of Iraq. Enrolling almost entirely Iraqi students, this institution strives to offer U.S.-quality education in English. However, Iraqi students often lack the academic and English language preparation needed to succeed at AUIS. Thus, 95% of all enrolled students are placed in an intensive APP to bridge the academic gap between the skills and knowledge acquired in Iraqi high schools and those needed to be successful in the undergraduate program. While APP is important to helping students transition to the institution, it may also create a barrier to entry. Merely offering the APP could leave students with the impression that success in the UG program is unlikely without the assistance of the APP.

Having open admissions but rigorous academic standards has resulted in high rates of attrition (27% annually, since 2015) from APP. Therefore, there is a need to understand how academic momentum, academic preparation, social and economic capital, and demographic factors influence retention and APP completion. Using AUIS for the context of this study provides an opportunity to better understand the effects of academic momentum in a different cultural and political context than it has been studied previously. This study aimed to understand persistence in the APP at AUIS, with the potential to expand the understanding of the relationship between academic momentum and persistence at other universities in the developing world.

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Data and Methods

The purpose of this study was to understand the factors associated with student retention and matriculation from the APP to the UG program at AUIS. Specifically, we sought to answer the following research questions:

1. When does attrition occur at AUIS? Does attrition at AUIS differ from U.S. higher education trends?
2. Which factors among demographic traits, academic preparation, academic momentum, and college experiences are associated with AAP retention and APP completion?

To examine the predictors of student persistence in the APP, and consequential matriculation to the UG program at AUIS, we used institutional data for all students enrolled in APP between 2014 and 2017. Though APP as a program was established in 2009, this time frame (2014–17) was selected because AUIS moved to a database system in 2014, resulting in accurate and complete data entered for each student. In other words, accurate and available institutional data prior to 2013 could not be assured. Because data after 2014 were used for this study, there were no missing data for any variables in our analysis. Of the students enrolled in APP since 2014 (n = 1,083), 184 were still enrolled in APP classes at the time of this study. To conduct the analysis based on data of students who entered UG or had dropped out of the program, we restricted the data set to data of students who were no longer taking APP classes (N = 899).

Variables

The dependent variable used in this study was dichotomous, reflecting the two ways that students left the APP: entering the UG program or withdrawing from the institution. The independent variables used in this study were selected based on the U.S.-based theory and research on developmental education, retention/persistence, academic momentum, and social capital described above, adapted for the Iraqi context. Student demographics included gender, ethnicity (i.e., Kurdish, Arab, or other), and age at enrollment. To reflect students' academic preparation, we included their scores on the college entrance exam (the Iraqi Baccalaureate Exam) and initial English-level placement in the APP. Students' social and economic capital were reflected in the type of high school they attended (public or private), their tuition status (self-paying full tuition, third-party sponsorship, or academic merit scholarship), and their living arrangements (AUIS housing or at home). Finally, academic momentum was measured by the number of courses failed during the APP, number of leaves of absence taken during the APP, and number of terms enrolled in the APP before moving on to UG or withdrawing. Finally, to control for any possible cohort effect, especially considering the many external factors that could contribute to students' ability to persist in the APP, including the war with ISIS and the great economic recession in Kurdistan that began in 2015, we included data from the term in which students initially enrolled in the APP. See Table 1 for a complete list of variables and descriptive statistics.

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Table 1
List of Dependent and Independent Variables Used in the Study

Variables and categories	Student count	Percentage
Sample Size of Study	899	
Current Enrollment status (dependent variable)		
Entered UG	522	58.1
*Withdrew	377	41.9
Demographics/ Gender		
*Male	612	68.1
Female	287	31.9
Ethnicity		
*Kurd	727	80.8
Arab	82	9.1
Other	90	10.1
Age when enrolled (continuous variable)		
15-17	150	16.7
18	283	31.5
19-20	299	33.3
21+	167	18.5
Academic Preparation (Iraqi Bacc Score)		
*Score in 50s range	34	3.8
Score in 60s range	114	12.7
Score in 70s range	211	23.5
Score in 80s range	343	38.2
Score in 90s range	197	21.9
Initial English Level (Higher levels are more advanced)		
*Foundations	149	16.6
APP 1	469	52.2
APP 2	118	13.1
APP 3/APP 4	64	7.1
Access (Short term offer before Spring)	99	11.0
Social and Economic Capital (High School Category)		
*Public	639	71.1
Private	68	7.6
External	25	2.8
Exemplary	94	10.5
International schools located in Kurdistan	17	1.9
Public schools located outside the KRG	56	6.2
Tuition Status		
*Normal tuition payments	705	78.4
Sponsored by third party	163	18.1
Academic merit scholarship	31	3.4
Dorms		
*Students living at home	754	83.9
Students living at AUIS housing	145	16.1

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Academic Momentum (Number of Fails in APP)		
*Student never failed	472	52.5
Fail one level	278	30.9
Failed two levels	111	12.3
Failed three or more levels	38	4.3
Leaves of Absence in APP		
*0 LOA	615	68.4
1 LOA	195	21.7
2 LOAs	69	7.7
3+ LOAs	20	2.2
Number of Terms		
*1 term in APP	149	16.6
2 terms in APP	134	14.9
3 terms in APP	163	18.1
4 terms in APP	176	19.6
5 terms in APP	130	14.5
6+ terms	147	16.3
Cohort (Term Enrolled in APP)		
*Fall 2014	188	20.9
Spring 2015	196	21.8
Fall 2015	240	26.7
Spring 2016	139	15.5
Fall 2016	136	15.1

**Age is the only continuous variable
*Reference group

Data Analysis

To identify the predictors of graduating from the APP and entering the AUIS UG program, we employed logistic regression analysis. We used "entering the undergraduate program" as the outcome reference category and regressed this outcome on our independent variables. We entered our variables simultaneously, rather than in a stepwise fashion, because the aim was not to test one particular theory but to examine the variables' contribution to entering the UG program.

Findings

Many studies have that noted first-year students are the group at greatest risk of attrition from colleges, accounting for half of all attrition (Rodríguez et al., 2017; Schneider, 2010; Tinto, 1993; Willcoxson et al., 2011). AUIS's UG program does not follow these trends, but only because 95% of the students go through the APP. Thus, the University's attrition happens in APP, not in the UG program. Upon examination, the majority of attrition since 2014 (66%) occurred in the first year of the APP, and 24% of all attrition took place in the first semester. Attrition trends for students who begin in Foundations, the most basic level of the APP, mirror the attrition trends for other cohorts: 65% of the withdrawals from the Foundation cohort occurred within the first year, and 19% within the first semester. For all other levels of the APP, the first semester had a higher attrition rate (24%) than all other

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semesters. Table 2 gives information of the enrollment, graduation, and attrition trends of the APP since 2011, and Table 3 lists information about the Foundation students.

Table 2
List of Enrollment, Attrition and Graduation Data for APP

Academic Year	Students Enrolled	Attrition	Continuing	Graduated
2014–15	664	121	543	307
2015–16	512	137	375	212
2916–17	715	190	525	222
2017–18	486	89	203	164

Table 3
Foundations Trends of Enrollment, Attrition and Graduation Data for APP

Foundations Enrollment	Total Students	Attrition	Continuing	Graduated
2015–16	209	17	192	101
2016–17	231	30	201	150
2017–18	78	19	59	44

Table 4 provides the full summary of the logistic regression analysis model. Of the demographic variables, only ethnicity was found to be a significant predictor of entering the UG program after completing the APP ($B = 1.706$, $p < .001$, $Exp(B) = 5.522$); the odds of entering UG were 5.522 times greater for Arab students than for Kurds. Academic preparation, as measured by students' initial English language placement and Iraqi Baccalaureate Exam score, was also a significant predictor of entering the UG program, where students with higher academic preparation were more likely to enter the UG program. For example, students who initially placed into the highest APP level, APP3, based on their English language proficiency, had more than 60 times greater odds of progressing to the UG program than had students who entered at the lowest level, the Foundations level ($B = 4.116$, $p < .001$, $Exp(B) = 61.294$). Social capital had no bearing on completion of the APP and the consequential entrance into the UG program. The one exception to this was private high school attendance. Even after accounting for students' academic preparation, the odds of entering the UG program were three times greater for students who had attended a private high school than for students who had attended a public high school ($B = 1.185$, $p < .01$, $Exp(B) = 3.272$).

Regarding academic momentum, we found that the number of times a student failed a semester and the number of leaves of absence a student took were both negatively related to the odds of entering the UG program. For example, students who failed no semesters had almost six times greater odds ($1/Exp(B)=5.814$) of entering the UG program than had students who failed just one semester ($B = -1.762$, $p < .001$, $Exp(B) = .172$), and 125 times greater odds ($1/Exp(B)=125$) of entering the UG program than had students with three or more failed semesters ($B = -4.799$, $p < .001$, $Exp(B) = .008$). Students who took no leaves of absence had over three times greater odds ($1/Exp(B) = 3.584$) of entering the UG program

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than had students with just one leave of absence (B = -1.277, p < .001, Exp(B) = .279), and over 71 times greater odds (1/Exp(B) = 71.429) of entering the UG program than had students with three or more leaves of absence (B = -4.289, p < .001, Exp(B) = .014).

On the other hand, after controlling for failed terms and leaves of absence, the longer students were enrolled in the APP, the more likely they were to enter the UG program. For example, students who took five terms to graduate from APP (generally indicating they initially placed into the Foundations level and progressed through the entirety of the APP, or they were placed in Level 1 and repeated one level at one point) had over fifty times greater odds of progressing to the UG program than had students who were only in the APP for one term.

Table 4
Logistic Regression Results Students (n=899)

Variable		B	S.E.	Exp(B)
Demographics				
Gender	Female	0.285	0.223	1.329
Ethnicity	Arab	1.706 ***	0.421	5.522
Age	Age	-0.015	0.041	0.985
Academic Preparation				
Iraqi Bacc Score	Bacc60	2.313*	1.193	10.103
	Bacc70	2.601*	1.332	13.472
	Bacc80	3.415**	1.542	30.411
	Bacc90	3.198**	1.75	24.476
Initial English level	APP1	1.89 ***	0.375	6.618
	APP2	3.455 ***	0.498	31.65
	APP3	4.116 ***	0.574	61.294
	Access	2.361***	0.502	10.597
Social and Economic capital				
High School type	Private	1.185**	0.414	3.272
	External	-0.14	0.609	0.869
	Exemplary	0.233	0.323	1.262
	Southern	0.682	0.438	1.978
	International	1.281	1.103	3.602
Tuition Status	Sponsored	0.106	0.272	1.112
	Scholarship	1.686	0.735	5.398
Dorms	Living in the dorms	0.498	0.288	1.646
Academic momentum				
# of level fails	Fails1	-1.762***	0.244	0.172
	Fails2	-2.344***	0.375	0.096
	Fails3more	-4.799***	0.608	0.008
# of leaves of absence	LOA1	-1.277***	0.271	0.279
	LOA2	-2.812***	0.464	0.06
	LOA3	-4.289***	0.739	0.014
# of terms in APP	Term2	0.236	0.357	1.266
	Term3	1.373***	0.358	3.939
	Term4	2.605***	0.36	13.405
	Term5	3.98***	0.409	53.532
	Term6	5.905***	0.535	366.732
Cohort				
Term Enrolled	Spring2015	-0.256	0.298	0.774

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	Fall2015	-0.385	0.35	0.684
	Spring2016	-0.628	0.375	0.534
	Fall2016	-0.527	0.36	0.566
	Constant	-5.325	2.668	0.005

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

Discussion of Results

The purpose of this study was to understand the factors associated with student retention and matriculation from the APP to the UG program at AUIS. Using institutional data from AUIS, we developed a logistic regression model to predict an APP student's probability of entering the AUIS UG program based on demographic and academic variables. Our logistic regression analysis model shows that ethnicity, initial English language placement, the Iraqi Baccalaureate Score, and attending a private high school were all significant predictors of entering the UG program after completing the APP. Our examination of academic momentum, as measured by the number of failed terms and the number of leaves of absence, indicated that were both negatively related to the probability of entering the UG program. On the contrary, the number of terms a student was enrolled in APP was a significant predictor of entering the UG program.

Student Demographics

Among the student demographics, only ethnicity was found to be significant predictor of entering the UG program from the APP, with the odds of entering the UG program being 5.522 times greater for Arab students than for Kurds. Prior research on the relationship between ethnicity and student persistence had shown a strong link between the two; in the United States, White and Asian American students were found to more likely persist toward a degree than were their African American and Hispanic counterparts (Kuh et al., 2008). In Iraq, a majority of the population (80%) is Arab, with a Kurdish minority (15%) located primarily in the North. Since AUIS is located in the Kurdish region of AUIS, a majority of the students (91%) are Kurdish. However, contrary to what one might expect based on the U.S.-based literature, we found that Arab students who started in the APP were five times more likely than the Kurds to persist in the APP and matriculate to the UG program. These findings align with those of a few limited studies that have suggested that students who are members of minority groups are more involved in their institution and interact with faculty more frequently than their majority population peers (Hu & Kuh, 2002; Kuh & Hu, 2001) or are more concerned with becoming academically integrated in an institution when compared to students of a majority group who are instead more preoccupied with establishing friendships (Terenzini et al., 1994).

Additionally, these findings may reflect the specific cultural and political dynamics in Iraq, as Arab and Kurdish students have different experiences leading up to higher education and different expectations of post-graduate life. Most Arab students at AUIS are from Baghdad, a city that has been plagued by decades of war and escalated violence. Thus, Arab students may enter their secondary education with a deeper belief a higher education will provide them with a better and safer environment after university. Kurdistan, for the most part, has been protected from direct fighting within its borders; thus, Kurdish students entering university may not have the same perception that better academic performance

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may result in life-changing, post-university experiences. Future research, not only at AUIS but throughout Iraq, could explore this particular issue.

In addition to ethnicity, our findings related to gender run contrary to what one might expect based on the prior U.S. (Hyde & Kling, 2001; McDaniel, 2012) and international literature (e.g., Dayioğlu & Türüt-Aşik, 2007). Several U.S.-based studies found that not only do more women than men attend university, but also more women than men graduate (Hamilton & Hamilton, 2006; Wintre et al., 2006). Similarly, in Turkey, Iraq's neighbor to the north, Dayioğlu and Türüt-Aşik (2007) found that women often outperform men in higher education. In this study with AUIS, however, gender was not a significant predictor of students' persistence in the APP and matriculation to the UG program. It may be that gender plays less of a role in student success in Iraq than in other countries. However, this finding may also be a limitation of our model, in that we only examined the direct effect of each variable on students' persistence in the APP, controlling for other variables in the model. It may be that the effect of gender on persistence is accounted for by other variables such as academic preparation. Future research should examine more complex relationships among the variables that may contribute to student persistence.

Academic Preparation

Our findings at AUIS show how factors of academic preparation, such as higher Iraqi baccalaureate scores and higher initial English language levels, are significant, positive predictors of persistence in the APP and matriculation to the UG program. Students receiving an Iraq Baccalaureate Exam score above an 80 have more than 30 times greater odds of progressing to the UG program than students who received a score of 50 on the same exam. These findings are consistent with that of the previous research on academic preparation, which has shown that SAT scores are predictors of college performance, retention, and degree completion (e.g., Hezlett et al., 2001; Kobrin et al., 2008; Mattern & Patterson, 2011).

However, a majority of students who received high scores on the Iraqi Baccalaureate Exam (i.e., scores of 80 or above) still needed the APP. As was stated previously, 95% of all enrolled students at AUIS are placed in the APP for at least one semester to bridge the academic gap between Iraqi high schools and the AUIS UG program. Thus, quality developmental education programs, such as the APP, not only provide high school students from lower socioeconomic and non-English language backgrounds with the resources and support they need to succeed in college (e.g., Farmer-Hinton, 2006; Knaggs et al., 2015) but also serve as the best way to ensure academic preparedness, enrollment growth, and student persistence at AUIS.

Social and Economic Capital

Regarding students' social and economic capital, we found that attending a private high school was a significant, positive predictor of entering the UG program after completing the APP; APP students who attended private school were three (3.15) times more likely to enter UG than were students who attended public school. These findings are consistent with those of previous studies that found that the quality of the high school academic experience has an effect on students' success in postsecondary education (Martinez & Klopott 2003; Warburton et al., 2001); in the case of AUIS, attending a private school had a positive effect

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on persistence in the APP, even controlling for students' academic preparation and economic capital. The quality of the academic experience and intensity of the high school curriculum affect almost every dimension of success in postsecondary education. Indeed, those students who are prepared best in high school are best positioned to do well in college, regardless of their ethnicity, their socioeconomic status, or where they go (Horn & Kojaku 2001; Martinez & Klopott, 2003). However, at AUIS between the years of 2009-2020, only 7.1% of the student body attended a private high school, pointing to a need to further bridge the gap between secondary and tertiary education for a majority of students at the institution.

In terms of students' economic capital, prior research in the United States has pointed to the potential that high college costs have a negative influence on academic performance and degree completion among low-income students (Dowd & Coury, 2006; Kim, 2007). However, we did not find any difference in the odds of persisting in the APP and matriculating to the UG program between students who did and did not receive financial support for their education. The most likely reason for this is there are no current option for lower-income students to obtain loans, since Iraq is a cash-based society. AUIS provides some scholarships, but these are limited. Thus, lower-income students do not have the immediate cash or means to pay for their tuition are less likely to enroll at AUIS.

Academic Momentum

Beyond the effects of students' entry characteristics, we found strong support for the importance of academic momentum in facilitating students' progress through APP to the UG program at AUIS. Students who maintained academic momentum through the APP, passing their courses and maintaining continuous enrollment, had substantially higher odds of entering the UG program than students who did not. Failing even one semester or taking even one leave of absence significantly decreased the odds of completing the APP and entering the UG program. This finding is particularly important, as almost one third of APP students (30.9%) fail at least one semester and over two thirds (68.4%) take at least one leave of absence.

These findings are consistent with U.S.-based theory and findings of previous studies on academic momentum that found that interruptions of continuous enrollment, such as excessive course withdrawals and leaves of absence, disrupt accumulated momentum, decreasing the likelihood that students will complete their degrees. Students who expend effort to maintain academic momentum, such as remaining enrolled in classes and striving to pass developmental classes, increase their odds of persistence (Adelman, 2016; Attewell et al., 2011).

Interestingly, contrary to the U.S.-based research that has shown that spending longer times in developmental education decreases students' chances of completing these programs successfully (Adelman, 2006; Bettinger & Long, 2005; Rutschow & Schneider, 2011), we did not find this same effect for APP students at AUIS. After controlling for failed semesters and leaves of absence, there was no effect of the amount of time students spent in the APP on their odds of entering the UG program. Students who are placed in Foundations must spend at least five semesters developing the English language skills needed to be successful in tertiary-level courses (Adamuti-Trache, 2013; Ardasheva et al., 2012; Finn, 2011). However, regardless of the additional semesters required to complete

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the APP, this extra time had no effect on the odds of entering the UG program, as long as the student continued to progress through the levels of the APP without minimum interruption. This demonstrates that, for AUIS students, academic momentum is best thought of as making continuous progress in developmental education, regardless of how long it takes to complete the APP.

Conclusion

Despite having to rely on U.S.-based theory and research due to the dearth of research in Iraq on developmental education, social and economic capital, student retention and matriculation, and academic momentum, this study found that U.S.-based theory and research was still able to provide insight on developmental education at AUIS.

Our study found that ethnicity, initial English language placement, the Iraqi Baccalaureate Score, and attending a private high school were all significant predictors of entering the undergraduate program after completing the preparatory program. Our examination of academic momentum found that disruptions to their course of study, either by a leave of absence or by failing, negatively decreased the probability of entering the undergraduate program. We found strong support for the importance of academic momentum in facilitating students' progress. Thus, it is not enough for institutions to simply offer developmental courses. The results of this study emphasize the critical importance of academic momentum, that students feel that they are progressing in their classes and throughout the program. Thus, one way for universities to promote this is to ensure that classes are scaffolded and created in ways that allow students to not only make steady progress through the curriculum but to feel that they are doing so.

Future research will need to explore if the same would be found in other institutions throughout Iraq and post-conflict settings, but the lack of available research conducted within these countries should not prevent sound research from being conducted. The findings of this study can also provide options for other similar institutions, practically those in developing nations. Though not all U.S.-based theories may inform what is going on in the developing world, this study found that common U.S. theories are relevant when the curricula and programming of the education institution are modeled on those of the United States. Finally, this study provides important insight into how students are retained and progress through APP into the AUIS UG program. By identifying the different variables that predict progression into the undergraduate program, we can better understand and reduce student attrition. After all, "you shall not pass" should remain Gandalf's famous line in Lord of Rings. It should not be the mantra of higher education.

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