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THE NONPREDICTIVE VALIDITY OF GENDER IN ASSESSING THE ACADEMIC ACHIEVEMENT OF INTERNATIONAL GRADUATE STUDENTS.

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ABSTRACT

The purpose of this study was to determine if there was a difference in international graduate students' academic achievement by gender at a Historically Black College and University (HBCU) in the southern region of the United States. Academic performance was measured by the international graduate students' Grade Point Average (GPA). Academic achievement indicates the extent to which a student has accomplished specific goals focused on activities in an instructional environment such as in schools, colleges, and universities. An analysis of variance (ANOVA) was used to compare the differences in means in the GPAs. The results obtained suggest that gender is not a predictor of academic achievement among international graduate students from non-English speaking backgrounds.

KEYWORDS: gender, academic achievement, ANOVA, GPA, international graduate students.

INTRODUCTION

Gender has long been identified as a predictor of academic achievement among students. Research has recorded gender disparity in academic performance in schools from K-12 to higher education (Meinck & Brese, 2019; Baye, & Monseur, 2016). Several tools have been adopted by educational researchers to measure the achievements of students. Such measurement tools include the Program for International Student Assessment (PISA); the Teaching and Learning International Survey (TALIS); and the Program for the International Assessment of Adult Competencies (PIAAC). Likewise, the European Union (EU) established the European Survey on Language Competences (ESLC) just to measure the academic achievements of students.

The data collected from PISA assessment tests reveal how gender affects achievement. One of the most studied aspects is the identification of how gender influences academic achievement in different academic skills such as reading, mathematics, and science. Attention was drawn to the reason why girls often score higher in humanities and boys in mathematics and science (Ivinson & Murphy, 2003; Pajares, 2005). This difference between areas of knowledge has been widely studied for years, but more recent research has found that the difference is not as significant as previously thought, even

suggesting that the most notable discrepancy can only be found in humanities, and not in other areas (Inda-Caro, Rodríguez-Menéndez, & Peña-Calvo, 2010; Ivinson & Murphy, 2003; Salisbury, Rees, & Gorard, 1999). Some studies outside the scope of PISA even assert that girls achieve better grades than boys in general terms (Yu, Chan, Cheng, Sung, & Hau, 2006). In this respect, it is suggested that the gender variable is a predictor of academic achievement (Capdevila & Bellmunt, 2016). However, the effect of gender on the academic achievement of international graduate students has not been widely explored. The gap in literature prompted this research, and the results of this research negate the long-held view of gender disparity in academic achievement.

Academic Achievement

The general notion of academic achievement captures the skills and productivity of a student in a particular subject as measured by different assessments. Academic achievement includes the performance outcomes, which indicate the extent to which a person has accomplished specific goals focused on activities in instructional environments, specifically in schools, colleges, and universities (Steinmayr, Meißner, Weidinger, & Wirthwein, 2017). It is the student's success in meeting short or long-term goals in education. Academic achievement is a multifaceted construct, and its definition depends on the indicators used to measure and predict it. Predicting student performance depends on the ability to assess it. For example, students' academic achievement at a college or university is measured with a grade point average (GPA). GPA is a number that reflects students' average grades in all their classes. It is a summary statistic that represents a student's average performance over a period, such as a semester (Richardson, Abraham, & Bond, 2012). The university for this study reports GPA on a 4.0 scale where the top grade is an "A," which equals 4.0.

GPA is not only used to indicate students' academic achievement, but this measure is also used as criteria for postgraduate admission, and graduate employment, and it is predictive of occupational status (Richardson, Abraham, & Bond, 2012; Strenze, 2007). Therefore, GPA is an index of performance directly relevant to training and employment opportunities (Plant, Ericsson, Hill, & Asberg, 2005; Richardson, Abraham, & Bond, 2012) and is meaningful to students, universities, and employers alike. GPA is also an objective measure with good internal reliability and temporal stability (Bacon & Bean, 2006; Kobrin, Patterson, Shaw, Mattern, & Barbuti, 2008; Stadler, Becker, Greiff, & Spinath, 2015). However, grade inflation (Johnson, 2003: Summary & Weber, 2012) and institutional grading differences (Didier, Kreiter, Buri, & Solow, 2006; Summary & Weber, 2012) have caused some to question the reliability and validity of the GPA system in demonstrating academic achievement. Nevertheless, no other measure of tertiary academic performance rivals the measurement utility of GPA (Richardson, Abraham, & Bond, 2012). Researchers assert that learning behavioral measures such as time spent studying appears to be unrelated to or weakly associated with GPA regardless of the assessment method used (Hill, 1990; Kizilcec, Pérez-Sanagustín, & Maldonado 2017; Richardson, Abraham, & Bond, 2012; Shuman, Walsh, & Olson, 1985).

Other measurements of tertiary academic performance include graduation, national, local, and campus-wide academic awards; membership in honor societies; presentations at regional, national, or international academic conferences; peer-reviewed academic publications; graduate school attendance; job placements at the time of graduation; leadership roles in extracurricular activities; and faculty mentor assessment (Mould & DeLoach, 2017). Therefore, it is important to examine the academic outcome of international students, such as pass or fail rates, grades, and a class of degree achieved because of the increase in enrollment of international students in various colleges and universities in the United States. The retention and graduation rate of international students are vital. Despite the use of other measurement criteria, GPA is the most widely used for performance outcomes (Decker, 2017).

The determining factors of international students' academic achievement are complex because many international students, even those with low language proficiency, appear to succeed in universities (Stoynoff, 1997; Meral, Colak, & Zereyak, 2012; Telbis, Helgeson, & Kingsbury, 2014). Lowinger, He, Lin, & Chang (2014) have maintained that important factors which affect the academic achievement of international students are not measured by the standardized test scores of TOEFL. Abel (2002) and Mamiseishvili (2012) have added that factors such as time management, classroom dynamics, social, and educational assistance, which are not measured by standard tests, are most likely to affect international students' academic achievement.

International Students in the United States

The United Nations Educational, Scientific, and Cultural Organization defines an international student as a student who has moved from his home country to another country to pursue education. An international student is neither a citizen nor a permanent resident of the host country. Additionally, the international student is not a refugee or an illegal immigrant. A student from another country can temporarily enter the United States legally to pursue an academic program either through an F or an M visa (United States Citizenship and Immigration Service, 2018). Once an international student completes his/her program he/she is expected to go back to his or her home country. However, the international student could work in the host country after changing his/her visa status.

Since 1948, students have been moving from their home countries to other countries in the pursuit of higher or tertiary education. Globally, international students surpassed one million for five consecutive years from 2015-2016 to 2019-2020 (Institute of International Education, 2021. The number of international students increased by ten percent from 2013-2014 academic year to 2014-2015 (Institute of International Education, 2015). As such, an additional 97,492 international students enrolled in the 2014-2015 academic school year, making this increase the highest rate of growth in 35 years (Institute of International Education, 2015). In the 2016-2017 academic year, the number of international students increased by 3.4 percent from the previous academic year (Institute International Education, 2017). This steady increase also marked the eleventh consecutive year of continued increase in the total number of international students (Institute of International Education,

2017). Currently, 914,095 international students are enrolled for the 2020-2021 academic year (Institute of International Education, 2021). There was a decrease in the enrollment of international students from 1,075,496 in 2019-2020 to 914,095 in 2020-2021.

There has been a steady influx of international students accepted into American universities from 2,102,000 in 1951-1952 to 20,185,000 in 2016-2017. Many of these international students in the United States come from China, India, South Korea, Taiwan, Vietnam, Saudi Arabia, Canada, Mexico, Brazil, and Nigeria (Institute of International Education, 2021). However, the total US enrollment of international students steadily declined from 20,185,000 in 2016-2017 to 19,720,000 in 2019-2020. Several factors may have contributed to the decreased enrollment in 2017-2018. Possible factors include the rising cost of U.S. higher education, delays and denials of student visas, unwelcoming environments for immigrants, and shifting conditions and opportunities in home countries (Zong & Batalova, 2018).

Additionally, there has been increasing competition from other countries that are interested in educating international students (Zong & Batalova, 2018). The decrease in large Saudi Arabian and Brazilian government scholarship programs also contributed to the decrease in enrollment of international students in 2017-2018 (Institute of International Education, 2017). Additionally, the COVID-19 pandemic may have negatively impacted international students' enrollment. Despite the decrease in enrollment, the United States remains the country of choice for a large majority of international students (Zong & Batalova, 2018). There was an increase in the total international students' enrollment in the US from 19,720,000 in 2019-2020 to 19,744,000 in 2020-2021 (Institute of International Education, 2021).

Academic Achievement and Gender of International Graduate Students

Researchers have presented conflicting results on the effect of gender on the academic achievement of international graduate students. However, some researchers (Ellis, 2012, Memari, Zia, & Zalpour, 2017) have posited that women are better than men at learning languages as women are more open to new structures and easily eradicate incorrect forms in the target language. Gender differences in speech and writing of second language learners were also reported by some researchers (Dousti & Rashekh, 2016; Ogunsiji, Farinde, & Adebiyi, 2012). Cohen (2014) reported that gender differences were found on the general proficiency test. Results showed that females earned significantly higher mean scores than males (Murphy, 2012; Dousti & Rashekh, 2016; Zoghi, Kazemi & Kalani, 2013). A possible explanation for the superiority of female learners is that females show a higher level of attribution than males (Dousti & Rashekh, 2016). Gender-specific linguistic characteristics were also identified by Gtowka (2014). According to gender role theory, prevalent gender stereotypes and appropriate behavior, which are culturally embedded, can also affect second language learning (Zoghi, Kazemi & Kalani, 2013). Conversely, Norton (2000) and Campbell (2015) reported that the level of language learning proficiency among immigrant women learning English was generally poorer than that of the men because of women's restricted access to interactional and educational

opportunities. The study revealed that women from traditional patriarchal families faced several challenges that often limited their access to the English language. Some women avoid attending second language courses due to their family responsibilities, thereby resulting in low academic achievement (Campbell, 2015; Norton, 2000).

Because the roles of men and women in society vary between countries and cultures, international graduate students' gender plays a crucial role in their academic achievement. Marville (1981) and Campbell (2015) have reported that female international students suffer more from adjustment problems than their male counterparts. One of the reasons for female maladjustment is gender roles. The demands and obligations of traditional gender roles constrain female international students from adjusting to the host culture (Campbell, 2015; Marville, 1981). For example, gender segregation is a defining element of Saudi political and religious life (Alhazmi, 2015). As a result, gender segregation in Saudi Arabian culture may affect the academic achievement of these students in American colleges and universities. The mixed-gender aspect of the American educational system limits Saudi students' participation in social life (Abdel Razek, 2012).

However, some researchers (Anthony, 2012; Kupczynski, Brown, Holland, & Ureigas, 2014) maintain that there is no relationship between gender and the academic achievement of international students. Kupczynski et al. (2014) conducted a study on 959 education students (including international students) and revealed that there was no difference in gender for students with mid and high grades. Again, Zoghi, Kazemi, & Kalani (2013) concluded that the magnitude of the difference and the strength of association between male and female academic achievement was relatively small. Although there was a difference in the academic achievement of male and female students, such differences were not statistically significant. Hence, they concluded that there was no difference in academic achievement based on gender.

RESEARCH METHOD

Research Design and Instrumentation.

An ex-post-facto, non-experimental approach was used in this study to determine the relationship between gender and academic achievement of international graduate students from non-English-speaking backgrounds enrolled in a Historically Black College and University in the southern region of the United States. Respondents were students who had spent two years in their programs, from Fall 2015 to Fall 2017.

Description of Participants

The researcher obtained an IRB approval from the university where this study was carried out. The university had enrolled 285 graduate students for Fall 2015 and 152 graduate students for Fall 2017. A total of 38 international graduate students from non-English speaking backgrounds were used for this study. There were 18 males and 20 females. The majority of the international graduate students were from Saudi Arabia and India. Also included among the participants were international graduate

students from Bangladesh, China, Ethiopia, Kuwait, Jordan, Libya, Nepal, and Switzerland. All participants were enrolled in Fall 2015 for different academic programs and continued their programs till Fall 2017.

Data Analysis

Table 1 Characteristics of Participants

Variable		Frequency	Percentage
Gender	Male	18	47.4
	Female	20	52.6
	Total	38	100
Nationality			
	Bangladesh	1	2.6
	China	1	2.6
	Ethiopia	1	2.6
	India	7	18.4
	Jordan	1	2.6
	Kuwait	1	2.6
	Libya	1	2.6
	Nepal	4	10.5
	Saudi Arabia	15	39.5
	Switzerland	4	10.5
	None	2	3.2
	Total	38	100
Student Level			
	Doctoral	24	63.2
	Masters	14	36.8
	Total	38	100

Only 47.4% (n=18) of the students were males as compared to 52.6% female students (n=20). There were 63.2% (n=24) doctoral students and 36.8% (n=14) masters-level students. Many of the students were from Saudi Arabia 15 (n=39.5%). Whereas only 2.6% (n=1) each were from Bangladesh, China, Ethiopia, Jordan, Kuwait, and Libya; 10.5% (n=4) were from Nepal and Switzerland. There were 5.3% (n=2) of students whose countries were unidentified.

Testing of Research Question/Null Hypothesis

Research Question /Null Hypothesis.

RQ1: Is there a difference in the GPA of international graduate students by gender?

$H_0$1: There is a difference in the GPA of international graduate students by gender.

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To ascertain the difference in GPA of international graduate students by gender, the means and standard deviations for Fall 2015 and Fall 2017 were calculated by gender. In addition, an ANOVA table and Measures of Association were conducted at the .05 significance level to test for significant differences in means. The HBCU reports GPA on a 4.00 scale, where the top grade is an "A," which equals 4.00. The GPAs for male international graduate students for the Fall 2015 semester were paired with their GPAs for the Fall 2017 semester. Likewise, the GPAs for the female international graduate students for the Fall 2015semester were paired with their GPAs for the Fall 2017semester. See Table 2.

Table 2 Frequency, Means, and Standard Deviation of GPA for International Graduate Students for Fall 2015 and Fall 2017 by Gender

Student Gender		Student GPA Fall 2015	Student GPA Fall 2017
Male	n	18	18
	Mean	3.05	3.74
	SD	.23	.18
Female	n	20	20
	Mean	3.10	3.78
	SD	.30	.17
Total	n	38	38
	Mean	3.07	3.76
	SD	.27	.17

There is a difference in the mean square within groups for Fall 2015 (.07) and Fall 2017 (.03) by gender as seen in Tables 3 and 4. The sum of squares is also different within groups for Fall 2015 (2.74) and Fall 2017 (1.13). However, there are no differences between groups. The differences within groups are not statistically significant because the level of significance by gender for Fall 2015 and Fall 2017 is .54. This is greater than 0.05. Therefore, $H_0 5$ is retained. There are no statistically significant differences in scores from 2015 to 2017.

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Table 3 ANOVA Table for Differences in GPA by Gender

		Sum of Squares	df	M S	F	Sig
Student GPA 2015 Gender	Between Groups	.01	1	.01	.24	.62
	Within Groups	2.74	36	.07		
	Total	2.76	37			
Student GPA 2017 Gender	Between Groups	.01	1	.01	.37	.54
	Within Groups	1.13	36	.03		
	Total	1.15	37			

Table 4 Measures of Association of GPAs for Fall 2015 and Fall 2017 by Gender

	Eta	Eta Square
Student GPA 2015 Student Gender	.08	.00
Student GPA 2017 Student Gender	.10	.01

CONCLUSION

This research intended to contribute to existing research on the relationship between gender and academic achievement. The study intended to fill the research gap on the relationship between gender and the academic achievement of international graduate students from non-English speaking backgrounds. The findings of this study indicate that there were no statistically significant differences found in the academic achievement of international graduate students for gender. However, this research did not reveal the influencing factors that led to the insignificant increases in GPA for Fall 2017. The increases were not caused by gender, nationality, and level of study. Based on the mean scores of male and female graduate students, the result of this research concludes that there is no significant relationship between gender and academic achievement of international graduate students at a Historically Black College and University in the Southern region of the U.S. Both male and female international graduate students' GPAs increased after two years. Since there is no correlation between the variables, the researcher cannot use the value of one variable (gender) to predict the value of the other variable (academic achievement). This finding is aligned with prior research, which had comparable findings: Agu (2014), Anthony (2012), and Kupczynski, Brown, Holland, & Ureigas, (2014) whose research has revealed that there is no relationship between gender and academic

achievement of international students. Zoghi, Kazemi, & Kalani, A (2013) also reported a non-statistical difference between gender and academic achievement.

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