Ethnic and gender stereotypes on college students' academic performance

Ya-Wen (Melissa) Liang
Texas A&M University-Kingsville

Don Jones
Texas A&M University-Kingsville

Rebecca A. Robles-Pina
Sam Houston State University

ABSTRACT

College students' academic performance reflects their learning strategies, academic competence, and dedication to college life. Ethnic and gender stigmas that contribute to college students' academic performance and Grade Point Average were investigated in this study. Results of the study pointed to the importance of respecting diverse ethnic populations and introduced interventions for conquering negative stereotypes for the purpose of promoting college students' academic success.

Keywords: ethnicity, gender, stereotypes, college students, academic performance
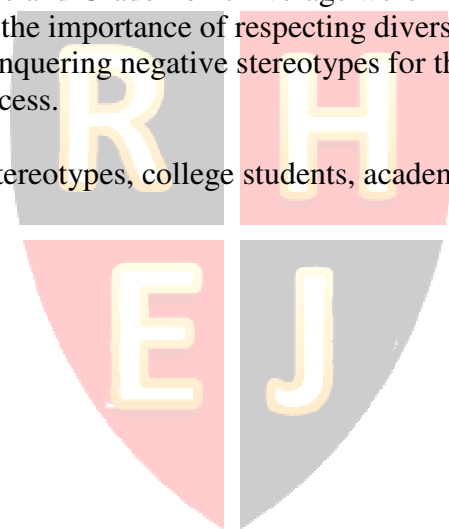
INTRODUCTION

College students' academic performance reflects their learning strategies, academic competence, and dedication to college life. Researchers revealed that ethnic identity and gender stereotypes affect college students' academic performance (Bottia, Giersch, Mickelson, Stearns, & Moller, 2016; Davis & Otto, 2016; Wolfle & Williams, 2014; Yeboah & Smith, 2016; Yuan, Weiser, & Fischer, 2016). Students of diverse gender and ethnic groups tend to have different goals and stereotypes toward academic satisfaction and stress (Cheryan, Davies, Plaut, & Steele, 2009; Sheu, Rigali-Oiler, Mejia, Primé, & Chong, 2016). Caucasian students tend to value self-efficacy and social independence, Asian students often value academic performance, Hispanic students would value social appraisal and collectivistic culture, and African American students normally value kin relationships and campus climate during their pursuit of academic success (Brooks & Allen, 2016; Sheu et al., 2016; Yeboah & Smith, 2016; Yuan et al., 2016). Female students tend to perform better in online courses and forsake computer science majors compared to male students (Cheryan et al., 2009; Jost, Rude-Parkins, & Githens, 2012). Various expectations toward college life would affect students' stress and academic achievements. Stereotypes and racial identity often hinder individuals' learning outcome (Goff & Steele, 2008).

Purpose of the Study

After reviewing current literature, we noticed a lack of literature addressing how negative stereotypes such as ethnic and gender issues would be utilized to help students overcome stigmas and promote academic performance. The purpose of this study was to investigate effects of ethnicity and gender on college students' end-of-year Grade Point Average (GPA). This study was done with the purpose of promoting academic success among college students.

Research Design and Research Questions

Parks, Faw, and Goldsmith (2011) advocated that empirical research method has become one of the most popular essentials in communication and teaching curriculums. We employed a quantitative research design to examine whether ethnicity and gender affect college students' GPA because researchers proposed GPA as a common measurement for assessing students' academic performance (Awad, 2007; Bottia et al., 2016). Research questions in this study addressed: (a) Is there a main effect for ethnicity or gender on college students' GPA and (b) Is there an interaction between gender and ethnicity on college students' GPA?

Data Collection and Participants

Institutional Review Board permission was approved prior to beginning the study. A total of 1,122 participants out of 1,329 undergraduate students of a medium-sized university in a southern state were qualified for this research study (see Table 1). The original dataset included 736 female and 593 male college students. Because small numbers of 13 Native Americans were under-represented for interpreting results in a large dataset, we excluded this population from the study. We combined the small number of eight international students into the population of Asian students because most of these international students were from Asia and this number was under-represented for interpreting results in a large dataset. A number of 194 students who

missed to report demographic questions were disqualified for the analysis. Hence, a number of 207 students were excluded from the study because of lacking information. After exclusions, there were 617 female and 505 male qualified participants, including 656 Caucasian, 280 African American, 161 Hispanic, and 25 Asian undergraduate students (see Table 1). Because no gay, lesbian, bisexual, and transgender individuals were reported in the dataset, we examined existing gender and ethnic groups for this research study.

Data Analysis and Results

A Two-Way ANOVA was employed to analyze the data. Independent variables were defined as (a) gender, including two levels of males and females and (b) ethnicity, including four levels of Caucasian, African American, Hispanic, and Asian. The dependent variable was defined as college students' GPA. The gender and ethnicity were coded as M = male students, F = female students, WH = Caucasians, BL = African Americans, HI = Hispanics, AP = Asians. Students' GPA was coded as the numeric type of variable including two decimals.

The analysis of 1,122 students was illustrated in Table 1. Examining the box-whisker diagrams, there was no outlier of the GPA scores among females; but there were 31 outliers of males (see Figure 1). There were no outliers for Asians, however, there were 20 outliers for African Americans, 10 for Hispanics, and 22 for Caucasians (see Figure 2). The z scores were calculated by kurtosis and skewness divided by standard error (see Table 2). We included outliers in our analysis because outliers reflected students in the margins and would better represent students with minority identity. Some z scores for ethnicity and gender were less than 3.00 indicating a normal distribution. Some z scores were greater than 3.00 indicating the GPA scores were abnormally distributed.

The Significance of Kolmogorov-Smirnov (K-S) of GPA was $p = .01$ for males and females as well as African American, Hispanic, and Caucasian students, for which p is less than .05 (see Table 3). This indicated that GPA scores were not normally distributed. The significance of K-S of Asian students was $p = .08$ (see Table 3), which p is greater than .05. This indicated that GPA scores of Asian students were normally distributed.

Normality

Three indicators were used to determine the assumption for normality of data: (a) kurtosis and skewness divided by standard error, (b) histograms, and (c) the K-S coefficients. The coefficients for kurtosis and skewness were within the 95% limits. The histograms of the gender and ethnicity on GPA appeared normally distributed (see Figure 3). The assumptions for normality of data, z scores and K-S coefficients were violated; however, since a large dataset was being used and quite robust regarding violations of assumptions, the researchers proceeded with the analysis. The decision was based on the fact that with large samples, the use of t-tests and linear regression can be used even when the data are not normally distributed (Lumley, Diehr, Chen, 2002). Data in large datasets most closely approximate the assumptions of the Central Limit Theorem, which states that the average of a large number of independent random variables is approximately normally distributed around the true population mean (Lumley et al., 2002; Tabachnick & Fidell, 2007).

Homogeneity of Variance

Based on the Levene's test of equality of error variances (see Table 4), there was no statistically significant difference between gender and students' GPA because $p = .01$ which was less than .05. There was a statistically significant difference between ethnicity and students' GPA because the Levene's statistic was .33 which was greater than .05. This indicated homogeneity of variance, indicating students' ethnicity groups have equal variables of GPA.

Interval Data and Independence

The GPA scores were measured in interval data. The GPA scores were independent because one group did not affect the scores of another group. Based on the results of the above tests of assumption, we conducted the two-way ANOVA analysis.

Two-Way ANOVA Analysis

Researchers proposed that results of ANOVA provide good discriminate validity (Linder et al., 2012). Male students' GPA ($M = 1.77$, $SD = .70$), [95% CI = 1.62–1.88] was lower than females students ($M = 2.05$, $SD = .81$), [95% CI = 1.93–2.16] (see Table 5; Figure 4). The main effect for gender was statistically significant (F [1, 1114] = 11.06, $p = .01$, $\eta^2 = .01$) (see Table 6). There was no statistically significant main effect for ethnicity (F [3, 1114] = 2.03, $p = .11$, $\eta^2 = .01$) or the interaction between gender and ethnicity found (F [3, 1114] = .12, $p = .95$, $\eta^2 = .01$) (see Table 6). Hispanic students' GPA was the highest compared to other ethnic groups ($M = 2.00$, $SD = .80$), [95% CI = 1.85–2.09] (see Table 5). Caucasian students' GPA was the second highest ($M = 1.93$, $SD = .79$), [95% CI = 1.88–1.99]. Asian students' GPA was the third highest ($M = 1.89$, $SD = .70$), [95% CI = 1.58–2.18]. African American students' GPA was the lowest ($M = 1.86$, $SD = .72$), [95% CI = 1.72–1.90] (see Table 5; Figure 5; Figure 6).

Based on the results of the study, GPA scores were statistically influenced by gender. Female college students scored higher on GPA compared to males. Approximately 1% of GPA scores were influenced by gender. The GPA scores were not influenced by ethnicity or the interaction between gender and ethnicity because they were not statistically significant.

Discussions

Based on the results, female students achieved higher GPA compared to male students. According to the stereotypical threat theory, the decrease of social-psychological anxiety can lower individuals' negative stereotypes in academic performance (Awad, 2007). It is possible that female students have higher levels of social coping than male students, which decreases social-psychological anxiety and helps with academic access (Morganson, Jones, & Major, 2010).

The results of GPA ranked surprisingly from the highest to the lowest with Hispanic to Caucasian, Asian, and African American students. The results between ethnicity and students' GPA were different from previous research studies that claimed Caucasian students receiving higher GPA compared to other ethnic groups (Bottia et al.; Davis & Otto, 2016; Jost et al., 2012) or Asian students receiving higher GPA (Sheu et al.). According to Yeboah and Smith (2016), students' motivations affect their anxiety and study strategies. The first generation of immigrant students value academic performance more than the second and third generation students (Jaret

& Reitzes, 2009). Most of our Hispanic participants were the first generation of immigrants. It is possible that Hispanic first generation college students strive for high GPA because of their motivations of academic success. It is also possible that Caucasian college students feel less threatened in the White dominated society, so they strive less for GPA and value enjoying college life rather than pursuing GPA (Dundes et al., 2009; Jaret & Reitzes, 2009).

According to the stereotypical threat theory, individuals with the high expectation of academic success tend to be affected by academic anxiety—a stereotype threat (Awad, 2007). Based on the results, Asian students' GPA was lower than Hispanic and Caucasian students. It is possible that the academic anxiety of performing well and learning barriers increased Asian students' stereotype threats and negatively affected their academic performance. Researchers revealed that Asian students or international students often experience cultural and language barriers to achieve academic success (Park, Lee, Choi, & Zepernick, 2017).

Yeboah and Smith (2016) noted that attitudes, motivations, and beliefs would impact students' anxiety on learning and study strategies. Based on the results, African American students received a lower GPA compared to students of other ethnic groups. Lige, Peteet, and Brown (2017) revealed that stereotypes of negative evaluation and perceived discrimination tend to reduce African American students' self-esteem and increase their academic threats. It is possible that African American students tend to perceive more stress and negative identity stigmas in a White dominated university, which negatively affects their academic performance.

Implications and Future Research

Helping individuals view racial anxiety as possibilities of social constructions can reduce their racial stereotypes on academic performance (Shih, Bonam, Sanchez, & Peck, 2007). Educators and counselors can facilitate educational and counseling interventions to help college students utilize their anxiety as a positive reinforcement to overcome academic challenges. Student-faculty interaction, mentoring systems, and outreach programs tend to help students, especially Asian and Hispanic college students, enhance support networks and promote academic achievements (Sheu et al.). Receiving additional advice and feedback on assignments from faculty often helps students improve their academic performance. Facilitating learning programs, including academic workshops, orientations, tutorial classes, writing centers, learning centers, and mentoring programs can help students receive advanced academic assistance, reduce anxiety, and conquer cultural as well as language barriers for achieving academic success. Educators and counselors can further explore with students their adaptive and maladaptive worldviews and aspects to help them overcome discrepancies in order to enhance academic performance (Elion, Wang, Staney, & French, 2012). Additionally, counselors and educators can enhance knowledge on diverse ethnicities to better understood students and to facilitate effective counseling and educational interventions to assist students in achieving identity integration and academic success (Awad, 2007).

The education law of No Child Left Behind requires educators to assist disadvantages students in boosting their academic achievement (Office of Superintendent of Public Instruction, 2004). Educators and counselors can explore with minority students impacts of ethnic identity and gender to reduce students' stereotype anxiety and use ethnic and gender strengths to achieve integration. Students with multiracial identities or LGBT identification would experience identity confusion which would affect their college life and academic performance. Researchers can investigate multiracial students' and LGBT students' challenges in social groups, college life,

and academic performance. Researchers can further investigate how students' perceptions affect their ethnic and gender identities as well as their coping strategies in the college life.

Limitations

This study was limited by the small number of international students and Native American students. Combining eight international students into Asian students, would impact the accuracy of the results because it is possible that not all international students were from Asian countries. International students from Asian countries are different from Asian Americans. The small number of Native American, international, and Asian students were under-represented for these minority groups in a large dataset. The results from a single university would not be sufficient to generalize the findings to college students in the United States. In addition, there was no student identified as multi-racial individuals. Students with multi-racial identity would have different ethnic identity compared to a particular ethnic group.

Conclusion

After reviewing literature and analyzing results of the study, we concluded that Hispanic students can score high GPA compared to other ethnic groups. It is also possible that college students can reduce their anxiety when they achieve academic expectations and embrace their gender and ethnic identities. This research points to the importance of helping diverse students adjust to college life as well as confront negative predictors of ethnic and gender stigmas in order to enhance college students' identity and academic success.
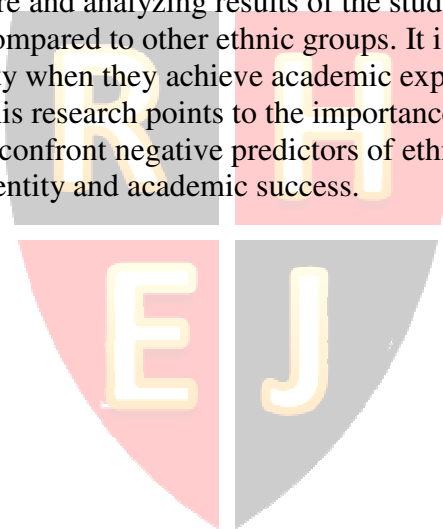
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APPENDIX

Table 1
Valid Cases of Participants with Cumulative GPA

Gender or Ethnicity of Participants	Valid Cases		Missing Cases	
n	Percent	*n*	Percent	
Female	617	100%	0	0%
Male	505	100%	0	0%
Asian or Pacific Islander	25	100%	0	0%
Black, Non-Hispanic	280	100%	0	0%
Hispanic	161	100%	0	0%
Caucasian, Non-Hispanic	656	100%	0	0%

Table 2
Z scores

Skewness	*SE*	zKurtosis	*SE*		*z*		
Male	0.843	0.109	7.73	1.247	0.217	5.75
Female	0.582	0.098	5.94	-.0178	.196	-.091
Caucasian	0.771	0.095	8.12	0.272	0.191	1.42
African American	0.474	0.146	3.25	0.358	0.29	1.23
Hispanic	0.742	0.191	3.88	0.224	0.38	0.59
Asian	0.713	0.464	1.54	-0.226	0.902	-.025

Table 3
Tests of Normality – Kolmogorove-Smirnov

Gender or Ethnicity of Participants	Statistic	*df*	*p*
Female	.174	617	.000
Male	.191	505	.000
Asian or Pacific Islander	.164	25	.083
Black, Non-Hispanic	.136	280	.000
Hispanic	.193	161	.000
Caucasian, Non-Hispanic	.209	656	.000

Table 4
Test of Homogeneity of Variance- Levene's Statistic

Cumulative GPA Based on Mean	Based on *M*	*df* 1	*df* 2	*p*
Gender	25.841	1	1120	.000
Ethnicity	1.134	3	1118	.334

Table 5
Two-Way ANOVA: GPA for Gender and Ethnicity

Gender	Ethnicity	*M*	*SD*	*n*	95% CI	
Lower Bound		Upper Bound				
Female	Asian or Pacific Islander	1.99	.73	14		
Black, Non-Hispanic		1.97	.76	187		
Hispanic	2.14		.85	94		

White, Non-Hispanic		2.07	.82	322		
Total	2.05	.81	617		1.931	2.156
Male	Asian or Pacific Islander	1.76	.67	11		
Black, Non-Hispanic		1.65	.59	93		
Hispanic	1.81	.68	67			
White, Non-Hispanic		1.80	.74	334		
Total	1.77	.70	505		1.624	1.882
Total	Asian or Pacific Islander	1.89	.70	25	1.577	2.178
Black, Non-Hispanic		1.86	.72	280	1.715	1.904
Hispanic	2.00	.80	161		1.853	2.092
White, Non-Hispanic		1.93	.79	656	1.876	1.992
Total	1.92	.77	1122			
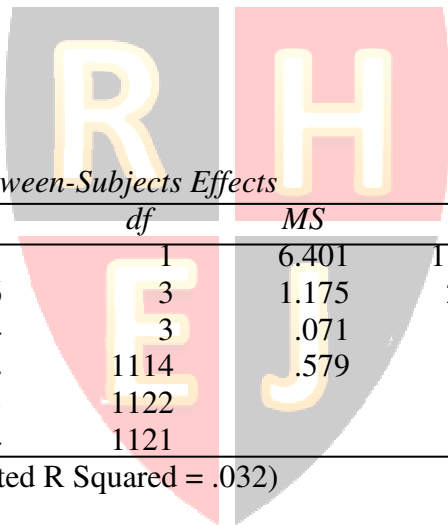
Table 6
Two-Way ANOVA: Tests of Between-Subjects Effects

Source	SS	df	MS	F	p	η^2
Gender	6.401	1	6.401	11.061	.001	.010
Ethnicity	3.526	3	1.175	2.031	.108	.005
Gender*Ethnicity	.214	3	.071	.123	.946	.000
Error	644.672	1114	.579			
Total	4821.103	1122				
Corrected Total	670.004	1121				

Note: R Squared = .038 (Adjusted R Squared = .032)
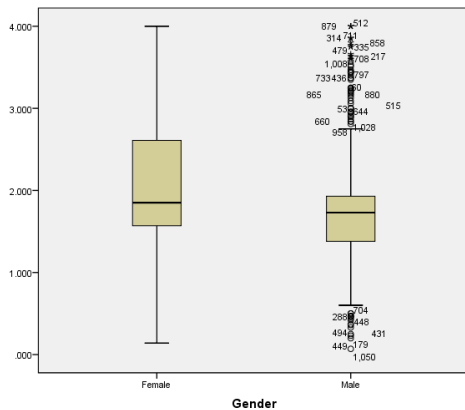Figure 1
Outliers of Gender
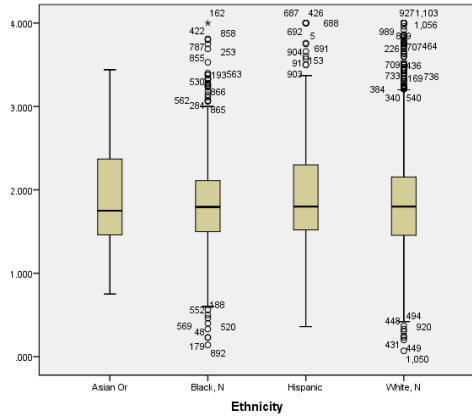

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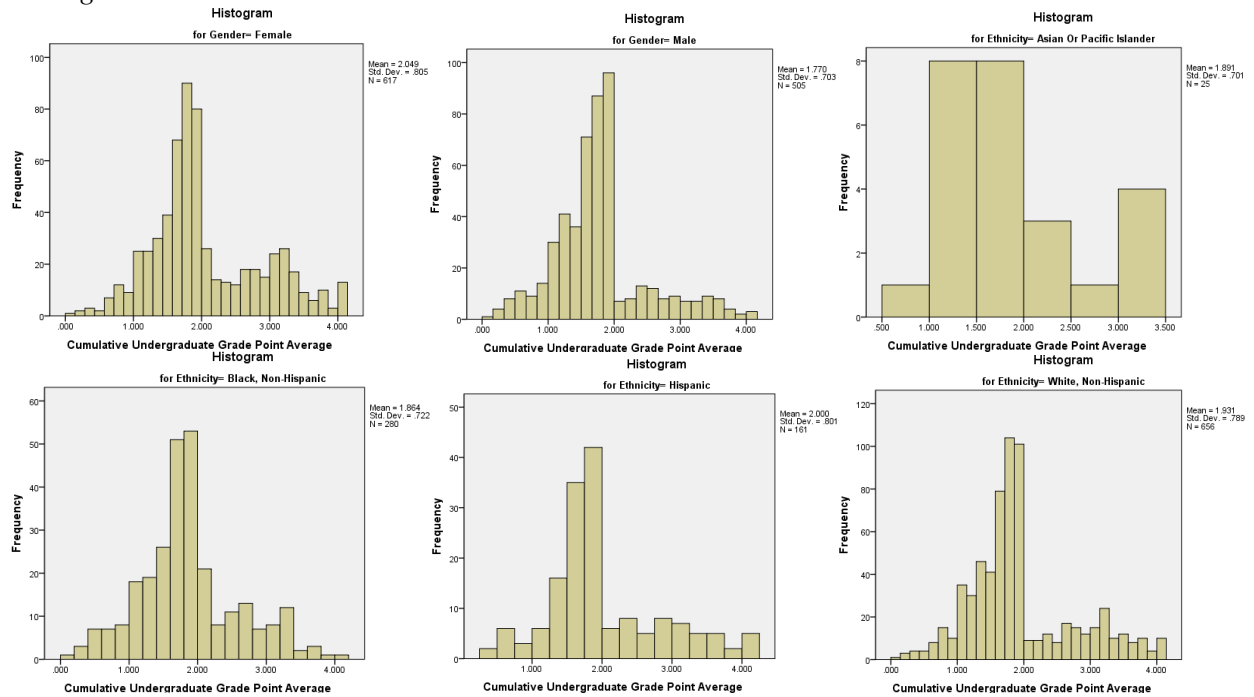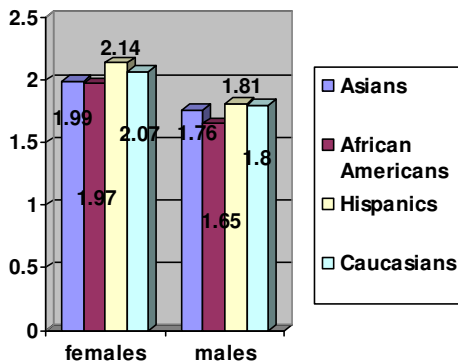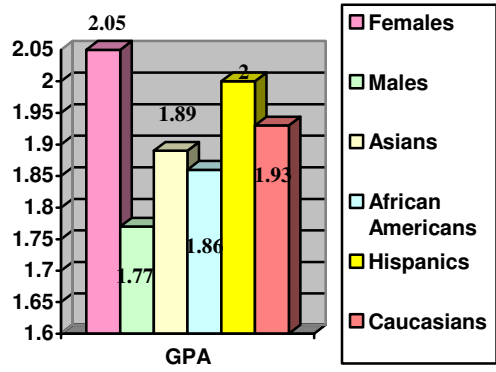*Outliers of Ethnicity*

Figure 3
Histograms

Figure 4
GPA and Gender

Figure 5
GPA, Gender, and Ethnicity

Figure 6
GPA and Ethnicity