

An Examination of Learning Preferences of U.S. and International Students

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Learning styles and preferences are often discussed topics in educational psychology, but are less prevalent in business education. International students are another understudied segment of business education. This article reviews literature regarding learning styles and preferences and examines whether U.S. and international students have different learning preferences using the visual-aural-read/write-kinesthetic (VARK) model. The findings indicate a large percentage of both populations have multimodal learning preferences. For the students who have one preferred learning mode, differences do exist between international and U.S. students.

Keywords: Learning preferences, Learning styles, VARK framework, International students

1. INTRODUCTION

The internationalization of business education has been the subject of much discussion (AACSB International, 2011; Bruner & Iannarelli, 2011). Many universities utilize activities such as study abroad programs that send students to another country to participate in academic and cultural learning. Study abroad programs are highly impactful in meeting the goals associated with international business education regarding internalizing foreign concepts and experiencing foreign nations and cultures (Aggarwal & Goodell, 2015). In 2013, 4.3 million students were studying outside their home country (Organisation for Economic Co-operation and Development [OECD], 2013). Bordia, Bordia, and Restubog (2015) note “despite their significant presence in western business schools, the needs and experiences of international students have not been adequately reflected in the business education literature” (p. 212). Learning styles and preferences have been studied a great deal in educational psychology, but business faculty may not have a background in this area. This article has two purposes: (a) to provide business faculty an introduction to learning styles and preferences and (b) to use the visual-aural-read/write-kinesthetic (VARK) model to determine if U.S. and non-U.S. students have differing learning preferences.

2. LEARNING STYLES AND PREFERENCES

As business faculty, we need to recognize that students come into business courses with a wide variety of strengths and preferences. Influences on learning include motivation, personality, and instructional preference. Learning styles and preferences of students are also important to consider. Learning styles are defined as “the preferences students have for thinking, relating to others, and particular types of classroom environments and experiences” (Grasha, 1990, p. 26). Leading theories of learning styles include those by Kolb (1976, 1984), Gregorc (1982), and Honey and Mumford (1993). Kolb’s seminal work on experiential learning describes how learners have preferences for doing versus reflecting and for experiencing versus thinking. Learning occurs in a cycle, with successful learners moving through four phases: abstract conceptualization, active experimentation, concrete experience, and reflective observation. Kolb implies that style is changeable with time and experience, rather than a structural trait that is stable over time. Instructors using Kolb’s model will build courses that allow students to engage in exercises, observations, theories and applications. Gregorc also emphasizes that information processing varies from concrete to abstract and from sequential to random. Honey and Mumford built on Kolb’s work to develop a Learning Styles Questionnaire (LSQ) targeted for management trainees. The LSQ measures whether an individual is most likely an activist, reflector, theorist, or pragmatist. The Felder-Silverman (1988) model has components for information intake and for cognitive processing. In this model, students vary as to whether they are sequential-global learners, active-reflective learners, verbal-visual learners, or sensing-intuitive learners.

Sensory modality addresses the question of how students prefer to take in information. The VARK model (Fleming and Mills, 1992) focuses on four modalities: visual or graphic (V), auditory (A), reading/writing (R) and kinesthetic (K). The visual preference includes forms of symbols, diagrams, charts, maps, etc., that people use to represent ideas rather than using words. The auditory (or oral) modality describes a preference for information that is spoken or heard. People who exhibit the reading/writing modality prefer information displayed as words. The modality where preference is given to the use of experience and practice is kinesthetic. Along with the descriptions of the four styles, Table 1 includes examples of activities that can be used in business classes that match each learning style. Individuals may have strong preferences for one modality, or may be adept at learning via any of the four modes.

Although many studies indicate that VARK is a learning style instrument (Hawk & Shah, 2007; Alexandra & Moldovan, 2011) and even Fleming’s (2014) own website uses the term learning style in some discussion of VARK (<http://www.vark-learn.com>), VARK does not take into account all aspects of learning style and, therefore, is not a full-fledged learning style instrument, per se. According to the VARK website, VARK is targeted to only one aspect of a learning preference. As Hawk and Shah (2007) noted, VARK is “in the category of instructional preferences because it deals with perceptual modes” (p. 6). Although it is not an all-encompassing learning style instrument, Fleming’s VARK model is particularly relevant for business faculty as it highlights the different ways in which students absorb information during class time and through assignments. If class time uses only one method (e.g., discussion), then only one group (e.g., auditory learners) is satisfied. Likewise, if assignments only use one method (outside readings), those assignments meet the needs of only those students with a preference for reading/writing. According to the VARK website (<http://www.vark-learn.com>), business students have a preference for kinesthetic (28.1%), followed by auditory (25.3%), reading/writing (24.5%), and then

TABLE 1
The Four Modalities Represented in the VARK Framework

<i>Sensory Mode</i>	<i>Characteristics</i>	<i>Sample Activities for Courses in Business School</i>
Visual/Graphic (V)	Take in information through symbols and design: Maps, charts, diagrams, whitespace, patterns, shapes.	Create audit diagrams; illustrate market process with supply & demand; analyze stock chart
Auditory (A)	Take in information through hearing and speaking: Lectures, group discussion, radio, web-chat and talking things through (even talking to self).	Listen to webinar on tax topic; hold small group discussion of daily business news; conduct focus group interview
Reading/Writing (R)	Take in information through text: Essays, reports, PowerPoint, textbooks, lists, dictionaries, and quotations.	Summarize IRS publication; read article from the business press; review investment prospectus; prepare an essay or report
Kinesthetic (K)	Take in information by doing: Simulations, demonstrations, case studies, labs, field trips, and role play.	Volunteer in community service learning; conduct in-class market experiment; run an investment simulation; prepare case study

visual (22.1%). Note that all are below the 30% level. By structuring class time and assignments with the four modes in mind, faculty may reduce frustration among students.

In the literature on learning styles and preferences, there is an assumption that the more faculty members understand the learning styles of students, the better we can design our courses to facilitate student learning (Felder & Spurlin, 2005; Hawk & Shah, 2007; Jaju, Kwak, & Zinkhan, 2002; Luck & Estes, 2011; Sandman, 2009). Additional studies have found a positive relationship between learning styles and performance (Eom, Wen & Ashill, 2006; Moldafsky & Kwon, 1994; Moores, Change, & Smith, 2004; Nicholson, Hamilton, & McFarland, 2007). Some researchers assert that matching teaching and learning styles is important in student performance (Borg & Shapiro, 1996; Charkins, O'Toole, & Wetzell, 1985; Davis & Bostrom, 1993; Felder, 1993; Fleming, 2001; Zapalska & Dabb, 2002). Not surprisingly, other studies disagree that adjusting teaching styles to match learning styles will make a difference (Clark & Latshaw, 2011; Karns, 2006). After a large review of the literature, Pashler, McDaniel, Rohrer, and Bjork (2008) criticized the experimental design and methodology used to assess effectiveness of instructional design. Other studies have not found links between performance and learning styles (Ayersman, 1996; Van Zwanenberg, Wilkinson, & Anderson, 2000).

3. INTERNATIONAL STUDENTS AND LEARNING PREFERENCES

In 2010, *The Economist* stated that foreign students made up 34% of students in America's elite business schools ("Business Education," 2010). In 2013, 4.3 million students were studying outside their home country (OECD, 2013). In 2013–14, 886,052 international students were studying in the United States (Institute of International Education, 2014). Nearly 25% of international students enroll in business schools ("Schumpeter," 2011). The percentage of U.S. business students

studying abroad has increased from 17.4 in 2004 to 20.5 in 2012 (DeLoach, Mark, & Olitsky, 2015).

Even with the increasing globalization of business education, there have only been a few studies focusing on differences of learning styles between nationalities. Sulkowski and Deakin's (2009) literature review indicated that one of the most frequently cited issues for foreign students was incongruence between teaching and preferred learning styles. Another reason to study the learning styles of students from different nationalities is that differences in learning styles may increase when students are more diverse (Dunn, Beaudry, & Klavas, 1989; Dunn, DeBello, Brennan, Krinsky, & Murrain, 1981). Some researchers suggest that teaching styles differ by cultures. International students in the United States often must shift from the lecture mode, which is typical in their culture, to more open teaching and learning methods (Albaum, 2011; Cheng, 1987). Instead of memorizing facts, students have to shift to problem-solving and other more active types of learning. As noted by Albaum (2011), "a 'cultural conflict' may arise over the discussion vs. listen difference" (p. 221). Asian students come from an authoritarian educational system, which does not expect verbal participation or interaction, and as a sign of respect, students should not challenge material from the professor (Bista, 2015; Lee, 2011; Van Auken, Wells, & Borgia, 2009). The majority of students in Central and Eastern Europe also learn through the lecture method (Zapalska & Dabb, 2002) and, given only about a quarter of a century has passed since the communist regimes of Central and Eastern Europe have fallen, business education is still developing and a lack of textbooks and other materials lead to lecture-based teaching styles (Zapalska & Perry, 2002). Bramorski (2002) stated that cultural differences promote differences in methodology and content between Central/Eastern Europe and the United States. He noted that U.S. business programs have evolved over a longer period of time, are more practical in nature, and tend to be better structured than those in Central and Eastern Europe. Given these assertions, international students may come to the United States with a different academic background with regarding to the teaching and learning styles and preferences.

The cultural work of Hofstede (1991) and Hall (1976) can help us understand why students bring differences to the classroom. For example, Bista's (2015) assertion that Asian students come from an authoritarian educational system and do not challenge professors might be rooted in Hofstede's cultural dimension of power distance. Bista also mentions that Asian students use context to communicate meaning. Given that Asian cultures are high context cultures and North American are lower context cultures, according to Hall's cultural context framework, potential differences in learning styles might be rooted in cultural differences (Lee, 2011; Mitsis & Foley, 2009).

Jaju et al. (2002) found differences in learning styles in business students from the United States, India, and Korea. Likewise, Hefferman, Morrison, Basu, and Sweeney (2010) examined differences in learning styles between Australian and Chinese business students and found substantial differences, as did Wait, Nichols, and Zatar (2011) between undergraduate engineering students in the Middle East and the United States. Using Hofstede's (1991) cultural dimensions, Mitsis and Foley (2009) found that culturally anchored values were predictors of learning style preferences. Chinese students' learning preferences changed while studying in Australia from a reflector learning style, which is consistent with a Confucian culture, to an active learning style, which is consistent with Anglo-Saxon business students (Barron & Arcodia, 2002; Volet & Renshaw, 1996). Using Honey and Mumford's (1993) learning style test, Kakkonen (2007) found the strongest learning style for a combined group of Finnish and Belgium students was

reflector, followed closely by pragmatist and theorist, with activist a distant fourth. In examining the development of cultural intelligence through international experience, Li, Mobley, and Kelly (2013) found that having a divergent learning style, as per Kolb's experiential learning theory, strengthened the positive relationship between length of overseas experience and the development of cultural intelligence for graduate business students and international executives in China and Ireland. Zapalska and Dabb (2002) administered the VARK questionnaire to students in economics and business courses in New Zealand, the United States, and Poland. They found that the New Zealand sample had higher multimodal learning styles than the United States and that the learning preferences in Poland were more evenly distributed than were the New Zealand or U.S. samples. Although Polish students were used to the lecture method, the preferred learning preferences for students with unimodal preferences were reading and kinesthetic, which are not aligned with the lecture teaching method predominant in Poland. However, Zapalska and Dabb did not present any statistical testing of their results.

The above studies have used a wide-range of learning style inventories. According to Hawk and Shah (2007), VARK is the only model in their review that contains the read/write and kinesthetic dimensions. VARK focuses on the sensory preferences for how to absorb and deliver information, allows for the strength of the preference for the learning style to be assessed, and allows for multimodal preferences (Boatman, Courtney, & Lee, 2008). Students may determine their VARK learning preferences via short web-based or paper-based questionnaires. Leite, Svinicki, and Shi (2010) found evidence of validity and reliability of the VARK instrument. The Cronbach's alphas were in the acceptable range of .77–.85 for each of the VARK subscales. Zapalska and Dabb (2002) cited Canfield's (1988) work on the validity of VARK in their justification for using the VARK model. Canfield indicates that VARK provides the ability to discriminate groups by learning preferences. Given the evidence regarding VARK's validity, we have selected the VARK instrument for our study of potential differences between U.S. and international students.

4. DATA ANALYSIS

Students at three universities participated in this study. The universities were located in the Western United States, the Southeastern United States, and Eastern Europe. The students in Europe were taught by English-speaking U.S. visiting professors. A total of 670 students participated, of whom 113 were international. The international students included the Eastern European students, students studying at the Eastern European university from another non-U.S. country, and international students studying in the U.S. universities. We did not identify the international students by home country because, in some cases, there were only a few international students per class. To ask the students to report their home nationality would result in the loss of anonymity. Additionally, the number of students from each country was so small, no further meaningful statistical analysis could have been performed for students by country. For the purposes of this study, we use the classification of U.S. and international students.

Surveys were distributed during a variety of business school courses held during the 2013/2014 and 2014/2015 academic years. Surveys were distributed during class time, with students assured that participation was voluntary and had no impact on course grades. The

TABLE 2
Summary of Survey Participants

<i>Major</i>		<i>Nationality</i>	
Business	80%	U.S.	71%
Nonbusiness, Related	8%	International	17%
Nonbusiness, Unrelated	6%		
<i>Age</i>		<i>Gender</i>	
Traditional age (18–22)	86%	Female	40%
Older student (Age 23+)	10%	Male	55%

Note. $N = 670$. Percentages may not sum to 100 due to rounding and due to missing responses. A related major is one outside the school of business that requires multiple business courses (e.g., Sport Management). A nonrelated major is one outside the school of business that does not require business courses (e.g., History).

surveys were approved by each of the U.S. universities' internal review boards (IRB) and by administration in the Eastern European university.

The survey instrument was Fleming's (2014) VARK 16-item questionnaire for young adults, which is available online (<http://www.vark-learn.org>). The copyright is held by VARK Learn Limited (2015), Christchurch, New Zealand; permission for use was obtained. Some of the survey questions use academic examples (What type of feedback do you prefer from a professor?) while others are varied (How do you give directions to a nearby location?). Additionally, demographic information of gender, GPA, age, and major was collected.

The respondents were 55% male, 71% were from the United States, and 80% business majors. Eighty-six percent of the students were in the traditional 18- to 22-year-old range. Approximately 11% of the total respondents and 67% of the international students were from the Eastern European university. Thirty-three percent of the international students were studying in the United States (Table 2).

The VARK survey contains 16 questions; however, multiple answers to each question are allowed. Whether a student has a preferred mode was determined by looking at the percentage of answers he or she gave corresponding to V, A, R or K preferences. We look at the difference in number of answers per category to classify whether each student is multimodal (no preference) or unimodal. Ganesh and Ratnakar (2014) used raw scores to determine a student's modality; "very strong" preferences are attributed when a respondent has the difference between the highest and second highest modes of 6, 7, 8, or 9 for total scores of 14–21, 22–27, 28–32, or 32+. "Strong" and "mild" preferences are categorized by smaller differences. Zapalaska and Dabb (2002) used a similar process with different ranges. In a 2009 scoring trial, VARK researchers suggested basing the categorization on the means and standard deviation of answers; these statistics are reported in Table 3.

For norming purposes, we calculated the percentage of answers in each category. If the difference between the scores for a respondent's highest and second highest preference was 36 percentage points or more (three or more standard deviations), the preference is "Very Strong"; if the difference between the scores for a respondent's highest and second highest preference was 24 percentage points or more (two or more standard deviations), the preference is "Strong"; if the difference was 12 percentage points or more, the preference is "Mild"; if the difference was less

TABLE 3
Overview of Responses

	<i>Percentage of Answers for "V" Mode</i>	<i>Percentage of Answers for "A" Mode</i>	<i>Percentage of Answers for "R" Mode</i>	<i>Percentage of Answers for "K": Mode</i>
Mean among all respondents	22.6	25.3	24.0	28.1
Standard deviation	10.1	11.1	11.7	11.8
Mean among respondents with Very Strong preferences	58.3	61.3	62.4	64.2
Mean among respondents with Strong preferences	51.4	51.0	50.2	51.4
Mean among respondents with Mild preferences	41.5	41.5	42.0	42.3

Note. $N = 670$ total; however, small numbers of students with very strong or strong preferences for each of the four modes preclude statistical testing for differences in means.

than 12 percentage points, the student had no preference. For example, one respondent selected 12 V, 6 A, 3 R, and 2 K. Fifty-two percent of the respondent's choices were V and 26% were A. The difference of 26 percentage points was categorized as "Strong."

Survey answers were analyzed using different approaches for categorical data and for continuous data. We first categorize students based on their preferred mode. Approximately 60% of students had no preferred mode of learning style, as shown in Table 4, Panel A. Roughly 27% of students have a mild preference, with the remainder demonstrating strong or very strong preferences. A chi-square test for independence indicated no significant difference between U.S. and international students in whether they had a preferred mode, $\chi^2(3, N = 599) = 0.517, p = .92, \phi = .029$.

Examining the students that do have a preferred mode, we found striking differences. There is a significant association between nationality and range of preferences, $\chi^2(3, N = 241) = 9.830, p = .02, \phi = .202$. While both groups have reading/writing as the second most common strength, international students are more likely to prefer auditory learning, while U.S. students prefer kinesthetic learning (see Table 4, Panel B).

Second, we examine the percentage of answers each student gave related to the four modes, as reported in Table 4. A standard *t*-test was used to assess differences in means. On average, 28.1% of answers chosen by all international students related to an auditory preference, which is significantly higher than the average of 24.5% of answers chosen by all U.S. students (as reported in Table 4, Panel C). Answers related to the kinesthetic mode were significantly more common among U.S. students than international students (28.6 versus 25.9%). Next, we examined only the students with a unimodal preference. The results in Table 4, Panel D show that the percentage of auditory answers chosen by international students was significantly higher than by U.S. students (29.3 versus 23.7%); the percentage of kinesthetic answers chosen by U.S. students was significantly higher than by international students (31.5 versus 23.8%).

Third, we investigate whether there are differences across students by gender, focusing on students with a modal preference. We focus on these students since the results of Table 4, Panel A, show no difference in the portion of U.S. students and international students with a modal

TABLE 4
Comparing U.S. and International Students

Panel A: Strength of Preferences		Panel C: Answers by Modal Category			
Portion of U.S. Respondents	Portion of International Respondents	Percentage of Answers by U.S. Respondents	Percentage of Answers by International Respondents	t	Sig.
59%	62%	22.5%	23.0%	0.474	.636
28%	27%	24.5%	28.1%	3.032	.003***
9%	7%	24.3%	23.0%	1.075	.283
4%	4%	28.6%	25.9%	2.451	.015**

Note. Percentages may not sum to 100 due to rounding, $\chi^2(3, N = 599) = 0.517, p = .92, \phi = .029$.

Panel B: Preferred Mode (Among Respondents with a Preference)		Panel D: Answers by Modal Category (Among Respondents with a Preference)			
Portion of U.S. Respondents	Portion of International Respondents	Percentage of Answers by U.S. Respondents	Percentage of Answers by International Respondents	t	Sig.
13%	16%	21.4%	21.4%	0.035	.972
21%	37%	23.7%	29.3%	2.204	.032**
23%	28%	23.4%	25.5%	0.873	.383
43%	19%	31.5%	23.8%	3.698	.000***

Note. Percentages may not sum to 100 due to rounding, $\chi^2(3, N = 241) = 9.830, p = .02, \phi = .202$.

Note. Percentages may not sum to 100 due to rounding, $\chi^2(3, N = 599) = 0.517, p = .92, \phi = .029$. ***Indicates means are different at the 1% significance level. **Indicates means are different at the 5% level.

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preference. Among U.S. students, there is a difference in the distribution of preferred mode across male and female students, $\chi^2(3, N = 196) = 3.411, p = .33, \text{phi} = .132$ (see Table 5, Panel A). The mean percentage of auditory answers was higher for U.S. males, while the percentage of reading/writing answers was higher for U.S. females (see Table 5, Panel B). International students also appear to have a difference in the distribution of preferred modes across male and female students. Unfortunately, focusing on these subgroups of respondents creates small groups, restricting statistical testing for differences (see Table 5, Panels C and D).

Fourth, regression analysis was used to assess the role of factors contributing to the percentage of answers given for each of the learning styles categories. Independent variables include student-reported GPA, a binary variable for gender (male = 1, female = 2), a binary variable for nationality (U.S. = 1, non-U.S. = 2), a binary variable for major group (business majors = 1, nonbusiness majors = 2), and a binary variable for age group (traditional college age = 0, older student = 1). Each of the four regressions had a *F* value that was significantly different from zero, as reported in Table 6. Gender was significant in all four, with a positive coefficient indicating that being female was directly related to the percentage of visual and reading/writing answers. Being an international student was positively related to the percentage of auditory answers and negatively related to the percentage of reading/writing answers.

Lastly, we examined whether there were differences between the preferences of international students who opted to study in their home country versus in the United States. Statistical tests found no significant difference between those two groups of international students. A chi square test indicated no association between location of study and distribution of learning preferences, $\chi^2(3, N = 113) = 3.719, p = .293, \text{phi} = .181$. Because 14% of students in our sample were nonbusiness students, we tested for differences between business and nonbusiness majors. There were no differences found between the modal preferences of business majors and nonbusiness majors, $\chi^2(3, N = 594) = 1.733, p = .630, \text{phi} = .054$.

5. DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH

A key takeaway for business faculty from this study is that differences in learning preferences do exist between U.S. and international students. The majority of students, both U.S. and international, are multimodal, meaning they do not have a strong preference for a learning mode. However, among those students with preferences, international students most prefer auditory. On the other hand, U.S. students have the strongest preference for kinesthetic activities and least prefer visual ones. These results are consistent with the results listed on the VARK website (<http://www.vark-learn.com>) for business students. As noted earlier, VARK reports business students have a preference for kinesthetic (28.1%, followed by auditory (25.3%), reading/writing (24.5%), and then visual (22.1%). Although the numbers in our study differ from those from the VARK website, the largest percentage of U.S. business students prefer kinesthetic (43%) in this sample and the lowest percentage of U.S. business students prefer visual (13%), which is consistent with the data from the VARK website. In this study, the preference order for auditory and reading/writing were reversed, with U.S. business students in this study slightly preferring reading/writing (23%) to auditory (21%), with the VARK website order of preference giving auditory a slight edge with 25.3 compared to 24.5% for reading/writing. We also note that there are similar results on whether the participants had a preferred mode. In this study, 59% of the U.S.

TABLE 5
Comparing Male and Female Students

<i>Panel A: Preferred Mode (Among U.S. Respondents with a Preference)</i>		<i>Panel C: Answers by Modal Category (Among U.S. Respondents with a Preference)</i>				
	<i>Portion of U.S. Females</i>	<i>Portion of U.S. Males</i>	<i>Percentage of Answers by U.S. Females</i>	<i>Percentage of Answers by U.S. Males</i>	<i>t</i>	<i>Sig.</i>
Visual	13%	13%	22.5%	23.0%	0.474	.636
Auditory	19%	23%	24.5%	28.1%	3.032	.003***
Reading/Writing	30%	19%	24.3%	23.0%	1.075	.283
Kinesthetic	37%	46%	28.6%	25.9%	2.451	.015**

Note. Percentages may not sum to 100 due to rounding. $\chi^2 (3, N = 196) = 3.411, p = .33, \phi = .132$.

<i>Panel B: Preferred Mode (Among International Respondents with a Preference)</i>		<i>Panel D: Answers by Modal Category (Among International Respondents with a Preference)</i>				
	<i>Portion of International Females</i>	<i>Portion of International Males</i>	<i>Percentage of Answers by International Females</i>	<i>Percentage of Answers by International Males</i>		
Visual	21%	11%	22.3%	20.2%		
Auditory	42%	32%	29.9%	28.6%		
Reading/Writing	25%	32%	24.3%	27.1%		
Kinesthetic	13%	26%	23.5%	24.2%		

Note. Percentages may not sum to 100 due to rounding. $N = 43$. The small sample size unfortunately precludes statistical testing across subgroups.

TABLE 6
Regression Results

Independent Variables	(1) Percent of Answers Visual		(2) Percent of Answers Auditory		(3) Percent of Answers Reading/Writing		(4) Percent of Answers Kinesthetic	
	B	Std. Error	B	Std. Error	B	Std. Error	B	Std. Error
Nationality	-0.004	0.021	0.055	0.023**	-0.058	0.025**	0.008	0.026
Gender	0.032	0.01***	-0.030	0.011***	0.024	0.012**	-0.026	0.012**
Major	0.001	0.013	-0.002	0.014	-0.019	0.015	0.020	0.016
Age group	-0.015	0.014	-0.044	0.015***	0.053	0.016***	0.007	0.017
GPA	-0.007	0.009	0.001	0.010	0.026	0.011**	-0.02	0.011*
Constant	0.207	0.041***	0.241	0.045***	0.201	0.048***	0.351	0.049***
F	2.479**		4.193***		5.246***		2.153*	
Adjusted R ²	.016		.034		.044		.012	
N	456		456		456		456	

***p < .01. ** p < .05. *p < .10.

sample and 62% of the international sample had no preferred mode. The results on the VARK website indicate that 63.6% had no preference.

Prior research has noted Eastern European countries have a propensity to use the lecture method (Bramorski, 2002; Zapalska & Dabb, 2002; Zapalska & Perry, 2002). Sixty-seven percent of the international students in this study were from an Eastern European university, and their preference for auditory learning is aligned with the predominant teaching method. However, there were no differences found between the students studying at the Eastern European university and the international students from a variety of countries studying in the United States, indicating it is not just a result pertinent to Eastern European students.

The results of this article contribute to a sparse literature on the learning preference differences between students of different nationalities (Hefferman et al., 2010; Jaju et al., 2002; Mitsis & Foley, 2009; Wait et al., 2011; Zapalska & Dabb, 2002). Future research should continue to explore the relationship between learning preferences and culture. A limitation of this article is that due to anonymity and sample size issues discussed earlier, we were unable to conduct analyses on students from the various international countries. This limitation resulted in studying U.S. compared to all non-U.S. students collectively. Future research that ties learning preferences of students from specific countries into the cultural work of Hofstede (1991), Trompenaars and Hampden-Turner (2012), and the GLOBE studies (House, Hanges, Javidan, Dorfman, & Gupta, 2004; Dorfman, Javidan, Hanges, Dastmalchian, & House, 2012) would provide additional insight. The prevalence of international students studying in the United States calls for more pedagogical research involving international students.

In this study, gender differences in learning preferences exist in the U.S. sample for auditory and reading/writing learning preferences, but unfortunately, the small sample size for the gender subgroups made it problematic to do further statistical testing for international gender differences. However, the regression results shown in Table 6 show that gender was the only demographic variable that was consistently significant. The potential of gender differences in learning preferences is another area that calls for future research.

6. CONCLUSION

Although international students make up approximately one-third of the student population in elite U.S. business schools (“Business Education,” 2010), little research has been done on their learning styles and preferences or on comparisons to U.S. students. This article adds to the literature on this topic. The results of this study indicate that, consistent with other research, most students do not have a learning preference—i.e., most students are multimodal. However, differences do exist between U.S. and non-U.S. students who are unimodal. Gender differences exist for the U.S. students, but sample size issues prevented an examination of gender differences for international students in this study.

As much of earlier research on learning styles and preferences have indicated, using a variety of pedagogical approaches is useful to reach students in a classroom. Faculty members who teach classes with a mix of student nationalities should be mindful to incorporate a variety of pedagogical approaches. However, faculty should be cognizant that diversity in the classroom does not just mean students from different cultures. Students from the same culture might be diverse in many facets, including learning styles and preferences.

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