

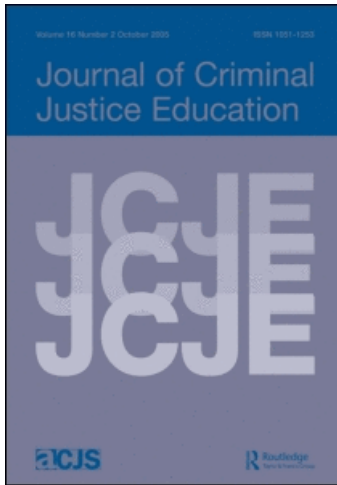
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A Cross-Cultural Comparison of East Asian and American Higher Education Criminal Justice Student Learning Preferences Using the VARK Questionnaire

James R. McKean, Shannon M. Brogan and Jason S. Wrench

The purpose of this quantitative study was to examine the relationship between learning preferences of East Asian and American higher education students. A review of the literature revealed a body of qualitative studies suggesting a stereotypical perception of an Asian learning preference influenced by cultural variables and the historical roots of Confucianism. The pedagogical implications of this stereotypical perception are obvious to faculty engaged in teaching and learning with Asian international students in America or abroad. The authors surveyed 233 higher education students from Hong Kong and America using the VARK Questionnaire. The authors used a two-way contingency table analysis and chi-square statistical tests to conduct their cross-cultural comparison on their variables of interest including age, gender, and country.

Introduction

Enrollments of international students continued to climb at American higher education institutions reaching a total of 564,766 during the 2005-06 academic year according to the National Center for Education Statistics (*Digest of Education Statistics* [U.S. Department of Education, NCES 2008]). The institutional implications of this trend reflect a recovery from the adverse impact on international enrollments created by the events of 11 September 2001 and the ensuing regulatory burdens placed on foreign students desiring to study in America. Of particular significance to the authors, 58% of the international students represent Asian countries (U.S. Department of Education, NCES 2008). Based on their international teaching and learning experiences in Hong Kong, the authors became interested in an academic question of pedagogical significance when viewed in the context of an expanding number of international students

studying in America—are there any recognized differences between international student learning preferences or styles, specifically, East Asian and American students? Are there differences in student learning preferences by age and gender when comparing students from different cultural backgrounds? How may these variables affect current pedagogical practices? What are the implications, if any, for faculty?

Literature Review

A review of the literature indicated a diverse compilation of recognized variables that affect the learning environment for international students in answer to the above questions as well as an emerging theme—traditional perceptions of East Asian learning preferences may in reality constitute misperceptions. A notable amount of the literature regarding international students fails to distinguish between different types of East Asian cultures. The implications of this distinction result in misleading notions that are documented by the authors. The authors remained consistent with this conceptual framework and researched literature from the context of East Asian as including students from Japan, China, Hong Kong, and Southeast Asian countries except where the individual literature was culturally specific.

Historical Perspectives: Asian Learning Style Stereotype

An examination of existing literature regarding multicultural comparisons of student learning preferences, specifically Asian and American, revealed that the body of research is limited. An early study in this area involved an examination of student conceptions of learning and their use of self-regulated learning strategies that compared Australian and Japanese students (Purdie, Hattie, and Douglas 1996). The methodology used by Purdie et al. involved both quantitative and qualitative methods. First, they administered a Student Learning Survey to 248 Australian students and 215 Japanese students in their final three years of schooling. From the quantitative results, they compiled a qualitative analysis of the students' conceptions of learning. One particular aspect of this study discussed the phenomena of increasing amounts of Asian students choosing to study in Australia. This trend created an impact that is particularly relevant to this review. According to the authors, this increase in students resulted in the creation of an Asian student stereotype. The existence of this stereotype is a recurring theme that is found throughout our review of the literature. Purdie et al. describe this stereotypical view of Asian students as highly dependent upon rote learning where the teacher is perceived to be the center of knowledge and students are passive learners in the learning environment. Conversely, the authors describe Australian students as stereotypically more active in their learning approaches. In their

summary of major findings, Purdie et al. initially posit that their quantitative data confirmed "... the stereotypical view of Japanese students as 'rote memorizers' who rely heavily on their textbooks and are reluctant to seek assistance from their teachers" (p. 97). However, the authors point out that their qualitative comparison between the two groups' conception of learning as understanding and use of strategies reveals that contrary to the stereotype, Japanese students are quite similar to their Australian counterparts. The relevance of Purdie et al. is the articulation of the Asian and Western stereotype of learning preferences.

Understanding the Asian Culture and Learning Styles

Similarly, more recent literature on learning style preferences of international students addressed this Asian stereotype from the perspective of pedagogical or cultural factors inherent in their home countries that may contribute to this perception. Ladd and Ruby (1999) conducted a study of 35 international students enrolled in a graduate Masters of Business Administration program at a state university. The methodology they employed involved the administration of the Canfield Learning Styles Inventory (Canfield 1992). The results of their study indicated that the primary pedagogy of the international students' home country was the lecture method but student learning style preferences indicated they preferred to learn experientially. Although their data sample is too small to reach statistically valid conclusions, it is an example of quantitative research directed toward measuring student learning preferences and the impact of pedagogical practices on these preferences.

Chan (1999) provided a historically significant piece of research for understanding the Asian educational stereotype, learning preferences of Asian students, and the impact of cultural variables on learning styles. According to Chan, the key to understanding the learning preferences of Chinese students is through a deeper understanding of the Chinese mind and culture. Chan further wrote that the influence of Confucianism on the Chinese cultural identity provides insight into Chinese pedagogical practices. According to Chan, children are encouraged to memorize the writings of Confucius from an early age. With such an emphasis on memorization, the result is that educational practices have evolved around the construct of acquiring individual knowledge from rote memorization and application of examples. Similarly, Confucianism as a philosophy emphasizes the value of harmony, controlling emotions, and avoiding conflict according to Chan. Chan found it understandable from this philosophical perspective that Chinese teaching styles based on this influence are frequently described in earlier research (Kirkbride and Tang 1992) as "didactic and trainer-centered". From this context, Chan suggested that Chinese learners might prefer traditional Chinese styles rather than the more active learning or participative environments of Western cultures. It is significant to note the author's business background. At the time of her writing, she served on the Faculty of

Business, Leeds Metropolitan University, UK. From this business perspective she concludes her article by identifying a number of problems associated with Western management programs and pedagogical practices, specifically (1) applicability of Western concepts to China, (2) lack of student participation in classroom activities, (3) limited use of typical management training techniques such as case studies, role-play, and business games, (4) inefficiency of group discussions, and (5) teacher-led (Chan 1999). In addition to the author's insight into the Chinese culture and its impact on learning styles, her work is significant in our literature review for its specificity and focus on the affect of the academic discipline on the integration of Chinese learning styles and Western pedagogical practices.

Additional insight can be gleaned from a similar but more recent study to identify learning styles of Asian students and its impact on pedagogical practices conducted by Chiang (2000). The methodology used by Chiang involved interviews and observations of 19 families from China, Hong Kong, Japan, Korea, and Taiwan as well as interviews of their collective 33 children. Demographic data of particular significance to her study is the level of postsecondary education obtained by the parents. According to Chiang, 97% of the children's parents possessed a baccalaureate degree or higher. The author reached similar conclusions as Chan (1999). One of the implications of her study was that the passive learning preferences of the parents resulted in similar preferences of the students. The pedagogical implications for the teacher are a need to understand the cultural differences inherent in Asian students according to Chan (1999). Similarly, Lin (2002) explored the learning styles of Chinese graduate students pursuing advanced degrees in the social sciences discipline (Lin 2002). The methodology used by Lin was a qualitative study, which consisted of interviews and participant observations. Despite her small sample size, it is interesting to note that her data analysis led to a series of six assertions one of which concluded that "... all participants have been accustomed to Chinese teaching and learning styles ..." (Lin 2002: p. 18). While her sample size does not permit us to generalize conclusions to a larger population of Chinese students, it supported the conclusions asserted in the previous work of Chan (1999) and Chiang (2000) regarding the impact of culture on Asian learning styles.

Dispelling the Asian Learning Styles Stereotype

Kennedy (2002) provided us with one of the most significant pieces of literature concerning the learning styles of Chinese students that challenged the historical stereotype of previous research. At the time of his writing, Peter Kennedy served as senior program director with the School of Professional and Continuing Education at the University of Hong Kong, Hong Kong, Special Administrative Region. Kennedy wrote that previous research suggested that student learning styles are frequently influenced by their Confucian heritage. According to

Kennedy, earlier research by (Cortazzi and Jin 1996; Ho and Crookall 1995; Murphy 1987; Nelson 1995; Scollon and Scollon 1995) all related influences of Confucius on the learning styles of Chinese students thought to prefer rote memorization of the teacher's knowledge without question. However, Kennedy noted that more recent research dispelled this Confucius stereotype. Cheng (2000) described the affect of Confucian values by "... pointing out that the Chinese term 'knowledge' is made up of two characters: One is *xue* (to learn) and the other is *wen* (to ask). This means that the action of enquiring and questioning is central to the quest for knowledge" (p. 441). According to Kennedy, historical research that suggested a rote memorization style preference by the Chinese learner due to culture, only acknowledged part of Confucius teaching. Kennedy further dispels this stereotype quoting the research of Winter and Tang (1996) which studied the impact of peer learning on Hong Kong students. Kennedy wrote that Winter's (1996) and Tang's (1996) studies of peer learning illustrated critical thinking skills inherent in Hong Kong students that are more complex than those represented by the Western stereotypes of Chinese learners.

Another critical aspect of Kennedy's (2002) research of significance to this study was his analysis of a cross-cultural study of learning styles by Oxford and Anderson (1995). According to Oxford and Anderson, Chinese learners prefer classrooms that emphasize grammar rules and learning is inductive. While this research was critical to dispelling the stereotypical myth, Kennedy wrote that due to the broad, general scope of the study, differences such as age and gender might be obscured. This acknowledgment by Kennedy also created an implication for the pursuit of future quantitative research on this subject with specific consideration to the role of individual variables such as age and gender on learning styles. Similarly, Jin and Cortazzi (2006) point out in their research of Chinese students studying in Britain that although Chinese students comprise approximately a significant percentage of the world's higher education students, there remains a gap in the quantitative literature into their learning practices abroad. A major aspect of a review of existing literature points to the lack of data-based research on this subject.

The literature is replete with empirical research studies of student learning emanating from the seminal work of pioneers such as Dewey (1938) to the experiential learning theories of Kolb (1984). More recent books such as Olson and Hergenhahn (2009) and Schunk (2007) document the learning process from a psychological framework of cognitive and behavioral learning theories. In their cross-cultural study of affective constructs, Marsh, Hau, Artelt, Baumert, and Peschar (2006) posit, "Student approaches to learning—learning strategies, self-beliefs and confidence, motivation, and learning preferences—are central components of schooling" (p. 346). In concert with our broadening understanding of the learning process, researchers such as Borden and Young (2008) have focused on the assessment of learning and the resultant institutional implications. Other researchers such as Klein, Benjamin, Shavelson, and Bolus (2007) have examined the Collegiate Learning Assessment and its use as a valid

measure of student learning along with the institutional and policy ramifications. Given the importance of faculty pedagogical practices, a significant body of literature has focused on the role of faculty in the learning process. According to Umbach and Wawrzynski (2005) "First-year students and seniors reported greater gains in personal social development, general education knowledge, and practical competencies on campuses where faculty members engaged them using active and collaborative learning exercises" (p. 165). The challenge for faculty remains in the implementation of appropriate pedagogical practices that create a learning environment for all students in an increasingly diverse classroom.

An emergent body of research in the 1980s on modal preferences, Dunn and Dunn (1987) and Fleming (2001) explored student learning preferences and resultant pedagogical implications for faculty. Fleming developed the VARK Questionnaire, which is designed to identify the manner in which an individual prefers to receive and give information. The acronym VARK stands for the modal preferences Visual, Aural, Read/Write, and Kinesthetic, an extension by Fleming (2001) of the body of literature suggesting a "... three-part sensory approach (V, A, and K)" (p. 37). Fleming's research suggested that visual information consisted of two types "... text and drawings, or symbolic and iconic" (p. 38). According to Fleming, individuals process information through their eyes (Visual), text (Read/Write), ears (Aural), and experiences (Kinesthetic). Fleming posits that teaching strategies that match student learning or modal preferences result in active student engagement and greater opportunities for learning to occur. According to Fleming, 55-65% of students and teachers are multimodal. The implications for faculty are clear—in order to enhance student learning, it is important to develop pedagogical practices that recognize differences in individual student learning preferences. A unique feature of the VARK Questionnaire is that it is available in a variety of languages facilitating cross-cultural studies. Kalkan (2008) used the VARK Questionnaire in a Turkish study of student learning preferences. French, Cosgriff, and Brown (2007) used the VARK Questionnaire and Kolb's Learning Styles Inventory in their study, the learning preferences of Australian occupational therapy students. Wehrwein, Lujan, and DiCarlo (2007) used the VARK Questionnaire to study the learning preferences of American physiology students.

Finally, there is one clear implication from the literature for faculty involved in higher education—we are increasingly part of a global learning environment. American institutions with increased international enrollments may not consider the academic implications for faculty. Conversely, a review of the literature validates pedagogic implications for faculty engaged in teaching and learning with an internationally diverse student body. For this faculty, pedagogical practices should reflect learning preferences in order to create and enhance a learning environment. The question remains and the overarching purpose of this study is to empirically determine if there are differences in student learning preferences between American and East Asian students.

Method

Research Questions and Hypotheses

The purpose of this study is to empirically examine differences in criminal justice student practitioner learning preferences in higher education from a cross-cultural context. The theoretical significance of this research is to provide empirical data on East Asian student criminal justice practitioners in support of an emerging body of research literature questioning historical beliefs about the learning preferences of East Asian higher education students. Additionally, this research has practical significance for the pedagogic practices of faculty engaged in international teaching abroad or within an increasingly internationally diverse student population in the America. Based on the literature review of academic perceptions of East Asian student learning preferences, the following research questions were developed:

- (1) Are there significant differences between the learning styles of East Asian students and student public safety practitioners from America?
- (2) Are there significant differences between the learning styles of East Asian students and student public safety practitioners from America by gender?
- (3) Are there significant differences between the learning styles of East Asian students and student public safety practitioners from America by age?

Research Design

Based on the research questions, the authors selected a survey research design as the methodology for this study. This design enabled the authors to collect data consistent with the short period of time they were available in Hong Kong and enabled them to delimit the population sample to student criminal justice practitioners. Additionally, this methodology lends itself to quantitative data analysis consistent with the identified research problem. Further, this research design enabled the informed consent of target population participants protecting the autonomy of students electing to participate in the study and satisfying ethical considerations consistent with contemporary ethical research guidelines. Student research participants did not receive any extra credit or inducements for their participation in this study. Learning preferences were measured using the VARK Questionnaire.

The authors used descriptive statistics and two-way contingency table analysis to determine the following:

- (1) Is there a statistical relationship between student learning preferences and country?
- (2) Is there a statistical relationship between student learning preferences and gender?

(3) Is there a statistical relationship between student learning preferences and age?

The authors recognize the limitations of this methodology, specifically the inability to generalize the findings to the larger population of student practitioners in Hong Kong and America.

Participants

The target population for the survey data came from a convenience sample of Hong Kong higher education students in the Continuing Studies Program at Chinese University who are current criminal justice or public safety practitioners primarily assigned to the Kowloon region. In the same way, American student criminal justice practitioners from the Midwestern region of America were selected based on their similarity to the subset of Hong Kong criminal justice students assigned to the Kowloon district. The Hong Kong Police Department is a national police force organized along hierarchical and geographic lines similar to the British model. Conversely, American participants represented state and local suburban police departments assigned to the central Ohio region of America. Based on the sample population, this study is limited in the degree of generalizability that is applicable to the learning preferences of Hong Kong or American student public safety practitioners.

The overall sample consisted of 233 participants with a mean age of 31.92 ($SD = 8.44$) and a range from 20 to 62. The distribution of the sample by age was positively skewed around the median age of 30, which is consistent with criminal justice practitioners where entry-level positions comprise the largest quantity of an organization. The total sample consisted of 69.5% male respondents ($n = 162$) and 30.5% female respondents ($n = 71$). Examining biological sex by country, the Hong Kong sample was more balanced with 59.1% ($n = 78$) of the Hong Kong participants male and 40.9% ($n = 54$) female. The American sample, on the other hand, consisted of 83.2% ($n = 84$) males and 16.8% ($n = 17$) females.

In addition to basic demographic information, information on the type of law enforcement for both the Hong Kong and American samples was also collected. The participants within the Hong Kong sample came from five distinct lines of law enforcement: Hong Kong Fire Services Division ($n = 15$, 11.4%), Hong Kong Police ($n = 53$, 40.2%), Hong Kong Immigration Division ($n = 20$, 15.2%), Hong Kong Customs Enforcement ($n = 20$, 15.2%), and Hong Kong Correctional Services ($n = 24$, 18.2%). Participants within the American sample came from three distinct lines of law enforcement: State Highway Patrol ($n = 40$, 39.6%), Police in a Municipal Suburb ($n = 49$, 48.5%), and Police Recruits ($n = 12$, 11.9%).

Procedures

Participants in this study were recruited using a simple networking technique. Criminal justice student practitioners in Hong Kong and America were asked to

find research participants for this study. The network sample was given a copy of the survey instrument with a letter of informed consent, which explained the nature of the study and clearly articulated the voluntary and anonymous elements consistent with the research design. After the participants completed the surveys they were returned to the principal investigators for data compilation and analysis.

Results

Analysis of Learning Preferences

The answer to our first research question, are there significant differences between the learning preferences of East Asian and American participants, can be gleaned from the observed results in Table 1. The observed results of the VARK Questionnaire, when cross-tabulated by country, reveal similar preferences among the sample. The largest distribution of a single learning style preference for Hong Kong and American students was K or Kinesthetic. The Kinesthetic learning preference comprised 22.7% ($n = 30$) of the Hong Kong students and 24.8% ($n = 25$) of the American students, which represented 23.6% ($n = 55$) of the total sample. Similarly, 10.6% ($n = 14$) of the Hong Kong students and 6.9% ($n = 7$) of the American students displayed an A or Aural preference as the next most frequently observed learning preference among the single modal styles. The R or Read/Write preference was preferred by 9.8% ($n = 13$) of the Hong Kong students and 6.9% ($n = 7$) of the American students while the V or Visual preference comprised 5.3% ($n = 7$) of the Hong Kong preferences and 1.0% ($n = 1$) of the American student preferences. Similarly, the observed frequency distribution for multimodal preferences was highest for both countries in the VARK preference. American students multimodal preferences were most frequently observed for the VARK preference consisting of 26.7% ($n = 27$), which was 11.6% of the total by country while the observed distribution of VARK for Hong Kong students was 17.4% ($n = 23$) or 9.9% of the total. An interesting observation occurs in the ARK multimodal preference where American students comprise 13.9% ($n = 14$) of the preference by country and Hong Kong students 3% ($n = 4$). This preference encompassed 6.0% of the American total but only 1.7% of the total by Hong Kong students.

Continuing our analysis of the data to answer our second research question, we look to the observed results of Table 2. When cross-tabulated by country and gender, the data reveals similar preferences among the sample by gender. The largest distribution of a single learning style preference for Hong Kong students by gender was K or Kinesthetic. The observed frequency distribution of the Kinesthetic preference comprised 19.2% ($n = 15$) for males and slightly higher for females 27.8% ($n = 15$). The Kinesthetic single preference represented 22.7% of the total sample among Hong Kong students. Based on the literature review, the authors anticipated a higher percentage of didactic preferences, which

Table 1 Distribution of learning preference by country

VARK	Country (N = 233)		Total
	Hong Kong	America	
V	7	1	8
% within country	5.3	1.0	3.4
% of total	3.0	0.4	3.4
A	14	7	21
% within country	10.6	6.9	9.0
% of total	6.0	3.0	9.0
R	13	7	20
% within country	9.8	6.9	8.6
% of total	5.6	3.0	8.6
K	30	25	55
% within country	22.7	24.8	23.6
% of total	12.9	10.7	23.6
VA	4	0	4
% within country	3.0	0	1.7
% of total	1.7	0	1.7
VR	2	0	2
% within country	1.5	0	0.9
% of total	0.9	0	0.9
VK	4	3	7
% within country	3.0	3.0	3.0
% of total	1.7	1.3	3.0
AR	4	0	4
% within country	3.0	0	1.7
% of total	1.7	0	1.7
AK	6	3	9
% within country	4.5	3.0	3.9
% of total	2.6	1.3	3.9
RK	6	6	12
% within country	4.5	5.9	5.2
% of total	2.6	2.6	5.2
ARK	4	14	18
% within country	3.0	13.9	7.7
% of total	1.7	6.0	7.7
VAK	5	3	8
% within country	3.8	3.0	3.4
% of total	2.1	1.3	3.4
VAR	5	0	5
% within country	3.8	0	2.1
% of total	2.1	0	2.1

Table 1 (Continued)

VARK	Country (N = 233)		Total
	Hong Kong	America	
VRK	5	5	10
% within country	3.8	5.0	4.3
% of total	2.1	2.1	4.3
VARK	23	27	50
% within country	17.4	26.7	21.5
% of total	9.9	11.6	21.5
Total	132	101	233
% of total	56.7	43.3	100

would be observable in the single preference results with specific regard to R or Read/Write preferences. The Read/Write preference comprised 14.1% ($n = 11$) of the single preferences among male Hong Kong students but only 3.7% ($n = 2$) among female students. By contrast, among Hong Kong female students the multimodal preference of AK comprised 7.4% ($n = 4$) of their total compared to 2.6% ($n = 2$) of the male Hong Kong students. The highest observed frequency of multimodal preferences for Hong Kong students occurred among the VARK preference with 15.4% ($n = 12$) of the male students and 20.4% ($n = 11$) of the female students displaying that preference. As can be seen from Table 3, the frequency distribution for American students indicated a preference for K or Kinesthetic among single preferences with 25% ($n = 21$) among male students and 23.5% ($n = 4$) among female students. The Kinesthetic preference represented 24.8% of the total preferences for American students. Conversely, the VARK preference represented 26.7% of the American total with 26.2% ($n = 22$) among males and 29.4% ($n = 5$) among female American students. One difference by country and gender among multimodal preferences was observed in the distribution of the ARK preference. Among American students, the observed frequency for males was 11.9% ($n = 10$) and 23.5% ($n = 4$) among females, which comprised 13.9% of the American total. By contrast, the observed frequency for Hong Kong male students was 3.8% ($n = 3$) and 1.9% ($n = 1$) for female students with this preference accounting for only 3% of the Hong Kong total (see Table 2).

To answer the third research question, the authors constructed three factors for the distribution of age based on the range for this variable—20-29, 30-39, and 40 and above. The observed results of the VARK Questionnaire, when cross-tabulated by country and age group, reveal similar preferences among the sample recognizing the sample distribution may be positively skewed by age. The largest distribution of a single learning style preference for Hong Kong students by age group was K or Kinesthetic (see Table 4). The age group of 30-39 comprised 38.1% ($n = 16$) of the Kinesthetic preference among Hong Kong students, which represented 11.4% of the sample total. Students aged 20-29 comprised 8.3% ($n = 11$) of the sample total. Collectively, the Kinesthetic preference equaled 22.7% of the sample total for Hong Kong students. Similarly, the Kinesthetic preference

Table 2 Distribution of learning preference by gender in Hong Kong

VARK	Gender (N = 132)		Total
	Male	Female	
V	4	3	7
% within gender	5.1	5.6	5.3
% of total	3.0	2.3	5.3
A	8	6	14
% within gender	10.3	11.1	10.6
% of total	6.1	4.5	10.6
R	11	2	13
% within gender	14.1	3.7	9.8
% of total	8.3	1.5	9.8
K	15	15	30
% within gender	19.2	27.8	22.7
% of total	11.4	11.4	22.7
VA	3	1	4
% within gender	3.8	1.9	3.0
% of total	2.3	0.8	3.0
VR	1	1	2
% within gender	1.3	1.9	1.5
% of total	0.8	0.8	1.5
VK	2	2	4
% within gender	2.6	3.7	3.0
% of total	1.5	1.5	3.0
AR	2	2	4
% within gender	2.6	3.1	3.0
% of total	1.5	1.5	3.0
AK	2	4	6
% within gender	2.6	7.4	4.5
% of total	1.5	3.0	4.5
RK	5	1	6
% within gender	6.4	1.9	4.5
% of total	3.8	0.8	4.5
ARK	3	1	4
% within gender	3.8	1.9	3.0
% of total	2.3	0.8	3.0
VAK	4	1	5
% within gender	3.8	1.9	3.8
% of total	2.3	0.8	3.8

Table 2 (Continued)

VARK	Gender (N = 132)		Total
	Male	Female	
VAR	3	2	5
% within gender	3.8	3.7	3.8
% of total	2.3	1.5	3.8
VRK	3	2	5
% within gender	3.8	3.7	3.8
% of total	2.3	1.5	3.8
VARK	12	11	23
% within gender	15.4	20.4	20.4
% of total	9.1	8.3	20.4
Total	78	54	132
% of total	59.1	40.9	100

Table 3 Distribution of learning preference by gender in America

VARK	Gender (N = 101)		Total
	Male	Female	
V	0	1	1
% within gender	0	5.9	1.0
% of total	0	1.0	1.0
A	6	1	7
% within gender	7.1	5.9	6.9
% of total	5.9	1.0	6.9
R	6	1	7
% within gender	7.1	5.9	6.9
% of total	5.9	1.0	6.9
K	21	4	25
% within gender	25	23.5	24.8
% of total	20.8	4.0	24.8
VA	0	0	0
% within gender	0	0	0
% of total	0	0	0
VR	0	0	0
% within gender	0	0	0
% of total	0	0	0
VK	2	1	3
% within gender	2.4	5.9	3.0
% of total	2.0	1.0	3.0

Table 3 (Continued)

VARK	Gender (N = 101)		Total
	Male	Female	
AR	0	0	0
% within gender	0	0	0
% of total	0	0	0
AK	3	0	3
% within gender	3.6	0	3.0
% of total	3.0	0	3.0
RK	6	0	6
% within gender	7.1	0	5.9
% of total	5.9	0	5.9
ARK	10	4	14
% within gender	11.9	23.5	13.9
% of total	9.9	4	13.9
VAK	3	0	3
% within gender	3.6	0	3.0
% of total	3.0	0	3.0
VAR	0	0	0
% within gender	0	0	0
% of total	0	0	0
VRK	5	0	5
% within gender	6.0	0	5.0
% of total	5.0	0	5.0
VARK	22	5	27
% within gender	26.2	29.4	26.7
% of total	21.8	5	26.7
Total	84	17	101
% of total	83.2	16.8	100

comprised 24.8% ($n = 25$) of the total American sample (see Table 5). Within the American sample, the 30-39 age group, like their Hong Kong counterparts, comprised the largest portion of the age group distribution for the Kinesthetic preference with 11.9% ($n = 12$) of the sample total. The frequency distribution of multimodal preferences by country was similar with VARK comprising 26.7% of the American sample. Similarly, the distribution by age group was higher for the 20-29 age group, which comprised 12.9% of the sample total.

Contingency Table Analysis

Based on the observed distributions, the authors conducted a two-way contingency table analysis with a chi-square test to evaluate the differences between

Table 4 Distribution of learning preference by age group in Hong Kong

VARK	Age group (N = 132)			Total
	20-29	30-39	40 and above	
V	5	1	1	7
% within age group	7.9	2.4	3.7	5.3
% of total	3.8	0.8	0.8	5.3
A	9	1	4	14
% within age group	14.3	2.4	14.8	10.6
% of total	6.8	0.8	3.0	10.6
R	7	5	1	13
% within age group	11.1	11.9	3.7	9.8
% of total	5.3	3.8	0.8	9.8
K	11	16	3	30
% within age group	17.5	38.1	3.7	22.7
% of total	8.3	11.4	0.8	22.7
VA	1	2	1	4
% within age group	1.6	4.8	3.7	3.0
% of total	0.8	1.5	0.8	3.0
VR	1	1	0	2
% within age group	1.6	2.4	0	1.5
% of total	0.8	0.8	0	1.5
VK	1	1	2	4
% within age group	1.6	2.4	7.4	3.0
% of total	0.8	0.8	1.5	3.0
AR	2	0	2	4
% within age group	3.2	0	7.4	3.0
% of total	1.5	0	1.5	3.0
AK	1	2	3	6
% within age group	1.6	4.8	11.1	4.5
% of total	0.8	1.5	2.3	4.5
RK	2	2	2	6
% within age group	3.2	4.8	7.4	4.5
% of total	1.5	1.5	1.5	4.5
ARK	1	2	1	4
% within age group	1.6	4.8	3.7	3.0
% of total	0.8	1.5	0.8	3.0
VAK	1	4	0	5
% within age group	1.6	9.5	0	3.8
% of total	0.8	3.0	0	3.8
VAR	1	1	3	5
% within age group	1.6	2.4	11.1	3.8
% of total	0.8	0.8	2.3	3.8

Table 4 (Continued)

VARK	Age group (<i>N</i> = 132)			Total
	20-29	30-39	40 and above	
VRK	5	0	0	5
% within age group	7.9	0	0	3.8
% of total	3.8	0	0	3.8
VARK	15	4	4	23
% within age group	23.8	9.5	14.8	17.4
% of total	11.4	3.0	14.8	17.4
Total	63	42	27	132
% of total	47.7	31.8	20.5	100

Table 5 Distribution of learning preference by age group in America

VARK	Age group (<i>N</i> = 101)			Total
	20-29	30-39	40 and above	
V	1	0	0	1
% within age group	2.0	0	0	1.0
% of total	1.0	0	0	1.0
A	3	2	2	7
% within age group	6.0	6.1	11.1	6.9
% of total	3.0	2.0	2.0	6.9
R	2	5	0	7
% within age group	4.0	15.2	0	6.9
% of total	2.0	5.0	0	6.9
K	8	12	5	30
% within age group	16.0	36.4	27.8	24.8
% of total	7.9	11.9	5.0	24.8
VA	0	0	0	0
% within age group	0	0	0	0
% of total	0	0	0	0
VR	0	0	0	0
% within age group	0	0	0	0
% of total	0	0	0	0
VK	2	1	0	3
% within age group	4.0	3.0	0	3.0
% of total	2.0	1.0	0	3.0
AR	0	0	0	0
% within age group	0	0	0	0
% of total	0	0	0	0

Table 5 (Continued)

VARK	Age group (N = 101)			Total
	20-29	30-39	40 and above	
AK	3	0	0	3
% within age group	6.0	0	0	3.0
% of total	3.0	0	0	3.0
RK	4	1	1	6
% within age group	8.0	3.0	5.6	5.9
% of total	4.0	1.0	1.0	5.9
ARK	8	3	3	14
% within age group	16.0	9.1	16.7	13.9
% of total	7.9	3.0	3.0	13.9
VAK	2	1	0	3
% within age group	4.0	3.0	0	3.0
% of total	2.0	1.0	0	3.0
VAR	0	0	0	0
% within age group	0	0	0	0
% of total	0	0	0	0
VRK	4	0	1	5
% within age group	8.0	0	5.6	5.0
% of total	4.0	0	1.0	5.0
VARK	13	8	6	27
% within age group	26.0	24.2	33.3	26.7
% of total	12.9	7.9	5.9	26.7
Total	50	33	27	101
% of total	49.5	32.7	20.5	100

student learning preference by country and age group. For this analysis, student learning preference consisted of two levels (single preference and multimodal preference with student age consisting of three levels (20-29, 30-39, and 40 and above). Student learning preference and age group was not statistically significant in the Hong Kong sample. However, in the American sample, student learning preference and age was found to be significantly related with a Pearson χ^2 (2, $N = 101$) = 7.27, $p = .026$, Cramér's $V = .27$. Follow-up pairwise comparisons were conducted to evaluate the difference among levels of age groups. Based on the Pearson χ^2 test, the p value for the comparison between American students aged 20-29 and 30-39 was .007. The p values for the comparison between 20-29 and 40 and above, and 30-39 and 40 and above are .40 and .20, respectively. As can be seen from Table 6, the results of these three tests are included with the Holm's sequential Bonferonni method for controlling for Type 1 error.

Table 6 Results for the pairwise comparisons using the Holm's Bonferroni method

Comparison age group	Pearson χ^2	<i>p</i> value (alpha)	Cramér's <i>V</i>
20-29 vs. 30-39	7.26	.007 (.017)	.296
20-29 vs. 40 and above	.735	.391 (.025)	.104
30-39 vs. 40 and above	1.62	.200 (.050)	.179

Discussion

Conclusions and Implications for Future Quantitative Research

The central purpose of this study was to use empirical data to examine the differences between learning preferences of East Asian, primarily Hong Kong, and American criminal justice student practitioners. A major implication gleaned from the review of existing literature was the lack of available quantitative research that compares learning preferences cross-culturally with specific attention to individual variables such as age and gender. The literature review illustrated the problems inherent in qualitative research that may lead to misperceptions if the data is overly dependent upon the interpretive analysis of the researcher. As Kennedy (2002) wrote, "It is time to start a new paradigm and go beyond the self-fulfilling prophecies and Confucian confusion that circumscribe notions of The Chinese Learner and Chinese Learning Styles" (p. 443). A significant conclusion of this study is that contrary to a considerable amount of previous research, Hong Kong and American students identify similar learning preferences based on the administration of Fleming's (2001) VARK Questionnaire. According to Fleming, approximately 21% of students display the VARK multiple preference while 20% display a Kinesthetic single preference (p. 8). In this study, the Kinesthetic single preference was observed in 22.7% ($n = 30$) of the Hong Kong students and 24.8% ($n = 25$) of the American students. This distribution was observed when cross-tabulated by age and gender for both Hong Kong and American students. Similarly, the distribution for American students multimodal preferences for VARK was observed in 24.7% ($n = 27$) of the students while Hong Kong students were slightly less with 17.4% ($n = 23$). These results have pedagogical implications for faculty involved in teaching abroad, online, or in a diverse residential university environment as they develop their teaching strategies to actively engage their students.

Another implication identified in previous literature was the lack of a valid research instrument on individual learning styles that can be readily adapted to cross-cultural comparisons or guide faculty pedagogical practices. While there is a large body of research on survey instruments, most do not easily adapt to cross-cultural comparisons. However, the body of research evolving from Fleming's (2001) development of the VARK Questionnaire continues to provide a quantitative methodology with an instrument designed to assist teachers and

learners increase their understanding of an individual's preferred mode of learning and their resultant teaching styles that can be administered in a variety of languages. Future research should focus on using the VARK Questionnaire and a validated learning scale to explore a canonical correlation to the VARK Questionnaire or other research to validate the instrument.

Finally, the significance of age and student learning preference discovered in the American sample has implications for faculty that merit further quantitative research. American public higher education is in a state of transformation and evolution driven by shrinking public fiscal support, competition from private sector for profit institutions, and rapid expansion in technology according to Schuster and Finkelstein (2006). In a seminal piece of literature, Schuster and Finkelstein suggest the confluence of these changes will have a far-reaching impact on the face of higher education and its core—the faculty. In this competitive environment, the pedagogical practices of faculty must more closely correlate with student learning preferences for the mutual benefit of each. Similarly, Fleming (2001) posits that increasing each student's awareness of their individual learning preferences through the use of the VARK Questionnaire often leads to a discussion on learning with faculty that actively engages students and improves the learning environment. The increasing diversity of contemporary academe demands such academic consistency from our faculty and our students deserve no less.

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