

## Ethnicity, Gender, and Perceptions of Online Learning in Higher Education

**Carol Y. Ashong**

Doctoral Candidate

Department of Educational Psychology and Special Education

Georgia State University

Atlanta, GA 30302 USA

[carolashong@yahoo.com](mailto:carolashong@yahoo.com)

**Nannette E. Commander**

Professor

Department of Educational Psychology and Special Education

Georgia State University

Atlanta, GA 30302 USA

[ncommander@gsu.edu](mailto:ncommander@gsu.edu)

### Abstract

This paper reports on a quantitative study that investigated the impact of ethnicity and gender on perceptions of online learning. Specifically, the study examined African-American students' perceptions of online learning as compared to those of their White-American counterparts. Participants completed a survey that investigated nine different elements of the online learning environment: Computer Usage, Teacher Support, Student Interaction and Collaboration, Personal Relevance, Authentic Learning, Student Autonomy, Equity, Enjoyment, and Asynchronicity. African-American and White students had overall positive views of online learning, but African-Americans reported significantly less positive views regarding the feature of asynchronicity. Females had more positive perceptions than males on Teacher Support, Student Interaction and Collaboration, Personal Relevance, Authentic Learning, and Student Autonomy. The findings of this study indicate that gender and ethnicity independently influence students' perceptions of online learning.

**Keywords:** African-American students, gender, higher education, collaborative learning, prior online experience, student perceptions, Online Learning Environment Survey (OLES)

### Introduction

In recent years, higher education institutions have faced changes in their student demographics as more and more students no longer fit the young, full-time, in-residence traditional profile ([Smart & Cappel, 2006](#)). As demographics change, so do educational needs. There is a great demand today for more flexible and convenient methods for obtaining a higher education. Technological advances have made the availability of online learning both economical and practical (Tanner, Noser, & Totaro, 2009). Interest in developing new online education programs, as well as strengthening existing ones, continues to increase. This is evident in both the numbers of courses and participants.

Over the last decade, the number of students taking at least one fully online class from an accredited university in the United States has grown considerably ([Armstrong, 2011](#)). According to a Sloan Consortium survey of 2,500 U.S. colleges and universities, online enrollments have more than doubled from about 1.6 million in 2002 to 3.9 million in 2007 ([Allen & Seaman, 2008](#)). Additionally, the number of institutions in the U.S. offering university-level pure online as well as hybrid/blended online courses has reached as many as 2,700 ([Kim, Kwon, & Cho, 2011](#)). In addition to programs and courses, most universities require online access to basic course information, such as the syllabus and resource lists. Even when not mandated by their institutions, educators are increasingly developing a presence for their courses on the Internet ([Song, Singleton, Hill, & Koh, 2004](#); [Smart & Cappel, 2006](#)).

## Literature Review

Online learning may be defined as instruction delivered electronically via the Internet, an intranet, or multimedia platforms such as CD-ROM or DVD ([Smart & Cappel, 2006](#)). Online learning may be delivered either synchronously, where the instructor and students must be online simultaneously, or asynchronously, where there are no time restrictions and students and teachers do not have to be online at the same time (Tanner et al., 2009). In contrast to the classic classroom environment, in an online environment there is no face-to-face contact. According to Tanner et al., context clues are more difficult to read in an online environment, and immediate dyadic communication is more challenging than in traditional face-to-face classrooms. Like any other learning medium, online learning has both strengths and challenges.

Research has consistently documented many of these important strengths. For instance, [Song et al. \(2004\)](#) found that online technology can allow for greater student reflection and foster more thoughtful and responsible comments than what might occur in face-to-face classrooms. Flexibility and convenience are additional strengths, as it is often viewed as easier to work in collaborative groups and schedule meetings because students can meet online instead of in-person ([Song et al., 2004](#)). Online learning has been described as personalized and self-organized because of control over content, learning sequence, pace of learning, time, and media, factors that allow learners to tailor experiences to meet learning objectives and manage access to materials ([Olojo, Adewumi, & Ajisola, 2012](#)).

While the strengths of online learning are impressive, research indicates it also brings with it many challenges. For example, [Mullen and Tallent-Runnels \(2006\)](#) found that it is more difficult to provide affective support to students in online learning, where affective support is defined as "communications from instructors to students that the students are important and valued individuals" (p. 258). Additionally, [Muilenburg and Berge \(2005\)](#) identified the lack of social interaction as the single most important barrier to students learning online. Administrative and instructor issues, time and support for studies, and learner motivation came in very closely as the next most significant barriers, with technical problems and cost being the least significant.

Due to both the strengths and weaknesses that exist, instructors and designers need a better understanding of how students perceive online learning. [Smart and Cappel \(2006\)](#) note that investigating student perceptions informs instructors and designers on how best to foster active participation and engagement in the learning process, which effectively enhances students' learning and motivation. [Young and Norgard \(2006\)](#) state that "in order to assure quality and consumer satisfaction, institutions and their faculty must pay close attention to their students' perceptions of online courses and programs" (p. 113). [Meyer \(2002\)](#) also recommended that research on quality online learning focus on student perceptions.

This interest in students' points of view has led to the development of a number of instruments designed to evaluate perceptions of online learning (e.g., [Chaney, Eddy, Dorman, Glessner, Green, & Lara-Alecio, 2007](#); [Roberts, Irani, Telg, & Lundy, 2005](#); [Stewart, Hong, & Strudler, 2004](#); Trinidad, Aldridge, & Fraser, 2004). In this study, the *Online Learning Environment Survey* (OLES) (Trinidad et al., 2004) was chosen because it incorporates scales from five other instruments. One strength of the OLES is that it allows researchers to view online learning with a finer lens as it measures students' perceptions of nine different components of online learning, derived from the five instruments on which it is based (detailed later in this paper). Investigating students' perceptions of these elements provides important information on the unique nature of online learning environments.

[Johnson \(2011\)](#) notes that it is important for researchers to understand the characteristics of students participating in online learning and how these characteristics may influence the learning outcomes that are achieved. In addition to examining the elements of online learning mentioned above, in the present study a decision was made to consider two important student characteristics: ethnicity and gender. Previous research has examined ethnicity both across cultures (Chin, Chang, & Bauer, 1999; [Munro-Smith, 2002](#)) and within the same culture ([Boyette, 2008](#); [Huffman Leyva, 2005](#); [Okwumabua, Walker, Hu, & Watson, 2010](#); [Rovai & Gallien, 2005](#); [Rovai & Ponton, 2005](#)), and the results of these studies point to an increasingly diverse population engaging in online learning. Another important student characteristic is gender; the results of previous studies on the difference between males' and females' perceptions tend to be very mixed ([Kay, 2008](#)). It was therefore decided that it would be valuable to investigate these two characteristics and their impact on students' perceptions of online learning.

### *Ethnicity and Online Learning*

Research has compared different ethnic groups cross culturally and found differences in their perceptions of online learning. Chin et al. (1999) investigated the effects of cultural background on perceptions of web-based learning. They found that Anglo-Saxon students felt more confident and had less difficulty than Asian students with this learning modality. They suggest that such differences call for a more differentiated approach in web-based learning to accommodate a culturally diverse learning context. Along the same vein, [Munro-Smith \(2002\)](#) found that Singaporean students had a higher preference than Australian students for in-person interaction instead of online interaction, and were more in the habit of meeting in person to collaborate on coursework. On the other hand, Australian students preferred carrying out both peer and instructor correspondence online. Also, Singaporean students reported that they choose to print class materials for reading in hard copy form, unlike their Australian peers, who chose largely to refer to the materials online ([Munro-Smith, 2002](#)). These studies comparing perceptions of students across countries reveal there are differences based on culture in students' perceptions and experiences of online learning.

Within the U.S., research has also found that differences exist between ethnic groups. [Huffman Leyva \(2005\)](#) found that Latina/Latino students, when compared to their peers of other ethnicities, agreed with the provision of online learning as an alternative option to traditional courses, but preferred the traditional in-person courses, mostly due to their personal and cultural attitudes. African-American students are one group largely missing in the literature on university students' perceptions of online learning. [Boyette \(2008\)](#) highlights the need for more studies on online learning within culturally diverse groups of students, and strongly stresses that the voices of African-American students, in particular, have been underrepresented. According to a report published by National Center for Education Statistics ([Snyder, 2011](#)), the percentage of American university students who are White has been decreasing, while the percentages of students belonging to other racial/ethnic groups have been on the rise. In 2009, 62% of university students were White, compared with 68% in 2000. Between 2000 and 2009, the percentage of students who were African-American rose from 11% to 14%, the percentage who were Hispanic rose from 10% to 12%, and the percentage who were Asian/Pacific Islander rose from 6% to 7% ([Snyder, 2011](#), p. 13).

As populations of African-American students increase, many universities in the U.S. are striving for better retention and greater progress toward graduation. Due to the increasing number of African-Americans enrolling in higher education in general, the number of African-American students participating in online courses has also seen a corresponding increase ([Waits & Lewis, 2003](#)). Unfortunately, the achievement gap between African-American and White students that exists in the traditional classroom in universities in the U.S. also exists in the online environment ([Rovai & Gallien, 2005](#); [Rovai & Ponton, 2005](#)). [Okwumabua et al. \(2010\)](#) found that African-American students report negative attitudes toward online learning, with the majority claiming that they do not enjoy using computers for school-related work. Additionally, 67% were not confident in the use of computers, and reported low levels of confidence working in an online environment ([Okwumabua et al., 2010](#)). [Merrills \(2010\)](#) reported that African-American students preferred frequent oral communication with their classmates, preferably face-to-face instead of online. Additionally, African-American students in an online learning environment wished to make verbal contact with online instructors, and preferred to work and learn in groups, which is more challenging to achieve in an online environment ([Merrills, 2010](#)). Emphasis on communal values and community by African-Americans may not be well supported in the online environment, and when educators fail to foster interactive requirements that promote collaboration, the result could be poor academic achievement ([Rovai & Ponton, 2005](#)).

### *Gender and Online Learning*

Another important characteristic that impacts students' perceptions of online learning is gender, with some research findings suggesting males have more favorable perceptions. For example, Kay (1992) examined gender differences in behavior toward computers and found that males had more positive attitudes toward computer use, and used computers much more frequently than females. Similarly, [Comber, Colley, Hargreaves, and Dorn \(1997\)](#) investigated the effects of age, gender, and prior computing experience on attitudes toward computers in 278 students aged 11-12 and 15-16 years. Males from both age groups reported greater experience with and more positive attitudes toward computers than their female peers. More specifically, in line with a number of previous studies, that study found that males had greater experience with computers than females. The majority of those who owned or had

access to computers at home, used them more frequently, and had wider general experience of computing, were males. Males also showed greater liking for computing than females overall, and males' level of liking did not differ between the two age groups. However, although younger females reported liking computers almost as much as younger males, older females were less positive in their perceptions (Comber et al., 1997).

More recent international research supports previous findings in the U.S. attesting to the idea that males have more positive perceptions of online learning than females. Ong and Lai (2006) explored gender differences in perceptions and relationships among factors affecting online learning acceptance. In a survey of 67 female and 89 male Taiwanese employees, males' ratings of computer self-efficacy, perceived usefulness, perceived ease of use, and behavioral intention to use e-learning were higher than those of females. Similarly, Li and Kirkup (2007) investigated differences in use and attitudes toward the Internet and computers generally for 220 Chinese and 245 British students. Responses to a self-report survey questionnaire indicated significant gender differences in both national groups. Males in both countries were more likely than females to use e-mail or chat rooms. Males played more computer games than females, with Chinese males being the most active gamers. Males in both countries were more self-confident about their computer skills than females, and were more likely to express the opinion that using computers was a "male" activity and skill than were females. Gender differences were higher in the British group than the Chinese group (Li & Kirkup, 2007).

U.S.-based studies conducted by Kay (2009) and Tsai and Tsai (2010) respectively have produced evidence suggesting that male students are significantly more comfortable with computers than females, and that males have significantly higher Internet use intensity than females. However, in Tsai and Tsai's study, females were found to be more communication-oriented Internet users, seeking interaction with others, while males were more exploration oriented in their use. These differences have been found to result in females experiencing a richer, more connected, and more valuable online learning experience than males (Johnson, 2011). Additionally, according to Rovai and Baker (2005), female students tend to find online learning more social and beneficial than male students do, and they have been found to display a higher degree of satisfaction than male students with online learning (González-Gómez, Guardiola, Rodríguez, & Alonso, 2012).

A review by Kay (2008) found that most studies within the U.S. investigating the impact of gender have looked at computer attitude, ability, and/or use, with 30-50% of the studies reporting differences in favor of males, 10-15% reporting differences in favor of females, and 40-60% reporting no difference between genders. While there is a persistent pattern of small differences in males' favor in terms of computer attitude, ability, and use, the results are not necessarily the same when it comes to perceptions and experiences of online learning. A recent study by Johnson (2011), for example, interestingly found that females perceived greater social presence in online learning, performed better, and were more satisfied with the experience than males.

## Purpose

The purpose of the present study was to investigate the impact of two key student characteristics – namely, ethnicity and gender – on perceptions of online learning. Overall perceptions of online learning were examined, but specific emphasis was placed on African-American students' perceptions as compared to those of their White counterparts. The decision to focus on African-American students was fuelled by the dearth of research done on perceptions of online learning with this ethnic group, and by a desire to "give voice" to an important and growing population group within the U.S. higher education sector. The study also examined African-American males' versus females' perceptions of online learning to determine whether gender differences in perceptions of online learning previously reported in the literature are reflected within this population group. The study sought to address the following explicit research questions:

- 1) Do students generally have positive perceptions of online learning?
- 2) Is there a significant difference in perceptions of online learning when African-American students are compared to White students?
- 3) Is there a significant difference in perceptions of online learning when African-American students are compared to all other students?
- 4) Is there a significant difference in males' and females' perceptions of online learning?

- 5) Is there a significant difference in African-American males' and females' perceptions of online learning?

It was hypothesized that students generally have positive perceptions of online learning. It was also expected that both ethnicity and gender would have an effect on students' perceptions, and that there would be significant differences in African-American students' perceptions when compared to Whites and all others in the population. Finally, within African-American students, it was anticipated that there would be differences between males' and females' perceptions of online learning.

## Method

### Participants

The participants in this study were 120 undergraduate and graduate students enrolled in 100%-online education courses during the 2011-12 academic year at a large research institution in the Southeastern U.S. Courses were taught using the University's learning management system, uLearn. Of the participants, 92 were female (76.7%) and 28 were male (23.3%), with an age range of 19 to 58 years and an average age of 24 years. In terms of ethnicity, 55 (45.8%) of the participants identified as African-American, 42 (35%) as Caucasian, 5 (4.2%) as Hispanic, and 18 (15%) as "Other" (see Tables 1 and 2). There were 50 (41.7%) seniors, 40 (33.3%) juniors, 15 (12.5%) sophomores, 12 (10%) graduate students, and 3 (2.5%) freshmen. Most of the participants (94 or 79%) were enrolled full-time, with the remainder (25 or 21%) enrolled part-time. With regard to country of birth, 105 (87.5%) participants reported USA, 2 (1.6%) reported Canada, and 1 (0.8%) each reported China, Columbia, Germany, Ghana, Greece, Guyana, Iran, Papua New Guinea, Sierra Leone, South Korea, St. Thomas (U.S. Virgin Islands), Trinidad, and Wales (UK). A high percentage of participants had previous online course experience (82 or 68.3%). The number of previous online courses ranged from 1 to 20, with a mean of 1. A majority of participants (51.6%) had previously taken at least one online course, with 31 (25.8%), 17 (14.2%), and 14 (11.6%) previously enrolled in one, two, or three online courses, respectively.

Table 1. *Participants' gender and age by ethnicity*

	<b>African-American</b>	<b>White-American</b>	<b>Hispanic</b>	<b>Other</b>
Total	55 (45.8%)	42 (35.0%)	5 (4.2%)	18 (15.0%)
Gender				
Male	8 (6.6%)	14 (11.6%)	1 (0.8%)	4 (3.3%)
Female	47 (39.1%)	28 (23.3%)	4 (3.3%)	14 (11.6%)
Age range	19-45	19-58	20-36	19-39
Mean age	24	25	25	22

Table 2. *Participants' age by ethnicity and gender (African-Americans and Whites)*

	<b>African-American Males</b>	<b>White-American Females</b>	<b>White Males</b>	<b>White Females</b>
Age range	21-27	19-51	19-36	19-58
Mean age	22	24	24	25

### Measures

Participants answered eight demographic questions regarding gender, age, ethnicity, country of birth, class (year in school), enrollment status, previous online enrollment, and number of online classes taken. They also responded to the *Online Learning Environment Survey* (OLES), which was created by Trinidad et al. (2004) to provide educators with a means of eliciting and analyzing students' perceptions of online learning environments. The instrument is presented in a dual-format measure that allows students to rate an "actual" online learning environment experienced as well as their "preferred" online learning environment. The preferred environment is what students would consider as being "more ideal," compared to what they actually experienced. Positive or negative perceptions are indicated by the size of the difference between the actual and preferred score. The OLES incorporates scales from five pre-existing instruments: (1) the *What is Happening in this Class?* (WIHIC) questionnaire (Fraser, McRobbie, & Fisher, 1996); (2) the *Constructivist Learning Environment Survey* (CLES) (Taylor, Fraser, & Fisher, 1997); (3) the *Distance Education Learning Environments Survey* (DELES) (Jegede, Fraser, & Fisher, 1995); (4) the *Technology-Rich Outcomes-Focused Learning Environment Instrument* (TROFLEI)



(Aldridge, Dorman, & Fraser, 2004; Aldridge & Fraser, 2003); and (5) the *Test of Science Related Attitudes* (TOSRA) (Fraser, 1981). It consists of 54 items organized into nine scales: Computer Usage (CU), Teacher Support (TS), Student Interaction and Collaboration (SIC), Personal Relevance (PR), Authentic Learning (AL), Student Autonomy (SA), Equity (EQ), Enjoyment (EN), and Asynchronicity (AS). The internal consistency (Cronbach's  $\alpha$  reliability) estimates were in the range of 0.86 to 0.96 for the "actual" version and 0.89 to 0.96 for the "preferred" version (Trinidad et al., 2004), indicating that the items in the scale assess the same construct. Participants are asked to rate the items using a five-point scale (1 = "almost never"; 2 = "seldom"; 3 = "sometimes"; 4 = "often"; 5 = "almost always") (see Table 3).

Table 3. *OLES scales*

Scale	Description	Sample Items
1. <i>Computer Usage (CU)</i> – 6 items	The extent to which students use their computers as a tool to communicate with others and to access information	<ul style="list-style-type: none"> <li>I use the computer to e-mail assignments to my teacher (Item 1)</li> <li>I use the computer to read lesson notes prepared by the teacher (Item 4)</li> </ul>
2. <i>Teacher Support (TS)</i> – 8 items	The extent to which the teacher helps, befriends, trusts, and is interested in the students	<ul style="list-style-type: none"> <li>If I have an inquiry, the teacher finds the time to respond (Item 7)</li> <li>It is easy for me to contact the teacher (Item 13)</li> </ul>
3. <i>Student Interaction and Collaboration (SIC)</i> – 6 items	The extent to which students have opportunities to interact with one another, exchange information, and engage in collaboration	<ul style="list-style-type: none"> <li>I can work with others (Item 15)</li> <li>I discuss my ideas with other students (Item 18)</li> </ul>
4. <i>Personal Relevance (PR)</i> – 5 items	The extent to which there is a connection with students' out-of-school experiences	<ul style="list-style-type: none"> <li>I can relate what I learn to my life outside of this class (Item 21)</li> <li>I apply my everyday experiences in class (Item 23)</li> </ul>
5. <i>Authentic Learning (AL)</i> – 5 items	The extent to which skills and processes of inquiry and their use in real-world problem solving and investigation are emphasized	<ul style="list-style-type: none"> <li>I study real cases related to the class activities (Item 26)</li> <li>I apply real-world experience to the topic of study (Item 30)</li> </ul>
6. <i>Student Autonomy (SA)</i> – 5 items	The extent to which students have opportunities to initiate ideas and the locus of control is student oriented	<ul style="list-style-type: none"> <li>I work during times I find convenient (Item 32)</li> <li>I am in control of my learning (Item 33)</li> </ul>
7. <i>Equity (EQ)</i> – 7 items	The extent to which students are treated equally by the teacher	<ul style="list-style-type: none"> <li>I am treated the same as other students in this class (Item 38)</li> <li>My work receives as much praise as other students' work (Item 41)</li> </ul>
8. <i>Enjoyment (EN)</i> – 6 items	The extent to which teachers cater for students differently on the basis of ability, rates of learning, and interests	<ul style="list-style-type: none"> <li>Online learning is exciting (Item 44)</li> <li>I would enjoy my education if more of my classes were online (Item 47)</li> </ul>
9. <i>Asynchronicity (AS)</i> – 6 items	The extent to which students enjoy the asynchronous nature (e.g., does it promote reflective thinking?)	<ul style="list-style-type: none"> <li>I access the discussion forum at places convenient to me (Item 49)</li> <li>The process of writing and posting messages helps me to think (Item 52)</li> </ul>

### Data Collection Procedure

The survey was administered online. Students were offered the option of either participating in the research study or completing an assignment of equal difficulty and length for extra credit toward their final grade in their course. Informed consent and a link to the survey were distributed to students through the uLearn site for the online course. Students were able to complete the survey in approximately 30 minutes at their own convenience within a one-week period. No identifiable private information was sought from the participants.

## Results

Data were analyzed through calculating means and standard deviations for the OLES overall and for each of the nine subscales. Due to the small number of students who reported Hispanic and Other as their ethnicity, these two groups were joined as one. For all analysis the "actual" mean scores on the nine subscales were used.

### *Students' Perceptions of Online Learning*

The average mean, standard deviation, and difference between "actual" and "preferred" mean were calculated to determine students' perceptions of their online learning experience (see Table 4). The overall actual mean for participants was 4.02 and the overall preferred mean was 4.23, out of the highest possible score of 5. The difference between the "actual" mean and "preferred" mean for the OLES shows whether students' perceptions were either negative or positive in relation to their experiences. Within this population the difference was very small (0.21), signaling positive perceptions. However, the overall "preferred" mean was slightly higher than the "actual" mean.

Table 4. Average item mean, average item standard deviation, and difference (effect size and MANOVA)

OLES Scale	Average Item Mean		Average Item Std. Dev.		Difference	
	Actual	Preferred	Actual	Preferred	Effect size	F
1. Computer Usage (CU)	4.12	4.22	0.80	0.99	0.04	0.58
2. Teacher Support (TS)	4.01	4.48	0.85	0.93	0.05	0.84
3. Student Interaction and Collaboration (SIC)	3.50	3.66	1.02	1.05	-0.03	0.46
4. Personal Relevance (PR)	3.92	4.12	0.85	0.95	0.15	2.37
5. Authentic Learning (AL)	3.97	4.25	0.81	0.97	0.08	1.43
6. Student Autonomy (SA)	4.42	4.51	0.74	0.96	0.03	0.48
7. Equity (EQ)	4.38	4.48	0.81	0.91	-0.05	0.69
8. Enjoyment (EN)	3.88	4.11	0.88	1.03	0.003	0.04
9. Asynchronicity (AS)	4.41	4.48	0.68	0.92	0.05	0.79

### *Ethnicity and Gender*

A 2 (Gender: Male vs. Female) x 3 (Ethnicity: White, African-American, Hispanic/Other) multivariate analysis of variance (MANOVA) was conducted, with the nine subscales of the OLES entered together as dependent variables. Results revealed significant main effects for gender (Wilks'  $\lambda = .83$ ,  $F(9, 104) = 2.40$ ,  $p < .05$ , partial  $\eta^2 = .17$ ) and ethnicity (Wilks'  $\lambda = .76$ ,  $F(18, 208) = 1.60$ ,  $p < .05$ , partial  $\eta^2 = .13$ ), but the interaction was not significant ( $p = .297$ ). Gender and ethnicity separately impacted upon the nine combined subscales. None of the other demographic variables were found to have a significant main effect on the nine subscales. This tells us that the main effect found for ethnicity and gender was not confounded by age, country of birth, class (year in school), enrollment status, previous online enrollment, and number of online classes.

### *Ethnicity*

Given the significance of the overall test, univariate analyses of variance (ANOVAs) for each of the nine dependent variables were conducted as follow-up tests to the MANOVA, with ethnicity as the independent variable. Table 5 shows the significance values for each subscale. A significant univariate main effect of ethnicity was found for subscale 9 (Asynchronicity),  $F(2, 120) = 5.37$ ,  $p < .05$ , partial  $\eta^2 = .09$ . Post hoc Scheffe tests including pairwise comparisons determined differences between ethnicities on

that subscale. Significant pairwise differences were obtained between White-American students and African-American students ( $p = .053$ ), with White-American students reporting a higher mean (4.52) than African-American students (4.20).

Table 5. *Significance of means (with standard deviations in parentheses) for ethnicity*

OLES Scale	African-American	White	Hispanic/Other	F Ratio
1. <i>Computer Usage (CU)</i>	4.18 (0.87)	4.00 (0.76)	4.27 (0.70)	1.14
2. <i>Teacher Support (TS)</i>	4.09 (0.87)	3.86 (0.81)	4.14 (0.89)	0.17
3. <i>Student Interaction and Collaboration (SIC)</i>	3.50 (1.04)	3.38 (1.03)	3.82 (0.91)	1.27
4. <i>Personal Relevance (PR)</i>	4.04 (0.88)	3.72 (0.86)	4.06 (0.72)	1.11
5. <i>Authentic Learning (AL)</i>	4.00 (0.82)	3.85 (0.75)	4.18 (0.79)	1.69
6. <i>Student Autonomy (SA)</i>	4.44 (0.72)	4.45 (0.72)	4.41 (0.65)	0.36
7. <i>Equity (EQ)</i>	4.25 (0.81)	4.55 (0.70)	4.45 (0.72)	3.72
8. <i>Enjoyment (EN)</i>	3.89 (0.82)	3.83 (0.96)	3.95 (0.89)	0.46
9. <i>Asynchronicity (AS)</i>	4.20 (0.79)	4.52 (0.55)	4.72 (0.45)	5.37*

\*  $p < .05$ .

### Gender

Once again, ANOVAs for each of the nine dependent variables were conducted as follow-up tests to the MANOVA, this time with gender as the independent variable. Table 6 shows the significance values for each subscale. Significant univariate main effects of gender were found for five of the nine subscales: subscale 2 (Teacher Support),  $F(1, 120) = 6.64$ ,  $p < .05$ , partial  $\eta^2 = .06$ ; subscale 3 (Student Interaction and Collaboration),  $F(1, 120) = 3.25$ ,  $p < .05$ , partial  $\eta^2 = .03$ ; subscale 4 (Personal Relevance),  $F(1, 120) = 9.58$ ,  $p < .05$ , partial  $\eta^2 = .08$ ; subscale 5 (Authentic Learning),  $F(1, 120) = 10.30$ ,  $p < .05$ , partial  $\eta^2 = .08$ ; and subscale 6 (Student Autonomy),  $F(1, 120) = .458$ ,  $p < .05$ , partial  $\eta^2 = .04$ . Females reported higher means than males on all five of these subscales. Within the African-American population of this study, there were no significant differences between males and females in overall mean or in the means of the nine subscales.

### Discussion

The results of this study are indicative of highly positive perceptions of online learning across ethnicity and gender. This finding supports the study's hypothesis that students will generally have positive perceptions of online learning, and it is important because high levels of satisfaction and positive attitudes among all students are what designers and instructors of online courses are ultimately striving to achieve. Thus, the results could provide potentially useful insight into what brings about positive student perceptions of online learning. For example, the positive perceptions may be linked to the participants' high levels of previous online course experience. The literature tells us that prior experience is a factor that positively influences attitudes toward and perceptions of online learning (Muilenburg & Berge, 2005). Interestingly, the results of this study also do not show an overall difference in perceptions of online learning between African-American students and White students, or between African-American students and all other students. This does not support the study's hypothesis that African-American students will differ significantly in their perceptions of online learning when compared to Whites and others. This finding could also be due to the high level of previous experience in online learning courses – participants' positive experiences in their previous online courses may have led them to enroll in subsequent online courses and contributed to their positive perceptions, which could have mitigated any differences



between subgroups of students. Furthermore, the fact that all participants in the study were actively enrolled in an online course at the time when they responded to the survey may have further influenced their overall positive perceptions of online learning.

Table 6. *Significance of means (with standard deviations in parentheses) for gender*

OLES Scale	Males	Females	F Ratio
1. <i>Computer Usage (CU)</i>	3.82 (0.82)	4.23 (0.78)	2.72
2. <i>Teacher Support (TS)</i>	3.69 (0.86)	4.12 (0.83)	6.64*
3. <i>Student Interaction and Collaboration (SIC)</i>	3.18 (1.16)	3.62 (0.95)	3.25*
4. <i>Personal Relevance (PR)</i>	3.39 (0.96)	4.10 (0.75)	9.58*
5. <i>Authentic Learning (AL)</i>	3.50 (0.69)	4.13 (0.77)	10.30*
6. <i>Student Autonomy (SA)</i>	4.18 (0.82)	4.52 (0.66)	4.58*
7. <i>Equity (EQ)</i>	4.36 (0.78)	4.41 (0.79)	0.76
8. <i>Enjoyment (EN)</i>	3.78 (0.92)	3.91 (0.89)	0.009
9. <i>Asynchronicity (AS)</i>	4.46 (0.64)	4.40 (0.69)	0.003

\*  $p < .05$ .

Both gender and ethnicity were found to separately significantly impact students' perceptions of online learning on the combined nine subscales of the OLES. These findings support the study's hypothesis that gender and ethnicity will affect students' perceptions; they are consistent with previous studies' findings that ethnicity influences perceptions and attitudes toward online learning (Chin et al., 1999; [Huffman Leyva, 2005](#); [Munro-Smith, 2002](#); [Tan, Nabb, & Aagard, 2010](#)), and that gender affects how students perceive their online learning environment and experiences ([González-Gómez et al., 2012](#), [Johnson, 2011](#); [Rovai & Baker, 2005](#); [Tsai & Tsai, 2010](#)).

The finding that African-American students report a less positive perception than Whites on the Asynchronicity subscale is an important one for designers and instructors of online courses to consider. It is possible that the opportunities for reflective thinking and the convenience afforded by asynchronous online learning environments and tools may be more appealing to White students than to African-American students. Another possible explanation may be that African-American students have less positive views of the asynchronous aspect of online learning because they have a stronger preference for real-time collaboration and groupwork than White students. Research by [Boyette \(2008\)](#) suggests African-American students work better in cohort groups with members in geographical proximity to one another whenever possible. In an earlier study, [Rovai and Ponton \(2005\)](#) concluded that an emphasis on communal values and community by African-Americans may not be well supported in the online environment. [Merrills \(2010\)](#) found that African-American students preferred frequent oral communication among students, preferably face-to-face rather than online; additionally, African-American students studying online often wanted to speak to their instructors offline. Since the asynchronicity feature of online learning may hinder the development of real community, it may be particularly important for African-American students that instructors communicate frequently, respond quickly to e-mails, and create discussions, chat rooms, and other activities that foster interaction and promote a sense of presence and immediacy.

The findings of this study that relate to the influence of gender contribute to emerging research suggesting that females have more positive perceptions of online learning than males ([Johnson, 2011](#)). Specifically, females in this study reported a more positive view than males in terms of the extent to which: the teacher helps, befriends, trusts and is interested in the students; students interact, work

together, know, help, support, and are friendly to one another; there is a connection with students' out-of-school experiences; students have opportunities to solve real-world problems and have opportunities to initiate ideas, make their own decisions, and maintain a strong locus of control. These results are in line with previous research showing that females are more communication-oriented in an online environment, seeking interaction with others (Tsai & Tsai, 2010). Additionally, as mentioned earlier, Johnson (2011) found that online learning environments provide females with a richer, more connected, more valuable learning experience, and Rovai and Baker (2005) reported that the females in their study found online learning more social and beneficial. González-Gómez et al. (2012) further report that females display a higher degree of satisfaction with online learning. The areas (subscales) in which the females in the present study reported higher positive perceptions are Teacher Support, Student Interaction and Collaboration, Personal Relevance, Authentic Learning, and Student Autonomy. Since these areas are relationship/interaction and personal development/relevance focused, the findings can be said to affirm what the previous research has found. However, there was no significant difference between male and female African-Americans' overall perceptions of online learning. This result may be attributable to the low number of African-American males in the study.

### Limitations of the Study

One major limitation of the present study lies in the disparity in the number of participants from each ethnic group (there were more African-American participants than Whites and all other participants). While unequal sample sizes are problematic when using parametric tests (like ANOVA or MANOVA) because the assumption of homogeneity of variance could be violated, the software package used for the analysis, SPSS (Statistical Package for the Social Sciences), dealt with this issue through weighted means. Nevertheless, a more equal number of African-American and White students could have served to strengthen the results that were obtained. Furthermore, there was a large discrepancy between the number of females and males, both overall and within the African-American and White groups. Greater gender balance might have also strengthened the results. Another limitation of this study is that the survey did not allow participants to give explanations or reasons for their responses.

### Future Research

The findings of this study have important implications for future research. Future studies could examine perceptions of online learning with more equal numbers of African-American and White students. Moreover, studies could be carried out to establish whether African-American students' perceptions of online learning are affected by previous online learning experience and/or current enrollment in an online course. Past research on students' perceptions of online learning comparing students of different ethnicities has often not considered the impact of previous enrollment in online courses (Chin et al., 1999; Huffman Leyva, 2005; Munro-Smith, 2002; Tan et al., 2010). Based on the results of the present study, it is suggested that previous online experience be examined as a possible mitigating factor in how students from different ethnicities view online learning. Finally, further research could also employ qualitative measures to provide a richer understanding of students' perceptions of online learning.

### Conclusion

The results from this study regarding African-American students' perceptions of asynchronicity in online learning have important implications for online educators. Since the achievement gap between African-American and White students that exists in the traditional classroom is also present in the online environment (Rovai & Gallien, 2005; Rovai & Ponton, 2005), instructors need to implement strategies to address African-American students' needs for face-to-face and verbal interaction and communication. Online discussions, group case-study projects, and paired learning experiences may be particularly beneficial to these students, and may help boost their academic achievement.

Overall, the results of this study make a contribution to the literature on students' perceptions of online learning by offering a focus on African-American students, whose voices have largely been missing on the subject. The results of the study additionally reinforce the need to consider prior and current online experience when researching students' perceptions of online learning. Most importantly, the findings indicate that gender and ethnicity independently influence students' perceptions of online learning. It is important for future research to continue examining these two student characteristics, so as to yield deeper insight into why and how these characteristics have a bearing on the way students perceive and experience online learning environments and activities.

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