

Correlating Community College Students' Perceptions of  
Community of Inquiry Presences with their Completion of Blended Courses

**Abstract**

Community colleges enroll more online learners than any other institution in higher education in the United States. While online community college courses expand access to higher education, their high attrition rates negatively impact student success. At writing, no researchers have applied the Community of Inquiry (CoI) framework to community college students' completion of online courses. This study uses a pre/posttest CoI survey design to explore the nature and development of students' perceptions of the CoI presences in 17 blended courses at Urban Community College, one of the seven community colleges in the Public University system. Students' perceptions of these presences, in addition to demographic and status variables, are then correlated with a measure of their course completion. As no significant differences between course completers and non-completers on any CoI indicators or demographic/status variables are found, new directions for community colleges and the research literature on the CoI framework are proposed.

Keywords: Community of Inquiry; community college; course completion; retention; attrition; blended courses

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### **1.1 Introduction**

Community colleges enroll more online learners than any other institutional category in higher education in the United States (Allen & Seaman, 2011). In fact, while America's community colleges currently account for more than half of all online enrollments, the rate of growth for these enrollments is higher at community colleges than it is at four-year colleges and universities (Allen & Seaman, 2011; 2007). According to Floyd (2003), online learning is congruent with the egalitarian, access-oriented mission of community colleges, the student-centered pedagogies traditionally employed by community college instructors, and the busy lives of community college students (see also Liu, Gomez, Khan, & Yen, 2007).

Yet, despite this dovetailing, evidence suggests that online learning tends to impede community college students' retention to graduation and their transfer to baccalaureate-granting institutions (Xu & Jaggars, 2011). One reason for this is that community college students are less likely to complete an online course than they are to complete a traditional face-to-face course (Xu & Jaggars, 2011; Jaggars & Xu, 2010). In a recent editorial on this subject, The *New York Times* Editorial Board (2013) drew on Community College Research Center (CCRC) data to construct three possible explanations for community college students' attrition in online courses: students' low levels of academic preparedness and confidence; students' feelings of isolation in the online environment; and instructors' poor online course design.

Readers familiar with Garrison, Anderson, and Archer's (2000) Community of Inquiry (CoI) framework will note similarities between these explanations and the frameworks'

“presences,” i.e., the student and instructor behaviors central to a productive online learning community. Yet, prior to this writing, no researchers have used the CoI framework to investigate community college students’ completion of online courses. In this article, we use a pre/posttest CoI survey design to examine the nature and development of students’ perceptions of the CoI presences in 17 blended, or partially-online, courses at Urban Community College, one of the seven community colleges in the Public University system. We then correlate students’ perceptions of the CoI presences, in addition to relevant demographic and status variables, to their completion of the study courses. We conclude the article with a discussion of what these results might mean for community colleges and the research literature on the CoI framework.

## **2. The Community of Inquiry (CoI) Framework**

In 2000, drawing on the work of Dewey (1967; 1933), Garrison et al. (2000) introduced the CoI as a framework for collaborative constructivist transactions in computer-mediated higher-education environments. In doing so, they specified the “interlocking set of factors that cohere in the creation of a community of learners” in online college-level courses (Shea, 2006, p. 38). Garrison et al. (2000) argued that these factors are of three dynamic and interdependent types, which they called “presences:” teaching presence, social presence, and cognitive presence. Shea and Bidjerano (2010) have since added a fourth type, learning presence, to the CoI framework.

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Figure 1 about here

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Teaching presence refers to the online instructor’s “design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally

worthwhile learning outcomes” (Anderson, Rourke, Garrison, & Archer, 2001, p. 5). There are three indicators of teaching presence: 1) instructional design and organization, “where instructors ... develop curriculum, activities, assignments, and course schedules;” 2) facilitation of discourse, “where instructors set the climate for learning by encouraging and drawing students into online discussion;” and 3) direct instruction, “where instructors present content and focus and direct online discourse” (Ice, Gibson, Boston, & Becher, 2011, p. 48).

Social presence is defined as the online learner’s ability to “project themselves socially and affectively into a community of inquiry” (Rourke, Anderson, Garrison, & Archer, 2001, p. 52). It also consists of three indicators: 1) affective expression, “where learners share personal expressions of emotion, feelings, beliefs, and values in their online course;” 2) open communication, “where learners build and sustain a sense of group commitment in their online course;” and 3) group cohesion, “where learners interact around common intellectual activities and tasks in their online course” (Ice et al., 2011, p. 47).

Cognitive presence is the “extent to which learners can construct and confirm meaning through sustained reflection and discourse” (Garrison & Arbaugh, 2007, p. 161). Four unfolding indicators comprise cognitive presence: 1) a triggering event, “where some issue or problem is identified for further inquiry;” 2) exploration, “where students explore the issue or problem, both individually and corporately through critical reflection and discourse;” 3) integration, “where learners construct meaning from the ideas developed during exploration;” and 4) resolution, “where learners apply this newly gained knowledge to educational contexts or workplace settings” (p. 161).

A growing recognition exists within the community of scholars who have used the CoI model that the model needs to encompass more than it has in the past. More recent work suggests

that either metacognition (Garrison & Aykol, 2013; Aykol & Garrison, 2011) or other dimensions reflecting approaches learners apply to their learning is missing from the description of teaching, social, and cognitive presence as described in earlier works (Garrison, Anderson, & Archer, 2001). We believe that self-regulated learning is a more comprehensive construct than meta-cognition and that this missing dimension is reflected in the work of Shea and his colleagues in "learning presence" (Shea et al., 2013; Shea & Bidjerano, 2012; Shea et al., 2012; Shea & Bidjerano, 2010).

Learning presence is described as “the proactive stance adopted by students who marshal thoughts, emotions, motivation, behaviors, and strategies in the service of successful online learning” (Shea et al., 2012, p. 90). The three indicators of learning presence are often associated with self-regulated learning: 1) forethought and planning, where students plan, coordinate, and delegate online tasks to themselves or others; 2) monitoring, where students check with online classmates for understanding, note their completion of tasks, and evaluate and monitor their performance on online activities; and 3) strategy use, where students seek, offer, or provide help to complete an online activity, and where students articulate gaps in their knowledge (Shea et al.).

While the CoI framework provides practitioners with a model for online community development, it also provides researchers with a methodology through which “to assess students’ perceptions of ... their online learning experiences” (Shea & Bidjerano, 2010, p. 1725). Using versions of or scales from the CoI survey instrument, the vast majority of these assessments have focused on: the interdependence of students’ perceptions of the CoI presences (Gorsky & Blau, 2009; Shea & Bidjerano, 2009; Shea & Bidjerano, 2008); the ways in which students’ demographic and status characteristics – like gender and employment status – mediate their

perceptions of the CoI presences (Shea, 2006; Shea, Li, Swan, & Pickett, 2005); and the positive relationship between students' perceptions of the CoI presences and their sense of community in online courses (Shea, 2006; Shea, Li, & Pickett, 2006; Shea et al., 2005).

Building on what is known about the *nature* of students' perceptions of the CoI presences, innovative research has also examined the *development* of students' perceptions of those presences. For example, drawing on data from course websites, student interviews, and end-of-semester CoI surveys, research indicates that students' perceptions of teaching and social presence tend to increase over the course of the semester (Akyol, Garrison, & Ozden, 2009; Akyol & Garrison, 2008). Additionally, studies reveal that these increases tend to be more pronounced for students enrolled in blended courses than they are for students enrolled in fully-online courses (Shea & Bidjerano, 2011; Akyol et al., 2009).

While "exploratory and descriptive," these studies reveal the empirical and potentially predictive potential of the CoI framework (Garrison & Arbaugh, 2007, p. 166). For this reason, and because the central objective of the CoI framework is the "(creation of) an effective learning community that enhances and supports deep approaches to learning," researchers have begun to correlate students' perceptions of the CoI presences to different learning measures (Akyol et al., 2009). For example, Shea et al. (2006) indicate that students' perceptions of teaching presence are positively correlated with their *perceived* learning, while Shea et al. (2012) reveal that students' perceptions of learning presence are positively correlated with a more objective measure of their learning, final course grades.

Additionally, given that online community development is considered central to student satisfaction and persistence in online courses (Rovai, 2002), researchers have begun to examine the relationship between the CoI framework and student attrition at the course and college levels.

Taking cues from studies that connect a myriad of demographic, psychological, technological, and social factors to student persistence in online courses and programs of study (for a concise review of these factors, see Liu et al., 2007), Ice et al. (2011) found that students' perceptions of teaching and cognitive presence work through course satisfaction to positively affect course completion and Boston et al. (2009) found that students' perceptions of social presence are positively correlated with college retention.

### **3. Purpose and Research Questions**

In this study we apply the CoI framework to the subject of community college students' course completion by asking four interrelated questions. The first two questions are grounded in the aforementioned research on the variable development of the CoI presences over time: *Do community college students' perceptions of the CoI presences change during their semester in a blended course? If so, what are the predictors of this change?*

The third and fourth questions reflect Garrison and Arbaugh's (2007, p. 166) appeal for "studies that examine the relationship between any of the framework's dimensions and learning outcomes." *Are there statistically significant differences between community college course completers and non-completers in initial perceptions of the CoI presences and/or changes in perceptions of the CoI presences? If not, what are the predictors of course completion?*

## **4. Method**

### **4.1 Instructional Setting**

This study was conducted at Urban Community College, one of the seven community colleges in the Public University system. The student body at Urban Community College is ethnically diverse including students from 129 countries. Of the 15,200 degree students and another 1,700 non-degree students enrolled at the college, 39 percent speak a language other than

English at home. Approximately 27 percent of the students attending the college describe themselves as Hispanic, 26 percent as Black/Non-Hispanic, 24 percent as White/Non-Hispanic, and 23 percent as Asian or Pacific Islander. Significantly, more than 60 percent of students are enrolled full-time (Urban Community College Office of Institutional Research and Assessment 2012).

The college made online learning an institutional priority in 2009. Since then, the college's online offerings have grown at a steady rate. At the time of this study, the college offered 59 online classes; 45 of those offerings were blended classes, where 20 to 80 percent of weekly class time was conducted online. The college's preference for blended learning is research-based: studies indicate that community college students are more likely to succeed in blended courses than face-to-face courses (Yen & Liu, 2009), and studies indicate that all students tend to learn more and be more satisfied in blended courses than fully-online courses (U.S. Department of Education, 2009; Garrison & Kanuka, 2004).

Yet, the college's students are less likely to complete blended and fully-online courses than they are to complete face-to-face courses (Urban Community College Office of the Registrar, 2010). As a result, since 2009, the college has committed significant resources to improving students' completion rates. Consistent with research recommendations (Moore, Bartkovich, Fetzner, & Ison, 2003), the college has focused many of these resources on easing students' transitions into the online-learning environment. For example, in 2010, the college developed an online training program to help students assess their readiness for online learning, understand their responsibilities in an online course, and become more familiar with online-learning tools.

Also consistent with research recommendations (Stumpf, McCrimon, & Davis, 2005), the college has allocated resources to training instructors in the intricacies of online course design and Blackboard, the college's primary learning management system. For example, during the 2010-2011 academic year, the college created an Online Faculty Institute, where instructors build fully and/or blended courses with the guidance of a peer mentor and a Blackboard technical expert. Instructors and mentors then use the Quality Matters rubric, which stresses design features consistent with the CoI framework (Swan, Bogle, Day, Matthews, & Boles, 2011; Bogle, Cook, & Day, 2009), to assess these course sites before they go live. At the time of this study, the college had trained more than 45 instructors through the Online Faculty Institute.

#### **4.2 Participants**

Participants included community college students enrolled in 17 different classes at Urban Community College. The 17 study classes enrolled 444, or 38 percent, of the 1,174 students enrolled in blended courses during the spring 2012 semester. All study classes were previously assessed using the Quality Matters rubric, and all study classes were taught by instructors who had participated in the college's Online Faculty Institute and who had consented to participate in this research. The study classes covered a wide range of academic disciplines and levels: six Business courses—Accounting, Business Law, Finance, Introduction to Microcomputer Applications, and Marketing Research; two English courses—English Composition II and Special Topics in Writing as Art and Craft; two Foreign Language courses—Elementary Spanish I and Latin American and Caribbean Cultures; two Health courses—Foundations of Therapeutic Massage and Introduction to Health Education; two Mathematics courses—Elementary Algebra and College Algebra and Trigonometry for Technical Students; and three Social Sciences classes—Introduction to Psychology and two sections of Introduction

to Sociology. To be clear, we did not review the CoI model or detail the objectives of this research with any of the instructors of the 17 study classes.

Of the 444 students enrolled in these 17 study classes, 282 students (64 percent) completed the pretest survey and 201 students (45 percent) completed the posttest survey. Respondents' demographic information is presented in Table 1. Of note, when compared to the general student population at Urban Community College, respondents were more likely to be enrolled in full-time coursework (85.5 percent vs. 63 percent) (Urban Community College Office of Institutional Research and Assessment, 2012).

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Insert Table 1 about here

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### **4.3 Instrument**

This study uses Shea and Bidjerano's (2010) CoI survey instrument, which appends measures of learning presence to the original, reliable, and valid CoI survey (Arbaugh et al., 2008; Shea & Bidjerano, 2008; Swan et al., 2008). The instrument consists of 48 six-point Likert questions relating to student perceptions of the four CoI presences: nine questions comprise social presence; 13 questions comprise teaching presence; 12 questions comprise cognitive presence; and 14 questions comprise learning presence. Scores on these questions range from 1-Strongly Disagree to 5-Strongly Agree. A sixth point, "I choose not to answer this question," was scored as 3-Neutral. All of these questions were adapted to suit the community college context.

Similar to previous investigators who correlated student demographic variables with the CoI presences (see, for example, Gibson, Ice, Mitchell, & Kupczynski, 2012), we included sixteen additional questions that prompted students for demographic and status information. In

most cases, these questions were informed by the research on student success in online courses. For example, drawing on Rovai's (2001) finding that women tend to be more successful in online courses than men, we asked students to report their gender identification (male/female). Similarly, building on Schlosser and Anderson's (1994) discovery that previous academic coursework was positively correlated with student success in online courses, we queried students for their registration status (full time, part time, non-matriculating), class standing (First-Year, Second-Year, non-matriculating), and experience with online coursework (first, second, third, fourth+ online course taken). Also, drawing on Rowntree's (1995) research on the technological requirements for successful online learning, we inquired about students' level of computer proficiency (expert, very good, average, below average, beginner) and computer access (home, school, work, library, commercial space).

In a few cases, these questions were informed by the research on students' academic persistence. For example, guided by Bean and Metzner's (1985) research on the environmental variables that mediate student retention, we prompted students for information on their employment (unemployed, employed part time, employed full time) and family responsibilities (primary caretaker or not). Additionally, acknowledging Tinto's (1993) discovery that older students are more likely than younger students to drop out of college, we asked students to report their age (18-21, 22-25, 26-30, ... 66 or above).

The survey also included two questions on students' experiences with group work in the study course, one question on students' satisfaction with the study course, and one open-ended prompt that invited students to share their thoughts on the study course.

In an attempt to replicate previous validation studies (Shea & Bidjerano, 2010), we examined the factor structures of the pretest survey and the posttest survey. Two separate

exploratory factor analyses were conducted: Principle Axis Factoring (PAF) and Oblimin Rotation. Four factors explained the relationships among the items on both occasions. The factors, which are presented in Table 2, were consistent with previous research (Shea & Bidjerano, 2010). Following these procedures, we calculated scale scores for each student response to the pretest survey and for each student response to the posttest survey. These scores represent the sum of all items comprising the respective scales divided by the total number of items comprising the scales. The internal consistencies of these scales (Chronbach's Alpha), which ranged from .92 to .97, are also presented in Table 2. **The bi-variate correlations for the pre- and posttest measures are shown in Table 3. The bi-variate correlations between teaching, social, and cognitive presence were strong and positive for both measurement occasions. The correlations between learning presence and each of the remaining presences were moderate to large.**

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Insert **Tables 2 & 3** about here

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#### **4.4 Procedure**

This study was conducted during the spring 2012 semester. Participants were asked to respond to two online surveys during on-campus class time: the first survey (pretest) was administered during the second or third week of the college's 14-week semester, and the second survey (posttest) was administered during the 12<sup>th</sup> or 13<sup>th</sup> week of the same semester.

The pretest and posttest were administered online through Vovici<sup>®</sup> survey software; however, students were only given access to these surveys during face-to-face class time in an on-campus computer lab. Students were notified about the study in the weeks prior to each

survey administration. For example, instructors indicated to students that a small portion of class time (approximately 20 minutes) would be allocated to each survey, and the first and second authors sent emails explaining the study to students at multiple points in the semester. The first and second authors also read a script explaining the study to students before administering each survey.

Only students who signed an informed consent form were allowed to participate in this study, and students were given the option to opt out of this study at both moments of survey administration. To protect their identities in this study, students were given a random code number, which only the first and second authors can decipher. These code numbers gave students access to the surveys, matched students' responses across the pretest and posttest surveys, and linked students' responses to their course completion data. To encourage student participation in this study, the first and second authors randomly selected six respondents who each received a \$25 Barnes & Noble gift certificate.

In the summer of 2012, students' survey responses were correlated with course completion data that participating instructors provided as a dichotomous yes/no variable. While researchers operationalize community college students' completion of online courses in different ways (see, for example, Aragon & Johnson, 2008; Liu et al., 2007), given relevant Public University withdrawal policies we defined it as earning a grade of A through F in the study course. Students' non-completion was defined as receiving a course grade of W, for an official withdrawal, or WU, for an unofficial withdrawal. Students who received a WN grade, which signifies that the student never attended class, were dropped from the study.

## **5. Results**

*Do community college students' perceptions of the CoI presences change during their semester in a blended course? If so, what are the predictors of this change?*

We examined mean changes in the constructs of presence from pretest to posttest with structural equation modeling (SEM). We chose this data analytic approach over conventional procedures (i.e., paired-samples t-tests and/or ANOVA for repeated measures) because it offers a number of advantages (McArdle, 2009). For example, using SEM, we can estimate models with missing data (Enders, 2010) and account for and effectively model the amount of measurement error (Volkle, 2007). In addition, with the use of appropriate procedures in available SEM software packages (in this case, Mplus 7.0), we can account for the structure of the data in parameter and standard error estimations (Geiser, Eid, Nussbeck, Courvoisier, & Cole, 2010).

We used the pretest and posttest data to estimate the model depicted in Figure 2. In this model, the coefficient  $\alpha_0$  represents the mean of the latent factor at pretest, whereas  $\alpha_1$  is the mean of the latent growth factor and is equal to the mean difference from pretest to posttest. The model is just identified ( $df = 0$ ) (see Volkle, 2007 for technical details). We estimated mean changes from pretest to posttest ( $\alpha_1$ ) while making a number of appropriate corrections. For example, using the maximum likelihood estimation in Mplus 7.0, we were able to evaluate the model with missing data (Muthén & Muthén, 1998-2012). Also, using the Mplus data analysis procedure Type = Complex, we were able to account for the clustering of students within each of the 17 classes. Lastly, by setting the variance of the latent variables ( $F_0$  and  $F_1$ ) to the quantity  $\text{var}^*(1 - r_{xx})$ , we were able to correct for measurement error (see Volkle, 2007).

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Insert Figure 2 about here

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Table 3 presents the mean for the latent growth factor ( $\alpha_1$ ). As seen, we found evidence that students' perceptions of teaching, social, and cognitive presence tend to increase over time.

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Insert **Table 4** about here

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These changes in students' perceptions of teaching, social, and cognitive presence are significant. The mean change in students' perceptions of learning presence was of borderline significance,  $\alpha_1 = .10, p = .06$ .

In follow-up analyses, we examined predictors of initial standing on the constructs of presence, and average changes over time. The model depicted in Figure 3 represents an extension of the previous model as it incorporates a covariate with arrows to both  $F_0$  and  $F_1$ . When the predictor is dichotomous, the regression coefficient ( $\gamma_0$ ) indicates the difference between the two groups in the initial levels of the construct ( $F_0$ ); ( $\gamma_1$ ), on the other hand, is the difference in latent growth from pretest to posttest between groups. The interpretation of the coefficients ( $\gamma_0$  and  $\gamma_1$ ) for continuous predictors is identical to that of regression weights in standard regression analysis.

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Insert Figure 3 about here

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We considered several demographic and status characteristics using the model in Figure 3. These included: gender; age; registration status (part time and non-matriculating *vs.* full time); class standing (First-Year *vs.* Second-Year); family responsibilities (care for family members *vs.* not); experience with online courses (first course taken online *vs.* more than one course taken online); and employment status (unemployed, employed part time, employed full time). **Age was**

treated as a continuous variable. In a few instances there was a difference in responses between pretest and posttest on the family responsibility variable; in these cases, the posttest data were used. In instances where the posttest data was missing on the family responsibility variable, the pretest data were used.

We examined each construct one at a time. Table 4 shows the results for all predictors. The results indicate that experience with online courses unvaryingly predicts initial levels of teaching, social, cognitive, and learning presence, but not changes in perceptions from pretest to posttest. In addition, class standing predicts differences in  $F_0$  in perceptions of teaching and learning presence, with Second-Year students showing higher average scores than First-Year students. Older students tended to score higher on learning presence than younger students. The students employed full-time had higher average scores on initial levels of social presence, but also lower latent growth factor scores on teaching presence.

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Insert Table 5 about here

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Additionally, we evaluated models with all significant covariates of a specific construct included. When teaching presence was regressed on the previously-identified significant predictors (i.e., class standing, employment status, and experience with online courses), the regression coefficients for employment status became non-significant. Second-Year students and students with more experience in online courses had higher mean scores on  $F_0$  than First-Year students and students for whom the course was their first online course (level:  $\gamma_0 = .20$ ,  $SE = .09$ ,  $p = .03$ ; experience:  $\gamma_0 = .22$ ,  $SE = .07$ ,  $p = .002$ ). Part- and full-time employed students differed in terms of latent growth,  $\gamma_0 = -.21$ ,  $SE = .10$ ,  $p = .042$ . In a model with initial levels of social

presence and changes in social presence regressed on experience and employment status, only the variable of experience retained its statistical significance,  $\gamma_0 = .34$ ,  $SE = .09$ ,  $p = .004$ . Results from a model with all three significant predictors of learning presence included (i.e., age, experience with online courses, and employment status) indicated that experience is the only viable predictor of initial levels of learning presence,  $\gamma_0 = .15$ ,  $SE = .06$ ,  $p = .004$ .

*Are there statistically significant differences between community college course completers and non-completers in initial perceptions of the CoI presences and/or changes in perceptions of the CoI presences? If not, what are the predictors of completion?*

We included course completion status as a predictor in the Latent Growth Curve Model (LGCM) to directly assess differences in initial levels of presence and mean changes from pretest to posttest. This was accomplished by evaluating the model depicted in Figure 3. In the last line of Table 4, we summarize the results of direct comparisons between course completers and non-completers in initial levels of presence and rate of change. More specifically, the estimates in Table 4 represent the mean difference in initial levels between course completers and non-completers and the mean difference in change from pretest to posttest for course completers and non-completers. Statistically significant differences in the CoI perceptions between course completers and non-completers were not observed. Likewise, the rates of change across the four CoI presences were at comparable levels regardless of course completion status.

The previous analyses indicated that course completers and non-completers do not differ with respect to initial standing and subsequent changes in perceptions of the four presences. Based on this finding, we conducted no further analysis of the relations between the CoI constructs and course completion. To explore the possibility that the collected student demographic and status information may play a role in course completion, we conducted a

binary logistic regression analysis, which did not include the CoI constructs. We included the following predictors of course completion in the logistic model: gender, age, income, registration status (part time and non-matriculating *vs.* full time), class standing (First-Year *vs.* Second-Year), family responsibilities (care for family members *vs.* not), and experience with online courses (first course taken online *vs.* more than one course taken online). Employment status (unemployed, employed part time, employed full time) was not included in the regression model because when the predictor is categorical and it has missing data, the sample size gets reduced. In addition, these missing data cannot be easily modeled with categorical predictors with missing data.

The model was evaluated with Mplus 7.0 with a maximum likelihood estimator and the Type = Complex data analysis option. The results indicated that the demographic and status variables included in the model do *not* reliably predict course completion, Wald  $F(9) = 4.64$ ,  $p = .86$ .

## **6. Discussion**

### **6.1 Changes in Students' Perceptions of the CoI Presences**

In general, the blended courses in this study fulfill their mission to enhance community college students' overall experiences and perceptions of the CoI presences. For example, we found, like previous investigators, that students' perceptions of teaching, social, and cognitive presence increase over time (see also Akyol et al., 2009; Akyol & Garrison, 2008). Similar changes in students' perceptions of learning presence were also noted, signifying an increase in students' perceptions of their ability to engage in self-regulated learning; however, these changes were not statistically significant by virtue of the conventional alpha type I error (.05).

Yet, consistent with previous research (Shea & Bidjerano, 2010; 2009), results also suggest that students' perceptions of the four presences are mediated by demographic and status characteristics. In this case, students' perceptions of the four presences are contingent upon their prior experiences with online learning: those students who reported having taken more than one fully-online or blended course in the past tended to rate the CoI presences higher than did those students for whom the study course was their first online experience. To promote equally positive experiences and perceptions of presence among all community college students enrolled in blended courses, institutions/instructors might consider offering expanded pre-course orientations and extended in-course interventions to those students who are new to the online learning environment.

## **6.2 Students' Course Completion**

We found that community college students' perceptions of the four CoI presences did not predict their completion of blended courses. In fact, we did not find any significant differences between course completers and non-completers on any of the CoI indicators included in this study. As a result, one may conjecture that community college students complete or fail to complete blended courses for reasons unrelated to the CoI framework.

Additionally, and similar to other researchers (Aragon & Johnson, 2008; Liu et al., 2007), we did not find any of the demographic and status variables considered in this study – gender, age, registration status, class standing, family responsibilities, experience with online courses, and employment status – to be predictive of community college students' completion of blended courses. Instead, other factors not included in the survey may account for this phenomenon. Future research should examine closely the effect of other contextual factors and course-level characteristics – like level of course difficulty (Jaggars, 2013), course discipline (Drago, Peltier,

& Sorensen, 2002), or a student's grade point average (GPA) (Muse Jr., 2003) – on community college students' completion of blended courses.

Community college students' blended course completion may also depend on a variety of idiosyncratic, student-specific variables not captured in the current data (Liu et al., 2007) or reflected in the literature on college persistence/attrition (Rovai, 2003). Moving forward, researchers might wish to consider whether students' prerequisite knowledge and skills, changes in life circumstances, or non-cognitive assets, like educational commitment, resiliency, and “grit” (Fain, 2013; Fusch, 2012), mediate their course completion. Such knowledge would allow institutions/instructors to target effective interventions – like those outlined by Liu, Gomez, and Yen (2009) and Liu et al. (2007) – to those community college students most at risk of dropping out or disenrolling from blended courses (Ice et al., 2011).

### **6.3 Limitations**

This study engages a mid-range sample size of 444 students at one community college in the United States. While this sample design helps to diversify the CoI research literature, where studies tend to gravitate between large, often multi-institution, samples (Ice et al., 2011; Shea & Bidjerano, 2010) and small, often course-specific, samples (Akyol et al., 2009; Akyol & Garrison, 2008), it may also limit the generalizability of our findings. Likewise, while Garrison and Arbaugh (2007) appeal for cross-disciplinary examinations of the CoI framework, the fact that our sample consisted of 17 classes representing multiple academic levels and disciplines may have impacted our findings. These concerns, in addition to our lack of a comparison group, should be taken into account when replicating this study.

Additionally, while our survey response rates were relatively high, a substantial number of the 444 students enrolled in the 17 study classes neglected to complete either survey. As a

result, we share Boston et al.'s (2009) concerns about response error in CoI research. In fact, response error is of particular concern in this study, where those community college students who took one or both of the surveys were more likely to be course completers. This raises the question of whether significant differences exist between those students who completed a survey and those who did not. Future researchers interested in the relationship between the CoI framework and course completion should administer the CoI survey to those students who drop or disenroll from the study courses (Ice et al., 2011).

#### **6.4 Contributions and Conclusion**

To conclude, in this article we used a pre/posttest CoI survey design to explore the nature and development of students' perceptions of the CoI presences in 17 blended courses at Urban Community College. We then correlated students' perceptions of the CoI presences, in addition to relevant demographic and status variables, to their completion of the study courses. While we found that students' overall experiences and perceptions of presence increased during the semester, we did not find students' perceptions of the CoI presences or any demographic or status characteristics to be predictive of their course completion.

Yet, as outlined above, this study adds to our understanding of online learning at the community college level in three important ways. First, this study asks instructors/institutions to consider how community college students' prior exposure to online coursework facilitates their current experiences in online courses. Second, this study encourages instructors/institutions to think critically about which community college courses to offer online, as well as what prerequisite knowledge and skills might best serve the students enrolled in those offerings. Third, by revealing the explanatory potential of variables not captured in the data or reflected in the literature on persistence/attrition at the course and college levels, this study begs for new

retention models that are specific to the fully-online and blended learning environments (see also Rovai, 2003).

This study also moves our understanding of the CoI research literature forward in three new directions. First, while previous studies have analyzed the development of students' perceptions of the CoI presences over time (Akyol et al., 2009; Akyol & Garrison, 2008), they did so by augmenting end-of-semester CoI surveys with data from course websites and student interviews. In contrast, this study models a pre/posttest CoI survey design; a novel approach that permits analysis of students' initial perceptions of presence, students' development of perceptions of presence, and the demographic/status characteristics that mediate both.

Second, this study adds to the small but growing number of studies that link students' perceptions of the CoI presences to objective measures of their success in online courses, like final course grades (Shea et al., 2012), course completion (Ice, et al., 2011), and college retention (Boston et al., 2009). Taken together, these studies begin to test the fundamental premise of the CoI framework: that a Community of Inquiry is central to student satisfaction, learning, and persistence in online courses.

Third, while many of the large CoI study samples include students enrolled in associates level courses (see, for example, Boston et al., 2009; Shea & Bidjerano, 2009; Shea et al., 2006), this study is relatively unique in that it focuses exclusively on community college students (see Morris, 2011 for one exception). Given that community college students make up the bulk of online learners in the United States, and that associates- and baccalaureate-seeking students seem to value the CoI presences differently (Kupczynski, Ice, Wiesenmayer, & McCluskey, 2010), this oversight threatens the generalizability and utility of the CoI research literature. By focusing

exclusively on community college students, this study represents one effort to expand and further legitimize that scholarship.

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