AMBIVALENT LEARNER SATISFACTION IN RELATION TO TEACHING, COGNITIVE AND SOCIAL PRESENCE IN DISTANCE EDUCATION

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ABSTRACT

The purpose of this mixed-methods study was to investigate learners' satisfaction and presence levels in five fully online graduate courses in special education that were offered in an eight-week semester, and whether there are any teaching, cognitive and social presence differences among the levels of learner satisfaction. The participants were 97 graduate students enrolled in an online special education program. The qualitative results indicated a multifaceted learner satisfaction profile including mixed or ambivalent satisfaction with different levels of positive and negative aspects. The quantitative analyses, conducted in RStudio, revealed that most of the learners had ambivalent satisfaction, and that only learners with positive satisfaction reported higher teaching, cognitive, and social presence compared to those who had ambivalent and negative ambivalent satisfaction. All these findings indicate that: (a) learner satisfaction in distance education is a complex construct having multiple dimensions; and (b) achieving positive satisfaction in distance education increases teaching, cognitive and social presence levels, which can enhance learning.

Keywords: Ambivalent satisfaction; cognitive presence; online education; social presence; special education; teaching presence.

INTRODUCTION

Learner or learning satisfaction is an important factor in online education (Alman et al., 2012; Bray et al., 2008; Dziuban et al., 2015; Fang et al., 2023; Palmer & Holt, 2009) because of its potential effects on the success of online or hybrid learning (Vernadakis et al., 2012) from different perspectives including active learning and collaborative learning (Emmanouilidou et al., 2010). Similarly, learner satisfaction is also important in blended learning (e.g., Batista-Toledo & Gavilan, 2023; Lim et al., 2008), and knowing about satisfaction would also directly inform program design and relevant support systems (Bray et al., 2008). Earlier research also suggested that learner satisfaction can relate to other important factors including perceived learning (Fredericksen et al., 2000; Kozan, 2016; Richardson & Swan, 2003), learner persistence in relation to the relevance of content (Levy, 2007; Park & Choi, 2009), interaction (e.g., Dharmadjaja & Tiatri, 2021; Kuo et al., 2013; Swan, 2001), and academic performance and completion rates (e.g., Sweeney, 2016).

Previous research also highlighted that learners' satisfaction is closely linked to completion rates and the quality of instruction (e.g., Kuo & Belland, 2016) as well as retention rates (e.g., Kuo et al., 2014), and dropout rates and grade point average (e.g., Choi & Park, 2018). For instance, Choi and Park (2018) showed that satisfaction can be both directly and indirectly (through grade point average) related to dropout rate, and it can also interact with other factors such as physical constraints and interaction with course content. Likewise, earlier Community of Inquiry framework research touched on learner satisfaction (e.g., Kozan, 2016; Rubin et al., 2013; Swan, 2001). For example, Kozan (2016) found that when there are high levels of teaching, social, and cognitive presence, perceived learning, and learner satisfaction may be the same factors in online education. Interestingly, learner satisfaction may not necessarily be positive or negative, or high or low only: Ambivalence or having positive and negative emotions simultaneously (Dziuban et al., 2015) is also possible and common (Dziuban et al., 2013). Specifically, according to Dziuban et al. (2013), ambivalence is much more common than expected, and ambivalence may increase the number of factors learners use to evaluate their online courses.

Accordingly, ambivalent satisfaction can also affect learners' teaching, cognitive and social presence levels since it is reasonable to expect online learners to get involved in providing peer feedback (teaching presence), interacting with their peers (social presence), and exploring solutions to issues (cognitive presence) more as their level of satisfaction increases. However, we still need to know how teaching, cognitive, and social presence would change across satisfaction levels in fully online education including its ambivalent level, which is an underexplored research issue.

The Community of Inquiry Framework and Learner Satisfaction

The Community of Inquiry (CoI) framework (e.g., Garrison, 2013; Garrison et al., 2000, 2010; Richardson et al., 2024; Richardson & Kozan, 2017) focuses on three components: teaching, cognitive and social presence. Teaching presence refers to "the design and organization of instruction, and especially the facilitation of productive discourse among students" (Shea & Bidjerano, 2009, p. 545). It also includes designing and facilitating cognitive and social processes to promote learning outcomes (Anderson et al., 2001; Garrison et al., 2000). Cognitive presence is "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (Garrison et al., 2000, p. 89). Social presence is "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities" (Garrison, 2009, p. 352). The presences have strong interrelationships (Kozan & Richardson, 2014a) and the CoI framework assumes that meaningful learning occurs through their interaction (Garrison et al., 2000). As a result, meaningful learning occurs in a critical community of inquiry where teaching, social and cognitive presence exist at higher levels and interact with each other (Garrison et al., 2000).

Within the scope of the CoI framework, earlier research addressed the presences, perceived learning, and satisfaction (e.g., Arbaugh, 2008; Shea et al., 2005). Learner satisfaction in online education is highly related to their presence levels (e.g., Akyol & Garrison, 2008; Arbaugh, 2008; Shea et al., 2005) and their learning (Fredericksen et al., 2000; Richardson & Swan, 2003). Accordingly, previous research established strong relationships between learner satisfaction and: (a) teaching presence (e.g., Arbaugh, 2010; Caskurlu et al., 2020; Nasir & Quick, 2016; Shea et al., 2003; Wu & Hiltz, 2004); (b) social presence (e.g., Gunawardena & Zittle, 1997; Hostetter & Busch, 2006; Richardson et al., 2017; Swan & Shih, 2005); and (c) cognitive presence (e.g., Garrison & Cleveland-Innes, 2005; Meyer, 2004).

From a teaching presence perspective, Arbaugh (2001) found that instructor immediacy or instructors' verbal and non-verbal behaviors that reduces social and psychological distance could positively predict not only learner satisfaction but also learning. Likewise, Wise et al. (2004) claimed that instructors' social presence is related to learner satisfaction and motivation. To add to these correlational insights, Wise et al. (2004) purported to check social presence effects by implementing varied levels of instructor social presence on learner performance and satisfaction in a one-to-one mentoring context. The results of this study indicated no effects on learner satisfaction, engagement, perceived learning, and learning outcomes.

This finding does not align with earlier research pointing to the importance of interaction with instructors in distance education (e.g., Fredericksen et al., 2000; Johnston et al., 2005; Kuo et al., 2014; Swan, 2001; Zhang et al., 2016) especially in large online learning contexts (e.g., Grady, 2013; Russell & Curtis, 2013). For instance, Swan (2001) asserted that interactions with instructors would increase perceived learning and learner satisfaction more than interaction with other learners. Likewise, Zhang et al. (2016) found a positive relationship between teaching presence and learner behaviors and interactions, which relates to learner satisfaction as well. Hosler and Arend (2012) also reported that teaching and cognitive presence could significantly predict course satisfaction.

As for learners' social interaction, earlier studies revealed inconclusive results. For instance, there are studies suggesting that social interaction or learner interaction is not directly related to satisfaction (e.g., Bray et al., 2008; Swan, 2001). Still, some other studies indicated the opposite (e.g., Dharmadjaja & Tiatri, 2021; Hostetter & Busch, 2006; Zhang & Mei, 2013). Hostetter and Busch (2006) indicated that social presence levels would be comparable in online and face-to-face learning environments, and that social presence can predict learner satisfaction in online education. Zhang and Mei (2013) found that social presence is closely linked to learner achievement and satisfaction, which was stronger in an online learning context than a face-to-face one. Kuo et al. (2014) also found that learner to learner interaction significantly and positively relate to learner satisfaction. Likewise, Bulu (2012) found social presence to be the best predictor in a Second Life learning context. In other words, previous research indicated that social presence can strongly relate to learner satisfaction in online education (e.g., Cobb, 2009, 2011; Richardson & Swan, 2003) and virtual environments (e.g., Bulu, 2012).

Some other research also linked both teaching and social presences to learner satisfaction: Combining instructor teaching presence and social presence, Ladyshewsky (2013) claimed that instructor presence is crucial to enhance learner satisfaction in online courses. Likewise, Cobb (2011) reported that social presence and instructor performance relate to learner satisfaction and perceived learning. Accordingly, it is not surprising that learners who receive motivating emails would achieve higher final grades than those who do not (e.g., Robb & Sutton, 2014). From an interaction perspective, Dharmadjaja and Tiatri (2021) reported that all interaction types (i.e., learner-content, learner-learner, and learner-instructor) are positively related to learner satisfaction in online learning together with perceived usefulness and ease of use. The authors also highlighted that longer online learning experiences would increase learner satisfaction.

In a hybrid learning context, Giannousi and Kioumourtzoglou (2016) found that cognitive presence was the best predictor of learner satisfaction, and cognitive, social, and teaching presence predicted satisfaction as a group. Similarly, even though Hosler and Arend (2012) found teaching and cognitive presences as significant predictors of course satisfaction, cognitive presence was the leader with the highest unique contribution, and Yang et al. (2016) found that cognitive presence has the strongest relationship with learner satisfaction. According to Garrison and Cleveland-Innes (2005), teaching presence is already crucial for not only creating but also sustaining cognitive presence in online learning. In this sense, Hosler and Arend (2012) indicated that discourse facilitation dimension of teaching presence leads critical thinking and cognitive presence, which would in turn promote learner satisfaction. Since the nature of triggering questions in online discussions impacted the cognitive presence level of learners' responses (Meyer, 2004), it is reasonable to assume that triggering would contribute to learner satisfaction as well as higher level of cognitive presence (i.e., resolution). Meyer (2004) also noted that direct instruction asking learners to solve a problem would also lead to the resolution or highest level of cognitive presence.

Ambivalent Learner Satisfaction

As for ambivalence in learner satisfaction under the CoI framework, it is an underexplored issue into which this paper provides insights. This lack of research is important since ambivalence impacts how students evaluate online learning experiences in that higher levels of ambivalence means learners' using more evaluation criteria (Dziuban et al., 2013). On the part of learners, ambivalence may also lead to more skepticism about their learning, and to the idea that instructional quality is uniquely linked to instructors' teaching capability (Dziuban et al. (2007). Dziuban et al. (2013) asserted that going beyond the visible contract or course syllabus, there is a second latent contract through which learners create expectations for a course and its instructor that

impacts learners' satisfaction. The latter is crucial since it is related to learners' trust relationships in an online course, which again directly impacts their satisfaction level (Dziuban et al., 2013).

Accordingly, Dziuban et al. (2013) concluded that learner satisfaction in online education is much more multifaceted than expected, and it may be impacted by instructors partially aligning with their personal prototypes. The authors further claimed that when learners have an ambivalent level of satisfaction, they can be much more analytical thereby paying attention to details more. In other words, it may become harder to satisfy learners further when they have an ambivalent satisfaction level. Unsurprisingly, then, some researchers stated that teaching presence including timely responses to learners and initiating collaborative interactions is crucial for learner satisfaction (e.g., Mahmood et al., 2012). Kuo et al.'s (2013) claim that learner-instructor interaction is important for learners' positive sentiments supports this idea.

From social presence and cognitive presence perspectives, learner-learner and learner-content interactions can also be effective. At this point, effective teaching presence can be the main driver thus increasing the levels of learner-learner and learner-content interactions that can directly serve social presence and cognitive presence respectively. Therefore, it is not surprising that Kuo et al. (2013) adds learner-content interactions to learner-instructor interaction and technology that would positively impact learner satisfaction. According to Dziuban et al. (2007), previous research highlighted various factors related to learner satisfaction with instructors ranging from interaction to facilitation to respect for learners, and the authors claimed that instructors who achieve a high level of these factors lead to higher levels of learner satisfaction independent of the instructional delivery mode.

As a result, even though learner satisfaction can be context dependent and unstable, ambivalent learner satisfaction is important since learner satisfaction is closely related to learner success in online education (Dziuban et al., 2015), and meaningful learning is also related to teaching, cognitive and social presence (Garrison et al., 2000). Therefore, it is reasonable to claim that ambivalence in learner satisfaction can change learners' teaching, social, and cognitive presence perceptions in online education since ambivalent satisfaction can make learners pickier while evaluating their online learning experiences, which is an underexplored issue. To this end, the purpose of the current research is to address whether there are teaching, cognitive and social presence differences across learner satisfaction levels including ambivalent satisfaction, which can inform how to enhance learner success or meaningful learning in online education. Specifically, the present study addresses the following complementary main questions in relation to online learning experiences of graduate learners in five fully online special education courses taken in an eight-week semester:

- What are the satisfaction and presence profiles of learners in a fully online special education context?
- Are there teaching, cognitive, and social presence differences among the learners' satisfaction levels including ambivalent satisfaction?

METHODS

Research Design

This study had an ex post facto research design since data were collected towards the end of each fully online course. In other words, the research data were collected after the fact or towards the end of the target online learning experiences, which also makes it retrospective in that participants needed to remember what had happened before. Finally, this study also employed a mixed method approach consisting of qualitative data and quantitative data (Creswell, 2014).

Setting and Participants

We collected the research data in a fully online graduate special education teacher preparation graduate program at a large public university located in the [region and country]. The online program started in 2014 with different program tracks focusing on teaching learners with mild and intense special exceptionalities. The purpose of the program is to provide learners with the teaching skills in line with the Council for Exceptional Children's standards and legal requirements as they apply to individual education plans (IEPs) and other legal documents. The courses in which research data collected were 8-week long courses covering both theoretical/conceptual and practical components. Table 1 presents the overall course descriptions:

Table 1. Overall Course Descriptions

Course	Description
Course A	This course presents insights on the characteristics of learners with mild intervention needs.
Course B	This course provides insights into social, legal, and ethical issues as they relate to special education.
Course C	This course introduces multiple methods of assessment and data sources.
Course D	This course covers successful life transitions for students with mild and intense intervention needs.
Course E	This course focuses on the characteristics of learners with intense intervention needs.

The fully online courses above were delivered in Brightspace. Overall, the courses mainly included weekly online discussions, project-based assignments focusing on application, readings and instructor videos related to weekly topics and/or practice. There were also brief videos introducing different places on campus to familiarize students with the institution in question, and the course assignments included both group and individual work items. There was an overall synchronous online seminar for all students in which invited speakers gave presentations on topics related to special education at the beginning of a semester. Feedback was provided in various ways including videos and written form. Some courses incorporated authenthic application tasks as well. For instance, in some courses, students were asked to prepare lesson plans and implement them in their classrooms or with a learner with special needs if they were not actively teaching. Finally, each course had a weekly synchronous online office hour in which course instructors and students were supposed to come together and discuss course-related stuff.

The participants of this study were a convenience sample and came from different undergraduate background ranging from psychology to education and were trying to earn a teaching license in special education. Specifically, a group of special education graduate students, separated by time and space largely, were invited to contribute to the study and the data from those who were available and agreed to participate were used in this study. The number of learners in each course, on average, was approximately 14. Besides, the number of online courses taken by the participants before the data collection ranged from 0 to 5 or more. Table 2 provides the number of learners enrolling in each course:

Table 2. Participants in Each Course (N = 97)

Course	*N*	%
Course A	22	22.70
Course B	18	18.55
Course C	21	21.65
Course D	16	16.50
Course E	20	20.60

Measures

The Qualitative Survey

The participants also completed a qualitative survey consisting of open-ended questions to indicate: (a) anything they would like to add in relation to their perception of presence; (b) how in-course interactions affected their perception of connectedness; (c) how on-campus videos affected their perception of being a part of the institution; (d) how course content videos supported their learning; (e) how videos affected their motivation; and (f) anything that would help to enhance overall course experience.

The Community of Inquiry Survey

The 34-item CoI survey instrument measures the three presences and uses a scale of (0=Strongly Disagree) to (4=Strongly Agree). The survey includes 13 questions for teaching presence (e.g., The instructor clearly communicated important course topics), nine for social presence (e.g., Getting to know other course

participants gave me a sense of belonging in the course), and 12 questions for cognitive presence (e.g., Learning activities helped me construct explanations/solutions). Validity and reliability for the CoI survey has been previously established (e.g., Arbaugh et al., 2008; Kozan & Richardson, 2014b). In this study, Cronbach's Alpha values indicated high internal consistencies: 0.96 for Teaching Presence, 0.95 for Cognitive Presence, and 0.90 for Social Presence.

Procedures

Data Collection and Preparation

This study was conducted in Spring 2023. The overall survey including the open-ended questions or the qualitative part and the CoI component were distributed to learners via Qualtrics and the learning management system used in the last week of an eight-week online semester. Data collection stopped at the very end of the semester. The first author prepared the online survey and preprocessed the data, and the third author helped with participant recruitment and creating the open-ended questions. Originally, there were 105 participants; however, eliminating cases with no data resulted in 97 participants. The 5% trimmed mean values indicated that outliers were not influential. After all, the CoI framework suggests us achieve high levels of presences since it is important to create meaningful online learning experiences. Finally, there was one participant only with a fully negative satisfaction level. Even though this participant were kept in descriptive statistics to answer the first research question, they were eliminated from further analyses addressing the second research question.

As for qualitative data, participants' responses were checked by a native speaker for any ambiguities and misspellings. There were no significant ambiguities and misspellings that would damage the meaning of participants' answers.

Data Analysis

Both Shapiro-Wilk tests and Kolmogorov–Smirnov tests showed that the quantitative presence data violated the normality assumption. As a result, descriptive statistics, the Kruskal-Wallis test, and the Dunn's test for post-hoc pairwise comparisons were used to answer research questions. The p-values for all the post-hoc analyses were adjusted using the Bonferroni method. An alpha level of 0.05 was used for all tests of significance. All statistical analyses were performed in RStudio (Version 2023.12.1+402) and effect sizes were also calculated. The second author performed the main analyses and the first author helped with assumption check.

Content analysis of the participants' answers to qualitative survey questions were completed by two coders. The two coders first came together to discuss the coding process and create a common way of coding participants' answers into positive, negative, and ambivalent categories. Next, using a random 10% of the qualitative data, the two coders separately coded participants' answers, and came together to discuss their coding results until an agreement level of 96% was achieved. Then, the coders continued to code the rest of the qualitative data separately, and, at the end, there was 89% of agreement between them. The two coders resolved the remaining 11% of disagreement by mutually discussing the codes one by one focusing on the question of why in the presence of a third researcher, which resulted in full consensus. Specifically, in Excel, color coding was utilized to increase the efficiency of the coding process: green = positive (e.g., "I loved the way the Brain Dumps were structured"), yellow = ambivalent (e.g., "It wasn't quite like being there [Covid has really hurt that also] but it was nice to see what campus looks like") , red = negative (e.g., "It had no bearing on my sense of belonging"), black = blank or no answers, and no color = not sure or not applicable (e.g., "N/A"). In other words, answers to qualitative questions were color coded to indicate whether they were positive, ambivalent, negative, or whether there was no answer, or the coder was not sure about the category of an answer.

The next process was to categorize participants into positive, positive ambivalent, ambivalent, negative ambivalent, and negative satisfaction levels. This process was conservative in that positive satisfaction required all green coding (for all six answers), and negative satisfaction consisted of all red coding (for all six answers). Ambivalence included a combination of green (positive satisfaction) and red (negative satisfaction) and/

or yellow (ambivalent satisfaction). Dividing ambivalent satisfaction into positive ambivalent and negative ambivalent levels was based on the number of green (positive) coded answers and red (negative) coded answers out of the total of six answers. Namely, when there were more positive answers in an ambivalent case, it was coded as positive ambivalent while those with more negative answers were codes as negative ambivalent. This process was first completed by the first coder and then was double-checked by the second coder with 92% agreement. The 8% disagreement was further discussed by the two coders and full consensus was reached at the end.

FINDINGS

This section presents the current findings of the current study.

Learner Satisfaction

The first research question of the present study addressed the nature of learner satisfaction and their perception of a community of inquiry as they relate to the five fully online graduate special education courses taken in an eight-week semester. This question was answered through: (a) descriptive statistics; and (b) content analysis of participants' answers to open-ended questions in the qualitative survey. Table 3 shows the descriptive results indicating one single case of negative satisfaction or one single learner who was not satisfied at all:

Table 3. Descriptive Statistics (N = 97)

Satisfaction Levels	*N*	%
Positive	44	45.36
Positive Ambivalent	37	38.14
Ambivalent	7	7.21
Negative Ambivalent	8	8.25
Negative	1	1.04

Learners' Perception of a Community of Inquiry

On average, the participants reported high levels of teaching, cognitive and social presence since mean ratings for each presence were quite high or close to their maximum (Table 4).

Table 4. Descriptive Statistics for the Presences (N = 97)

Presence	Possible Min.	Minimum	Possible Max.	Maximum	*M*	*SD*
Teaching	0	16	52	52	46.1	8.8
Social	0	12	36	36	30.8	5.3
Cognitive	0	12	48	48	41.6	7.8

Presence Differences across the Levels of Learner Satisfaction

Before running the following analyses, one single negative case was eliminated from the data set. Therefore, in the main statistical analyses, the following groups were compared in terms of their teaching, social, and cognitive presence levels (Table 5).

Table 5. Descriptive Statistics (N = 96)

Satisfaction Levels	*N*	%
Positive	44	45.83
Positive Ambivalent	37	38.54
Ambivalent	7	7.30
Negative Ambivalent	8	8.33

Kruskal-Wallis tests and the Dunn's tests with Bonferroni adjustment were employed to test whether participants with different satisfaction levels would have different teaching, cognitive, and social presence levels (Table 6).

Table 6. Presence Differences across Satisfaction Levels

Presence	Satisfaction Level	*Minimum*	*Maximum*	*Median*	*IQR*	*H*	*p*
Teaching	Positive	39	52	52	5	12.52	.006
	Positive Ambivalent	16	52	49	8.5		
	Ambivalent	20	52	43	16.5		
	Negative Ambivalent	17	52	47	20.5		
Social	Positive	21	36	34	5.5	13.19	.004
	Positive Ambivalent	22	36	32	5.5		
	Ambivalent	12	36	28	6.5		
	Negative Ambivalent	14	33	19	13.5		
Cognitive	Positive	35	48	47	5	18.69	< .001
	Positive Ambivalent	31	48	45	11		
	Ambivalent	24	48	36	8		
	Negative Ambivalent	12	47	32	24		

Results of the Kruskal-Wallis tests indicated that there were significant differences across the four satisfaction levels in terms of teaching presence, H(3) = 12.52, p = .006, η^2= .10; social presence, H(3) = 13.19, p = .004, η^2= .11; and cognitive presence, H(3) = 18.69, p < .001, η^2= .17. Following post-hoc analyses also revealed significant results. Teaching presence was significantly lower in the ambivalence group (Md = 43.0) compared to the positive group (Md = 52.0), p = .019, r = .42. Moreover, social presence was significantly lower in the negative ambivalence group (Md = 19.0) compared to the positive group (Md = 34.0), p = .014, r = .45. As for cognitive presence, it was significantly higher in the positive group (Md = 47.0) compared to both the ambivalence (Md = 36.0, p = .007, r = .46) and negative ambivalence groups (Md = 32.0, p = .004, r = .50). Finally, the results showed that only a positive level of learner satisfaction differs from lower levels of learner satisfaction regarding all presences with a medium (positive vs. ambivalent satisfaction for teaching presence; positive vs. negative ambivalent satisfaction for social presence; positive vs. ambivalent satisfaction for cognitive presence) or large (positive vs. negative ambivalent satisfaction for cognitive presence) effect size.

DISCUSSION AND CONCLUSIONS

The results revealed that learner satisfaction in online education, taken as a form of distance education in this study, can be highly multifaceted including mixed or ambivalent levels. Namely, learner satisfaction in distance education seems to be a much more complex construct than having a dichotomous nature: positive versus negative. Specifically, descriptive results suggested that it was impossible to divide satisfaction into positive vs. negative since most learners had both positive and negative satisfaction or some sort of

ambivalent satisfaction. In other words, satisfaction was not a black or white issue but a much more complex emotional reaction. As a result, when it comes to variables such as satisfaction, ambivalence seems to be important to keep in mind since people may be more inclined to have ambivalent experiences.

Still, having more positive aspects in an ambivalent satisfaction situation may indicate a higher level of successful distance education given the role of learner satisfaction (e.g., Caskurlu et al., 2020; Richardson et al., 2017; Zhang et al., 2016). For instance, in this study, positive ambivalence outnumbered ambivalent and negative ambivalent satisfaction levels suggesting that learner satisfaction was at a certain high level. Here, it is also worth providing insights into the one single negative satisfaction case that emerged. The participant revealed that: (a) there were too many group work items: "I felt like there were too many group related activities"; (b) office hours were not effective: "No, I didn't feel like I needed to attend office hours"; (c) on-campus videos were not interesting: "I really didn't care about them"; (d) content-related videos did not support: "not really"; (e) videos did not increase their motivation: "No"; and (f) they had nothing to suggest to enhance overall course experience: "No". Given the positive and positive ambivalent satisfaction were dominant in the present study, it is reasonable to regard the one single negative case as an outlier.

Moreover, the participants' teaching, cognitive and social presence levels were quite high indicating that the fully online courses were successful at establishing a learning context encouraging meaningful learning. Further, the high levels of the presences align with the mostly positive and positive ambivalent satisfaction levels of the participants: One would expect higher learner satisfaction to associate with higher levels of teaching, social, and cognitive presence. Such a relationship is not surprising since learner satisfaction and the presences are connected to each other (e.g., Yang et al., 2016; Zhang & Mei, 2013; Zhang et al. (2016). Accordingly, it is reasonable to claim that participants of this study had a significantly positive online learning experience accompanied by higher levels of teaching, social, and cognitive presence. After all, meaningful learning occurs in the intersection of teaching, social and cognitive presence (Garrison et al., 2000).

The teaching, social and cognitive presence differences among different satisfaction levels indicate that learner satisfaction influences the presences. Specifically, the finding that positive satisfaction group reported significantly higher teaching presence than ambivalent group but not than negative ambivalent suggests that it was not increased negativity in learner satisfaction that led to lower levels of teaching presence perception, but it was equally mixed or ambivalent level of satisfaction. As a result, it is very reasonable to assume that preventing ambivalent satisfaction can increase learners' perception of teaching presence. One possible explanation is that ambivalent satisfaction would keep learners confused when it comes to instructors' efforts or teaching presence. In contrast, even negative satisfaction would not lower teaching presence perception since it makes it clear that learners are not satisfied, and this may not be directly related to teaching presence. Therefore, instructors and course designers can invest in increasing student satisfaction as much as possible by paying attention to various course features including organization, facilitation and instruction. For instance, instructors and course designers can create online courses where the structure is clear and allows the participants to understand what is expected of them easily. Similarly, they can provide clear instructions as it relates to both content and course assignments, and the assignments themselves would encourage practice or application.

However, positive satisfaction group reported higher social presence than negative ambivalence group. In other words, social presence can depend on the decreasing levels of learner satisfaction more since it seems to be much more vulnerable to lower learner satisfaction. Given that social presence is related to collaborative and constructivist nature of online learning experiences, the current findings also suggest that it is better to try to increase learner satisfaction so that learners would experience higher levels of social presence, which would lead to more successful collaborative and constructivist learning experiences. Since social presence depends more on students' interactions among themselves, instructors and course designers can try to make sure that these interactions are working and useful. For instance, they would prepare guidelines for group work that help students not only respect each other's contributions but also contribute significantly. Similar guidelines can be used by instructors and course designers to make sure students can professionally voice their opinions and agree or disagree while interacting with others.

The results pertaining to cognitive presence is much more complex since positive satisfaction group reported significantly higher cognitive presence than both ambivalent and negative ambivalence groups. This finding aligns with both teaching presence and social presence results and suggests that cognitive presence is vulnerable to the effects of both ambivalent and lower learner satisfaction. Cognitive presence is the component of the CoI framework that is closest to learning. Therefore, the current finding suggests that it is better to increase learner satisfaction as much as possible above ambivalent satisfaction to increase their cognitive presence or learning. To this end, instructors and course designers can employ problems or activities that would trigger students' interest in the course content and provide access to a wide variety of resources students can explore. Likewise, the assignments can also reflect real-life practice based on the course content thereby making it easier for students to connect the content with professional practice easily.

It is also interesting that even positive ambivalence did not differ from ambivalent and negative ambivalent satisfaction for any presence types. This finding also highlights the importance of achieving more positive levels of learner satisfaction to achieve high levels of teaching, cognitive and social presence that are assumed to encourage meaningful learning based on the CoI framework. However, positive ambivalence did not matter as much as positive satisfaction either. In other words, positive ambivalence may be a proxy for positive satisfaction, but it is not still significantly different from ambivalence and negative ambivalence in learner satisfaction.

Overall, the present results reveal that positive learner satisfaction seems to increase teaching, social and cognitive presence, which would contribute to higher levels of learning in distance education. To this end, ambivalent satisfaction can function as a key threshold to keep teaching, cognitive and social presence at a certain level. In other words, it is important to prevent even mixed or ambivalent levels of learner satisfaction, which means eliminating the possibility of negative satisfaction as well. A possible way of achieving higher student satisfaction throughout online learning experiences would be running multiple formative evaluations and employing relevant interventions when necessary.

All these results and conclusions should be approached carefully due to some limitations. First, this study included five fully online courses in a specific academic field and employed convenience sampling, which reduces generalizability and asks for further research. Such a larger future study context would increase the ecological validity with randomly selected samples. In other words, the findings may be limited to the experiences of the convenience sample or participants who were available and agreed to contribute and the field of special education. Therefore, further research would include more purposeful or random sampling and other academic fields to gauge the extent to which the current findings can generalize. Second, there was one time data collection in this study, and future research can collect data multiple times in a semester thus checking presence and satisfaction levels in a longitudinal manner. Third, the current study did not include any instructor-related data in relation to the presences and learner satisfaction. Therefore, future research would focus on instructors and their online teaching as well. Finally, similar future research can address not only online learning but also blended or hybrid learning as well, which may enhance our understanding of how to increase teaching, cognitive and social presence, and learner satisfaction in a larger educational context.

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