Winter 4-12-2021

Classroom Social Connection and Academic Success in the Online Classroom During COVID-19

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Honors Psychology Thesis

School of Behavioral and Social Sciences

Brescia University College

London, Ontario, Canada

April 2021

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Abstract

With the emergence of COVID-19, a shift towards online learning has become necessary. At Brescia University College, mandatory Psychology courses, which have previously only been provided in person, are now only offered online. The purpose of the current study is to characterize previous and current course experiences, and the current classroom learning community of Brescia psychology students as well as investigate how forced online learning impacts their achievement as measured by perceived learning, final grade, and course satisfaction. Participants completed an online survey, which assembled questions from various sources, including the Community of Inquiry Survey. It is hypothesized that students with stronger feelings of social connection and classroom community will show higher academic achievement as measured by higher perceived learning, course satisfaction, and overall course grade. The results from this study indicate that teaching presence and cognitive presence may be more important predictors of perceived learning and course satisfaction, than social presence.

Keywords: social connection, Community of Inquiry Survey, classroom community, perceived learning, academic success, course experience

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Social connection is the most fundamental human need and the key to survival (Akcaoglu & Lee, 2018). Moreover, social connection is defined as the feeling of belongingness and closeness to other people (Delahunty et al., 2014). One, of many, contexts where social interactions have clearly shown to be vital is in classrooms. In fact, learning is considered a social task, and therefore, social connection is the primary element of learning (Akcaoglu & Lee, 2018). Akcaoglu and Lee (2018) have also found that building social connections and good working relationships have positively influenced students' achievement of learning outcomes. Similarly, Hosler and Arend (2012) have stated that achieving a classroom that is community-like increases the rate of successful educational experiences. Moreover, previous research has shown that social connection not only enhances students' learning experiences through building a classroom community, but also positively influences their overall academic performance in both face-to-face and online learning settings (Delahunty et al., 2014). Delahunty et al. (2014) have found that social interactions are especially important in online learning settings because there tends to be a trade-off between course flexibility and the sense of connectedness. Thus, active discussions have shown to be vital contributors of enhanced social connection and academic success (Delahunty et al., 2014). These studies highlight the importance of characterizing social connection in the classroom as it is strongly linked with academic success.

More specifically, in online learning settings, social connections are referred to as "social presence", which defined by the Community of Inquiry (CoI) framework (Swan et al., 2008) as a sense of being and belonging. Swan et al. (2008) have also identified two other key presences in the CoI framework, known as teaching presence, which is the facilitation of social and cognitive

processes, and cognitive presence that is the students' abilities to construct meaning. All three presences consist of sub-categories, which aim to show the various factors influencing each presence as well as to clarify their definitions. For instance, social presence consists of open communication, emotional expression, and group cohesion, which all enhance the students' sense of belonging. Similarly, teaching presence includes instructional design and course organization, facilitating discourse, and direct instruction, which are all means of achieving learning outcomes. Lastly, cognitive presence can be thought of a learning cycle that consists of effective exploration, integration, and resolution.

A review carried out by Stenbom (2018) has shown that the CoI survey is a reliable measure of social presence, teaching presence and cognitive presence, and in fact, not only provides useful data about students' perceptions of their learning experiences, but also allows instructors to understand the importance of establishing an instructional design in enhancing students' learning (Shea & Bidjerano, 2013). Moreover, Stenbom's (2018) review has shown that teaching presence is the main predictor of students' perception of their cognitive presence as well as social presence. For instance, timely feedback, well-organized courses with clear assignment goals, and active instructor interaction are critical contributors to student satisfaction (Hosler & Arend, 2012). Therefore, students who rate their instructors' teaching presence higher, are more likely perceive their learning experience positively, and feel more socially connected to their peers and instructors (Shea & Bidjerano, 2013).

The curiosity of many researchers about whether students' perceptions of social presence, cognitive presence, and teaching presence will change across different learning environments is what led them to carry out experiments in traditional (face-to-face), hybrid (combination of online and face-to-face), and fully online learning settings. As anticipated, classrooms with

higher levels of social interactions, contribute to the satisfaction of students and the rating of their social presence (Shea & Bidjerano, 2013). For example, students in traditional class settings performed significantly better than students in any other learning environment, mainly due to the various opportunities made available to students that allow them to maintain direct interactions with their peers and instructors (Kaufmann and Vallade, 2020). This further allows clear interactions between instructors and their peers to be developed, as well as genuine interpersonal relationships to be built between peers, increasing their perceptions of an ideal classroom community. In contrast, Friday et al. (2016) have found that there are no differences between undergraduate students' performances in traditional and online classes. This may be explained by the increased interactive activities and group-based tasks that were introduced to the students, or by the gender-differences, which helped achieve this equilibrium in performance (Friday et al., 2016).

In regards to social presence, previous research has suggested that students in online courses, unlike students in traditional courses, often feel a sense of isolation (Delahunty et al., 2014). In fact, this was explained by the geographical and physical separation of instructors and students, which decreased the chances of having a safe communication space for all students Delahunty et al., 2014). In fact, asynchronous learning lacks various cues, such as gestures, voice tone, and clarifications, which may result in low levels of rapport as well as low confidence levels and self-assurance for students (Delahunty et al., 2014). In order to compensate for this physical separation, students in online settings must be given several opportunities to interact with other students via online discussions, in order to build their identity as well as explore other students' identities. Thus, students in asynchronous courses have shown to lack a sense of community, and tend to have feelings of isolation, which further play a role in decreasing the

quality of their learning experiences and their perception of social presence (Delahunty et al., 2014). Similarly, a study carried out by Akcaoglu and Lee (2018) has shown that students in online courses feel frustrated and lack immediacy due to their low levels of social interactions so, a Facebook supplementary group was introduced to students in order assist outside-classroom communication. In fact, over time, some students, as anticipated, have not only shown favorable perceptions of their social presence due to their enhanced feelings of sociability and connectedness with their peers, but also performed better during their online courses as a result of this increased interaction with fellow learners through Facebook (Akcaoglu and Lee, 2018).

As for teaching presence and cognitive presence, a study carried out by Hosler and Arend (2012) has found that students in online courses have shown to have various concerns in regards to instructor feedback and participation in discussion forums. In fact, those issues are sometimes inevitable in online settings due to the lack of organization or individual feedback. In both traditional and online learning settings, the same study has also shown that students want to be challenged by their instructors, to be engaged in critical thinking, and to be guided and encouraged, which are all considered to be facets of social interactions in the classroom (Hosler & Arend, 2012). Overall, despite the issues and concerns, the students' perception of teaching presence and cognitive presence across online settings and traditional classrooms did not seem to differ.

Indeed, numerous studies have evaluated the components of a CoI in various classroom settings (traditional classrooms, hybrid, online learning settings (Hoslet & Arend, 2012, Delahunty et al., 2014, Friday et al., 2016, Shea & Bidjerano, 2013). However, these investigations still do not capture the current learning environment. With the emergence of COVID-19, a shift toward online learning has become necessary. At Brescia, psychology

courses, previously only provided in person are now only offered online. Although research has explored CoI in online learning classrooms, there is a lack of research into the perception and experience of CoI when students are forced to enroll online as opposed to having choice.

Friday et al. (2016) have assessed the effects of gender-differences on students' performance in both online learning and traditional classrooms. In fact, the study has shown that females are more likely than males to participate in online discussions, because they are usually left out of discussions in traditional classes (Friday et al., 2016). Moreover, since females are more collaborative than males, they tend to outperform males in online learning. This is mainly due to the fact that men tend to be more competitive, and web-based settings rather require more collaborative interactions from students (Friday et al., 2016). Similarly, a study carried out by Albert and Johnson (2011) have found that females tend to associate online learning with greater control over their academic and learning progress. Meanwhile, although males also perceive, to some extent, control over their knowledge and experience, it is vital to acknowledge that males tend to feel restricted by the structure of the online learning system (Albert & Johnson, 2012). Thus, females, in comparison with men, perceive a higher level of social presence in online classrooms than in traditional classrooms (Albert & Johnson, 2012). Overall, females not only outperform males in online classrooms, but also in traditional settings (Albert & Johnson, 2012). Moreover, within-gender differences were also explored, and it was found that males in traditional classrooms perform better than males in online settings (Friday et al., 2016). Students' characteristics and individual differences, besides gender, have also shown to have effects on their social interactions, perceived learning and academic performance. For instance, students vary in age, maturity and experience, which can all also play a role in affecting students' performances in online courses. For example, graduate students tend to be more serious and

goal-oriented than undergraduates, and despite their equal levels of technology usage, graduate students tend to be more involved in asynchronous communication (Friday et al., 2016). Thus, graduate students, unlike undergraduates, are more likely to perform better in asynchronous learning environments.

It is important to acknowledge that previous research have only examined gender-differences in online settings, rather than differences within one gender in a specific context. Moreover, the previously mentioned articles have focused more on making comparisons between online, hybrid, and synchronous student experiences, rather than measuring performance among different students in one specific online setting. In addition to this, there has also been a few more gaps in regards to individual differences such as enthusiasm, and previous experience with online learning, and whether those factors affect students' perceived learning and academic performance. Thus, this study provided a unique opportunity to examine the relationship among previous and current social connection in courses, current classroom learning community and academic achievement as measured by perceived learning, final grade, and course satisfaction.

Considering the small community that Brescia holds, social connection between students, their peers and instructors is always guaranteed to be outstanding. However, given the current pandemic and the fact that Brescia has never previously offered any online courses, Brescia students are expected to experience a drastic shift in their university education. In fact, the current study investigated characterized previous and current course experiences and the current classroom learning community to examine the relationship among these and academic achievement. The current study collected demographics information and evaluations of previous course experiences through surveys created by the researchers as well as assess the current classroom learning community using the Community of Inquiry (CoI) survey (Swan et al., 2008).

To hypothesize, students with stronger feelings of social connection and classroom community will show higher academic achievement as measured by higher perceived learning, course satisfaction, and overall course grade.

Methods

Participants

Participants for this study were anticipated 23 female undergraduate students (18+ years of age) recruited from PSY 2850A and PSY 2855F in the 2020-21 academic year.

Materials

As this was an online study, students needed access to any internet-connected device, not provided by the research, to participate in this study. The structure of the study consisted of one survey, which was administered via Qualtrics, an online survey software. The Late Course Survey was used to examine the relationship among previous and current social connection in courses, current classroom learning community and academic achievement as measured by perceived learning. This survey used a mixed method approach that consisted of open-ended qualitative questions in combination with closed-ended quantitative questions, where responses were chosen from 5-point Likert Scales. It incorporated questions from the Community of Inquiry Survey (Swan et al., 2008) which assessed teaching, social and cognitive presences in the online classroom as well as questions created by the researchers to assess student perceptions of social connection in their current classes.

Initially, the participants answered 13 demographic questions. After these questions, the survey included 8 social connection questions, 9 perceived learning questions, 6 course satisfaction questions, 13 teaching presence questions, 9 social presence questions, and 12

cognitive presence questions. The survey questions were assembled from a variety of sources. Social connection questions developed by the researchers to allow participants evaluate the social connection in their current online course. For example, “Overall, how connected did you feel to the other students in the class?”. Moreover, the survey also included questions that were derived from previous studies about perceived learning (Alqurashi 2019; Hiltz 1994; Lee et al 2011; Sher et al. 2009;) and course satisfaction (Alqurashi, 2019, Arbaugh 2000; Lee et al. 2011; Sher 2009). An example of both perceived learning related and course satisfaction questions are “In your estimation, how well did you learn the material presented in this course?” and “Overall, I was satisfied with my online learning experience in this course”, respectively.

Quantitative analysis including correlational and regressional analysis were used to investigate relationships among current classroom social connection, community of inquiry, and academic achievement as measured by final grade in the course, perceived learning and course satisfaction. Additionally, qualitative data analysis was used to conduct inductive thematic analysis to investigate Brescia students’ perceptions of what helps and hinders online learning.

Procedure

A third party not affiliated with teaching any of the classes of interest, any class procedures or marking was added to the course OWL sites for PSY 2850A and PSY 2855F. In the middle of November in the first term, the third party posted an announcement in the course OWL sites with a recruitment postcard, which described the nature of the study. The next day, the third party also posted an announcement to OWL with a link the recruitment video, the letter of information, and the link to the survey. Additionally, the third party also posted a reminder announcement in OWL a week later with a link to the letter of information and survey. For this survey, participants implied their consent to participate, access their final course grades, and

possible future use of data to be collected at the end of the LOI on Qualtrics. Participants either selected “yes” or “no” boxes to give their specific consent for each as well as confirm their consent by clicking “submit survey” after completing the survey on Qualtrics.

To participate in the study, students logged onto the Qualtrics website through Western University. Participants completed the study virtually, from any location, and at any time convenient to them. After students have accessed the URL for the Late Course Survey, they were presented with the letter of information, which described the nature of the study and asked students to provide their informed consent to participate. Participants then completed the Late Course Survey, which took about 20 minutes. After answering a total of 69 questions, participants were presented with the debriefing form, urged to follow up with any questions they may have for the researcher, and thanked them for their contribution to the study. Last but not least, individuals who chose to participate and complete the survey received a $20 Amazon gift card.

Results

Measures of Social Connection & Community

Participants in this study rated their Social Connection with Students (M = 2.48, SD = 0.73), Social Connection with Instructor (M = 3.04, SD = 1.69), and overall sense of Class Community (M = 2.61, SD = 1.23). A repeated measures ANOVA with within-subjects factor of Connection Group (3 levels: student, instructor, & class) was conducted to examine whether social connections significantly differed among groups. The ANOVA did not reveal any significant effect of Connection Group, $F(2,44) = 2.38$, $p = .10$, suggesting that amount of social connection with the various groups did not significantly differ. In addition, participants rated their experience of dimensions from the Community of Inquiry framework including, Social

Presence *(M* = 30.78, *SD* = 6.0), Cognitive Presence *(M* = 39.39, *SD* = 8.72), and Teaching Presence (*M* = 47.35, *SD* = 13.09).

Course Differences in Social Connections with Groups

In order to examine whether there were the differences between students in PSY 2850A and PSY 2855F in measures of social connection with different groups, an independent t-test analysis was conducted. In fact, as shown in Figure 1, students in PSY 2850A rated their Social Connection with Instructor (*M* = 4.33, *SD* = 0.99) significantly higher than that of students in PSY 2855F (*M* = 1.64, *SD* = 1.03), $t(21) = 6.43$, $p < .001$, $d = 2.68$, with a large effect size. Similarly, students in PSY 2850A also rated Class Community (M = 3.42, SD = 0.10) significantly higher than that of students in PSY 2855F *(M* = 1.73, *SD* = 0.79), $t(21) = 4.49$, $p < .001$, $d = 1.87$, with a large effect size. However, ratings of Social Connection with Students among PSY 2850A (*M* = 2.67, *SD* = 0.78) and PSY 2855F (*M* = 2.27, *SD* = 0.65) did not significantly differ, $t(21) = 1.31$, $p = .203$.

Course Differences in Community of Inquiry Dimensions

Course differences in the Community of Inquiry Dimensions are shown in Figure 2. In order to examine whether there were the differences between students in PSY 2850A and PSY 2855F in the Community of Inquiry Dimensions, an independent t-test analysis was conducted. For Teaching Presence, Cognitive Presence and Total CoI, Levene's test was significant, Levene's $F(1, 21) = 4.42$, $p = .048$, Levene's $F(1, 21) = 7.19$, $p = .014$, and Levene's $F(1, 21) = 4.34$, $p = .050$, respectively, so Mann-Whitney U was used. The Mann-Whitney test indicated that the Cognitive Presence was significantly higher for students in PSY 2850A (*M* = 43.50, *SD* = 4.62) compared to students in PSY 2855F (*M* = 34.91, *SD* = 10.07), $U = 31.00$, $p = .033$.

Similarly, Teaching Presence was significantly higher for students in PSY 2850A (M = 56.50, SD = 5.85) compared to students in PSY 2855F (M = 37.36, SD = 11.37), U = 2.50, $p < .001$. As for Total CoI, students in PSY 2850A (M = 132.08, SD = 11.24) also had significantly higher scores than students in PSY 2855F (M = 101.64, SD = 27.13), U = 16.50, p = .003. In contrast, there was no significant difference in Social Presence for students in PSY 2850A (M = 32.08, SD = 4.19) compared to students in PSY 2855F (M = 29.36, SD = 7.47), $t(21) = 1.09$, p = .288.

Course Differences in Course Experience

Course differences in Course Experience are shown in Figure 3. In order to examine whether there were the differences between students in PSY 2850A and PSY 2855F in Course Experience, an independent t-test analysis was conducted. For Course Satisfaction, students in PSY 2850A (M = 24.33, SD = 2.67) had significantly higher scores than students in PSY 2855F (M = 15.36, SD = 3.50), $t(21) = 6.94$, $p < .001$, d = 2.90, with a large effect size. Similarly, for Perceived Learning, students in PSY 2850A (M = 20.2, SD = 2.35) had significantly higher scores than students in PSY 2855F (M = 14.91, SD = 4.57), $t(21) = 4.02$, $p < .001$, d = 1.68, with a large effect size. Overall, students in PSY 2850A scored M = 79.42, SD = 6.47 on their final grade, as opposed to students in PSY 2855F who scored M = 72.60, SD = 9.77.

Relationship among Social Connection with Different Groups and Academic Success

To examine the relationship among social connections with the different groups and measures of academic success including Perceived Learning, Course Satisfaction and Final Grade, a correlational analysis using Kendall's Tau was conducted. A summary of these analyses can be found in Table 1. The data show that Social Connection with Instructor was positively, moderately, and significantly correlated with the Perceived Learning, $\tau_b(23) = .50$, p = .002.

Similarly, Class Community was also positively, weakly, and significantly correlated with the Perceived Learning score, $\tau_b(23) = .39$, $p = .018$. As for Social Connection with Students, although it was positively and weakly correlated with Perceived Learning, the association was not significant, $\tau_b(23) = .19$, $p = .286$. Likewise, none of the social connections with the different groups were found to be significantly correlated with Final Grade (see Table 1).

To further examine the nature of these significant relationships with Perceived Learning, a multiple linear regression analysis was performed. This analysis showed that neither Social Connection with Instructor, $\beta = 1.11$, $p = .228$, nor Class Community, $\beta = .801$, $p = .468$, were significant predictors of Perceived Learning. Together, Social Connection with Instructor and Class Community explained a significant proportion of variance in Perceived Learning, $R^2 = .36$, $F(2, 20) = 5.69$, $p < .05$. However, Social Connection with Instructor did not significantly predict Perceived Learning, $\beta = 1.22$, $t(20) = 1.65$, $p = .11$ and Class Community also did not significantly predict Perceived Learning, $\beta = 0.73$, $t(20) = 0.72$, $p = .48$.

Similarly, the data has shown that Social Connection with Instructor was positively, moderately, and significantly correlated with Course Satisfaction, $\tau_b(23) = .53$, $p < .002$. Moreover, Class Community was also positively, moderately, and significantly correlated with Course Satisfaction, $\tau_b(23) = .60$, $p < .001$. As for Social Connection with Students, although it was positively and weakly correlated with Course Satisfaction, the association was not significant, $\tau_b(23) = .15$, $p = .407$.

To further examine the nature of these significant relationships with Course Satisfaction, a multiple linear regression analysis was performed. The analysis showed that Social Connection with Students was not a significant predictor of the Perceived Learning, $\beta = .08$ $p = .954$.

Likewise, the analysis showed that neither Social Connection with Instructor, β = 1.19, p = .177, nor Class Community, β = 1.97, p = .072, were significant predictors of Course Satisfaction.

Relationship among Dimensions of CoI and Academic Success

To examine the relationship among dimensions of CoI and measures of academic success including Perceived Learning, Course Satisfaction and Final Grade a correlational analysis using Pearson's coefficient was conducted. A summary of this analyses can be found in Table 2. Briefly, all dimensions of CoI including Social Presence, Teaching Presence, Cognitive Presence and Overall CoI were found to be significantly, positively correlated with Perceived Learning and Course Satisfaction (see Table 2). None of the dimensions of CoI were found to be significantly correlated with Final Grade (see Table 2).

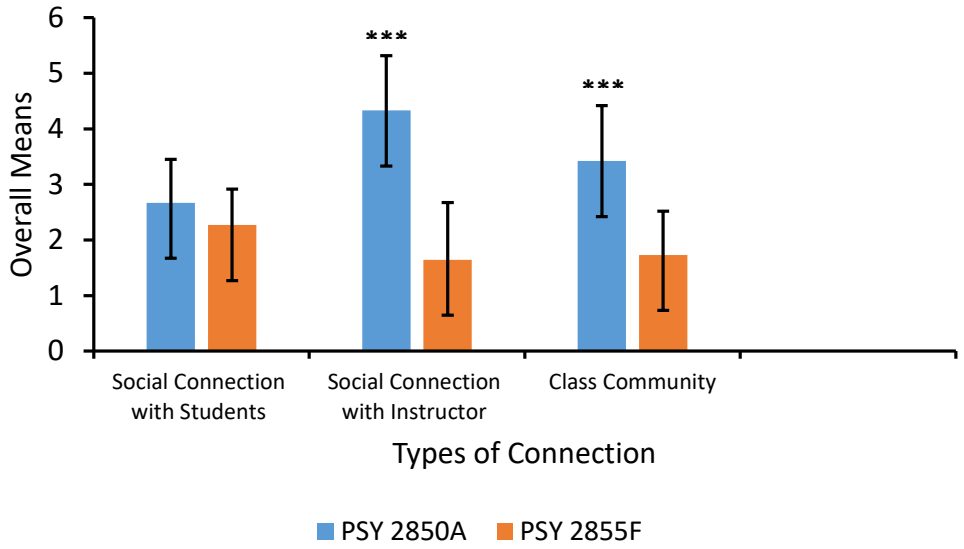
To further examine the nature of these significant relationships with Perceived Learning, a multiple linear regression analysis was performed. This analysis that Social Presence, β = -.107, p = .420, was not a significant predictor of Perceived Learning. However, the analysis showed that Teaching Presence, β = .160, p = .050, was a significant predictor, of Perceived learning. Similarly, Cognitive Presence, β = .285, p = .023, was also a significant predictor of Perceived Learning. Together, Teaching Presence and Cognitive Presence explained a significant proportion of variance in Perceived Learning, R^2 = .72, $F(3, 19) = 16.27$, $p < .001$.

To further examine the nature of these significant relationships with Course Satisfaction, a multiple linear regression analysis was performed. The analysis showed that social presence, β = -.230, p = .071, together with Cognitive Presence, β = .009, p = .932, were not significant predictors of course satisfaction. However, the analysis showed that Teaching Presence, β =

.437, $p < .001$, was a significant predictor of Course Satisfaction, and explained a significant proportion of variance in Course Satisfaction, $R^2 = .83$, $F(3, 19) = 30.02$, $p < .001$.

Figure 1

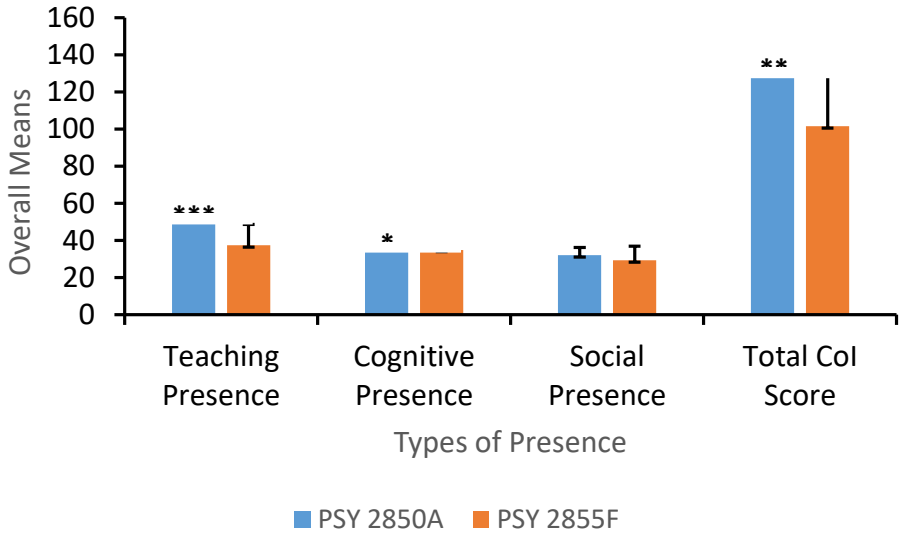
Course Means for Social Connections with Different Groups



Note: Means in PSY 2850A & PSY 2855F for social connections with different groups. Students in PSY 2850A rated their connections with the instructor and the class significantly higher than students in PSY 2855F. *** $p < .001$

Figure 2

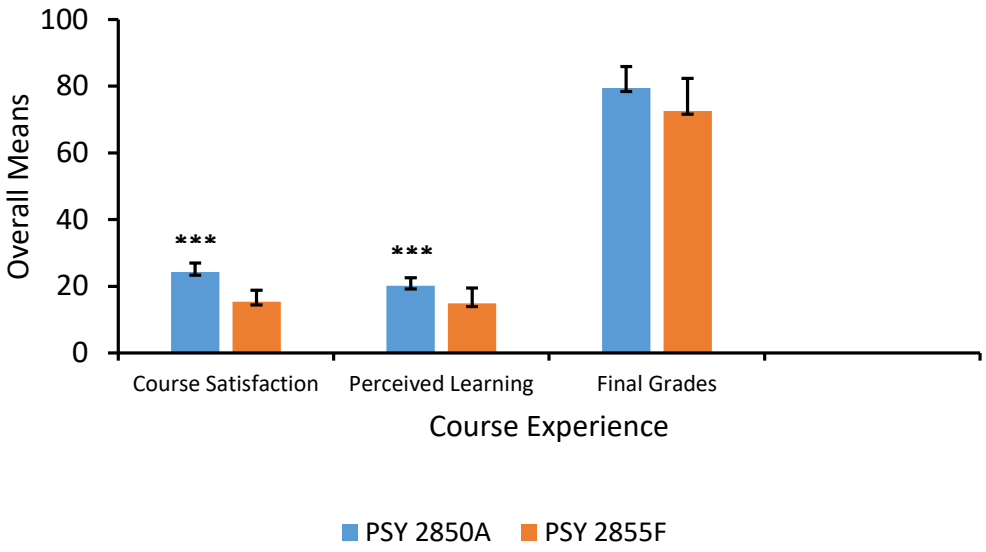
Course Means for Dimensions of CoI



Note: Means in PSY 2850A & PSY 2855F for the dimensions of CoI. Students in PSY 2850A reported significantly higher levels of Teaching Presence, Cognitive Presence and Overall CoI relative to students in PSY 2855F. * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 3

Course Means for Measures of Course Experience



Note: Means in PSY 2850A & PSY 2855F for the measures of course experience. Students in PSY 2850A reported significantly higher levels of Course Satisfaction and Perceived Learning relative to students in PSY 2855F. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 1

Correlational Analysis of Social Connection and Academic Success

	Perceived Learning	Course Satisfaction	Final Grade
Social Connection with Students	τ_b = .19 p = .286	τ_b = .15 p = .407	τ_b = *.04* p = .846
Social Connection with Instructor	τ_b = .50** p = .002	τ_b = .53** p = .002	τ_b = .17 p = .357
Class Community	τ_b = .39* p = .018	τ_b = .60*** p < .001	τ_b = .25 p = .164

Note: Results of correlational analysis using Kendall's coefficient examining the relationships among dimensions of Social Connection and measures of academic success. Social Connection with Students, Social Connection with Instructor, and Class Community were significantly, positively correlated with Perceived Learning and Course Satisfaction. None of the social connections were significantly correlated with Final Grade. *p < .05, ** p < .01, *** p < .001

Table 2

Correlational Analysis of CoI Presences and Academic Success

	Perceived Learning	Course Satisfaction	Final Grade
Social Presence	$r = .51^*$ $p = .014$	$r = .44^*$ $p = .037$	$r = .41$ $p = .084$
Teaching Presence	$r = .79^{***}$ $p < .001$	$r = .89^{***}$ $p < .001$	$r = .38$ $p = .108$
Cognitive Presence	$r = .81^{***}$ $p < .001$	$r = .69^{***}$ $p < .001$	$r = .30$ $p = .214$
Total CoI Score	$r = .81^{***}$ $p < .001$	$r = .80^{***}$ $p < .001$	$r = .39$ $p = .096$

Note: Results of correlational analysis using Pearson's coefficient examining the relationships among dimensions of CoI and measures of academic success. Social Presence, Teaching Presence, Cognitive Presence and Overall CoI were significantly, positively correlated with Perceived Learning and Course Satisfaction. None of the presences were significantly correlated with Final Grade. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$

Discussion

The purpose of this study was to characterize how university students perceive social connections and classroom community in two online mandatory courses during COVID-19 and examine how these relate to academic success. Specifically, this study examined connections with various groups as well as the components of the Community of Inquiry including social, cognitive and teaching presences within courses (Garrison, Anderson & Archer 2003) and how these relate to final grades, perceived learning and course satisfaction.

As hypothesized, teaching and cognitive presence were shown by linear regression to be significant predictors of perceived learning and teaching presence was shown to be the only significant predictor of course satisfaction. Contrary to our hypothesis, social presence was not a significant predictor for either perceived learning or course satisfaction. This study also identified distinct course differences both levels of social connections and CoI measures. Students in one of the courses showed significantly higher scores on social connection with instructor, class community, teaching presence, and cognitive presence, in comparison with students in the other course, but no significant differences were found across both courses in terms of their social connection with students or social presence score. More specifically, according to our results and as mentioned previously, the differences in connections and CoI measures among the two classes were mainly accounted for by the differences in teaching presence and cognitive presence, rather than social presence. Past research has shown that variances in teaching presence depend on instructional design, timely feedback, due dates, clear communication, and clear course goals (Shea & Bidjerano, 2013). Similarly, perception of cognitive presence depends on how often the course design encouraged or discouraged students to engage in critical thinking through assignments, readings, and course content (Hosler &

Arend, 2012). Moreover, Hosler and Arend (2012) have shown that teaching presence and cognitive presence are not only interrelated, but teaching presence is also considered to be a vital promoter of cognitive presence. Put differently, it is by effective teaching behaviors that students' cognitive presence, and the rating of their instructors' teaching presence is maximized (Hosler & Arend, 2012). Since our research study did not go in-depth in terms of teaching strategies and communication methods used in either courses, we can only assume that the differences in cognitive presence and teaching presence scores among the two classes were potentially due to the different teaching strategies and behaviors of the instructors. Hence, this allows plenty of room for improvement and future direction for subsequent research to assess those factors, which will ensure a precise explanation as to how different instructor characteristics can influence students' learning experience in different courses.

Since students in these online classes did not differ in terms of their perceived social connection with other students or social presence, it seems then that classroom and instructor characteristics must be contributing to differences between the courses. For instance, research has shown that providing direct instructions, setting clear learning outcomes, initiating classroom discussions and providing timely feedback, all positively influence students' perceptions of teaching presence (Hosler & Arend, 2012; Stenbom, 2018). Additionally, cognitive presence has been found to be enhanced by critical thinking activities, reflection exercises, persistent communication (Hosler & Arend, 2012).

Previous studies have made the link between the social connections with various groups and the dimensions of CoI. Thus, we can assume that social connection with students can serve as social presence, social connection with instructor as teaching presence, and finally, classroom community as cognitive presence. Likewise, previous research seemed to agree with this

assumption. Lowenthal and Snelson (2017) have defined social presence as social connection with peers, and have used both terms interchangeably. Furthermore, Weidlich and Bastiaens (2017) have also stated that social presence is mainly concerned with student-to-student interaction, as opposed to student-instructor interaction. Hence, this makes teaching presence more concerned with student-instructor connections, and cognitive presence more interchangeable with class community, as per previous research and our recent findings (Weidlich & Bastiaens, 2017). Then, given these close relationships we have chosen to focus solely on CoI dimensions especially given that our social connections with various groups were each derived from a single response in our questionnaire and therefore not a robust indicator of these social connections.

Moreover, our findings have highlighted various associations between social connections and CoI measures, with measures of academic success, such as perceived learning and course Satisfaction. In fact, perceived learning and course satisfaction were both significantly related to social presence, teaching presence, and cognitive presence. However, our results have indicated that teaching presence and cognitive presence significantly predicted perceived learning, and only teaching presence significantly predicted course satisfaction. Other studies report mixed findings about the relationship between CoI measures and measures of academic success. For example, a study conducted by Stenbom (2018) found that social presence, cognitive presence, and teaching presence were all positively correlated with course satisfaction, and perceived learning. Thus, a higher CoI score was related to higher levels of perceived learning, and more satisfaction with the course design (Stenbom, 2018). In contrast, another study has found only teaching presence and cognitive presence to be vital predictors of students' course satisfaction and perceived learning (Hosler & Arend, 2012). Furthermore, Weidlich and Bastiaens (2017)

found no direct relation between social presence and perceived learning, or between social presence and course satisfaction. Given these mixed findings, it is clear that the relationship between teaching, cognitive and social presences, and perceived learning and course satisfaction is not well understood. Further research is needed to further elucidate the nature of this relationship and determine the contribution of these components of the CoI to student outcomes.

As for the relationships between social connections with groups and final grades as well as the CoI Dimensions with final grades, the current findings show a lack of association between those variables. This contrasts with previous research which has shown that students with higher perceived social, cognitive, and teaching presences demonstrate higher course grades (Stenbom, 2018). Similarly, Akaoglu and Lee (2018) have also shown that achieving positive social interactions with peers and instructors can positively influence the academic success of students, which was also measured by course grade. The small sample size in this study may contribute to the lack of association between our measures and students' final grade. While there were n = 23 students for correlational analysis between social connection and CoI measures and perceived learning and course satisfaction, there were only n = 11 students for correlational analysis between social connection and CoI measures and final grades. This small sample size severely limited the ability to detect significant relationships.

In addition, the lack of association between social connections and CoI measures and final grades in this study may, in part, stem from the fact that final grades are not necessarily a good representation of students' learning or their academic success Rovai (2002). , Moreover, previous research has actually shown that Final Grades have restricted ranges limiting their applicability in correlational analysis, and are only slightly related to how much knowledge students have acquired throughout their course experience (Rovai, 2002). Thus, a more accurate

way to operationalize learning can either be by measuring students' grades consistently throughout the course, or by relying on students' self-reports of their own cognitive learning (Rovai, 2002) as we used here in self-reports of perceived learning.

Last but not least, this study has a few limitations, which can be improved to achieve better results. Since the research was conducted at Brescia University College, an only women's college, then this eliminates any scope for generalization across males. Additionally, it is important to note that due to the small sample size achieved, the generalizability of our findings to the general population is also limited, since it prevents the detection of significant correlations and significant predictors in linear regression. Thus, future research can aim to replicate this study at a larger university, to increase both the sample size and the generalizability to the overall student population of males and females. Moreover, this would also allow for individual and gender characteristics to be characterized and assessed more thoroughly in future studies. Furthermore, the survey only incorporated one question to evaluate students' social connection, which may not have been as sufficient if more questions were to be incorporated into the survey. Hence, a more in-depth examination of social connection is required to accurately assess how connected students felt to both their instructors and peers. This can be achieved through questions that ask about the frequency of messages or emails sent to other students or instructors, which allow for more values to represent social connection in the study. Additionally, for future directions, research studies ought to incorporate teaching strategies used by instructors for online-teaching, as well as the instructor characteristics, which may affect both the overall Social Connection of Students, and their performance throughout the course. This would further allow for improved course structure and design, which decreases stressful incidents for instructors, and increases both the social connection and academic success of students.

Overall, despite these limitations, the study has done a successful job in assessing the various dimensions of the CoI and types of social connection in the new, forced online learning setting at Brescia University College. It is interesting to observe the vast differences between both psychology courses; PSY 2850A and PSY 2855F, in regards to students' perceived connection and presences. This study indicated that there appear to be significant course differences in teaching presence, and cognitive presence. Additionally, we observed no significant course differences in terms of social presence. Moreover, the results of this study suggest that teaching presence and cognitive presence may be more important predictors of perceived learning and course satisfaction, than social presence. This study also provides additional evidence about what contributes to students' academic success and suggests that instructors may be able to influence academic success by maximizing the constructs of teaching presence and cognitive presence. Lastly, by improving the limitations of this study, instructors will be able to design more effective online courses, ensuring a comfortable and social online environment for students, as well as better opportunities to achieve academic success.

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