

Synchronous Videoconferencing: Social Presence and the Engagement of Different Learners in a Blended Family Studies Course

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ABSTRACT. Blended learning allows instructors to retain some face-to-face activities while integrating additional online components to meet demands of a new generation of learners. Yet student disengagement and isolation continue to present challenges to effective course design. Technology adaptation, specifically synchronous videoconferencing, can facilitate student engagement and promote social presence, both of which have been linked to various learning outcomes. There has been insufficient research on person-centered approaches to inquiry, specifically the roles of students (e.g., characteristics) in technology integration. This mixed methods study in a blended family science course explored students' perceptions of contributions from videoconferencing with regard to social presence. Three profiles of students (i.e., receptive, ambivalent, and resistant) emerged in relation to technology integration and social presence. Quantitative results also found significant differences between these profiles on perceptions related to social presence.

Keywords: synchronous videoconferencing; social presence; blended learning

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Over the past decade, distance education has increased yearly. Current data show that more than one-third of all students are taking distance courses (Seaman et al., 2018). Many institutions are exploring innovative ways to reinvent traditional instruction to meet the demands of this new generation of learners (Allen et al., 2007; Garrett, 2007). Blended learning has emerged as a cost-effective pedagogical approach to make distance education more student-centered (Garrison & Kanuka, 2004). About 55% of all U.S. higher educational institutions offer at least one blended course (Allen et al., 2007). In general, blended courses intentionally replace face-to-face time and activities with online activities for pedagogical benefit (Picciano, 2019). Students choose online and blended courses for flexibility (Yaure & Schwab, 2018), perceiving that they offer fewer constraints (e.g. physical location, time) than face-to-face courses do. Despite these benefits, student disengagement (Kahn et al., 2017) and isolation remain problems in distance education.

Compared to their peers in face-to-face courses, students taking distance courses often feel less connected to their campus communities (Dawson, 2006). Lack of interaction with peers and teachers was a main influence on preference for face-to-face courses (Paechter & Maier, 2010). Beyond preference, online classes were ranked as the fourth most substantial barrier to college completion by 1,300 of 6,000 students; again, this was mostly due to lack of interaction (Smith, 2019). Furthermore, half of faculty believe distance education is less effective than traditional instruction in achieving learning outcomes (Jaschik & Lederman, 2017). Therefore, there is a need for more research to explore strategies for leveraging strengths of blended learning (such as flexibility) while also addressing barriers (e.g., student engagement in online learning).

According to the Community of Inquiry (CoI) framework, three core aspects foster effective online and blended learning: *teaching presence*, *social presence*, and *cognitive presence* (Garrison et al., 2000). Teaching presence consists of designing, facilitating, and directing the cognitive and social processes to make learning meaningful and worthwhile for students (Anderson et al., 2001). This includes developing content and learning activities and facilitating effective interactions with and among students. Through their teaching presence, instructors generate social presence, which is the degree of personal connections, identification, and interpersonal relationships students develop within their courses (Garrison et al., 2000). This includes building a sense of trust, belonging, and collaboration in the online learning space.

Even though the framework places equal weight on all three components, the authors emphasized that social presence is “an essential precondition for establishing a sense of community and a cognitive presence” (Garrison & Vaughan, 2008, p. 33). Cognitive presence reflects the learning and inquiry process (Garrison et al., 2010). Specifically, greater social presence was associated with increased interactions in online classes (Tu & McIsaac, 2002), along with perceived learning and satisfaction with the instructors (Richardson & Swan, 2003). Social presence further correlated with cognitive presence; social and teaching presence predicted 70% of the difference among students’ cognitive presence (Shea & Bidjerano (2009).

Therefore, examining social presence in blended courses is important because it serves as a precursor to cognitive presence and is predictive of outcomes such as course retention and completion (Carini et al., 2006; Hu, McCormick, & Gonyea 2012).

When they are well-designed and executed, blended courses have potential “to facilitate a community of inquiry” (Garrison & Kanuka, 2004, p. 97) by increasing social presence and, as a consequence, students’ engagement (Jusoff & Khodabandelou, 2009). Of the nine items assessing social presence in their study, Shea and Bidjerano (2009) found two most influential for cognitive presence: comfort participating in online course discussions and feeling a sense of belonging in through getting to know other course participants. There should be more studies that examine these two specific dimensions of social presence.

Blended courses may incorporate asynchronous or synchronous components. Asynchronous activities (e.g., discussion boards, blogs) offer convenience and flexibility, giving students opportunities to think deeply about the content (Hrastinski, 2008). While asynchronous activities have often been used for generating social presence (Lang, 2008), they have failed to meet student needs for social interaction and engagement (Bullen, 1998; Hiltz, 1998; Kreijns et al., 2003). By contrast, synchronous activities (e.g., videoconferencing, have been identified as innovative tools for promoting social interactions between students and teachers and among students themselves (MacDonald & Caverly, 2000; Smyth, 2005), which facilitates collaborative and student-centered learning through increased social presence (Smyth, 2005). Others noted that specific synchronous tools (e.g., videoconferencing and digital games) were more critical than other synchronous tools (e.g., wikis) in promoting student engagement and enhancing learning in blended courses (Schindler et al., 2017). Along with perceiving small group videoconferences as particularly important in creating a sense of community via real-time interactions, students identified increased understanding of content and facilitated learning as the top two outcomes of video conferencing (Akarasriworn & Ku, 2013).

While researchers have found that most students embrace synchronous online learning activities such as videoconferencing, some students are either uncertain of or do not support this format (McBrien, Jones, & Cheng, 2009). For example, while 75% of students described their experience with videoconferencing positively (e.g., useful, interesting, enjoyable), only 58% desired more videoconferencing sessions in the future, and 22% indicated they would never use it as an educational tool in their classrooms as future teachers (Candarli & Yuksel, 2012). Some face-to-face students have even expressed concerns that their learning was compromised (e.g., replacement of face-to-face interactions) in blended courses (Bower, 2015). There should be more research that explores the influence of videoconferencing on social presence, such as sense of belonging and collaboration in the course (Schindler et al., 2017).

While the use of technological tools to increase student interaction has been offered as a general retention strategy (Lee & Choi, 2011) and may effective to some extent, other scholars suggest students interact in the course depending on the use of specific technologies (i.e., synchronous tools; Schindler et al., 2017). However, regardless of technology, individual differences in perception, experience, and outcomes persist in distance courses. According to West and Jones (2007), the student is one of seven essential factors instructors must consider

when designing an online course; this includes students' technological skills and comfort with online learning. While some researchers have speculated that previous negative experiences may influence students' negative assessments of online learning (Candarli & Yuksel, 2012), other researchers found that no relation between previous online learning experience and social presence (Kim et al., 2011). Some scholars argued that since instructors lack understanding of the diverse student body in distance education courses, they struggle to identify and address individual needs (Vanslambroucka et al., 2018). Many Scholarship of Teaching and Learning (SoTL) studies tend to examine effectiveness of technology use in distance or blended courses without taking individual students' roles or variations in students' characteristics into account. Social presence is required for creating cognitive presence in distance education, but use of specific technologies may not equate with increased social presence for *all* students in distance education. Understanding variations in student characteristics may offer further explanation for aversion to and lack of engagement with distance learning.

Although there has been some examination of the influence of individual characteristics (e.g., gender, motivation) on social presence and engagement in distance courses (see Liu et al., 2014; Rovai, 2001), the research remains sparse. Furthermore, while research relating to blended learning and technology integration has grown over the past few years (Skrypnuk et al., 2015), SoTL is still developing in the family science field (Maurer & Law, 2016). More worrisome is the lack of SoTL recognized in the discipline. A recent analysis found only 1% of all sessions at NCFR conferences between 2006-2015 were considered SoTL (DiGregorio et al., 2016). At the same time, more family science students are being required to take additional courses in an online or blended format (Yaure & Schwab, 2018). This trend is supported by a recent finding in which 38% of courses taught were in an online or blended format (albeit from a small sample of faculty) (Hyndman et al., 2016). The numbers of online and blended course offerings will likely continue to grow. Therefore, clarity in our understanding of issues relevant to effective instruction in this medium (e.g., course design, technologies, techniques) is particularly relevant to family science educators.

Current Study

The current study contributes to the growing body of SoTL literature in family science by exploring how synchronous videoconferencing foster social presence and student engagement in a blended family science course using the CoI Framework (Garrison et al., 2000). According to Potter and Kustra (2011) SoTL is defined as “the systematic study of teaching and learning, using established or validated criteria of scholarship, to understand how teaching (beliefs, behaviours, attitudes, and values) can maximize learning, and/or develop a more accurate understanding of learning, resulting in products that are publically shared for critique and use by appropriate community” (p. 2). The focus of this investigation aligns with the descriptive type of SoTL inquiry (Maurer & Law, 2016). Based on Hutchings's (2000) taxonomy of SoTL questions, our study aimed to address the “*what is*” or “*what does it look like*” question.

It is important to focus on the “*what is*” question because the findings could provide instructors with factors to consider before incorporating new technologies into their courses, which may indirectly affect learning outcomes. For example, while research has shown students

express varying levels of support for use of synchronous technologies, additional understanding is limited. How students react to technology may influence their usage of the technology and ultimately their learning in the course. Therefore, the first step is to better understand the specific role of the student with regard to use of specific technologies, especially those students without prior exposure to such tools. Obtaining holistic understanding of student's prior and current experience with blended course elements (including use of synchronous videoconferencing) is warranted. Such findings would help educators (re)design courses that are student-centered to promote optimal engagement. Descriptive results from this study could then inform future SoTL research questions focused on "*what works*" related to performance outcomes (Hutchings, 2000; Maurer & Law, 2016).

The current study aimed to address gaps in the literature by examining the impact of videoconferencing as a synchronous tool to enhance students' social presence and engagement in a blended course. Specifically, we sought to achieve a deeper understanding by focusing on individualized student experience with synchronous videoconferencing, before and during the course. Given that flexibility is a frequently cited benefit of distance courses, we were interested in assessing whether the use of synchronous videoconferencing provided flexibility. Therefore, we also examined student perceptions related to time management. The study addressed these research questions:

1. What are students' perceptions of the benefits and challenges of engaging in synchronous videoconferencing in a blended course?
2. To what extent do students' experiences with synchronous videoconferencing impact perceptions of social presence, including engagement with others and the course?
3. To what extent do students' experiences with synchronous videoconferencing help their time management?

Methods

A mixed methods approach was used to examine research questions in the context of an Interpersonal Relationship Dynamics course. We employed the CoI Framework (Garrison et al., 2000) in construction and evaluation of this study. To our knowledge, this framework has not been applied to the SoTL in a family science course.

Participants

A total of 29 students completed the course. Four declined study participation, resulting in a final sample of 25 participants. Their class standing was as follows: sophomores ($n = 6$), juniors ($n = 10$), and seniors ($n = 9$). Most students were Family Service majors ($n = 15$), with the rest being minors ($n = 10$). Pseudonyms were assigned to each participant. No additional demographic data were obtained from participants. All students completed informed-consent forms and the study was approved by the institutional review board (IRB).

Course Context and Procedure

Interpersonal Relationship Dynamics is an undergraduate 200-level course in a family studies Certified Family Life Educator (CFLE) program at a Midwest state university. The purpose of the course is to increase understanding of interpersonal relationship dynamics. Core objectives include (a) applying theoretical concepts (e.g., family systems theory, ecological systems theory) in analyzing interactional patterns and dynamics in interpersonal relationships; (b) identifying systemic and contextual factors impacting interpersonal relationships; and (c) understanding behavioral, emotional, and cognitive processes which impede/promote healthy relational functioning. The course was designed to meet standards of application and analysis based on Bloom's taxonomy and knowledge. Students were assessed by using three exams, a written paper requiring theoretical analysis of relational patterns, and course participation.

This is an optional course in the family studies program. The catalog listed it as a blended course; before enrolling, students were aware of its structure and self-selected the course. In previous semesters this blended course consisted of approximately 50% face-to-face (F2F) and 50% online (i.e., entirely asynchronous) components. During the academic semester under study, January - May 2018, the course design was modified to examine incorporation of synchronous online components.

During the first week of the course, students were informed of the course design, which included (for the first time) synchronous and asynchronous components. Synchronous activities were conducted through the videoconferencing tool Zoom (Zoom Video Communications, Inc., 2017). Zoom is cloud-based encryption secured videoconferencing software. While other videoconferencing platforms are available and appear to share some similar features (e.g., Cisco WebEx), Zoom was selected for access, its features, and being user-friendly.

First, students had access to Zoom paid for by the university, but free accounts are publicly available. Zoom can also be used on multiple devices (e.g., computer, phone). The application has several features that enable facilitation of multiple instructional activities. For example, participants can be assigned to smaller groups and then sent to "breakout rooms" where only those group members are present. Breakout rooms can be activated and terminated by the facilitator, which divides and regroups participants into small and large groups. Additional features include the ability to share device screen(s) and use of a whiteboard. Zoom is user-friendly in terms of connection and navigation.

The blended design for the semester consisted of the following sessions: F2F ($n = 11$), synchronous ($n = 8$) and asynchronous ($n = 5$). Of the 8 synchronous sessions, students earned participation points for attendance at five required synchronous sessions (three sessions were optional) and for the asynchronous and F2F sessions. Synchronous and asynchronous sessions were designed to elicit these interactions, which are also associated with social presence: learner to learner, learner to instructor, and learner to content (Bernard et al., 2009). The learning management system (LMS) randomly assigned students into small groups (e.g., 6-7 students), where they remained for asynchronous and synchronous activities throughout the semester. Students often prefer peer-led small group discussions (Correia & Davis, 2007) and student-led

discussions and activities can make a course more student-centered and increase students' engagement (Baran & Correia, 2009; Poole, 2000; Rovai, 2007).

The five asynchronous sessions focused primarily on learner to content, with some learner to learner interactions. Using a discussion board in the LMS in their small groups, students responded to a specific prompt from the instructor related to course content. Students were also instructed to respond to one peer's discussion post. The eight synchronous sessions were intentionally designed to increase social presence and thus focused on all three modes of interaction (i.e., learner to learner, learner to instructor, and learner to content). For example, learner to content and learner to instructor interaction occurred in synchronous session #4. In a large group of all attending students, the instructor reviewed content for the upcoming exam and responded to student questions.

Learner to learner interactions were the focus of synchronous session #2. Students were sent to breakout rooms where they led small group discussions with the instructor visiting each breakout room. Following the small group discussions, students reassembled for a large group conclusion where the instructor tied together discussion points, important concepts, and answered questions. In synchronous session #5, learner-to-content was the primary focus where students assembled in the large group and the instructor addressed important (often difficult) theoretical concepts, engaged students in large group discussion, and addressed questions. During this session, the instructor's computer screen with PowerPoint slides was shared with students and the whiteboard (e.g., genogram drawing) was used to facilitate content delivery. Refer to Table 1 for detailed outline of all synchronous sessions.

Table 1
Descriptions of Synchronous Video Sessions

Session	Content/ Activity	Structure	Required/ Optional
Synchronous #1	Introduction/ Practice	Individual small group meetings with instructor.	Required
Synchronous #2	Ecological Systems Theory	Large group introduction, student-led small group discussions, large group conclusion.	Required
Synchronous #3	Ecological Systems Theory	Large group introduction, student-led small group discussions, large group conclusion.	Required
Synchronous #4	Review	Large group content review and Q&A.	Optional
Synchronous #5	Family Systems Theory	Delivery of content and large group discussion.	Required
Synchronous #6	Family Systems Theory	Large group Q&A of content and genogram assignment, including use of screen sharing and whiteboard.	Optional
Synchronous #7	Family Systems Theory	Guided discussion following video, but unsuccessful due to technical problems.	Required
Synchronous #8	Review	Individual student meeting for Q&A with instructor.	Optional

Data collection. Quantitative and qualitative data were collected using an online pre- and post-survey. Since Zoom was a new technology and there are obstacles in online learning (Sit et al., 2005), the instructor conducted a pre-survey before implementing Zoom to gather students' feedback, including their openness to using this modality. It is also recommended that instructors conducting synchronous blended learning hold practice sessions (Park & Bonk, 2007). Therefore, session #1 focused on providing students the opportunity to practice using the tool. They were also instructed to complete the online pre-survey before the next class period. The pre-survey consisted of six items related to expectations of using synchronous video activities (see Appendix A).

During the final week, students earned points for completing the post-survey, of which nine items are the focus of the current study (see Appendix A). To assess social presence, two items (e.g., *videoconferencing increased discussion and collaboration*) were adapted from Garrison et al., (2009). Responses were on a 4-point Likert scale ranging from 1 (*extremely disagree*) to 5 (*extremely agree*). The items demonstrated good reliability ($\alpha = .87$; Garrison et al., 2009). Reliability was similar in the present study ($\alpha = .86$).

Data analysis. Quantitative analyses were conducted using the Statistical Program for the Social Sciences (SPSS; IBM Corp., 2017). Qualitative data were analyzed using within and across-case analysis (Ayres et al., 2003). Textual data were organized into a matrix by item and participant. Analysis began with reading through all data several times and making notes of initial observations. Codes were assigned to meaningful units of data (Merriam, 2009), with a focus on using in-vivo codes (Saldaña, 2011) where appropriate. Then, an iterative process of examining for patterns, comparing, and grouping codes into similar categories was completed to describe and interpret data (Creswell, 2007; Merriam, 2009).

Following initial stage(s) of coding, student profiles emerged from the data. The authors met to discuss the coding for 6 students (24% of the cases), to test the coding schemes, and make necessary revisions. Each author then analyzed the data separately. Upon completion of coding the authors met to compare and discuss agreement. Interrater reliability was 92% (i.e., 23 of 25 cases) using the percent agreement statistic to determine consensus agreement (Stemler, 2004). The authors discussed the unmatched cases and reached consensus on the profile designation. This served as a validation strategy along with triangulation of the qualitative and quantitative data (Merriam, 2009).

Results

In this study we sought not only to understand perceived benefits and challenges of videoconferencing, but also the extent to which students' experiences impacted their perceptions of social presence (including engagement with others and the course) and time management. When examined aggregately, qualitative findings revealed generally positive perceptions for use of synchronous videoconferencing. While only 24% ($n = 6$) of the students had previous experience with synchronous activities (e.g., small groups, meetings), at the end of the course 80% ($n = 20$) reported some positive experiences with synchronous videoconferencing as reflected in comments such as, "liked," "enjoyed," and "very good." However, in-depth analysis

of the individualized student experience revealed the presence of three unique student profiles. We will present aggregated findings (i.e., benefits and challenges), student profiles, and quantitative results.

Benefits and Challenges of Synchronous Videoconferencing

Anticipated benefits centered around two general themes: *promoting flexibility and convenience and promoting social presence and learning*. Prior to using the synchronous tool (i.e., videoconferencing), the most anticipated benefit related to *flexibility and convenience* ($n = 12$). For example, Genie commented, “I like being able to have class from home, or the library.” Specifically, some noted how this tool would assist with practical barriers of the F2F classroom (e.g., inclement weather, conflicting schedules), as exemplified in Casey’s comment, “It may be easier than trying to find somewhere where everyone can meet. It also may be quicker and more flexible.” However, by the end of the course, 28% of students ($n = 7$) indicated *flexibility and convenience* as the most beneficial aspects of the synchronous tool.

Prior to use of the tool, students anticipated videoconferencing would promote *social presence*, specifically through interactions with others that promote *communication and a sense of community* ($n = 6$). For example, Jesse stated, “Students sometimes feel more comfortable talking or sharing in smaller group settings. We are able to get to know our peers better.” Students also expected synchronous videoconferencing to aid their *learning* ($n = 11$), with some specifically noting the opportunity for immediate feedback. For example, Jadyne stated, “I just like how we are with people from the class, so we can help each other learn and teach each other new things.” Michele added, “[Synchronous video is] better than just reading someone’s blog post. You can talk about things better.”

Interestingly, by the end of the course, 68% of the students ($n = 17$) indicated that the most beneficial outcome of videoconferencing was related to *promoting social presence via communication and a sense of community* with other students. Students valued being able to “discuss,” “talk,” “see,” and “participate” with other students and the instructor during synchronous activities, especially in small groups. For example, Addison stated, “I liked breaking off into groups and being able to talk on our own about the topic for that day. I like small group discussions a lot.” A few students described the impact of videoconferencing on their learning, including *immediacy* of feedback and helping to keep them “focused.” For example, Casey commented, “If I had a question, I got an instant answer. I also learn and understand better through listening than through reading and writing discussion posts.”

At the conclusion of the course, some students described the importance of the tool in helping with time management, and more specifically in decreasing their “worry” about managing multiple demands (e.g., work, school). Others noted their “comfort” increased regarding using videoconferencing in the future (e.g., graduate school interviews, jobs) and a few students appreciated the combined benefits of flexibility and social presence, as illustrated by Leslie’s comment: “We were all [able] to stay at home while getting the same experience like we do during class.”

Most initial concerns related to practical issues of time and technology (e.g., internet connectivity problems). But several students also mentioned concerns related to social interactions such as, it being “*awkward*” to meet with others in this medium and/or less effective than F2F meetings. At the end of the course, a few students commented that their initial concerns about these uncomfortable interactions were either proven false or were temporary. This is reflected in Jesse’s comment, “I thought it may be awkward but it was not.” Aligning with initial technological concerns, at the end of the course students reported that challenges of videoconferencing included (a) technology problems (e.g., connectivity issues causing lag, battery drain, or required internet connection; $n = 9$) and (b) course management (e.g., distracting background noise, difficulty with entire class discussions, and lack of time for small group discussion; $n = 10$).

Student Profiles

The use of across- and within-case analysis revealed a salient pattern in students’ responses in the qualitative data. Interestingly, these responses could be categorized into three distinct student profiles (i.e., *receptive*, *ambivalent*, and *resistant*) that offered greater insight into students’ holistic experience with synchronous videoconferencing during the course as well as social presence and time management outcomes.

Receptive students. The majority ($n = 18$) of students were categorized as receptive. They demonstrated overall positive experiences and outcomes with the synchronous videoconferencing activities. These students described synchronous activities as “interesting,” “a fun new way to learn” and they “liked” them. Only 16% ($n = 3$) of these students had prior experience with synchronous videoconferencing but they reported an overall “good” experience with the tool. The majority ($n = 13$) also had positive expectations for the tool even prior to using it in the course. They were “looking forward” to and expecting to “like” synchronous activities, because these activities would allow for interaction with others, discussion of content, immediate feedback, and convenience; some even preferred it to asynchronous discussion. In addition, a few students had concerns at the beginning of the course (e.g., being “slightly awkward”), but at the end they reported that videoconferencing was more beneficial than they anticipated. For example, Christina commented, “I didn’t know what to expect from Zoom and was afraid it wasn’t going to be very successful, but it worked a lot better than I thought....”

For the majority ($n = 13$) of these students, the most beneficial aspect of videoconferencing related to social presence. They liked engaging in discussions with peers and the instructor and being able to receive immediate feedback regarding questions or clarifications. This was illustrated with Casey’s statement: “I liked being able to split into small groups and discuss with my group members while also getting to interact with the professor and confirm what I learned.” Interestingly, some students even found this mode to produce a “relaxed atmosphere,” and one that was “more comfortable for students.” It helped to “relieve pressure” and encouraged them to engage in discussions. Others appreciated the flexibility, as noted by Angel: “The zoom activities let us access class from anywhere which was nice....” In addition, these were the only students who specifically indicated they would recommend use of videoconferencing in the future.

Notably, a few of these students ($n = 5$) whose experience, while positive overall, appeared slightly less impactful as evidenced by depictions of their experience as “good” versus “very good.” The diminished returns were related specifically to small group interactions for at least three of the five students. For example, Dani commented, “...No one really wanted to talk so I felt obligated,” and Holly noted, “....It seemed like people didn’t prepare for the discussion because there was a lot of silence.” Upon further investigation, it was discovered that three of these students were also in the same small group. Their other group members included students from the ambivalent ($n = 2$) and resistant ($n = 1$) groups. Thus, group composition and dynamics likely influenced experiences with and evaluation of synchronous videoconferencing, at least for these students.

Ambivalent students. Ambivalent students ($n = 4$) expressed hesitation at the beginning of the course, although they were open to trying videoconferencing. They appeared concerned about the effectiveness of synchronous discussion and lack of learning. One student had positive previous course experience with videoconferencing. At the end of the course, the hesitations of these ambivalent students were confirmed. Although their evaluation of videoconferencing appeared more neutral, they also identified some positive outcomes. They appreciated understanding how to use Zoom along with the flexibility and convenience that synchronous activities offered. However, a few students had difficulty focusing when using videoconferencing because of distractions (e.g., background noises) and many explicitly indicated they “prefer the F2F classes.” As exemplified by Jadyn’s comment, “I personally was not a fan of Zoom. I was always very distracted....It was very hard for me to focus during Zoom....”

Resistant students. The final group of students was classified as resistant ($n = 3$). They resisted the use of synchronous activities from start to finish. Before using videoconferencing in the course, these students had negative expectations for synchronous activities and expressed strong concerns such as: “...I am not a fan of the video chatting.... I like to think before I speak or post,” or “...I am more use to...having an online class that allows me to work at my own time....” Unlike the receptive students, two of the three students had previous negative experiences with videoconferencing. As a result, Kim expected to “hate” using synchronous video in this course. These students indicated that their negative expectations of the synchronous videoconferencing were indeed confirmed at the end of the course. They reported negative experiences across the survey items. For example, Kim stated “I didn’t like my experience with Zoom when I used it for another class and I didn’t think this experience would change. I think it’s hard to manage and hard to rely on technology.” Kim and Abby found the interpersonal interactions challenging; Abby described this as follows: “People just simply cannot speak at the same time and the same people talk every time rather than giving other people a chance to speak up.” Mason also described his experience as “negative” and expressed his lack of motivation to join the sessions as follows “... [I] really wasn’t enthused about the zoom activities.”

In contrast to receptive students, resistant students specifically recommend not using synchronous videoconferencing in the future as exemplified by Mason’s statement, “Don’t use zoom...” It is assumed that Mason’s reference to Zoom was a general reference to any synchronous videoconferencing tool since most software functions similarly, and because his

responses did not specify technological problems. This also seems plausible for the other resistant students—as Kim noted an aversion to “technology.”

Table 2
Means, Standard Deviations, and Test Statistics by Student Profile

Measure	Receptive	Ambivalent	Resistant	Total	<i>F</i> (2,24)	<i>p</i>	<i>n</i> ²
	(<i>n</i> = 18)	(<i>n</i> = 4)	(<i>n</i> = 3)				
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
Discussion (CD)	4.2 (.88)	3.8 (.50)	2.0 (1.0)	3.9 (1.1)	8.86 ^b	.002	.45
Collaborate (CO)	4.4 (.61)	3.3 (.79)	2.0 (.00)	3.9 (1.0)	22.0 ^a	.000	.67
Time Manage (TM)	4.2 (.71)	3.0 (1.2)	2.3 (.58)	3.8 (1.0)	9.51 ^b	.001	.46
Attendance (Att)	4.8 (.55)	4.0 (1.2)	2.7 (1.5)	4.4 (1.0)	9.76 ^a	.001	.47
Exemplar Statements							
	I really enjoyed the zoom activities and would highly encourage this type of experience in the following semester (Jasper)	I liked zoom, for the fact I know how to use it but I would rather have that face to face interaction more often. (Reagan)	I knew right away that the zoom meeting were a bad idea and I know plenty of people who agree with me on my stances as to why we should not do them.... (Abby)				

Note. CD = synchronous video increased comfort in discussions; CO = synchronous video helped develop sense of collaboration; TM = synchronous video helped manage time; Att = attendance at required synchronous sessions (0-5).
^a= Games-Howell, ^b= Bonferroni,

Quantitative Results

Three student profiles from qualitative findings demonstrated clear convergence with quantitative data (see Table 2). We conducted analyses to explore potential mean differences among student profiles on students’ report of social presence, time-management, and attendance.

Receptive students perceived the greatest influence of videoconferencing on increasing their comfort in participating in discussions. A one-way ANOVA indicated significant difference between group means, $F(2, 22) = 8.86, p = .002$, with a slightly moderate effect size (partial $\eta^2 =$

.45; Cohen, 1988). A Bonferroni post hoc test revealed that resistant students ($M = 2.00$, $SD = 1.00$) reported significantly less discussion comfort increase than either the ambivalent ($M = 3.75$, $SD = .50$, $p = .03$) or receptive groups ($M = 4.22$, $SD = .88$, $p = .001$). No significant difference ($p = .976$) was found between the ambivalent and receptive groups.

Receptive students perceived the greatest influence of videoconferencing on helping to develop a sense of collaboration. A one-way ANOVA showed statistically significant difference between groups, $F(2, 22) = 22.02$, $p = .000$, with moderate effect size (partial $\eta^2 = .67$). Games-Howell post hoc test revealed the receptive students ($M = 4.39$, $SD = .61$) reported significantly greater collaboration than did resistant students ($M = 2.00$, $SD = .00$; $p = .000$). No significant difference ($p = .144$) was found between ambivalent and receptive groups.

Receptive students perceived the greatest influence of videoconferencing on helping to manage time and life demands. A one-way ANOVA indicated significant difference between groups, $F(2, 22) = 9.52$, $p = .001$, with a slightly moderate effect size (partial $\eta^2 = .46$). Bonferroni post hoc test revealed receptive students ($M = 4.17$, $SD = .71$) reported significantly greater assistance with time management than either the ambivalent ($M = 3.00$, $SD = 1.16$, $p = .037$) or resistant students ($M = 2.33$, $SD = .58$, $p = .003$). No significant difference ($p = .814$) was found between ambivalent and resistant groups.

In terms of attendance, of the five required videoconferencing sessions, receptive students attended the most ($M = 4.8$, $SD = .55$), followed by the ambivalent ($M = 4.0$, $SD = 1.2$) and resistant groups ($M = 2.7$, $SD = 1.5$). A one-way ANOVA showed significant difference in group means, $F(2, 22) = 9.76$, $p = .001$, with a slightly moderate effect size (partial $\eta^2 = .47$). However, the Games-Howell post hoc test revealed no significant differences among groups. This can occur in ANOVA analyses (Cardinal & Aitken, 2006). In our case it may be due to violation of homogeneity of variance.

Discussion

The current study contributes to an emerging body of literature relating to SoTL in family science. Mixed method design, including use of pre- and post-surveys and a focus on individual student voices, are strengths of this study and contribute in areas receiving less attention in the literature. The overall aim was to examine to what extent incorporation of synchronous videoconferencing in a blended course relates to social presence and engagement in a blended course. Based on CoI theoretical principles, increased social presence is expected to increase cognitive presence in a course.

Consistent with the challenges of distance education already established in the literature, students in our study experienced difficulty with technological problems and time constraints (Law et al., 2018; Rehfuss et al., 2015). Despite these difficulties, most students indicated that using videoconferencing was beneficial. Students appreciated the flexibility and convenience of synchronous activities, which is consistent with existing findings (Bower et al., 2015).

Beyond convenience, results indicated that social presence increased for students. Again, social presence is a sense of belonging through interpersonal connections (Garrison et al., 2000). Qualitative findings indicated that most students felt videoconferencing enabled interactions with their peers, especially in small group discussions and with the instructor (e.g., obtaining answers to questions). This supports recent empirical findings on the promotion of social presence and learning via videoconferencing in distance education (see Cunningham, 2014).

A major contribution of our results was formulation of student profiles (i.e., receptive, ambivalent, and resistant) which emerged from a holistic examination of students' experiences with videoconferencing before and after it was implemented in this course. The distinct profiles highlight variability in student experiences with technology. If only looking at general trends, it appears erroneous to disregard the small portion of students with negative experiences or to attribute these differences to the technology itself. Shared individual characteristics of students in these profiles appear likely to have influenced their engagement with the technology, with other students and with the course, and evaluation of this teaching modality. From the beginning, resistant students were opposed to using videoconferencing whereas receptive students were primarily enthusiastic about the experience. In further support, quantitative results specifically assessing increased social presence were in the anticipated direction when considering these profiles and results revealed significant mean differences between groups. Resistant students indicated the least impact from videoconferencing on helping to increase comfort in discussions, develop a sense of collaboration, or manage their time and attended the fewest required videoconferencing sessions. While this is not causal, it demonstrates support for social presence as an antecedent for cognitive presence (Garrison et al., 2009).

While resistant and receptive students have been documented to some extent in past research (Cardarli & Yuksel, 2012; McBrien et al., 2009), the use of both pre- and post-surveys allowed us to identify a third type of student—those more ambivalent towards technology integration. These profiles also showed that students' perceptions, especially initial expectations, may change based on their experiences throughout the course. Even though resistant and ambivalent students make up a small proportion of the students in the course, deepening our understanding of individual student impacts (including personal characteristics) remains an important task to facilitate effective distance education courses.

While the literature has identified some individual characteristics effecting engagement, these often focus on demographic factors such as gender (e.g., female students reporting a greater sense of community than males at the end of an online course; Rovai, 2001) or trait (e.g., assertive students dominating synchronous online discussions; Tu & McIsaac, 2002). Limited empirical work focused on subgroups of learners have been identified in the SoTL literature. Broadbent and Fuller-Tyszkiewicz (2018) also noted relatively few studies of student profiles, which prompted their examination of specific types of self-regulated learners.

Limitations and Future Directions

The current study contributes to the growing body of SoTL literature by identifying initial profiles based in the CoI framework and focused on technology integration and social presence. However, limitations must be noted. First, the study is exploratory with a preliminary identification of student profiles. Future studies could validate these profiles by using latent class analyses and examining how the profiles directly influence other CoI components such as teaching presence and cognitive presence. Evaluations of effectiveness should account for how these student factors may mediate or moderate the relationship between social presence and cognitive presence in distance education. Relatedly, it is important to note variability (i.e., small and unequal distribution) in the student profile groupings when interpreting the results. However, while the sample was small and group sizes were uneven, the ANOVA F-test has been shown to be quite robust even with small samples (i.e., as low 5) and large group size variations (Blanca et al., 2017). Others have also indicated ANOVA is an appropriate test to use, even with unequal groups (Judd et al., 2009). Additional research with larger, more diverse samples would strengthen current findings.

We also collected data via a survey, which provided preliminary understanding of the integration of a novel technology (i.e., videoconferencing) for these students and impacts related to social presence. Future studies could conduct more in-depth exploration by using other methods such as focus groups and interviews and by engaging students as partners in data collection. These methods likely would provide deeper understanding of students' previous experiences with and current integration of technology. For example, these methods could help explore factors that influence previous negative experiences with videoconferencing and how they affect students in the current context.

Implications

The literature has clearly established course design, including the use of different teaching modalities, as critical to student engagement. Scholars have also argued that student engagement "...rests upon the instructor's ability to create a sense of presence and engage students in the learning process." (Groccia, 2018, p. 17). While instructors bear this burden, initial results underscore the importance of the "students" as agents in their own learning and engagement in a course. A more comprehensive student-centered understanding concerning technology integration can help instructors better design their courses to meet needs of all students in efforts to enhance engagement.

Given the presence of these profiles, instructors may find it beneficial to assess for student profiles before implementing new technologies. It is important to mention that these profiles were not solely static in their characteristics. Some students found the technology more beneficial than initially anticipated. However, we suggest special attention be given to resistant students. In contrast to their peers, resistant students strongly opposed using videoconferencing from the beginning. Therefore, it may be beneficial for instructors to provide choices or alternative learning activities. Student choice positively impacts student engagement, but there are mixed effects regarding choice on student performance (Von Mizener & Williams, 2008).

Individualization remains a practical issue for instructors. Another strategy, and one likely to be incorporated into future iterations of this course, would include assessment of student profiles (e.g., before and during the course) but also inclusion of informational content from past students concerning integration of new technology. For example, previous students could be included in development of orientation materials (e.g., how to videos, documents, etc.) shared with future students. Such materials could address the challenges students faced, tools to overcome these, and benefits of engagement.

Lastly, our results will inform future practice in the area of group composition. Student-led small group discussions were well received in our use of synchronous videoconferencing. However, group composition, specifically inclusion of ambivalent and resistant students in the same group, may have negatively influenced students' experiences in the group. While group composition is not a new problem to teaching (Lang, 2008) and will likely remain a barrier to student engagement and learning, it is critical to address the issue more intentionally in course (re)design. One strategy may include assessing small group function and scaffolding to help students better understand how to conduct synchronous discussions (Park & Bonk, 2007) and styles of communication, which encourage more participation from reluctant students (Tu & McIsaac, 2002).

In conclusion, synchronous videoconferencing was found to be an effective teaching technology for increasing social presence and likely to increase cognitive presence. Increasing the use of student-led small group activities synchronously may have significant impact on student engagement and learning. However, perceived engagement with and effectiveness of synchronous videoconferencing was highly influenced by individual student characteristics. This is an area needing further attention from instructors and scholars.

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Appendix A

Instrument: Videoconferencing and Student Social Presence and Engagement

Pre-Survey	Item	Response
1.	Have you ever participated before in "synchronous" online activities before (e.g., small groups, meetings, advising)?	Yes or No
2.	If yes, please tell me more about your "synchronous" experience (e.g., what, when, how, good/not so good, etc.)?	
3.	What do you think/feel/anticipate you would like (or would be beneficial) to the learning experience by using synchronous small groups (at least some of the time)?	
4.	What do you think/feel/anticipate you would dislike about using synchronous small groups (at least some of the time)?	
5.	In thinking about synchronous small groups in this class, do you think you would....	(a) Love it (b) Hate it (c) Not sure: willing to try
6.	Please explain why you would "love it," "hate it," or "not sure."	
Post-Survey		
1.	Activities in Zoom increased my comfort in participating in discussions with others (e.g., peers, professor). <i>Original item: I felt comfortable participating in the course discussions.</i> Adapted from Garrison et al. (2009).	(1) Extremely Disagree (2) Disagree (3) Undecided (4) Agree (5) Extremely Agree
2.	Activities in Zoom helped me develop a sense of collaboration. <i>Original item: Online discussions help me develop a sense of collaboration.</i> Adapted from Garrison et al. (2009).	""
3.	Activities in Zoom helped me to manage my time and the demands of classes, life, and work.	""
4.	What did you find most beneficial about the Zoom activities?	
5.	What did you find most difficult about the Zoom activities?	
6.	What was your overall experience with the Zoom activities?	
7.	Did your experiences confirm what you anticipated at the beginning of the course concerning Zoom?	Yes or No
8.	Please explain how your experiences did or did not confirm your expectations of Zoom?	
9.	Do you have any other thoughts, feelings, input, suggestions you would like to share about your experience in the class?	