



Interaction and WTC in Online EMI Courses: Social Presence, Anxiety, and Digital Tool Use

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ABSTRACT

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With the proliferation of online English classes, L2 willingness to communicate (WTC) and interaction in online settings have recently received attention. Given the distinctive characteristics of online classes, it is imperative to investigate what roles interactional factors play in L2 WTC and interaction. This study explores the relationship between interactional factors (social presence, L2 anxiety, perceived benefits of digital tools) and their predictive roles in L2 WTC and interaction in online English as a medium of instruction (EMI) classes. A questionnaire was administered to 111 non-native English speakers taking EMI courses at a Korean university. Correlation and regression analyses revealed three major findings. First, social presence in terms of psychological comfort was a significant predictor of L2 WTC and positive learning interaction which suggests that providing a non-threatening atmosphere in online classes enables learners to be more willing to initiate talk and actively engage in interaction. Second, general L2 anxiety and online L2 anxiety differed in their relationships to other variables, suggesting they are distinct constructs. Lastly, while learners recognized digital tools as beneficial, they were not actively used in interaction due to privacy concerns and technical issues. Based on these findings, pedagogical implications for English language teaching are offered.

KEYWORDS

L2 learning, online interaction, WTC, social presence, anxiety, digital tools

1. Introduction

Interaction is a central source of learning, and how students converse in language classes has been the subject of much research to date. The mode of interaction has expanded from traditional face-to-face to encompass a diverse array of online modalities. While online learning has become prevalent since the outbreak of COVID-19, online classes and interaction have become important subjects of inquiry. Along with this transition, researchers have explored the effects of online language classes on various aspects of second language (L2) learners' learning such as emotion and involvement (e.g., Mihai et al. 2022). Recent studies have unveiled the adverse effects of physical distance in interaction during COVID-19 which have led to psychological distress and hindered students' L2 learning by increasing boredom (Pawlak et al. 2021) and dissatisfaction (Yüksel 2022).

Despite the apparent drawbacks of online classes, the advantages they offer in terms of accessibility and flexibility in time and space can yield ample learning opportunities. As a result, even beyond the COVID-19 lockdown, numerous L2 classes continue to be conducted online, with English as a medium of instruction (EMI) classes being no exception. EMI classes have proliferated worldwide as a means for universities to internationalize, fostering students' L2 communicative competence while imparting subject-specific knowledge. Hence, researchers are increasingly recognizing the need to explore EMI classes, as well as their recent online iterations (Lim et al. 2022, Yüksel 2022).

Digitized learning environments for English classes are found to exert influence on students' emotions and L2 use, in comparison to traditional offline classes. According to Lee and Liu (2022), multimodal digital communication modes enable students to express their emotions and facilitate L2 communication. For example, students are able to use emojis during multimodal online interaction to compensate for the limitations imposed by restricted access to social cues, such as body gestures. Moreover, digital settings featuring online games and playback videos captured learners' interest and enabled them to fully concentrate, ultimately leading to increased participation and enhanced willingness to communicate (WTC).

On the other hand, unfamiliarity with how online interaction works may elevate students' anxiety levels, preventing them from initiating L2 communication. Yüksel (2022) demonstrated that ESL students thought they did not have adequate resources to navigate the digital environment. The psychological discomfort prompted by the shift from traditional offline to online classes contributed to the perception of online interaction as low quality. Furthermore, the study noted that ESL students regarded the online classes as less satisfying when compared to offline classes, primarily due to perceived low-quality interaction. Although multimodality can facilitate interaction in online EMI courses, the unfamiliarity with and subsequent dissatisfaction with online environments and digital tools can serve as formidable barriers to active engagement. Therefore, an examination of students' perceptions of online interaction and their participation in online EMI classes is warranted.

To gain a better understanding of learner engagement during L2 interaction, it is worthwhile to explore WTC as a precursor to L2 use. WTC is the inclination of an interlocutor to freely communicate with another (MacIntyre et al. 1998). L2 WTC assumes a pivotal role in language classrooms, as it propels learners to initiate communication and, subsequently, language learning. Furthermore, it is worth noting that L2 anxiety and social presence can influence WTC (Al-Amrani and Harrington 2020, MacIntyre and Charos 1996, Sheybani 2019).

L2 anxiety has been linked to decreased communicative confidence (MacIntyre et al. 1998), which has a detrimental effect on learner engagement in communicative tasks. Moreover, the unease due to unfamiliarity with digital tools represents yet another factor that can impact student engagement. In digital environments, communication can be affected by learners' sense of social presence. Social presence, originally a concept emerging from the field of interpersonal relationship studies, addresses an individual's sense of belonging within

online environments, and has been observed to affect online interaction (Tu and McIsaac 2002). The effects of social presence on L2 WTC during online interaction, in relation to L2 anxiety, have been explored in a few studies (Al-Amrani and Harrington 2020, Le et al. 2018). Although it has been suggested that social presence, L2 anxiety, and perceptions of digital tool use collectively contribute to the extent of students' L2 WTC and learner interaction, findings regarding the correlations between these factors and their impact on WTC and interaction have yet to yield conclusive results.

2. Literature Review

2.1 Social Presence

Social presence is defined as the “degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship” (Short et al. 1976, p. 65). In other words, it refers to feeling social belonging and relating to others during online interaction. According to Short et al. (1976), two key concepts largely contribute to social presence: intimacy and immediacy. Intimacy is displayed through facial expressions such as smiling, intentional eye contact, and content of communication such as personal topics. Immediacy, defined as “a measure of the psychological distance which a communicator puts between himself and the object of his communication” (p. 72), is modulated by a communication medium which often determines the amount of information accessible to interlocutors. It may be also conveyed through intentional use of inclusive expressions such as “we” rather than “you” and “I” (Wiener and Mehrabian 1968, p. 4). Although the nature of online interaction inherently limits intimacy and immediacy, various social cues such as intentional eye contact and smiling, can still foster a sense of social presence in online classes, thereby strengthening connections among classmates. Increased social presence has the potential to enhance student satisfaction (Gunawardena and Zittle 1997) and promote interaction in online classes (Wei et al. 2012).

The establishment of social presence appears to depend on the delivery of social context and cues, as Tu (2001) noted “a medium with high social presence should be able to convey social context and provide two-way communication and interaction while a medium with low social presence will possess less ability to provide these aspects” (p. 49). In the early stages of computer-mediated communication (CMC) where text-based interaction was dominant and social cues were limited, online settings were seen to induce a low sense of social presence (Tu 2001).

Nevertheless, technological advancements brought forth new digital tools and interaction channels such as synchronous video-based communication. Current video platforms (e.g., Zoom) can compensate for the challenges in effectively delivering social cues by providing features such as text chat and emojis. Yeh et al. (2022) stated that language learners can establish social presence by using multimodal video-based platforms with tools which enable them to effectively communicate with others and make connections. The study further suggested that online settings promote positive experiences of communication, as learners tend to be less concerned about saving face than in in-person settings, making them more willing to be open.

In addition to medium and technology, personal and social factors play a paramount role in determining social presence (Aldosari et al. 2022). Consequently, social presence should be contextualized within specific settings. Several studies (e.g., Zhang et al. 2023) investigated students' social presence in online interaction during COVID-19 when students were at risk of social isolation. Despite their attempts to depict students' social presence in the context of COVID-19, findings have been inconsistent. For instance, Yeung et al. (2023) explored the importance

of webcams in synchronous classroom communication, during the pandemic, focusing on their roles in shaping students' social presence. The study revealed that being able to view others' faces was not as effective in increasing students' social presence as initially anticipated. In contrast, Aldosari et al. (2022) explored the impact of two-way video conferencing in live virtual classrooms, also during COVID-19. The research demonstrated that during video conferencing in online classes, students felt more connected with their instructors and expressed enhanced psychological support and social presence. This finding aligns with Zhang et al. (2023), which showed that synchronous video-based online classes were more successful in inducing social presence during the pandemic, due to real-time interaction in contrast to asynchronous classes.

In general, it seems that the quality of L2 interaction and a sense of social presence in online settings are largely contingent on the technological format and the availability of other supplementary digital tools such as communication resources (e.g., emojis and text chat). Nevertheless, although some contextualized research on students' social presence has led to fruitful findings, they have yielded mixed conclusions on social presence in online synchronous video-based interaction.

2.2 L2 Communication Anxiety

In foreign language classrooms, anxiety and discomfort not only hinder students from fully utilizing their L2 communicative competence but also deter them from initiating and engaging in L2 communication. Although anxious students in such settings exhibit similar reactions, the underlying reasons for their anxiety can vary. As previous research has highlighted, there are two dimensions of anxiety at play: trait anxiety and situational anxiety (MacIntyre and Gardner 1991). Trait anxiety represents a stable predisposition that remains consistent across various situations. On the other hand, students can experience anxiety in particular situations such as L2 classes, which is termed situational anxiety or state anxiety.

While trait factors, such as personality, exert persistent influence on students' communication anxiety, situational variables, such as social relationships and the L2 classroom environment, can also affect anxiety levels. Horwitz et al. (1986) explored students' state anxiety in foreign language classrooms and developed the Foreign Language Classroom Anxiety (FLCA) scale, which comprises three dimensions: fear of communication, test performance anxiety, and the apprehension of negative evaluation. The scale has since become widely employed in research related to anxiety in language learning contexts.

As several decades have passed since the proposal of the FLCA, the classroom environment has dramatically changed due to the advent of online instruction with students' L2 communication anxiety in digital learning environments garnering attention (Alqarni 2021, Côté and Gaffney 2021, Kissau et al. 2010). Digital environments seem to have both positive and negative effects on student anxiety. Aldukhayel (2022) employed a mixed-methods approach to explore the L2 speaking anxiety of EFL learners in a higher education setting. The study revealed that learners tend to experience lower levels of anxiety when using L2 in online synchronous settings compared to offline ones. The study further showed that online settings contribute to enhanced psychological comfort, as students can take classes at home, where they feel at ease and are less concerned about appearances compared to offline settings. In contrast, participants noted technological challenges such as unstable internet connection, absence of gestures, and audio echoes, which hindered online communication. This finding supports Kissau et al. (2010), which noted that, at the outset of online courses, technological unfamiliarity impeded student interaction, causing anxiety.

2.3 L2 WTC

In the context of EMI classes where the development of students' L2 communicative competence takes place while learning subject matter, exploring what role L2 WTC plays is crucial. As previously mentioned, WTC pertains to the likelihood that a learner will voluntarily use language in interaction (MacIntyre et al. 1998). Thus, learners with a high level of L2 WTC are more inclined to engage in L2 communication when opportunities arise. WTC is a dynamic construct and while functioning as a relatively stable predisposition, can fluctuate. MacIntyre et al. (1998) proposed a heuristic model in which three layers of trait-like variables, along with a layer of situational variables, collectively influence learners' WTC, thereby determining their actual L2 use. L2 anxiety and interpersonal affiliation are among the major influences on L2 WTC. Notably, social presence, in terms of interpersonal affiliation, is considered to exert a lasting influence on L2 WTC during online EMI classes, while state L2 anxiety significantly, albeit temporarily, contributes.

Social presence has the potential to positively affect students' L2 WTC. According to MacIntyre et al. (1998), affiliation, or "the amount of interest in establishing a relationship with the interlocutor" is found to be crucial in enhancing learners' L2 WTC (p. 550). In online classrooms, where students feel a high sense of social presence, there is a prevailing impression that their peers hold favorable views of them and are eager to forge social connections. In this regard, the increase in social presence can be conducive to students' L2 WTC, creating a non-threatening atmosphere. This argument aligns with Al-Amrani and Harrington (2020), which noted the adverse influence of low social presence on WTC. However, social presence is two-sided and may play the opposite role. It has also been shown that students' WTC may diminish due to a high level of social presence during online synchronous video interaction. Le et al. (2018) observed that L2 learners felt less social presence but were more willing to talk during online text and audio interaction than video interaction. This can be attributed to learners feeling less face-threatened in environments with low social presence. In such settings, learners might be less likely to perceive others as authentic interlocutors in text and audio interaction, resulting in less distress regarding face. In sum, although it has been established that social presence can influence learners' decisions to initiate and participate in L2 communication, research findings are inconclusive as to what roles social presence plays in WTC, warranting further research.

Among the situational variables, one significant predictor of students' L2 WTC is L2 communication anxiety. In other words, in specific situations, students may feel discomfort in using L2 and underestimate their L2 speaking abilities, eventually leading to avoidance. Regarding state L2 communication anxiety, Lee and Chiu (2023) differentiated online L2 communication anxiety from general L2 communication anxiety, as measured by instruments like the FLCA, which addresses anxiety irrespective of whether students take classes online or offline. To better understand the role of L2 communication anxiety in WTC during online interaction, online L2 communication anxiety (hereinafter referred to as online L2 anxiety) should be treated as a distinct construct from general L2 communication anxiety (hereinafter referred to as general L2 anxiety).

Online L2 communication anxiety has been explored as a prominent factor in determining WTC, in relation to digital tool use. Jun and Yoon (2022) compared Korean EFL learners' online and offline L2 WTC. Through focus group interviews, the study illustrated that an online environment made learners feel relaxed and less anxious, leading to higher WTC. This was attributed to the benefits of online interaction, such as the ability to easily access online dictionaries and the avoidance of in-person communication. However, participants also noted that technological issues such as unclear audio quality caused them anxiety and disrupted their preparation for answering teachers' questions, negatively influencing their WTC. These findings point to the dynamic and complex nature of WTC, highlighting the importance of investigating interrelationships between online L2 anxiety

and the use of digital tools.

In conclusion, while students' L2 WTC and interaction are essential components for online EMI classes, the two variables under consideration, online L2 communication anxiety and social presence, can determine students' L2 WTC and interaction. Considering the characteristics of online classes in contrast to offline classes, it is postulated that online L2 anxiety will assume a distinct role from general L2 anxiety in online interaction. Furthermore, recognizing the role of digital tools in establishing these two variables, it is worth exploring the interplay of social presence, anxiety, and digital tools. As such, the present study proposes the following research questions:

RQ1. How are interactional factors, social presence, L2 communication anxiety, and perceived benefits of digital tools, in online classes related to each other?

RQ2. To what extent do students' levels of social presence, L2 communication anxiety, and perceived benefits of digital tools predict L2 WTC and interaction?

3. Method

3.1 Participants

In the current study, a total of 111 university students taking two major courses in applied linguistics topics taught in English (i.e., EMI) were recruited. The courses were originally designed for face-to-face instruction, but due to a COVID-19-related shutdown, they were transitioned to an online format. Consequently, course instructors tried to engage students in interaction, mirroring the dynamics of in-person classes. Both courses consisted of lectures and whole-class interaction, with the majority of interaction occurring in small group discussion sessions. The instructors delivered lectures on course content, and groups of 3-4 students were tasked with interacting in discussions in breakout rooms on the video conferencing platform, by sharing their opinions on prompts provided by the instructors.

Of the participants, the majority were native Korean speakers ($n = 89$), with a small number of speakers of other languages, including Chinese, Mongolian, Swedish, German, Spanish, and Russian ($n = 22$). As this study focuses on English learners, native English speakers were excluded. According to self-reports, the participants were considered to possess an intermediate level of English proficiency. Their experiences of studying or living abroad in English-speaking countries varied from none, 6 months, to 13 years. The participants were diverse in terms of age ($M = 22.51$, $SD = 2.04$) with approximately 76% identifying as female ($n = 84$) and 24% as male ($n = 27$).

3.2 Instruments and Procedure

To assess perceived social presence and attitudes toward English in an online environment, several constructs were selected and a corresponding questionnaire was developed¹. First, questionnaires concerning social presence were adapted from Gunawardena and Zittle (1997). While 13 items were initially considered, in a preliminary factor analysis, four items which did not load properly on social presence were deleted. The remaining nine items

¹ The complete questionnaire is available upon request.

were retained and included items such as “I felt comfortable introducing myself to others online” and “The online group discussions enabled me to form a sense of online community”. Next, considering the potential fluctuation of learners’ L2 anxiety depending on the mode of interaction, L2 anxiety was examined in terms of both general anxiety and online anxiety. The general L2 anxiety items ($n = 5$) were adopted from Horwitz et al. (1986) and were subsequently modified to reflect the context of online L2 speaking anxiety. For example, statements included “I get nervous and confused when I am speaking English” and for online L2 anxiety, “The online setting helped me lower my English speaking anxiety”. Additionally, the perceived benefits of online interaction ($n = 3$) included aspects such as the use of online resources like search engines and text chat during interaction as in “I find it useful to use text chat in online oral collaborative activities”.

The dependent variables included an assessment of L2 WTC and positive learning interaction. L2 WTC measures the degree of learner intention to engage in L2 speaking. Referring to Eddy-U’s (2015) task-specific situated WTC model, questionnaires were formulated to measure classroom WTC in both group and whole class discussions. The items aimed to capture students’ readiness and willingness to engage in class discussions, with items such as “I’m generally enthusiastic about participating in online group discussions”. Learners’ interaction experiences were assessed according to positive emotions associated with classroom interaction. Sample items included “Engaging in online collaborative activities in English was an enjoyable experience for me”.

Participants were invited to voluntarily participate in the survey, which asked about their experiences in online class and class interaction. The survey was administered in English, and typically required approximately 20 minutes to complete.

3.3 Analysis

The preliminary factor analysis, which was conducted to establish convergent and divergent construct validity, showed that social presence bifurcated into two distinct constructs. Five items loaded on Factor 1, and they indicated to what extent a learner felt secure in interaction (e.g., “I felt that my point of view was acknowledged by other participants in the course”; “I felt comfortable participating in online group discussions”). This first component of social presence was aptly labeled as “psychological comfort”. The remaining four items loaded on Factor 2, which measured learners’ perception of social belonging to an online community. Example items were “I felt I was part of an online community” and “The online group discussions enabled me to form a sense of online community,” and this factor was labeled as “sense of belonging”. “Psychological comfort” explained 24.32% of the total variance, while “sense of belonging” accounted for 21.78% of the total variance. The internal consistency of other measured constructs was evaluated using Cronbach’s alpha, and except for the use of digital tools (Cronbach’s alpha of .596), all other constructs scored over .70 (see Table 1).

4. Results

Before addressing the research questions, descriptive statistics regarding the variables were examined, as summarized in Table 1.

Table 1. Descriptive Statistics for Variables (N = 111)

	Mean (SD)	Min	Max	Skewness	Kurtosis	Cronbach's alpha
Psychological comfort	4.93 (1.27)	1.80	7.00	-.42	-.35	.796
Sense of belonging	4.25 (1.20)	1.25	6.50	-.37	-.43	.751
General L2 anxiety	4.37 (1.50)	1.33	7.00	-.41	-.84	.823
Online L2 anxiety	4.11 (1.66)	1.00	7.00	-.07	-1.10	.874
Perceived benefits of digital tools	4.93 (1.28)	1.00	7.00	-.75	.24	.596
L2 WTC	5.20 (1.11)	2.33	7.00	-.43	-.60	.854
Positive learning interaction	4.49 (1.26)	1.00	7.00	-.30	-.18	.754

As Table 1 indicates, the perceived social presence, both in terms of psychological comfort ($M = 4.93$, $SD = 1.27$) and sense of belonging, ($M = 4.25$, $SD = 1.20$) generally was high, given the midpoint of the scale. The participants' general L2 anxiety ($M = 4.37$, $SD = 1.50$) was also higher than online L2 anxiety ($M = 4.11$, $SD = 1.66$). Additionally, it was revealed that the participants generally regarded digital tools as beneficial ($M = 4.93$, $SD = 1.28$). Lastly, the participants showed a high level of L2 WTC ($M = 5.20$, $SD = 1.11$) and reported positive experiences in online interaction overall ($M = 4.49$, $SD = 1.26$).

4.1 Relationship between Social Presence, L2 Communication Anxiety, and Perceived Benefits of Digital Tools

Regarding the research questions, the first question investigates the relationships among the predictor variables. Table 2 summarizes the correlation coefficients of these variables.

Table 2. Correlations of Relevant Variables

	Sense of belonging	General L2 anxiety	Online L2 anxiety	Perceived benefits of digital tools
Psychological comfort	.41*	-.17	-.41*	.32*
Sense of belonging		.13	-.59*	.51*
General L2 anxiety			-.18	.15
Online L2 anxiety				-.30*

Note. * $p < .05$.

In general, the two aspects of social presence, psychological comfort and sense of belonging, showed similar correlation patterns with other variables. However, they were moderately correlated with each other ($r = .41$, $p < .05$). Students who felt a high level of sense of belonging in online settings also tended to feel psychological comfort. General L2 anxiety, on the other hand, displayed no correlation with either type of social presence. Nonetheless, both aspects of social presence were negatively correlated with online L2 anxiety ($r = -.41$, $p < .05$ for psychological comfort; $r = -.59$, $p < .05$ for sense of belonging). This indicates that social presence and online anxiety have negative relationships, while social presence and general L2 anxiety appear to be unrelated. General L2 anxiety and online L2 anxiety were not correlated, reinforcing their status as separate constructs, as reported in previous research (Lee and Chiu, 2023). In addition, perceived benefits of digital tools were correlated with learner responses in online settings, either positively in the case of social presence or negatively in the case of online anxiety but showed no correlation with general L2 anxiety.

4.2 Predictability of Social Presence, L2 Communication Anxiety, and Perceived Benefits of Digital Tools in Determining L2 WTC and Interaction

Next, two regression analyses were performed to address the second research question. In both analyses, five variables were entered as predictor variables, with different criterion measures for each: one with L2 WTC and the other with positive learning interaction. When L2 WTC was used as a criterion measure, the model proved to be robust enough to explain L2 WTC ($R^2 = .57$, $F(5, 105) = 27.79$, $p < .05$). Table 3 summarizes the regression coefficients of the analysis.

Table 3. Summary of Multiple Linear Regression Model Predicting L2 WTC ($N = 111$)

Variable	B	SE B	95% CI	β	t
L2 WTC					
(Constant)	1.79	.67	[.50, 3.12]		2.67
Psychological comfort	.74	.08	[.59, .89]	.76*	9.86
Sense of belonging	.06	.08	[-.10, .23]	.07	.77
General L2 anxiety	-.07	.05	[-.17, .03]	-.09	-1.30
Online L2 anxiety	.05	.06	[-.07, .15]	.07	.81
Perceived benefits of digital tools	-.08	.07	[-.21, .05]	-.10	-1.27

Note. CI = confidence interval. * $p < .05$.

As can be seen in Table 3, psychological comfort was the sole variable that significantly accounts for L2 WTC ($\beta = .76$, $p < .05$). A one unit increase in psychological comfort corresponds to an increase of .74 in L2 WTC. In contrast, the other variables were not significant predictors for L2 WTC ($p > .05$).

Next, an additional regression analysis was conducted, this time with positive learning interaction as the criterion variable, with social presence, general L2 anxiety, online L2 anxiety, and perceived benefits of digital tools as the predictor variables. Overall, the model was found to be valid to explain positive learning interaction ($R^2 = .71$, $F(5, 105) = 52.33$, $p < .05$). The regression coefficients are summarized in Table 4.

Table 4. Summary of Multiple Linear Regression Model Predicting Positive Learning Interaction ($N = 111$)

Variable	B	SE B	95% CI	β	t
Positive learning interaction					
(Constant)	1.93	.62	[.69, 3.16]		3.09
Psychological comfort	.54	.07	[.40, .67]	.48*	7.68
Sense of belonging	.28	.08	[.31, .43]	.27*	3.71
General L2 anxiety	-.05	.05	[-.15, .04]	-.06	-1.13
Online L2 anxiety	-.23	.05	[-.34, -.13]	-.31*	-2.28
Perceived benefits of digital tools	-.02	.06	[-.14, .10]	-.02	-.28

Note. CI = confidence interval. * $p < .05$.

Two aspects of social presence, specifically psychological comfort ($\beta = .48$, $p < .05$); and sense of belonging ($\beta = .27$, $p < .05$), along with online L2 anxiety ($\beta = -.31$, $p < .05$) significantly accounted for unique variance in L2 WTC. An increment of one unit in psychological comfort leads to an increase of .54 in positive learning interaction, while a one unit increase in sense of belonging results in an increase of .28. Conversely, a one unit increase in online L2 anxiety leads to a decrease of .23. However, neither general L2 anxiety nor perceived benefits of digital tools emerged as significant predictors of positive experiences in online interaction.

5. Discussion

The present study attempted to explore English learner experiences during online class interaction in an EMI course. It initially investigated the relationships among social presence, anxiety, and perceived benefits of digital tools (RQ1). It also investigated their roles in predicting L2 WTC and positive learning interaction (RQ2). This study yielded three significant results. First, psychological comfort was found to be a significant predictor of L2 WTC and positive learning interaction. Second, it became evident that general L2 anxiety and online L2 anxiety were separate constructs, exhibiting different relationships with other variables. Lastly, although digital tools were perceived to be beneficial, this did not necessarily lead to efficient use during online interaction.

As for the first research question, results indicated that the nature of presence in online settings is related to learners' L2 anxiety in online interaction, which, in turn, was also connected to the perceived benefits of digital tools. Specifically, the two types of social presence, sense of belonging and psychological comfort, showed similar correlation patterns with other predictors. Social presence and online L2 anxiety were negatively correlated, whereas social presence and perceived benefits of digital tools were positively correlated. Although the causal relationships are not definitive, the findings align with Satar (2015), which reported the benefits of webcams and video in providing additional visual cues like smiling and nodding, which in turn promote social presence and arouse positive emotional reactions. This was attributed to enabling interlocutors to better understand the communication content by using the cues and giving the impression that their partners were considerate and paying attention to them. In contrast, neither type of social presence displayed a relationship with general L2 anxiety. Considering that social presence concerns interpersonal relationships in online communication settings (Gunawardena and Zittle 1997), it is plausible that this sense of presence can develop in an online environment, irrespective of general language anxiety.

Another interesting finding is the lack of correlation between general L2 anxiety and online L2 anxiety, thus demonstrating different correlation patterns with other variables. This finding underscores that these two types of anxiety are separate and different (Lee and Chiu 2023). In addition, Resnik et al. (2023) described the sources of anxiety in online and offline classes as dissimilar. Offline learners tended to feel anxious due to their sense of obligation to contribute to classroom discussions, while online learners were primarily anxious because of their unfamiliarity with technology. These findings further support the claim that online L2 anxiety and general L2 anxiety are separate constructs. Lastly, there was a negative association between perceived benefits of digital tools and online L2 anxiety. These results support Namaziandost et al. (2022) findings, which revealed that text chat reduces L2 anxiety in online settings as it provides sufficient time for language use and facilitates self-paced learning. In contrast, general L2 anxiety and the perceived benefits of digital tools were not correlated, which emphasizes the distinct nature of online environments compared to offline settings.

As for the second research question, it was found that psychological comfort was a significant predictor for L2 WTC in online settings. However, other variables such as sense of belonging and perceived benefits of digital tools failed to predict L2 WTC. These findings are somewhat unexpected, as it was assumed that social presence and digital tool use could reduce anxiety, consequently enhancing L2 WTC. It is important to note the context of the study, which required participants to engage in group discussions as part of the class activities. While volition is central to L2 WTC (MacIntyre 2007), when in-class discussions are obligatory to meet course requirements, the dynamics may change. It is plausible that students tried to actively engage in class activities, regardless of their sense of belonging to the classroom community or level of anxiety. Khomejani Farahan et al. (2023) showed that in teacher-centered classrooms, anxiety becomes an insignificant factor in L2 WTC because students are compelled to interact regardless of their anxiety levels. Therefore, the classroom setting, with its structured and

controlled format, may have affected learners' WTC more than other factors, such as anxiety, sense of belonging, and perceived benefits of digital tools.

Furthermore, findings suggest that the positive impact of psychological comfort, induced by an online environment, outweighs the potential negative impact of anxiety on L2 WTC. In this regard, Lee and Hsieh (2019) argued that L2 anxiety is not a crucial factor in L2 WTC in online interaction, since learners consider digital environments as more emotionally supportive, leading to reduced anxiety compared to face-to-face interaction. In the present study, drawing from student responses to a questionnaire that inquired into their emotional support in online settings, it appears students receive sufficient psychological support.

Regarding the question of whether certain variables predict positive learning interaction, sense of belonging, psychological comfort, and online L2 anxiety were found to be significant predictors. To elaborate, both sense of belonging and psychological comfort positively affected interaction in online settings. These findings are consistent with Zhao et al. (2014) which showed that social presence facilitates collaboration by building a learning community that encourages active interaction. Furthermore, while general L2 anxiety did not prove to be a predictor of learners' self-evaluation of their performance, online L2 anxiety negatively affected learning experiences. Higher levels of online anxiety were associated with a more negative perception of the activities they were engaged in. It seems reasonable to assume that anxiety induced by physical settings and emotional conditions is related to perceptions of performance. The participants in the study pointed out various challenges related to online interaction, which included technical issues such as chat delays, microphone, and webcam malfunctions, and the lack of visual cues in online interaction. As online L2 anxiety and learning experiences are related, it seems important to create an online environment that mitigates L2 anxiety. Ample evidence supports the notion that learners' perceptions of learning experiences and their attitudes are crucial for fostering motivation (e.g., Taguchi et al. 2009).

Lastly, the study was unable to establish a clear association between learners' perceived benefits of digital tools and positive learning interaction. It was initially posited that learners who think digital tools are helpful in interaction would effectively employ tools, leading to a positive evaluation of online interaction. However, one plausible explanation could be that digital tools were underutilized for practical reasons. In the responses to an open-ended item on the questionnaire, students noted that they found online class discussions difficult because many did not use digital tools efficiently. Some mentioned that online interaction was challenging, particularly because students did not turn on their webcams, rendering it difficult to observe others' responses and reactions. While the issue of limited facial expressions or gestures persists, it is challenging to compel students to activate their webcams due to privacy concerns. Furthermore, some students cited technical issues like device malfunctions that disrupted the flow of interaction. Although students thought digital tools were useful, this did not necessarily translate into efficient use during online interaction. Thus, the potentially beneficial effects of digital tools may have been diminished or entirely negated, affecting the overall learner experience.

6. Conclusion

The present study investigated the relationships between social presence, general L2 anxiety, online L2 anxiety, and the perceived benefits of digital tools in online interaction. In addition, the study aimed to elucidate the predictability of these four factors on L2 WTC and positive learning interaction. Several noteworthy findings were revealed such as a negative interrelationship between social presence and online L2 anxiety, while social presence positively correlated with perceived benefits of digital tools. The perceived benefits of digital tools were negatively

associated with online L2 anxiety. Furthermore, the findings demonstrate that psychological comfort emerged as a positive predictor of L2 WTC. Both psychological comfort and sense of belonging were identified as favorable predictors of positive learning interaction, whereas online L2 anxiety was a negative predictor.

The results of the current study should be considered with certain caveats and limitations. First, a more comprehensive examination of learners' familiarity with technology could yield more robust results. Although learners' technological familiarity was found to be an important factor in L2 WTC and online interaction, individual differences among the participants in terms of their technological familiarity and digital competence were not accounted for. Further research focusing on the role of these factors could provide more meaningful insights. In addition, a comparison of learners participating in offline versus online classes may reveal nuanced differences between online L2 anxiety and general L2 anxiety. It should be noted that the interaction in the present study was partially controlled and structured, since participation was somewhat mandatory for the course requirements. Moreover, exploring how L2 WTC-related factors interplay with the learning of subject matter could yield pedagogical implications for EMI courses.

Nonetheless, although this study examined a higher education context, it provides several meaningful implications for educators across all school levels to enhance learners' L2 WTC and positive learning interaction. Given the significance of psychological comfort in L2 WTC and online interaction, educators can employ a range of strategies to foster psychological comfort such as intentionally smiling, warmly greeting students, and encouraging respect for peers' opinions. Moreover, in online settings, unforeseen technical issues may disrupt online interaction. Educators should provide detailed instructions and guidance on the use of digital devices to meet these challenges. They can also facilitate L2 WTC further by promoting the use of digital tools, such as text chat and emojis, to complement learners during online interaction. Furthermore, considering that online L2 anxiety is a separate construct from general L2 anxiety, it is essential to explore various aspects of online L2 anxiety that have received relatively less attention in L2 research compared to general L2 anxiety. Beyond factors that have been reported to elevate general L2 anxiety (e.g., obligation to participate in L2 interaction, lack of competence, apprehension of face-threatening situations), additional factors such as insufficient social cues and technological familiarity should be addressed in fostering learners' WTC and facilitating interaction in online language learning, which will become a norm in English learning in the future.

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Examples in: English

Applicable Languages: English

Applicable Level: All