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Gender perspective on intercultural competence: Communication and student self-perceptions in higher education

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Abstract

This study is focused on the analysis of online intercultural competence from a gender perspective. It uses online communications and student self-perceptions to explore similarities and differences. Videoconferencing was used as a tool for communication in higher education. A quantitative and qualitative methodologies were applied, including quantifying content analysis. The sample consisted of pairs of university students. The results show very similar scores between men and women in communication and self-perception in affective aspects. Statistical differences were found in the behavioural communication and in cognitive self-perception. Communications of negative nature are scarce in both groups. This study helps to understand the similarities and differences in students' communication and self-perception in an intercultural online context.

KEYWORDS
gender, higher education, intercultural communicative competences, videoconference

1 | INTRODUCTION

One of the challenges facing education systems—currently immersed in processes of globalisation—is to encourage the active participation of students in an increasingly diverse society. Higher education seeks to adapt to

these processes by creating a space for students to interact with people from other cultures, and students are required to communicate effectively and appropriately (Akdere et al., 2021), since all societies in our contemporary world are the result of intercultural communication (Deardoff, 2020, p. ix).

By means of telecollaboration, intercultural educational communication enables students to reflect on their own experiences, while offering them opportunities to develop a wide range of competences. Intercultural communicative competence (ICC) refers to understanding the norms of one's own and other cultures and involves understanding how to use this knowledge for successful communication, in order to effectively build bridges (Akdere et al., 2021; Toscu & Erten, 2020) on a gender-equal footing. The development of the ICC has implications for identity, feelings and thought patterns. This is why, in intercultural exchange, each individual interprets reality through the lens of their cultural group and their own personality (Lantz-Deaton & Goluveba, 2020). As Avgousti (2018) points out, the relationship between communicative competences and cultural knowledge can be considered indissoluble, since culture sets the conventions and norms of communication.

This research attempts to analyse communications between culturally diverse pairs of students developed through videoconferences (VCs) as tools for telecollaboration. There is evidence that online pair work has positive effects on socio-cultural integration through communication, work management and mutual respect (Bergman et al., 2023). This study is innovative in the sense that it seeks to detect the influence of gender on the development of ICC through (behavioural, affective and cognitive) communications and the self-perception of the participants. In this regard, it helps to understand online intercultural learning in pairs of female and male learners. Its scope could reduce gender disparities, mitigate the negative influences of stereotyping and develop learning strategies conducive to equal opportunities for women and men.

In particular, the study examines this issue with the following research questions:

- Are there differences between males and females in online intercultural communications?
- Are there differences between males and females in online intercultural exchange self-perceptions?

2 | THEORETICAL FRAMEWORK

2.1 | Intercultural communication competence, telecollaboration and videoconferences

Intercultural communicative competence does not only involve some reciprocity in providing information, as it is based on the building of a relationship and reciprocal commitments between the participants (Deardorff, 2006). We can consider the relationship between intercultural competence (IC) and ICC in a number of ways. Some scholars consider that IC develops through ICC; that is, ICC is a tool for the development of IC. Lantz-Deaton and Goluveba (2020) point out that ICC is a specific term involving only communication between people of different linguistic backgrounds. Other scholars argue that ICC is the ability to communicate effectively and appropriately in cross-cultural situations (Akdere et al., 2021; Chen & Gabrenya, 2021; Deardoff, 2020). From this perspective, Swartz and Shrivastava's (2021) proposal points out that ICC includes behavioural, affective and cognitive attributes. In a different sense, Deardorff (2020, p. 5) points out that the intercultural competence or intercultural communicative competence typically includes the attitudes, skills and knowledge required in communications when interacting across difference, thus considering the two terms as synonyms. In addition to the conceptual diversity of the relationship between IC and ICC, there is little consensus on the measurement of ICC (Chen & Gabrenya, 2021; Griffith et al., 2016). Several investigations, according to Chen and Gabrenya (2021), is based on self-reports that do not cover a comprehensive perspective of the construct, and this review analysed five studies and it concluded that all used three dimensions: behaviours, attitudes/affects and cognition; conceptual structure of the ICC was systematised in Chen and Starosta's (2000) model.

Behavioural elements, according to Lee and Song (2019), are the least studied and have been defined as 'students' willingness to learn about the target culture or their directed efforts to engage in behaviour aimed at intercultural understanding' (p. 180). Other authors (Akdere et al., 2021; Lee & Song, 2019; Swartz & Shrivastava, 2021; Toscu & Erten, 2020) list a number of behavioural skills for successful communication: identity management (maintain personal and partner identity), relationship nurturing (establish a relationship of interdependence and reciprocity), interaction management (engage in conversation, take turns and end it), message skill (employ verbal and non-verbal behaviours of the partner, behavioural adaptation), flexibility (pay attention to diverse information using strategies for appropriate communication) and conation (personal energy that has both direction—positive/negative—and magnitude—greater/lesser).

The affective dimension involves intercultural sensitivity, that is the promotion of positive feelings and emotions in communication 'including the willingness to understand, recognize, respect and even accept the differences of the two people or cultural groups' (Chen & Starosta, 1997, p. 231). Other authors (Akdere et al., 2021; Griffith et al., 2016; Lee & Song, 2019; Toscu & Erten, 2020) when pointing to affective elements refer to: tolerance of ambiguity (allows to continue communicating despite the fact that the behaviours they observe differ from their own), interaction confidence (degree of trust felt by interlocutors during communication), positive cultural orientation (cosmopolitanism, open-mindedness, curiosity, respect for the other culture, willingness to learn from other cultures), interaction enjoyment (level of pleasure that the interlocutors obtain from the communication), cultural self-efficacy (development of trusting environments that reinforce intercultural ties through empathy, interest or joy) and interactional attentiveness (respond observantly in communicative situations).

Cognitive elements are related to intercultural awareness. Some descriptors of this awareness could be understanding the characteristics of the target culture, beliefs and values and ways in which people from different cultures think (Lee & Song, 2019). Cognitive elements are also related to valuing and appreciating the differences between cultures, but from a critical approach and providing the opportunity to generate cultural dynamics which facilitate to understand reality through cultural self-awareness. Chen and Young (2012) and Toscu and Erten (2020) point out other aspects of the cognitive elements: the ability to infer hierarchies and social norms (social monitoring), skills that facilitate the understanding of situations without resorting to generalisations or stereotypes (judgement and perspective-taking), the use of cultural information to make decisions and assess the type of action (application of cultural knowledge) and that to develop the cognitive elements, it is necessary to reduce ambiguity and uncertainty (anxiety, confusion and discomfort).

In addition, telecollaboration is used to improve ICC and the students displayed significant improvement in dimensions of ICC (Lee & Song, 2019). Research has also shown that telecollaboration helps to improve some aspects of students' affective state (curiosity and interest) and enthusiasm for learning about other cultures (Toscu & Erten, 2020). Intercultural telecollaboration involves the use of online communication tools (synchronous or asynchronous) in an institutional context which brings together students from culturally diverse backgrounds for the development and exchange of structured collaborative tasks (Godwin-Jones, 2019). To better understand cultural influences in these environments, it is suggested that each telecollaborative initiative be seen as a particular expression of culture, a 'micro-culture'. In addition, in online environments, learning about culture is experiential and takes place through a fluid, negotiated and subjective process (Avgousti, 2018; Lee & Song, 2019; Liu & Shirley, 2021).

Specifically, VC is a tool used for telecollaboration which facilitates connection through mobile devices or personal computers allows direct contact—audio and visual—between participants, and it is a synchronous tool which facilitates intercultural negotiation, questioning, clarification and instantaneousness. Its collaborative and interactive nature conducive to reflection, encourages greater depth and breadth of thinking and infuses trust and closeness among participants (Dai, 2019; Lenkaitis et al., 2019). Other findings have demonstrated the significant impact that VCs have on students' critical intercultural development due to facilitates the acknowledgement of diversity, reveals prejudices and stereotypes, enhances the negotiation of meanings, the development of a pragmatic cultural stance and the raising of awareness about the relativity of cultural beliefs (Eren, 2021; Grothaus

& Zawacki-Richter, 2021). Lee and Song (2019) assessed behavioural, affective and cognitive aspects of the ICC and they concluded that students who work with VCs improve significantly in these aspects, and, according to Dai (2019), VCs can increase cultural knowledge, thus creating 'glocal' learning environments. VC is very useful for the development of ICC in terms of overcoming apprehension and getting fluency in intercultural communication; however, no effect has been observed on the attitudinal dimension of the participants (Toscu & Erten, 2020). Moreover, according to Gutiérrez-Santiuste & Ritacco-Real (2023), the typology of the topics of conversation has a significant impact on the amount of communication developed by culturally different partners and, over the time of the online educational experience, there are no significant differences in any of the dimensions analysed (behavioural, affective and cognitive).

Traditionally, VC has been seen as a tool that does not facilitate learner reflection because of its synchronous nature and the pressure that can arise from having to provide immediate feedback. In this sense, Van Der Zwaard and Bannink (2019) argue that thinking and responding quickly and effectively is challenging through VCs. It is also argued that online synchrony can sometimes make it difficult to perform tasks because of unwanted exposure in the case of people who are shyer or do not want to be on camera and with the use of VC, learning is put at risk due to emerging problems in synchronous exchanges, such as it is being an unfamiliar technology to the participants or that there is a poor Internet connection (Custer & Tuominen, 2017). However, the level of demand of VC has been recognised, as participants have to pay attention and interpret the meaning of gestures, facial/verbal expressions and paralanguage. In addition, there are a variety of findings that have analysed negative stereotypes linked to the target culture: reduce the reproduction of stereotypes, and VCs modify attitudes and preconceived ideas (Flowers et al., 2019; Kirschner, 2015).

2.2 | Gender differences in online learning environments

Previous research related to gender, albeit limited, offers some differences in the use of VCs and other telecollaboration tools in the ICC. Several studies related to the behavioural dimension indicate that female students are more motivated and committed to learning, females have more positive attitudes and higher levels of satisfaction and interest in learning and research has also shown that females have higher levels of social interaction, cooperation and collaboration (Alenezi, 2020; Heckel & Ringeisen, 2019; Heemskerk et al., 2009). In this regard, Apesteguia et al. (2012) explored the dynamics of collaboration in computer-supported collaborative learning environments: when considering the impact of gender, it became evident that female groups and/or pairs developed higher levels of collaboration. In a different research context, Obokata and Pauen (2023) examined the relationship of online communication with previously unknown people and concluded that women saw higher levels of social communication. Furthermore, a study by Klinger and Svensson (2021) shows that male learners have higher levels of behavioural intention (commitment, effort and persistence), especially when communication poses certain challenges and resistance, for example when there are technical problems and lack of language skills. Thus, in the behavioural dimension, women stand out in traits such as motivation, commitment, satisfaction, interest and collaboration, while men emphasise the traits of commitment, effort and perseverance.

Regarding the affective dimension, previous research (Alenezi, 2020; Gebhardt et al., 2019; Klinger & Svensson, 2021) found that males are more capable of generating trusting environments that allow them to better express their emotions. These studies specifically indicate that males are more likely to express their enjoyment, joy and optimism. In this vein, Estaji and Tabrizi (2022) and Solhaug and Kristensen (2020) point out that women, while sharing their emotions and affections, do so with a greater degree of self-control and regulation, and the female students are more empathetic and sensitive to social and/or ecological issues. Also, Vinella et al. (2022), in a study targeting collaborative dynamics in virtual pairings, concluded that women are less aggressive and more self-regulated. In addition, in the emotional dimension, men are able to express their emotions as long as they

develop an environment of trust. This contrasts for women, who implement mechanisms of self-control and regulation in the expressiveness of their emotions.

Finally, in relation to the cognitive dimension, Zhonggen and Liheng (2021) concluded that male students excel in the deployment of technological skills as part of learning strategies and the results shows that female students seem to score higher than male students in terms of learning in online communication environments and performing better in problem solving. Almasri (2022), comparing the attitudes and achievements of female and male students in online learning environments, concluded that females showed higher levels of achievement and more positive attitudes towards learning. In other studies, slightly better performance by females has been observed in two areas: understanding and critical appraisal/appreciation. Specifically, the studies by Alenezi (2020) and Heemskerk et al. (2009) conclude that female students have a better understanding of the content addressed throughout the communication and the females seem to have a better understanding. In relation to critical appraisal/appreciation, females tend to have a higher critical appraisal of topics in online communication (Heemskerk et al., 2009). Thus, in the cognitive dimension, women in online communication contexts excel in terms of learning (problem solving and attitude towards learning) and understanding and critical appraisal/appreciation, while men stand out in the application of technological skills for learning.

Moreover, there is research that points to gender as a significant individual characteristic which impacts pair compatibility in online communication. For example, Kuttal et al. (2019) and Xu and Correia (2023) showed that women tend to use more non-verbal cueing for communication than men and prefer to work in same-gender groups. They also compared same-gender pairs with mixed-gender pairs, finding that same-gender pairs tended to be more democratic and to divide tasks equally. In contrast, in mixed-gender pairs, an authoritarian partner usually plays a leading role.

3 | METHOD

3.1 | Pedagogical context

The communication was developed through VCs in higher education. In order to achieve the instructional objectives, and together with the teacher's organisation, students worked in pairs, as this distribution contributes to the achievement of academic objectives (Bergman et al., 2023). The content of the VCs was organised on the basis of the learning objectives of two subjects. In the case of the Spanish students, the subject was 'The Educational System in Primary Education', which involved four face-to-face and one online hour per week, and participation was voluntary. In the case of the US students, the subject was 'Spanish', which involved 5 hours per week—four face-to-face and one online—in which participation was compulsory. For both groups, the VCs accounted for 25% of their final marks. The VCs took place over 8 weeks. American students were in their 3rd semester and Spanish students in their 1st semester. Some prior guidelines were set for all students: to create an individual online profile and share it with partners on an educational platform; each pair chose the communication tool to develop the VCs; to use Spanish as a priority and, if necessary, using English; to prioritise the pre-established topics of conversation, with the option of dealing with other emerging topics of interest; to record the VCs in audio and/or video (in the event of technical problems only the audio would be recorded); each couple determined the timetable for the meetings.

The topics of conversation for the VCs were arranged as follows: (a) four generic VCs dealt with introductions, hobbies and free time, politics, farewell; (b) four specific VCs dealt with the educational systems in Primary Education in each country and the participants had to prepare their speeches in advance. The specific topics were school governance, organisation of the educational community, attention to diversity in schools, educational laws, school planning and assessment. Each couple was provided with a conversation script to help them with their VCs (Appendix A).

3.2 | Sample of participants

Twelve couples (Spanish/US) who were fixed and of the same gender participated. The VCs of two couples were nullified because they did not reach the minimum of 60% of VCs performed. The pairs were matched by a teacher, taking into account the convenience of schedules and possible contingencies, same gender and compatibility of tastes and preferences (Almasri, 2022). The socio-demographic data of the sample were as follows: age ($M = 18.8$, $SD = 2.6$); females (70%) and males (30%); Caucasian racial background (91.3%), African-American (4.3%) and Afro-Caribbean (4.3%); 50% Spanish nationality and 50% US nationality. The study complied with the ethical standards of the centres involved in the research (Goucher College, 2021; University of Granada, 2019).

3.3 | Methodology

The methodology used is integrative (Akerblad et al., 2021). On the one hand, the study uses a quantifying content analysis, since the qualitative data are from the transcripts of the communication VCs which were used for quantitative analysis (Fetters et al., 2013). On the contrary, a quantitative method was employed to analyse the questionnaires. Both processes were complemented (Figure 1) in order to give a convergent answer to the problem posed in the research (Plano-Clark, 2019): the influence of gender on online intercultural competence.

3.3.1 | Analysis of communication

The analysis procedure was organised in two phases: establishing the categorical system to be used and analysing the online communications on the basis of this system. In phase 1, the researchers constructed a categorical system according to the affective, cognitive and behavioural dimensions and organised into various sub-dimensions (Appendix B). The researchers determined what a thematic unit was, established an operational definition for each dimension and sub-dimension, and agreed on tracking indicators. This process made use of proposals by: Akdere et al. (2021), Chen and Starosta (2000), Chen and Young (2012), Deardorff (2006), Griffith et al. (2016), Lee and Song (2019), Swartz and Shrivastava (2021), Toscu and Erten (2020). Each of the sub-dimensions consider
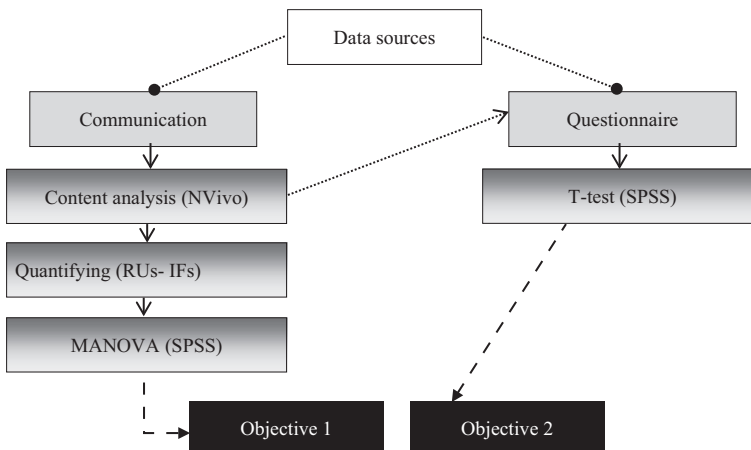

FIGURE 1 Methodological process.

a positive (+) orientation, which is conducive to effective communication, and a negative (−) orientation, which inhibits communication (Bergman et al., 2023). Phase 2 entailed the assignment of each thematic unit to each sub-dimension, thus rendering each communication piece into recording units (RU). In this process, work was done inductively and deductively, with constant crossover between the theoretical precepts of the research and the communications developed. The transcripts of the 73 VCs included both spoken word and gestures (nodding, smiling, etc.). Nvivo12 software was used for data processing and structuring.

In order to ensure the reliability of the intercoders, seven VCs were randomly selected, and a first coding was done independently by two researchers. Work was carried out with 300 thematic units obtained from 297 interventions and the Scott's pi statistic (Freelon, 2013) was obtained. Three rounds of coding/review were carried out, resulting in $\pi = .75$. Finally, a count of the RUs was made and a percentage frequency index (IF) was set for each dimension and sub-dimension using Excel V20 software. There were 12 VCs that could not be analysed, so they were given the mean value (the mean of these VCs of the other pairs). The quantification of the RUs allowed to perform MANOVA with the SPSS (V20) software and to observe the influence of gender on online communications—related to the dimensions of intercultural competence analysed in this paper.

3.3.2 | Analysis of questionnaires

The questionnaire items were constructed on the basis of the categorical system. The final Spanish questionnaire was evaluated (clarity, adequacy and wording) by four experts in the fields of technology in education and interculturality. Minor changes had to be made to the items. Subsequently, it was translated into English by a native speaker and revised by another specialist and translated back into Spanish to check the similarity between the Spanish and American versions. The items were grouped into the three dimensions analysed in this study: behavioural (4 items), affective (4 items) and cognitive (6 items). The questionnaire also contained a section with socio-demographic data (gender, age and race). The scale used was Likert-type, with four response levels, from 1, *disagree completely with the statement* to 4, *agree completely with the statement*. The alpha of the questionnaire was .78 (14 items). The alphas obtained, if any item was removed, ranged from .76 to .78, so it was decided not to discard any item. A *t*-test was administered to analyse students' self-perception of online intercultural competence with regard to gender.

4 | RESULTS

4.1 | Research question 1. Are there differences between male and female in online intercultural communications?

A total of 45,533 RUs of the communications developed in the VCs were analysed. The distribution of IFs by gender was as follows: behavioural communications (male, 36%; female, 25.6%), affective communications (male, 13.6%; female, 10.1%) and cognitive communications (male, 7.7%; female, 7%).

A one-way between-groups multivariate analysis of variance was performed to investigate gender differences. Three dependent variables were used: behavioural, affective and cognitive communications. The independent variable was gender. Preliminary assumption testing (Pallant, 2007; Tabachnick & Fidell, 2007) no serious violations noted and they were conducted to check for:

- Univariate normality: Kolmogorov–Smirnov *p*-value between .04 and .19. This suggesting violation of the assumption of normality for cognitive communications ($p = .04$). However, the histogram and Normal Q–Q Plot show scores and a reasonably straight line suggests a normal distribution.

- Multivariate normality: Using Mahalanobis distance, we are observed multivariate outliers. In this study, one case (ID = 24, Mahal. =16.82) had a score that exceeded the critical value (16.27). We leave because its score is not too high.
- Linearity: Figure 2 does not show any obvious evidence of non-linearity, referring to the presence a straight-line relationship between each pair of dependent variables. Therefore, our assumption of linearity is satisfied.
- Multicollinearity: The relationship between dependent variables was investigated using Pearson product–moment correlation coefficient. There were correlations (Cohen, 1988, pp. 79–81) between the three variables ($r = .52$ to $.72$, $n = 80$, $p = .00$).
- Homogeneity of variance–covariance matrix. Box's M $p = .23$. This study has not violated this condition in which multiple groups have the same variance–covariance matrix.

There was a statistically significant difference between males and females on the combined dependent variables $F(3, 76) = 5.16$, $p = .003$; Wilks' Lambda $= .83$; partial eta squared $= .17$. When the results for the dependent variables were considered separately, the only difference to reach statistical significance, using a Bonferroni-adjusted alpha level of .017, was behavioural communication, $F(1, 78) = 12.10$, $p = .001$, partial eta squared $= 0.13$. An inspection of the mean scores indicated that males reported slightly higher levels of behavioural communication ($M = 432.7$; $SD = 191.03$) than females ($M = 307$; $SD = 125.96$). Dividing by gender (Table 1), the percentage of IFs per person is:

Regarding behavioural communications, Beh/Eff+ is the most used sub-dimension in communications in both males and females. These are communications referring to expressions of interest in communicating and effort to do so (e.g., trying to obtain and/or provide more information, making inferences, highlighting subtle differences, adapting to various communication situations). There is also a difference, albeit to a lesser extent, in the number of communications concerning expressions reflecting a positive attitude during communication (Beh/Att+), for example showing a sociable, friendly, polite, respectful and tolerant attitude or respecting the
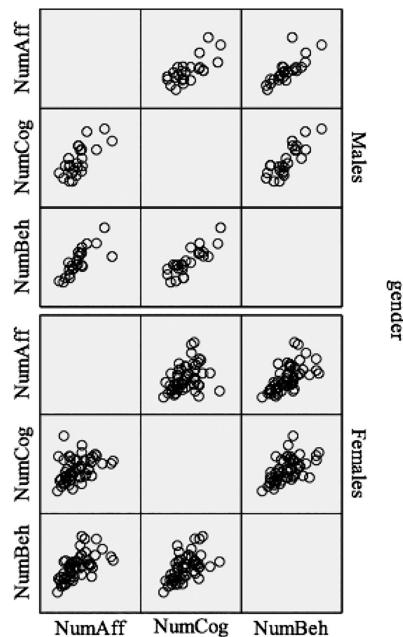

FIGURE 2 Matrix of scatterplots.

rules of manners and politeness. Negative Behavioural communications had a very low percentage (less than .01%).

In most of the affective communications—where no statistically significant differences were found—a similar mean is observed between male and female (Table 1), except in Aff/Fee+, where males used more communications or expressions that reflect ways of feeling. Males also reported more in the sub-dimension Aff/Moo– referring to communications or expressions that reflect a negative mood (inhibiting communication).

Regarding cognitive communications, the sub-dimension Cog/Kno+ shows a somewhat larger difference—statistically non-significant—between both groups at .28 percentage points (Table 1) than the other cognitive sub-dimensions. Males, in this case, communicated more in terms of understanding the other culture and cultural differences and similarities, changing their perspective to understand the other culture, analysing from an inclusive approach and displaying a sense of community without stereotypes. It was also observed that females communicated more in terms of learning objectives. The most frequently found negative communications are referred to the cognitive dimension in both male and female.

4.2 | Research question 2. Are there differences between males and females in online intercultural exchange self-perceptions?

A total of 19 responses to the questionnaire were analysed. The distribution by gender was as follows: male, 26.3%; female, 73.7%. An independent-samples t-test conducted to compare the intercultural competences self-perception for males and females. Three dependent variables were used: self-perception of behavioural, affective and cognitive intercultural competences, and the independent variable was gender. Preliminary assumption testing was conducted to check for:

- Univariate normality: Shapiro–Wilk p-value between .12 and .78 (male) and p-value between .002 and .004

TABLE 1 Percentage of IFs per person (45,533 RUs =100%).

	Male	Female
Behavioural communication (%)		
Beh/Att–	0.01	0.00
Beh/Att+	4.75	2.41
Beh/Eff–	0.04	0.02
Beh/Eff+	13.03	10.27
Affective communications (%)		
Aff/Moo+	2.25	2.24
Aff/Moo–	0.68	0.48
Aff/Fee+	3.90	2.30
Aff/Fee–	0.02	0.02
Cognitive communications (%)		
Cog/Lea–	0.04	0.05
Cog/Lea+	1.49	1.63
Cog/Und–	0.83	0.49
Cog/Und+	0.77	0.42
Cog/Kno–	0.84	0.69
Cog/Kno+	0.46	0.18

(female). This suggesting violation of the assumption of normality for female group. However, the histogram and Normal Q–Q Plot show scores and a reasonably straight line suggests a normal distribution.

- Homoscedasticity was analysed through Levene's test. In our case, $p < .05$; therefore, we accepted the H0 of homogeneity of variances in all items except in the following three: My attitude has been positive (affective dimension), I have shown collaboration towards my partner (behavioural dimension), I have related the topics of discussion with my previous knowledge (cognitive dimension).

There was no significant difference in scores for males ($M = 3.61$, $SD = 0.25$) and females ($M = 3.67$, $SD = 0.34$) on affective and behavioural dimensions. Df for the items in which no difference has been found is 16 and 17; the value of t is between -1.78 and 1.10, the p-value have oscillated between .80 and .09 (two-tailed). A significant difference was found in Cognitive Dimension (item: I have reflected on my contributions before starting the online exchanges). The magnitude of the differences in the means (Cohen's $d = 0.03$, $r = .01$). Observing the means of both genders, it can be considered that all students had a high self-perception of three dimensions. In Table 2, the M and SD of the items are shown:

Item there were significant difference (in bold, Table 2) in score for males ($M = 3.2$; $SD = 0.45$) and females, $M = 3.71$; $SD = 0.47$, $t(17) = 2.13$, $p = .05$ (two-tailed). The magnitude of the difference in the mean (mean

TABLE 2 Mean and standard deviation of the items.

	Male		Female	
	M	**SD**	**M**	**SD**
Behavioural self-perceptions				
I have promoted discussion	3.40	0.54	3.71	0.61
Previous VCs have motivated me to research more information about the topics discussed	3.40	0.54	3.31	0.75
Previous VCs have been respectful	4	–	3.92	0.27
I have shown collaboration towards my partner	4	–	3.79	0.42
Set of behavioural self-perceptions	3.70	0.21	3.69	0.34
Affective self-perceptions				
My attitude has been positive	4	–	3.79	0.42
I have felt free to express my point of view	3.80	0.44	3.79	0.42
I have been able to express any issues, doubt or questions that have risen from the topics discussed	3.40	0.54	3.57	0.64
My partner and I have created an adequate environment for study	3.80	0.44	3.57	0.93
Set of affective self-perceptions	3.75	0.25	3.68	0.42
Cognitive self-perceptions				
I have received relevant information for my learning process	3.8	0.44	3.57	0.64
I have found answers to any issue, doubt or question that have risen from the topics discussed	3.4	0.54	3.43	0.75
I have reflected on my contributions before starting the online exchanges	3.2	0.44	**3.71**	0.47
I have related the topics of discussion with my previous knowledge	3.6	0.54	3.93	0.26
Previous VCs have facilitated reflexion on the topics discussed	3.4	0.54	3.77	0.44
Previous VCs have generated more questions related to the topics discussed	3	1	3.54	0.77
Set of cognitive self-perceptions	3.40	0.40	3.67	0.34

difference = 51.95%, CI: −1.02 to −0.004) was small (eta squared = 0.21). On the whole, there is a high perception of the cognitive, affective and behavioural aspects of the participants and a similarity between men's and women's perceptions on behavioural competence (skills message, interaction and identity management and behavioural flexibility), affective competence/intercultural sensibility (positive feelings, willingness, respect, cultural self-efficacy, positive orientation, tolerance of ambiguity, interaction confidence, interaction enjoyment and attentiveness). In the cognitive competence (intercultural awareness, social monitoring, suspending judgement and cultural knowledge application), there are small differences in 1 of the 6 items of this dimension.

5 | DISCUSSION

The study analyses the influence of gender on digital intercultural communication between Spanish and American university students within an educational experience and this same influence on the student' self-perceptions. It analyses behavioural, affective and cognitive dimensions. The originality of the study lies in that this topic has been analysed from two perspectives: the communication between culturally different peers and university students' self-perceptions of their own competences. Both perspectives converge to deepen our knowledge of gender differences in ICC. In this study, in general terms, no influence of gender has been found in the typologies of communications or in the self-perception of students on the dimensions of the ICC. The statistically significant differences found between men and women are few and have a small effect size. In particular, this study found significant differences in Behavioural communication between males and females but not in Affective or Cognitive communication. On the contrary, this study found no statistically significant gender differences in the self-perception of intercultural competences, whether behavioural, affective dimensions, except for a minimal difference (reflection on the contribution before starting the online exchange) related to cognitive Dimension.

The students—males and females—used the Affective communication by reflecting positive emotional expressions and ways of feeling. In relation to overcoming shyness, the displays of trust and sincerity, and those of relaxation and receptivity, were higher in males' communications—without statistical difference but in greater numbers that female—, coinciding with the results of the study by Gebhardt et al. (2019) and Alenezi (2020). However, while the study by Klinger and Svensson (2021) indicates that males tend to externalise more expressions of enjoyment, joy and optimism; in our case, these expressions were similar in both groups. We observed the same situation in the self-perception that male and female participants had in relation to affective aspects. On the other hand, while in the studies by Heckel and Ringeisen (2019), females have more positive attitudes and higher levels of satisfaction and interest in learning, in the present study the self-perceptions of males and females were broadly similar. In the face of ambiguity, tolerance was also observed in all the VCs, as well as ways of overcoming difficulties, whether due to discomfort, confusion or anxiety. Thus, the educational experience, in our case through the VCs, became a means of establishing social relations between the participants, as Griffith et al. (2016) pointed out. Negative feelings, albeit at a very low rate, are expressed when technical problems arise, and these affect communications. In this sense, as pointed out by Bergman et al. (2023), pair work from a relational perspective was both transactional—on the academic content—and interactional—sharing personal attitudes and building social relationships.

Taking into account the Behavioural dimension, the results obtained show that, although both groups have similar levels of self-perception—a high level—men and women have not communicated in the same way. In this case, men have been more communicative in intercultural awareness. In this study, the behavioural communication is the most frequently observed, and we have found evidence that would point to cultural self-efficacy. In addition, the communications indicate a marked open-mindedness in expressions, positive attitudes towards communication, interest in it and the effort to maintain it. This is observed by the high degree of Beh/Eff+, but more so in males than in females. Effort to maintain effective communication is also observed in the use of other resources (e.g., Internet searches), especially in relation to language difficulties. Few negative communications were observed in either males or females. Our study does show low similarities with the studies of Alenezi (2020) or

with those of Heckel and Ringeisen (2019), due females have been more involved in learning. This study does concur with others that report higher levels of behavioural intention—effort and persistence—among male students (Klinger & Svensson, 2021) as our study has found significant difference between the two groups. In addition, the high self-perception of both groups (males and females) about their behavioural competences (either attitudes or effort) does not show significant differences.

Lee and Song (2019) commented that the cognitive aspects are linked to the understanding of the characteristics of the target culture, its values and beliefs, as well as the ways of thinking of people from different cultures. In line with this, this study shows a certain ability to infer social norms, and the non-use of personal biases or stereotypes, although, in some cases, generalisations appear. In addition, some communications were found to refer to the historical and geopolitical background of the partner country. This study there was no cognitive significant difference in scores for males and females' communication, but on a general level, female students seem to register higher scores than male students in terms of learning in online environments. These results are consistent with those of Zhonggen and Liheng (2021), who conclude that male students got more communication in relation to cultural knowledge and acceptance as well as understanding of the other culture. However, a similar level was observed between males and females in relation to establishing common meanings, critical self-perception or inferring social norms. Negative communications of a cognitive nature, which inhibit communication, were also found to a greater degree in the males's group, both in aspects of knowledge and understanding of the other culture. Signs of ignorance and lack of understanding of the cultural other were found in several communications which, though few, can become a hindrance to communication. However, while the study by Zhonggen and Liheng (2021) found that males excel in the performance of technological skills as part of strategies for learning, this aspect has not been noted in the present study. It can be noted that males communicated more in this aspect—except Cog/Lea+—and that the self-perception of both groups was similar regarding their intercultural communicative competence in the Cognitive dimension. However, it was the females, in general terms, who had more perceived cognitive dimension, as in most of the items referring to this dimension, they had higher averages than the group of males, although the difference was not statistically significant—except one item with a small effect size.

This research has a number of limitations that need to be taken into account when interpreting the results. There are both general limitations, such as the target language, which affected the American students' communications. In addition, the training proposal (voluntary or compulsory nature) through VCs was also an issue, since for the American group it was compulsory while for the Spanish group it was voluntary. Furthermore, in straight relation to the research questions, another limitation may have been that the sample size is modest, so the results must be interpreted strictly in the research-specific context. Another limitation is that the pairs had to be of the same gender. This raises doubts for the researchers about behavioural and affective and, perhaps, cognitive aspects. This aspect should be investigated in more detail in future studies. Another near future perspective is to expand the study context with other countries and cultural backgrounds.

Our findings have implications for developing a more internationalised and interculturally sensitive vision for higher education institutions. These institutions can enhance and facilitate the new dynamics of intercultural online learning through telecollaboration. This study also has implications for teachers because it highlights the implementation of useful tools and technology-based methodologies for developing CCI. Practical implications have a marked educational nature because they facilitate teachers' cognitive, affective and behavioural characteristics in understanding the communicative process and self-perception in intercultural online contexts. Finally, in our opinion, students would benefit from a fully functional methodology for practising intercultural competences in a technified and globalised world.

AUTHOR CONTRIBUTIONS

Elba Gutiérrez-Santiuste: Conceptualisation; methodology; validation; formal analysis; investigation; resources; data curation; writing; review and editing; visualisation; supervision. Maximiliano Ritacco-Real: Conceptualisation; methodology; validation; resources; writing; review.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY STATEMENT

Data are available to reviewers and editor.

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