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Socio-cognitive presence in e-learning: A study of intercultural telecollaboration between French and Chinese students

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Abstract: This article focuses on socio-cognitive presence in e-learning. Empirically, it draws on a telecollaboration experiment in which sixteen geographically dispersed Chinese and French students, organized into small groups, carried out a series of collaborative activities using socio-digital communication artefacts. The aim was to determine whether, during these activities, social interactions between students had generated a socio-cognitive presence. The results reveal that this presence, resulting from mediated communicative transactions between group members, developed to varying degrees across the different groups, influenced by several factors such as the volume and mode of interaction, the quality of relationships established within the group, the group's mode of functioning, and cultural differences. Furthermore, the emergence and level of socio-cognitive presence within all the groups studied were closely linked to the students' agency, both individually and collectively. Similarly, the higher this level was, the more it promoted intercultural learning.

Keywords: telecollaboration, model of social presence in e-learning (MSP), social presence in e-learning, socio-cognitive presence, communicative transaction, agency, intercultural learning, small-group dynamics, qualitative research, foreign language learning

Highlights

What is already known about this topic:

- Social presence is recognized as a key factor in e-learning processes and distance education.
- According to the Model of Social Presence in e-learning (MSP-elearning), socio-cognitive presence is one of the three dimensions of social presence, the other two being socio-affective and pedagogical presence.
- Socio-cognitive presence is theorized as the result of mediated communicative transactions between learners during collaborative online activities.
- Empirical studies on socio-cognitive presence in intercultural online collaboration remain limited.

What this paper contributes:

- It contributes empirical research on socio-cognitive presence in the context of intercultural telecollaboration.
- In the Franco-Chinese telecollaboration examined in this study, the findings show how mediated communicative transactions generate different levels of socio-cognitive presence depending on the group.
- It highlights the role of individual and collective agency of learners in the emergence and development of socio-cognitive presence.

Implications for theory, practice and/or policy:

- The findings empirically support and refine the Model of Social Presence in e-learning (MSP).
- Socio-cognitive presence appears as a key lever for promoting intercultural learning in e-learning.
- The individual and collective agency of learners in a group tends to influence the degree of socio-cognitive presence.



Introduction

Since the 1990s in English-speaking countries, and then in the 2000s in Europe, the development of Web 2.0 has encouraged the implementation of telecollaboration systems in Computer-Assisted Language Learning (CALL), through international projects such as: *Le français en (première) ligne* (Mangenot & Zourou, 2007), teletandem, *Projet Cultura* (Furstenberg et al., 2001) and *Projet Galanet* (Martin, 2003). Meanwhile, extensive empirical research on telecollaboration in this field has been synthesised in several publications, including those by O'Dowd (2007, 2018), Mangenot (2013), Cappellini (2020) and Akiyama and Cunningham (2018).

However, Belz and Thorne (2006) and Wang and Vásquez (2012) note that this research focuses mainly on dominant languages such as English, Spanish, German and French. Akiyama and Cunningham (2018) confirm this trend, while pointing out that the cultural differences between these European languages are relatively limited.

Although, since 2010, some studies on telecollaboration in languages have begun to explore Asian contexts (Akiyama & Cunningham, 2018), work on the use of Digital Information and Communication Technologies (DICTs), in the context of "less taught languages" such as Arabic, Chinese or Japanese, remains rare. O'Dowd and O'Rourke (2019) also highlight the complexity of telecollaborative exchanges between Asian and European students. They point out that this is a cultural partnership profile that remains under-researched. These researchers call for intercultural dialogues between different linguistic communities to be enhanced, and for research involving these languages to be expanded.

The research behind this article contributes to this perspective. Empirically, it was based on an experiment in telecollaboration between Chinese and French students. Specifically set up for the present research, this experiment was in fact telecollaboration in the sense given by O'Dowd and Lewis (2016): it involved students, located in different places, in task-based interactions and collaborative projects using online communication technologies. Its educational aim was to encourage mutual learning of a foreign language, but also, and above all, to develop intercultural skills. This experiment thus stands out from Franco-Chinese telecollaboration projects, which are mostly conducted asynchronously via blogs or forums (Chen, 2015; Muller, 2013), as well as from teletandem, centered on individual interactions between two learners (Cappellini & Zhang, 2013; Wang-Szilas, 2016). The situation involved Chinese and French students divided into several groups, each located in their own country. Having never had the opportunity to meet physically, they had to work together on a collective project, entirely remotely. In this research, the group dimension of social interactions between students was central. More precisely, sixteen students were divided into four groups of two Chinese and two French individuals. The experiment, conducted outside the formal university framework, was carried out on a voluntary basis, with the occasional intervention of a trainer who was also a volunteer.

The aim was to verify whether the mediated social interactions between these students during this collective work carried out remotely generated a socio-cognitive presence for each of the four groups formed. The study of these interactions was based on a qualitative approach. More precisely, the aim was not to observe these mediated social interactions directly, or to analyze their traces (oral and written), but to study them from the students' own discourse on the subject and their own points of view. Thus, this study focused on their perceptions of these interactions and their experiences during the group work carried out.

Before describing the experiment in greater detail, the article explains what socio-cognitive presence essentially means according to the Theoretical Model of Social Presence in e-learning (MSP-elearning) developed by Jézégou (2022, 2025). It then describes the methodology used for this research. Finally, it presents the main results and provides an interpretation, drawing in particular on two specific concepts: the psychosocial concept of agency, and the concept of interculturality in language didactics.

Socio-cognitive presence according to the Model of Social Presence in e-Learning

In MSP-elearning, social presence is considered as a specific form of remote presence. It refers to “*being and doing together to learn with and from others*” (Jézégou, 2025, p. 77), despite geographical distance and via the use of socio-digital communication artefacts. More specifically, “social presence results from the synergy of certain forms of social interactions between the learners, and between them and the trainer (or the educator) when they are carrying out a group activity entirely remotely” (p. 83). These specific forms of interaction define the shape as well as the content of the three dimensions of social presence: that is, socio-cognitive, socio-affective and pedagogical presences. Since the early 2020s, several empirical studies have been conducted and published using this model (Androwkha & Jézégou, 2019; Bebbouchi & Jézégou, 2022; Maury-Zing, 2024; Proust-Androwkha, 2022, 2023; Zhao, 2024, 2025a, 2025b; El Keffi, 2026). As emphasized in the introduction, this article focuses on the first dimension: socio-cognitive presence. The empirical research behind it also addresses the other two dimensions, but they are not covered in this paper.

Socio-cognitive presence: one of the three dimensions of social presence

The French-speaking origin Model of Social Presence in e-learning (MSP-elearning) is relatively recent, having been published in its entirety in the early 2020s (Jézégou, 2022, 2023, 2025). To a greater extent than the famous Community of Inquiry model in e-learning (Garrison, 2016, 2017), it locates social presence in the register of a relational dynamic, both of a group nature and mediated. As demonstrated by Jézégou (2025), the epistemological and theoretical foundations of this model are different from those produced by Randy Garrison. For example, contrary to the COI model, the MSP-elearning is based in particular on two major theories from social psychology: the theory of small-group dynamics (Festinger, 1954; Lewin, 1948; Maisonneuve, 1968) and the theory of socio-cognitive conflict (Darnon, Butera & Mugny, 2008; Doise & Mugny, 1981; Perret-Clermont, 1979). The latter emphasises the importance of expressing and comparing points of view in the construction of knowledge, both individually and collectively. It is also grounded in the transactional perspective of action developed by John Dewey and Arthur F. Bentley (1949). It integrates the concept of inquiry practice (Dewey, 1938): Inquiry practice is a collective working based on collaboration and on a specific process of resolving a problematic situation. The expression ‘problematic situation’ may denote a project to be led, a solution to be sought for a problem, a response to an unexpected event or a new activity to be undertaken.

Socio-cognitive presence is defined as follows:

Socio-cognitive presence is one of the three dimensions of social presence in e-learning. It is the result of mediated communicative transactions between learners in a group during the practice of inquiry. The socio-cognitive presence thus created expresses itself in a socio-digital third space of communication and contributes to the development of an online learning community. Communicative transactions are specific social interactions involving the expression and confrontation of points of view, mutual adjustment, negotiation and deliberation (Jézégou, 2022, p. 173)¹.

According to this author, the “third space” referred to here is a digital space for verbal communication governed by synchronous and asynchronous temporalities via instant messaging, videoconferencing, e-mail, a discussion forum, a collective writing editor, an interactive whiteboard, social networks and so on. In e-learning, these socio-digital communication artefacts are often integrated, in whole or in part, into a dedicated platform. Defining this space (or platform) as a “third space” serves to move beyond a purely technologically centred perspective.

¹ Translation from French to English

As Jézégou (2022) explains, "it is above all a shared and co-constructed space for written and oral expression and for multiple forms of interaction. It is described as 'third' because it differs from the users' respective physical locations and has its own territoriality, one often described as virtual" (p. 64). "Learning community" means "a group of people, voluntary members with diverse expertise of equal value, jointly engaged in a collaborative approach to solving a problematic situation; this approach promotes the individual and collective construction of knowledge" (Jézégou, 2010, p. 7).

Socio-cognitive presence: the result of mediated communicative transactions between learners

Two key concepts from the work of Dewey (1938) are at the heart of the definition of socio-cognitive presence: "practice of inquiry" and "communicative transaction". Jézégou (2022) explains that the practice of inquiry is an approach that refers to "how to do things together" to solve a problematic situation, while highlighting the importance of the collaborative and experiential dimension of the activities carried out by the group of learners. Referring to the meaning given by Dewey and Bentley (1949), communicative transactions are "social interactions of expression of convergences and divergences, confrontation of points of view, mutual adjustment, negotiation and deliberation, which testify to remote collaboration between learners within a digital communication space" (Jézégou, 2022, p. 153). The author shows that the transactional perspective on action aligns with the theory of socio-cognitive conflict by asserting that communicative transactions, particularly those that confront divergent points of view, facilitate the individual and collective construction of new knowledge.

Mediated communicative transactions associated with socio-cognitive presence are grouped into six categories (Table 1 below):

Table 1. Six categories of mediated communicative transactions leading to socio-cognitive presence (Jézégou, 2025, p. 86).

Six categories of mediated communicative transactions leading to socio-cognitive presence	
Mediated communicative transactions	expression of each of the learner's points of view
	confronting the points of view expressed
	mutual adjustments between learners
	negotiations between learners
	deliberations between learners
	group's decision

These six categories are present in each of the four phases of the practice of inquiry (Dewey, 1938): the phases of defining the problematic situation and formulating a hypothesis for resolution, followed by the phases of testing this hypothesis and evaluation.

The question at the heart of the empirical study presented in this article is the following: "How do mediated interactions between French and Chinese students, in the context of remote group work, generate a socio-cognitive presence?" In other words, the aim was to determine whether mediated social interactions, as perceived here by these students, fell into those categories of communicative transactions (Table 1 above) that carry socio-cognitive presence.

Empirical study with Chinese and French students

The empirical study used a deductive approach, based on a theoretical model and pre-existing concepts that guided data collection and interpretation. Before turning to the methodology adopted, it is appropriate to provide a few details about the experiment set up and specific to this research.

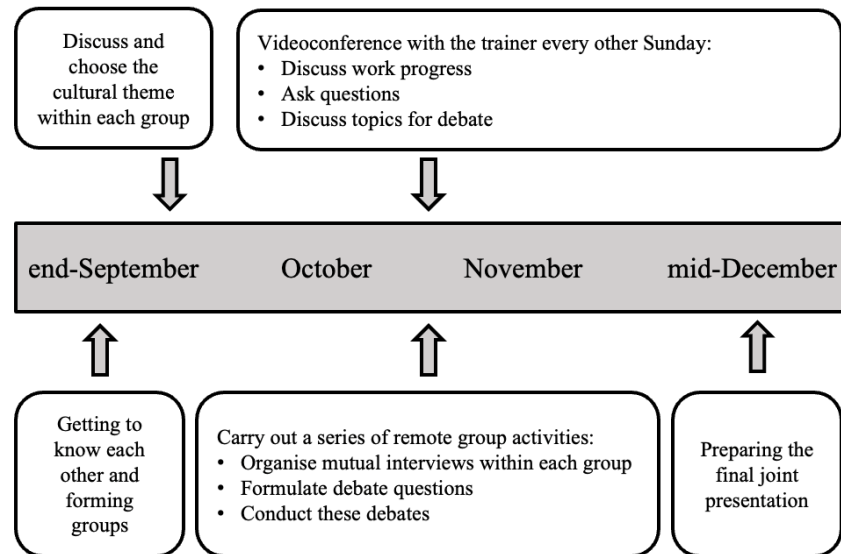
About the experiment

The experiment, which began in September 2023, lasted 12 weeks. Sixteen participants took part on a voluntary basis: eight students from a university in China and eight from a university in France. The Chinese students were all enrolled in a bachelor's degree program in French language and literature. Among the French students, three were non-specialist learners taking Chinese language courses offered by a university language center, while the remaining five were enrolled in an Applied Foreign Languages bachelor's program with an English-Chinese pathway.

The participants, born between 2000 and 2003, had language levels ranging from B1 to B2 in French for the Chinese students, and around B1 in Chinese for the French students. All had chosen to participate voluntarily after receiving an email invitation. They registered through a questionnaire designed to collect demographic data: gender, age, languages spoken, course of study, and reasons for taking part in the experiment. On the French side, all students who responded positively were included in the study. On the Chinese side, as the number of volunteers was higher, eight students were selected in order to match the number of French participants and form four-person groups of two Chinese and two French students. As far as possible, the selection of the Chinese students also took into account criteria such as the absence of any prior stay in France, their levels of French and English, gender balance, and the absence of pre-existing relationships between participants; students from the same class were not assigned to the same group. This experiment took place outside the formal framework of a program or curriculum, teaching unit, or module.

The sixteen students were divided into four working groups, each comprising two Chinese and two French students. The main task given to the students was to work in groups to prepare a presentation in two languages on a cultural topic. The topic was to be chosen from a predefined list of varied themes, such as conceptions of marriage and love, respect for elders, university life and the place and role of women in society. A Chinese trainer living in France also volunteered to take part in the experiment. She was not directly involved in the life and work of the group, nor in the activities proposed. Here is the chronology of these activities (Figure 1, below):

Figure 1. Chronology of activities



Thus, the activities proposed to the students encouraged them to organize, within each of the four groups, mutual interviews between students, to express their points of view, to formulate questions, to organize and conduct debates: in other words, to implement communicative transactions. The activities were carried out entirely remotely, using digital artefacts such as WeChat and Zoom. Once every two weeks, the trainer intervened in videoconferences with all the groups. At the start of the experiment, a few basic operating principles, notably drawn from the work of Puren (2004) and Bouyssi and Nissen (2013) in language didactics, were presented to the students and reiterated as necessary during group work: thus, they were encouraged to experience and express themselves in the target language, each being considered as an expert in their mother tongue and a learner of their partner's. They were advised to alternate regularly between French and Chinese, to develop a non-hierarchical relationship by adopting an egalitarian status, to demonstrate reciprocity in exchanges, to show interest in the other's language and explore its cultural dimensions. The series of activities concluded with an oral presentation of the group's work to the other groups and to a few Chinese and French language teachers from the universities concerned. These teachers were also volunteers. All participants were connected via Zoom to ask questions after the presentations, then vote and elect the best. As the experiment took place outside any formal framework, these oral presentations were not graded.

Data collection and analysis methodology

As previously indicated, the empirical study was based on a qualitative deductive approach and informed by phenomenology. Following Fortin and Gagnon (2022), phenomenology gives particular attention to the meaning participants attribute to their lived experience. From this perspective, the present study examined how students perceived the communicative transactions contributing to the emergence of socio-cognitive presence. In order to provide some answers to the research question formulated above, the study specifically sought to:

1. determine whether the social interactions, as reported by the students, corresponded to the communicative transaction categories of socio-cognitive presence and to describe them;
2. identify and understand, if any, the factors that may have influenced this socio-cognitive presence.

Data were collected through individual interviews conducted at the end of the experiment. Fourteen interviews lasting around 45 minutes were conducted by videoconference, after obtaining written

consent from the students via a form specifying the purpose of the study, its use in research, the guarantee of anonymity, confidentiality of comments, and authorization for recording. Following the withdrawal of two French students from Group 4, this group was disbanded. In the end, the panel comprised three complete groups, i.e., twelve members: six French and six Chinese.

The interviews were structured according to a guide based mainly on the categories of mediated communicative transactions linked to socio-cognitive presence (Table 1 above). For illustration, some of the questions asked and their associated indicators were as follows: "During the group activities, did each member of your group express themselves and share their points of view? Could you give some examples?" ("Expression"); "Did any confrontations of points of view arise among group members? Could you give some examples?" ("Confrontation"). All interviews were recorded and transcribed; those with Chinese students were translated into French for analysis.

The analysis of these data was carried out using a qualitative content analysis based on conceptual categories. In contrast to an inductive logic for constructing conceptual categories according to the method proposed by Paillé and Mucchielli (2021), this study relied on pre-constructed categories, derived from a well-established theoretical framework (MSP-elearning), in this case, the categories of communicative transactions generating socio-cognitive presence (Table 1 above). The data were then coded by the researcher using a coding grid based on these categories.

This analysis involved several stages: preparation of the transcribed qualitative corpus; repeated readings of each interview transcript in order to become familiar with the data; coding of the data according to the a priori categories through the systematic examination of each interview excerpt in relation to the indicators associated with these categories; use of a table linking excerpts, indicators, codes, and categories; comparison of the accounts provided by members of the same group, in order to identify convergences and divergences in their perceptions; comparison across groups, in order to identify variations in perceived socio-cognitive presence and the factors that may have influenced these perceptions; and, finally, interpretation of the results obtained.

The presentation of the findings was structured according to the six categories of communicative transactions derived from the MSP-elearning framework, namely expression, confrontation, mutual adjustment, deliberation, negotiation, and decision. The last two categories were grouped together because the students' accounts in the interviews suggested a close relationship between them.

Findings: Perceived Socio-Cognitive Presence

Before presenting the results, it should be pointed out that the time difference between China and France (six hours in summer, seven in winter) considerably reduced the opportunities for synchronous exchanges, especially as participants' schedules were not always compatible. This had an impact on the frequency and modes of interaction within the groups and, as an indirect effect, on the creation of a socio-cognitive presence.

Each of the three groups was made up of one man and three women. In the rest of the article, they are identified according to the format (Gn/Cm or Gn/Fm), where n and m represent the group number and the Chinese (C) or French (F) student number respectively.

Frequency and modes of interaction within groups

Despite encouragement to use the target language, French remained dominant, due to differences in language skills: Chinese students had a better command of French than French students of Chinese. Based on the information gathered during the interviews, it appears that the frequency and modes of communication between students varied from group to group.

Group 1 comprised two female Chinese students (C1 and C2), one female French student (F1) and one male French student (F2). The group organized weekly videoconferences every Sunday (1 to 3 hours), in addition to constant written exchanges on WeChat. A rapid consensus was reached to establish a working rhythm, with everyone striving to set aside the time needed to work together. The majority of interactions were carried out by video call, allowing facial expressions to be captured and ensuring more fluid and immediate communication, a point confirmed by all members.

Group 2, faced with difficulties in finding time when all members were available, was unable to organize regular videoconferences. The majority of exchanges therefore took place in writing via WeChat. The Chinese students (C3 and C4) expressed their dissatisfaction with this mode of exchange, which they considered unresponsive. The two female French students (F3 and F4) held two or three video sessions without their Chinese partners, who were unavailable at the time. They both confirmed that the exchanges between them were more frequent, while the Chinese students were less inclined to participate in synchronous meetings. According to the four group members, interactions were insufficient and not always timely, a situation they attributed mainly to the time difference.

Group 3 communicated exclusively by written messages via WeChat, without resorting to videoconferencing, despite several proposals from the Chinese students that were not taken up by the female French students. The latter, more at ease with written than spoken Chinese, nevertheless regretted this absence and acknowledged the difficulty of structuring time due to the time difference. Exchanges therefore took place mainly at weekends. For their part, the Chinese students expressed strong disappointment: C5 felt a lack of connection with their partners, while C6 found written exchanges less effective and intrusive on their free time.

With reference to the categories of communicative transactions

Expression of individual ideas within the group

On the whole, students in all three groups felt free to express their ideas and views on how to organize the group work, on the chosen theme, as well as to make corrections they felt would be useful for their partners.

Here are a few examples of verbatim excerpts collected:

"Each of us had the freedom to express our opinions. As soon as someone had an idea or suggestion, they immediately shared it with the group." (G1/C2)

"I found that everyone expressed themselves and shared their points of view... regarding the organization of work, we discussed it as we went along." (G2/F3)

"If I made mistakes in grammar or usage, they immediately corrected me on how to express myself... If they made mistakes in Chinese, we corrected them too." (G2/C3)

Confrontation of points of view between students

Each group was encouraged by the trainer to debate controversial topics related to the chosen themes, such as the consequences of celebrity infidelity, the practice of dowries in China or the legalization of same-sex marriage. Without limiting themselves to their initial theme, each group could also explore other topics of interest.

Many of the students (8 out of 12) noted that, despite their cultural and linguistic differences, their opinions were often similar on many subjects, in view of their proximity in age. Faced with differences of opinion and disagreement within their group, students (10 out of 12) from all three groups mentioned

having benefited from these confrontations of points of view, even if, depending on the group, they manifested themselves to different degrees, with group 1 being more active here than the other two. Nevertheless, all of them (12 out of 12) mentioned the fact that expressing themselves, arguing, listening to others and seeking consensus to better understand each other was a particularly interesting aspect. The following three extracts highlight this:

"We were very interested in the debate questions... Our French friends confided in us that talking to people from different cultures... was a really enriching and interesting experience." (G1/C1)
 "Each time we explained why we had made our choice... And for example C4, she really explained to us why in China it could be the other way around, ... That way we could compare points of view." (G2/F3)
 "Everyone had their own unique perspective and ideas on problems, and after exchanging ideas, we would compare the different points of view to come up with a common idea." (G3/C5)

In particular, the four students in Group 1 declared a keen interest in the debates. Weekly videoconferences offered them a regular opportunity and a dedicated space to discuss their ideas. This process included the expression of divergent opinions, the solicitation of others' points of view, the exposure of disagreements, in-depth questioning and the development of arguments:

"We'd often say, 'What do you think?'... if we didn't agree, we'd say 'Ah, well, I don't agree.' And we sometimes asked more questions... We were able to debate quite a bit." (G1/F1)

The Chinese students in Group 1 sometimes perceived a reluctance on the part of French students to get involved in sensitive debates, for fear of upsetting or offending them. This caution meant listening carefully before sharing their point of view. F1, for example, explained that her reserve was linked to a lack of knowledge on certain subjects:

"We talked about it together, and I listened to their opinions, because they knew more about the situation in the country than I did" (G1/F1).

In Group 2, F3 reported that a member of the group had adopted a less-than-open attitude, sometimes hindering mutual understanding and the confrontation of points of view. For example, when discussing the dowry, C3 expressed strong opposition to the practice, showing little openness to the perspectives of others. Faced with this rigidity, the other members preferred not to insist, leaving him to develop his arguments alone, which limited the depth of the exchanges and restricted the exploration of ideas.

The confrontation of points of view, according to the members of Group 3, was limited. The French students (F5 and F6) mentioned exchanges and comparisons of points of view, without any real debate. However, the Chinese students (C5 and C6) reported that there had been some confrontation of points of view, but that the insufficient volume of exchanges and the exclusive reliance on written communication had reduced the opportunity for in-depth debate.

Mutual adjustments and changing students' points of view

In the debate on celebrity infidelity, a marked divergence emerged between French and Chinese students. The Chinese students insisted on the exemplary role of celebrities as public figures, while the French students defended respect for privacy. This confrontation led some, particularly in Group 1, to reassess and adjust their opinions. G1/F2 admitted to having changed his mind after considering the influence of celebrities on young people:

" After this debate, I've changed my mind a little on this issue ... I think it's true that celebrities are public figures who have to set a bit of an example. Because they can influence children."

The testimony of a Chinese student (G1/C1) also illustrated an adjustment of her point of view, facilitated by dialogue within the group: confronted with a diversity of opinions, she had the opportunity to express her ideas while actively listening to the arguments of her peers: "as a result, my position has softened". These discussions led her to re-examine certain aspects of the topics debated, and enriched her overall understanding of the subjects. G2/C4 reported a similar development:

"My opinion started to change, and I also started to think that their work should really be separated from their private lives. In the beginning, I was firmly convinced that if a celebrity was unfaithful, she shouldn't be accepted by society, should lose all work and be boycotted." (G2/C4)

Moreover, the student in Group 1 (F1) mentioned that her point of view on dowry had evolved. Initially, she perceived this tradition in a negative light, as a commodification of women, but after debating with the Chinese students, she began to understand and accept the cultural rationality behind the practice. Still in the same group, C2 compared their opinion with that of C1, from another region, which enabled them to question their initial vision:

"I thought that the dowry was a universal tradition in China... but it's not. It made me think differently about the diversity of cultural practices, even in my own country" (G1/C2).

The debate also made F1 and F2 aware of possible differences of opinion within the same cultural group, prompting them to reflect on the risks of generalization:

"C1 and C2 didn't think alike... like the dowry, and that was super interesting... we decided we had to be careful not to generalize. Not all Chinese think alike..." (G1/F2)

Deliberations: discussions on various topics or focused on group work

According to the students in Group 1, everyone felt they were working together towards a common goal. They declared that they had regularly reviewed and corrected each other's work, and felt that everyone had contributed to the collective reflection and work carried out. As mentioned by G1/F1:

"The four of us would read our slide together... everyone would come up with their own ideas and we'd discuss modifications together. [...] we would send our "text" to each other to see if there were any mistakes... Sometimes we'd divide up the work. [...] if we had any more questions, we'd send them to the group."

The Chinese student (G1/C1) stated:

"We were working together towards our common goal... I think the effort put in by every member of our group was the same, and everyone was working hard and seriously."

Group 1 stood out for exchanges that included personal aspects, which increased the frequency and intensity of interactions, revealing that they went well within the group. As these two extracts illustrate:

"Our exchanges were not limited to the training course; we also talked about... personal or daily life. Sometimes... two or three hours weren't enough." (G1/C2).

"It was more like a conversation between friends. Everyone took an active part in the discussions." (G1/F2)

In Group 1, a sense of belonging gradually developed. Members felt "an integral part of the group" (C1), "very supportive" (F1) and "like friends" (F2), exchanging in a "pleasant" and "cheerful" way (C2). Collective work was deemed "satisfactory" and "efficient", with everyone demonstrating a spirit of collaboration: "working hard towards the same goal" (C1), underlining a joint effort. This group showed

strong motivation to interact, both socially and cognitively. Socially, members discussed various topics, shared their emotions and opened up about their private lives to others. Videoconferencing reinforced this cohesion through paraverbal communication (gestures, facial expressions, intonation). Cognitively, they shared their knowledge and solved problems together by adjusting their schedules, maintaining regular discussions and monitoring the progress of collective work.

In Group 2, exchanges were mainly about work, leaving little room for personal discussions. C4 felt this reduced mutual knowledge of and interest in the other members, while F4 noted brief discussions with delays in written communication.

Chinese students in Group 3 (C5 and C6) reported that discussions within the group were not frequent enough, often very brief and fragmented. F5 and F6 rarely took part in discussions at the same time: F5 was more available during the day, F6 in the evening. This situation reinforced C5 and C6's sense of isolation, making contact with their French partners more difficult.

Negotiations between students: active participation in collective ideas, solutions and decisions

Within the groups, 11 out of 12 students indicated that ideas were proposed by everyone, resulting in a democratic selection process. This process was based on consultations, recurring exchanges and the convergence of points of view to reach a consensus.

A particular case occurred in Group 2 with student C3. According to the testimonies of this group's members, student C3 often considered himself particularly qualified for certain tasks, and took the initiative without always taking into account the opinions of others. He also tended to make decisions independently, an approach perceived as authoritarian and contrary to the expectations of the group, which favored consultation. Although not officially designated leader, he was perceived as such, particularly by C4, because of his firm attitude and his refusal to see his decisions challenged. Other members often compromised out of politeness or to preserve group harmony.

Summary of results

Based on the categories of communicative transactions previously analyzed, a table summarizes the perceptions of the students in each group concerning the transactions leading to socio-cognitive presence. This makes it possible to compare more directly the levels of socio-cognitive presence perceived across the three groups.

Table 2. Perception of transactions leading to socio-cognitive presence in e-learning among three groups

Participants Categories	Group 1				Group 2				Group 3			
	C1	C2	F1	F2	C3	C4	F3	F4	C5	C6	F5	F6
Expression of individual ideas within the group	X	X	X	X	X	X	X	X	X	X	X	X
Confrontation of points of view between students	X	X	X	X	X	X	X	X	X	X		
	A significant number of confrontations of points of view, encouraging mutual adjustments				Limited confrontation of viewpoints				Limited confrontation of viewpoints		More discussion than confrontation	
Mutual adjustments and changes in points of view	X	X	X	X		X			X			
Deliberations between students	X	X	X	X	X	X	X	X	X	X	X	X
	Group discussions on a variety of topics				Discussions focused solely on the task				Discussions focused solely on the task			
Negotiations between students to reach collective decisions in a democratic manner	X	X	X	X	X		X	X	X	X	X	X

The results of this table 2 show that the socio-cognitive presence perceived by Group 1 students is the most pronounced. Mediated communicative transactions were more evident than in the other two groups. While the expression of ideas was effective in all three groups, confrontations of points of view were more frequent and numerous in Group 1, where mutual adjustments and changes of perspective were also more tangible. This group also deliberated on a variety of topics related to the chosen theme, whereas in Groups 2 and 3, the deliberations focused mainly on the activities to be carried out. More than in the other groups, Group 1 showed a strong sense of cohesion, marked by mutual tolerance and openness to differences, encouraging free expression of opinions, active listening and a willingness to revisit one's own ideas.

The level of socio-cognitive presence perceived by Group 2 members is higher than that of Group 3. All members exchanged their points of view, although this process was sometimes hampered by the less open attitude of one of them (C3); this had a negative impact on negotiations and collective decisions, forcing the others to compromise, a point particularly emphasized by C4. As for Group 3, the volume of exchanges was smaller than in Group 2, and limited to written communication. Confrontations of points of view were seen as interesting but limited (C5 and C6), or even absent for some members (F5 and F6). Although deliberations did take place, discussions were generally short and fragmented.

Moreover, the way the groups functioned seems closely linked to the different perceived levels of this presence. The first important aspect to emerge from these three modes of group functioning is that Group 1 was more committed to collaboration. According to its members, they shared a common goal – to succeed in the oral presentation – while pursuing personal objectives (perfecting their skills in the target language, exchanging with students from another culture, etc.). Activities were carried out jointly, and decisions were taken in a concerted, even democratic way, thus characterizing a collaborative mode of operation (Henri & Lundgren-Cayrol, 2001; Jézégou, 2019). Despite the difficulties of time synchronization, the choice of synchronous communication combined with constant written exchanges facilitated a collaborative work modality, and vice versa. In Group 2, on the other hand, collaboration was more limited, either by choice, time constraints, or both. As for Group 3, the collaboration did not seem to have really worked; the exchanges, less frequent and exclusively written,

were more akin to cooperation in Mangenot's (2013) sense, since they were based on a simple division of tasks.

Ultimately, the results show that the level of socio-cognitive presence varied according to the possibility (or willingness) to synchronize schedules, particularly because of the time difference. It also depended on the frequency of written exchanges (asynchronous and synchronous). It was also linked to the work modality adopted, with the collaborative modality being the most effective. Another dimension also played a central role: that of the individual and collective agency of the students in each of the three groups. This is an essential finding that merits development and discussion.

Discussions

Socio-cognitive presence and student agency

In the broadest sense, agency refers to the willingness to act, while exercising intentional control over the action (Bandura, 2006, 2008; Carré, 2005; Jézégou, 2019). It is particularly called upon in remote situations, when it is a question of "doing and being together" despite geographical distance, via the use of socio-digital communication artefacts, and perhaps even more so when the interlocutors are from different continents and cultures. This section describes some of the main aspects of this agency on the part of the students involved in this experiment.

All students voluntarily chose to take part in this experiment. Their motivation was therefore self-determined (Deci & Ryan, 2000), in the sense that they engaged in it without any external intervention or pressure, in the absence of any reward. The reasons given in the registration questionnaire reveal that most were motivated above all by the desire to exchange ideas, share cultural aspects and improve their language skills. For example, some students (G1/C1 and G2/C4), planning to study in France, wanted to familiarize themselves with French students. Others (G2/F3 and G2/C4), despite the pressure of a double degree in law and languages, enrolled to improve their language skills and enjoy an intercultural experience. For their part, G3/F5 and G3/F6, who did not have any Chinese classes in their Master's programs, saw this experiment as an opportunity to continue their learning. Furthermore, the students showed perseverance in carrying out the group activities, albeit to varying degrees, but all contributed to the presentation of their own group's work at the end of the project, which also suggests sustained motivation on their part. Such motivational commitment is a major lever of agency (Deci & Ryan, 2000; Bandura, 2006).

Although the activities followed a predefined program, the students had considerable freedom of action to adjust the pace of work, modify debate themes, propose cultural topics, and choose the language, frequency and tools of communication. They embraced these freedoms, while exercising control over the activities carried out. These self-regulation strategies are described as "proactive" (Cosnefroy, 2011, 2019; Jézégou, 2019; Poellhuber & Michelot, 2019; Zimmerman, 2000): they are intentional and based on a finalized action plan whose implementation is monitored by the group. Admittedly, the flexible structure and pedagogical intentions of this experiment may have encouraged these self-regulation strategies, but in any case, they testify to the students' agency. In addition, in the face of the obstacles they encountered, they implemented self-regulation strategies that, according to the same authors, are "reactive": these strategies enabled them to overcome certain obstacles or constraints by implementing specific actions; in this case, in order to get around Internet restrictions in mainland China, the French students installed WeChat despite initial technical difficulties. To overcome language barriers, they focused on mutual support, correction and adaptation, slowing down their speech rate or using text chat to clarify complex terms. Time zone constraints also necessitated mutual adjustments between students on the two continents. This type of strategy can also be seen as evidence of the agency of students in all three groups.

This agency was certainly exercised on a collective level when the group work and associated activities were carried out, but not exclusively, because, as Bandura (2006) points out, collective agency cannot manifest itself without individual agency on the part of the people involved. That is, they had to make a personal commitment to collective work and to persevere in it, to enter into relationships with the other students in the group and interact with them throughout the experiment, to grasp and use communication tools, to participate in the development of an action plan, and to help overcome technical, spatial and time constraints.

However, this finding needs to be qualified with regard to the three groups that took part in this experiment, as they did not demonstrate the same level of collective agency. Group 1, for example, showed a high level of commitment to group work, both in terms of motivation and the self-regulation strategies put in place to complete the task at hand; this commitment was lower in Groups 2 and 3. Furthermore, there seems to be an association between this level of agency and that of socio-cognitive presence within each group. Indeed, as mentioned above, the socio-cognitive presence perceived by Group 1 was particularly striking. Throughout the process, members demonstrated strong agency, both individually and as a group, as they worked together to achieve set objectives. Furthermore, they showed a clear willingness to enter into and develop relationships with others. Socio-cognitive presence, as perceived by Group 2 members, was more moderate. The members only experienced a sense of "doing together and being together" in the final phase of the experiment, during preparation for the oral presentation, when they adopted the strategies needed to accomplish this work. Group 3 reported the lowest level of socio-cognitive presence. There was a marked difference in attitude and motivation between the Chinese students, who saw the experiment as "a valuable opportunity", and the French, who saw it as "a hobby". This discrepancy was reflected in the stronger individual agency of the Chinese students, who were also more proactive: they initiated contacts, organized discussions, directed the collective work and developed strategies to maintain group cohesion.

If the level of collective agency of the students in each of the three groups thus appears to be associated with the level of socio-cognitive presence, there is another dimension that also seems to be linked to the type of presence studied in this research. Indeed, the results suggest the role played by the communicative transactions at work within each of the three groups in intercultural learning.

Socio-cognitive presence and intercultural learning

In this study, intercultural learning appears, to some extent, to be linked to the level of perceived socio-cognitive presence. To interpret the results, the model of intercultural competence developed by Byram (1997) was used, as well as some of the foundations of the intercultural approach proposed by Abdallah-Preteuille (1997, 2003, 2010, 2023), such as recognition and respect for cultural diversity, decentering, and learning about relativity.

During the experiment, Chinese and French students were encouraged to co-construct meanings around cultural themes, through exchanges, debates and the realization of a joint production. Based on the participants' accounts, the communicative transactions – especially those that involved confronting different perspectives – enabled them, to varying extents, to develop a deeper understanding and new insights into both their own culture and that of the Other. In this respect, the analysis highlights several components of intercultural competence as defined by Byram (1997). All students demonstrated, to varying degrees, attitudes (*savoir-être*) – that is, an attitude of openness, respect, and suspension of judgment – and enriched their knowledge (*savoirs*) by acquiring new knowledge. However, other components such as the skills of interpreting and relating (*savoir comprendre*), the skills of discovery and interaction (*savoir apprendre/faire*) and critical cultural awareness (*savoir s'engager*) seem to be more closely linked to the quality of exchanges and effective communicative transactions.

More specifically, it was in Group 1 that students most often mentioned mutual adjustments and changes of perspective. Exchanges in this group were described as based on a symmetrical relationship, founded on mutual respect, active listening and open-mindedness. As Jézégou (2022) points out, such a relational climate favors communicative transactions and, consequently, the development of a socio-cognitive presence.

So it seems that the more effective the communicative transactions, the more decentering took place, especially in Group 1. The divergences expressed, the confrontations of opinions and the collective deliberations led the students to re-evaluate their positions, to refine their perspectives on complex subjects. This process led them to decenter from their own frame of reference and adopt the point of view of the Other, in line with the definition of decentering proposed by Abdallah-Preteille (1997). For example, F1, initially very critical of the dowry, has gradually revised their position, considering it to be culturally justifiable. This readjustment illustrates a process of decentering, in the sense of Neuner (2003), where what was perceived as foreign becomes comprehensible. Abdallah-Preteille (2003) reminds us that this decentering does not imply adherence to the other's ideas, but recognition of their legitimacy. Other students, such as C2 and F2, have challenged their initial representations by becoming aware of the diversity of cultural practices. This questioning has prompted reflection on the risks of generalization, echoing Abdallah-Preteille's (2010) idea of the need to avoid essentializing cultural affiliations. This example highlights the advantages of working in a group: unlike a dyad, where each speaker can be perceived as a unique representative of his or her culture, a group allows for a greater diversity of viewpoints and limits the risk of stereotyping (Audras & Chanier, 2008). Furthermore, all the members of this group spoke of an evolution in their outlook on certain topics, such as celebrity infidelity, by integrating divergent perspectives and refining their understanding. The examples illustrated suggest that these students are capable of interpreting cultural phenomena by relating them not only to their own culture, but also by taking into account the point of view of the Other. This is the skill of interpreting and relating (*savoir comprendre*) in Byram's (1997) model, based on interpreting, comparing and relating points of view.

This process also reflects a gradual learning of relativity, in the sense of Abdallah-Preteille (2003, 2023), understood as the recognition that every vision of the world is situated and that one's own is not universal. The testimonials from Group 1 suggest an effort to objectify personal frames of reference, combined with vigilance against the excesses of absolute relativism. Rather than passively accepting ideas, they adopted a critical, empathetic and reflective posture: they expressed disagreements, questioned their points of view, softened their positions and integrated other perspectives. This interactive process engages the skills of discovery and interaction (*savoir-apprendre/faire*) (Byram, 1997) – that is, the ability to interact in real time by drawing on one's linguistic and cultural knowledge while maintaining a curious, open, and respectful attitude. It also testifies to a reflexive stance akin to critical cultural awareness (*savoir s'engager*) (Byram, 1997), i.e. the exercise of critical thinking with regard to cultures, as well as the ability to negotiate divergences while accepting differences. Such critical distancing, according to Neuner (2003), broadens horizons and provides an additional framework for understanding the world. However, as Oberlé (2016) reminds us, such adjustments do not necessarily imply homogeneity of opinion. Conversely, the evidence suggests that this phenomenon was less noticeable in Group 2, where only C4 mentioned a change in perspective when debating celebrity infidelity, as transactions were more limited and thus reduced the perceived degree of socio-cognitive presence. Group 3 presents an even weaker level: only C5 noted an adjustment of opinion limited to discussions on work organization, and not to thematic debates.

These results seem to indicate that communicative transactions, which lead to socio-cognitive presence, promote the construction of new knowledge and the recognition of cultural diversity. The more effective they are, the more they seem to be accompanied by the development of decentering, which is one of the pillars of intercultural learning likely, in time, to nurture intercultural competence, as defined by Byram (1997). In this context, *savoir-être* and *savoir* emerge as the initial stages in the manifestation of intercultural competence, both present to varying degrees among all students. On the other hand, the

manifestation of the other components, particularly critical cultural awareness (*savoir s'engager*), seems to be linked to the high degree of perceived socio-cognitive presence, and requires a high volume of communicative transactions, supported by a symmetrical relationship and a positive climate of exchange, as in Group 1. To some extent, this finding also echoes the study by Johnson and Tuncer (2023), which likewise shows that, in virtual exchange, discussion and negotiation play a key role in the development of students' intercultural competence.

Conclusion

The results of this empirical study show that the level of socio-cognitive presence differs from one group to the next (highest in the first, lowest in the third), under the influence of several factors.

Thus, a high frequency of interactions and the use of synchronous multimodal communication modes such as videoconferencing via Zoom or video calls are more conducive to the emergence of socio-cognitive presence. Beyond frequency and modality, the quality of the relationships established within the group is also a key factor: openness to discussions on a variety of subjects, going beyond the work setting, enabled members to get to know each other better and strengthen their relational intimacy, which, in turn, encouraged them to engage actively in interactions. Furthermore, cultural differences helped to stimulate the desire to encounter otherness, encouraging students to compare their perspectives on various subjects. In fact, curiosity about and experience of diversity were among the main reasons why students took part in the experiment. In addition, the group's mode of operation, with its greater commitment to collaboration and democratic decision-making, seemed to encourage a higher level of socio-cognitive presence. Finally, each member of the group demonstrated, albeit to different degrees, personal agency to trigger and maintain group agency, which in turn enabled the development of collective strategies aimed at carrying out the activities and overcoming the obstacles encountered. It appears that the more individual and group agency manifested itself, the higher the perceived level of socio-cognitive presence within the group. Overall, when some members demonstrated personal agency while others showed it to a lesser degree, perceived socio-cognitive presence was more limited.

Over and above these factors, the initial principles that governed the design of this telecollaboration probably had an influence on the socio-cognitive presence. In fact, its aim was to encourage participants to exercise their critical thinking skills and stimulate reflection through discussion, confrontations of points of view, mutual adjustment and negotiation within their group, while promoting, to some extent, decentering and acceptance of and respect for cultural differences. Moreover, it emphasized, as Beacco (2018) advocates, openness to cultural otherness, hoping in this way to develop critical, reflective and proactive attitudes in these students. At the same time, it encouraged them to set aside an idealized vision of the Other (Lemoine, 2018). From the point of view of intercultural learning, the gamble seems a priori successful. A priori, because the number of groups and students involved in this empirical study is very limited and obviously leads to caution regarding the results obtained and their interpretation². In addition, the trainer's pedagogical presence, even if occasional, may have facilitated both the adoption and implementation of these principles by the students in each group, as well as the development of a socio-cognitive presence.

Certainly, this study has some limitations, which open up several avenues for further research. The study relies on self-reported perceptions. A more in-depth examination of the relationships between socio-cognitive presence, agency, and intercultural learning would benefit from additional sources of evidence. Future research could therefore usefully compare students' perceived transactions with their actual transactions, based on videoconference recordings and written exchanges. Moreover, the participants in this study were volunteers whose motivation to take part in the experiment was self-determined and who were therefore likely to already have a certain degree of curiosity about and

² At the time of writing, this experiment is being repeated with other groups of French and Chinese students.

openness toward the other culture. Further research conducted within an institutional framework would make it possible to examine whether similar results would emerge in a different context.

From the perspective of distance education scholarship, the study by Boz and Uçar (2025) points out that a large body of research in the field agrees that interaction plays a central role in effective learning, and that improving the quality of interaction at a distance is therefore an important issue. In this respect, the present study also confirms the importance of interaction, while further suggesting that interaction alone is not sufficient. Rather, interaction needs to give rise to transactions in order for socio-cognitive presence to be established among students, thereby fostering deeper learning. Finally, as Yavuzalp and Bahcivan (2021) observed, social presence has been defined and discussed in multiple ways over the years in e-learning. From this perspective, the present empirical study contributes to refining the understanding of socio-cognitive presence as conceptualized in the MSP-elearning framework, thereby extending current reflection on social presence in distance education.

In any case, this exploratory qualitative research opens interesting prospects in terms of the links to be investigated between these principles, derived in particular from interculturality and language didactics, and the foundations of the social presence model in e-learning.

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Author's Contributions (CRediT)

Yihuan Zhao: Conceptualization, methodology, investigation, data curation, formal analysis, validation, visualization, writing—original draft preparation, writing—review and editing; Annie Jézégou: Conceptualization, supervision, methodology, validation, writing—review and editing. All authors have read and agreed to the published version of the manuscript.

Sustainable Development Goals (SDGs)

This study is linked to the following SDG(s): Quality education (SDG 4).

Data Accessibility Statement

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics and Consent

All participants involved in this study were over 18 years old and participated on a voluntary basis, with the right to withdraw from the study at any time without any consequences. Written informed consent was obtained from all participants prior to data collection through a consent form detailing the purpose of the study, its use for research purposes, guarantees of anonymity, confidentiality of the data, and authorization for audio recording. In addition, verbal consent was systematically reaffirmed by participants prior to each interview before recording began. All data were anonymized during transcription and analysis to ensure participants' privacy and confidentiality.

Competing Interests

The authors have no competing interests to declare.

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