A Preliminary Study on the Influence of Social Presence for Learning Satisfaction of Chinese Online Learners

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Abstract: *This study analyzes the effects of social presence on cognitive presence, emotional presence, and learning satisfaction, and attempts to empirically analyze whether learning readiness has a moderating effect on these relationships. Taking social presence as an independent variable and the relationship between emotional presence, cognitive presence, and learning satisfaction as the main research object, the author examined the effect of learning readiness as a moderating variable. The subjects in this study are Chinese undergraduates taking online course of Korean language on the designated learning platform. The questionnaire survey used Likert 5-level scale. A total of 189 valid questionnaires were collected, and SPSS was used to conduct exploratory factor analysis on the questionnaire structure. Smart PLS 3.0 was used to analyze the data structure. All the VIF values < 5. The conclusion thus obtained shows that social presence has both direct and indirect influence on learning satisfaction, and the overall effect is significant. Cognitive presence is a mediating effect on learning satisfaction, and emotional presence also needs to have a mediating effect through cognitive presence. Learning readiness moderates the relationship between social presence and emotional presence, and affects learning satisfaction through cognitive presence.*

Keywords: *social presence, cognitive presence, emotional presence, learning readiness, learning satisfaction*

1. INTRODUCTION

Scholars have different definitions of 'presence', but in general, the feeling of being in a place and belonging to a specific group is called presence (Anthony, 2002), which is different from online learning, where physical contact is excluded. In such a situation in a virtual space, learners have a qualitatively different understanding and experience than that in a traditional (offline) learning environment. Therefore, the learning experience, process and learning effect experienced by learners are different from offline learning in the traditional sense. As a variable to explain this issue, presence is brought back. Presence is referred to as the concept of the sense of being there, a kind of a subjective perception different from reality. When two people have a conversation in a space, the two people actually exist in the same space; however, the conversation situation or the presence of each other is very different. Even when learning the same online course, the respective levels of presence are different, the subjects are in physically different places, and in the learning environment in the ongoing virtual space, the question of presence naturally arises. According to Kim & Kang. (2010), this can be interpreted as the perceptually evoking fantasies or the second media experiences for representation.

2. THEORETICAL BASIS

The research regarding 'presence' called the Community of Inquiry Theory (CIT) was put forward by Garrison and Cleveland (2005). This theoretical model elucidates the behaviors and processes required for effective knowledge construction during online learning by describing three major presence, of which, Teaching Presence (TP) refers to the organization, design, facilitation of dialogue and direct teaching instruction; Social Presence (SP) refers to online discourse that promotes positive emotion, interaction and functional collaborative cohesion; Cognitive Presence (CP) refers to the degree to which learners construct meaning through conversation and reflection in an online learning community. The inquiry community model provides unique perspectives, methods and tools for online learning research, which has been widely recognized by researchers from all over the world (Jia & Li,

2020).

Other scholars have also described a community of inquiry as a TP, a CP, and a SP. While CP is referred to as the extent to which learners construct and verify meaning based on critical, continuous dialogue and reflection in an online inquiry learning community, SP dialogue and reflection in an online inquiry learning community, SP express their "true self" socially and emotionally through communication media in an online inquiry learning community. TP refers to the design, promotion and guidance of learners' CP and SP in order to realize the learning effect of learners' personal as well as educational value. The core of the inquiry community model is the superposition of TP, SP and CP. The superposition of the three presences is "deep and meaningful learning experience" (Lan，Zhong, Lv & Song, 2018).

Contrast to CIT, the Learning Presence Theory (LPT) holds that when a learner is faced with a specific learning situation, he or she feels an inner state through interaction with the environment. Wang and Kang (2006) divided learning realism into cognitive, social and emotional presence for discussion. This includes three overlapping and intersecting domains: cognitive domain, affective domain, and social domain. Teachers can use this model to describe each learner, and then design strategies for each individual. Students will not only have the opportunity to achieve their learning goals but will actively participate in the learning process. In doing so, they actually provide meaningful and engaging learning experiences for online learning students with diverse cultural and linguistic backgrounds (Wang & Kang, 2006)

Apart from this, LPT integrates factors from the affective domain with social and cognitive factors in the learning dynamics. In the social domain, the most important factor affecting learning and learning outcomes is social background. The learner's social background cultivates his personal characteristics, affecting the participation in group discussions and the group he belongs to. In fact, each learner has the specific background and culture of his own, and they inevitably reveal these characteristics during each learning endeavor. In this sense, consideration of social and cultural background is crucial (Wang, 2008)

In this study, presence was defined as learning presence. The social presence in learning presence was used as an independent variable. The main research subjects are college students who are learning online. They are the main learners of many online courses. The social scope of these learners is relatively fixed and the social background is relatively simple. Thus the social presence plays an important role in learners' course selection.

2.1. Social Presence (SP)

Defined as "perceived realism using communication media as a bridge", social presence (SP) is an important factor for non-face-to-face learning and can be felt through various non-face-to-face media such as computers, interactive TV, and mobile phones. According to Kim, Choe & Gwon (2014), which medium to use depends on the degree of perception of social presence. Social presence also refers to the degree to which learners have the sense of and express their psychological and social roles.

SP can also be interpreted as the learner's ability to identify themselves in their relationships with the community, to interact in a goal-directed manner in an atmosphere of trust, and to develop interpersonal relationships while appropriately expressing their individuality. The social presence perceived or expressed by a learner can determine psychological distance from other learning participants and influence the level of engagement in the learning process (Lee & Kim, 2015).

In virtual spaces, the desire to interact face-to-face is strong, which plays a decisive role in forming trust and affects whether more research or interaction will be conducted and the relationship between intimacy and immersion. Anonymity or virtuality created by non-face-to-face interactions can negatively impact overall attitudes; therefore, a method needs to be devised to minimize virtuality. Although direct face-to-face interaction cannot be provided in an online environment, it is necessary to provide a similar perception or feeling, the concept of a social presence that establishes elements of a learning environment for academic exploration and high-level interaction (Park, 2020). The researchers found that social presence creates a sense of intimacy through the exchange of opinions between learners and has a positive impact on learning outcomes. Furthermore, as online learning progresses, the amount of social information among the learners increases. This is positively

correlated with learning outcomes, suggesting that social presence can be a reason for improved learning outcomes (Kim, Son, Lee, Jeung, Jang & Lee, 2020).

Meanwhile, social presence is also understood as a sense of coexistence, influence, and cohesion, which provides a foundational process for learners to identify relationships with others and the communities that learners identify in the learning process. Especially in web-based learning, social presence increases intimacy between learners, which has a positive effect on academic satisfaction and plays an important role in achieving learning outcomes (Lee & Yun, 2012). Defining social presence as the degree of presence of an individual participating in the communication to the object with which it is communicated can also be broadly interpreted as the social relationship with the communication object, the degree to which people perceive others in the interaction, and find that each person is very sensitive to social presence. Here the perception of the senses is different, and such a difference plays an important role in the interaction (Kim & Cho, 2012).

2.2. Cognitive Presence (CP)

Cognitive presence is an element that reflects the knowledge experienced in the learning process. It is an essential element of authentic experience. The difficulty forming a high-level cognitive existence also supports such a notion that it is distinct from interaction. While it is true that cognitive presence is based on interaction, the simple exchange of information or the sharing of opinions does not necessarily produce presence. In addition, when interaction is structured and systematized as a communication characterized by reflective thinking and critical discourse, it may require a cognitive presence (Garrison & Cleveland, 2005).

2.3. Emotional Presence (EP)

Emotional presence refers to a kind of personal presence that allows users to freely express their emotions and feel comfortable through them via online or mobile communities. EP is defined as the degree to which learners become aware of themselves and generate positive emotions in their surroundings through contact with themselves in data and communication situations (Wang & Kang, 2006). In this sense, EP is also taken as acknowledging how much a person knows about their emotions as well as the freedom to express them in a learning situation. Within such a learning context, should EP be replaced with virtual reality, it would be interpreted as both the degree to which users can freely feel and express emotions and the degree of expression they feel when using digital media (Han, 2019).

2.4. Learning Satisfaction (LS)

Learning satisfaction, the most widely used primary measure of learning performance, refers to the learner's response to the satisfaction of the learners participating in the course with their learning. In the online learning environment, learners must learn independently. If they are satisfied with the education, the motivation to actively participate in learning will increase because the learning can achieve educational purposes. This is considered an important variable to measure learning performance (Joo, Ha, Yoo & Kim, 2010). LS is an important factor in acquiring knowledge as it allows learners to directly examine learners' responses to the classroom instructions and to know that learning satisfaction in an online learning environment is important for the improvement and development of effective teaching and other online education as well (Jeon & Yoo, 2020)

2.5. Learning Readiness (LR）

Learning readiness (e-Learning readiness) refers to the readiness of learners to be able to learn successfully in a learning environment because the learning opportunities provided by e-learning are the skills, cognitive strategies and motivations suitable for the new learning environment. This increases the chances of successful learning (Watkins, Leigh & Triner, 2004). Learning readiness includes the hardware readiness needed in terms of learning and of the status readiness for online communication and learning skills.

3. RESEARCH METHOD

The research method in this paper includes three parts: research model, research hypothesis, and the composition of the research objects and variables.

3.1. Research Model

The present researcher attempts to illustrate the learning process experienced by Chinese university learners in an online environment through presence, and to correlate learning outcomes with learning presence so as to verify the relationship between/among factors. In this study, of the three factors of learning presence recognized by Chinese university learners: SP, EP and CP, SP is the main factor. It is assumed that learners' satisfaction as a representative in terms of the relationship between learning outcomes.

The present research examines the appropriateness of the relationship between learning presence and learning outcomes in Chinese college students' online learning in the following:

To examine how SP, as an independent variable, affects other factors of LP, and ultimately affects learning outcomes;

To examine and compare how EP and CP, as mediators, affect desired learning outcomes, and

To examine whether the adjustment of learning readiness affects the relationship between presence and school effectiveness.

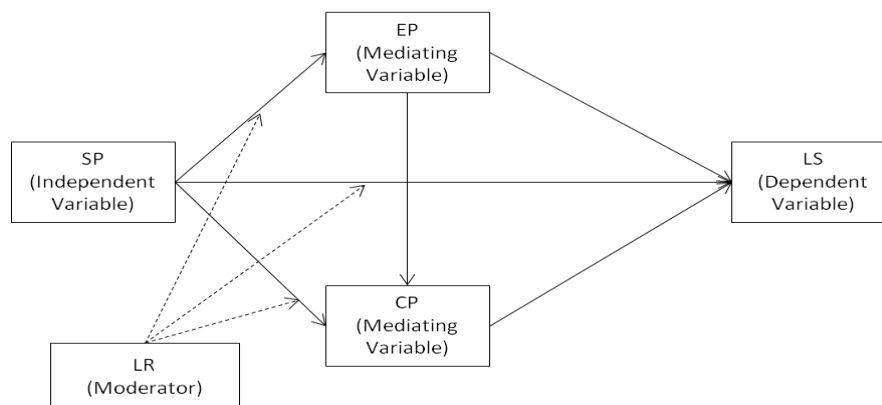The research model designed shown in Diagram.1 below.

Diagram1. *Research Model*

3.2. Research Hypothesis

In the research model, social presence (SP) is used as an independent variable, emotional presence (EP) and cognitive presence (CP) are mediating variables, learning readiness (LR) is a moderating variable, and learning satisfaction (LS) is a dependent variable. Therefore, the research hypotheses are formulated as what follows:

Hypothesis 1: SP affects learning satisfaction.

Hypothesis 2: CP and EP act as a mediating role between SP and LS.
Hypothesis 3: LR will moderate the relationship between SP and LS.

3.3. Research Subjects and Variables

The subjects of this study are Chinese college students who take selected elementary Korean courses on the designated online learning platform, with no specific major and grade limit required. The prerequisite for answering the research questionnaire is that subjects have learnt offline no less than 8-hour preparation course. A total of 189 valid questionnaires were collected from these learners. Empirical studies (Wang & Kang, 2006; Kim & Kang, 2010) and the measurement tool of Shin and Chan (2004) were taken as reference.

The learning satisfaction in the present study is defined as the overall satisfaction of learners with online learning (see 2.4); Learning readiness refers to the measurement tool of Kim, Moon, and Par

K (2015). Based on the measurement tools validated in the pilot study, the author remodified and constructed the variables to suit the purpose of the present study, as diagrammed in Figure 2.
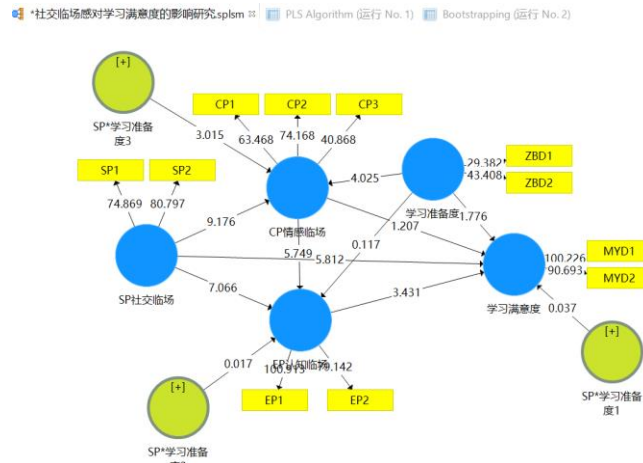

Figure2. *The model constructed by the author*

Where five factors were specified, namely social presence (SP), emotional presence (EP), cognitive presence (CP), learning readiness (LR) and learning satisfaction (LS). SP was used as an independent variable, EP and CP were used as mediating variables, LR was used as a moderator variable, and LS was used as a dependent variable (3.2.).

3.4. Questionnaire and Discussion

In order to ensure the reliability and feasibility of the study, the author designed a questionnaire using the 5-Likert scale, and conducted exploratory factor analysis on the 14 dimensions that the questionnaire might construct, as shown in Figure 3. The analysis of the data collected by the questionnaire is shown in Table 1 below.

Table1. *KMO and Bartlett Test*

KMOand Bartlett's Test		
Kaiser-Meyer-Olkin Measure Sampling Adequacy		.927
Bartlett's Test of Sphericity	Approx. Chi Square	1993.848
	df	91
	Sig	.000

From Table 1 above, we can see that the KMO value is very close to 1, indicating that the questionnaire we designed is very suitable for factor analysis. Another thing that draws our attention is the scree plot obtained from the questionnaire data, as shown in Figure 3, where goes the curve trend of the scree plot of this questionnaire.
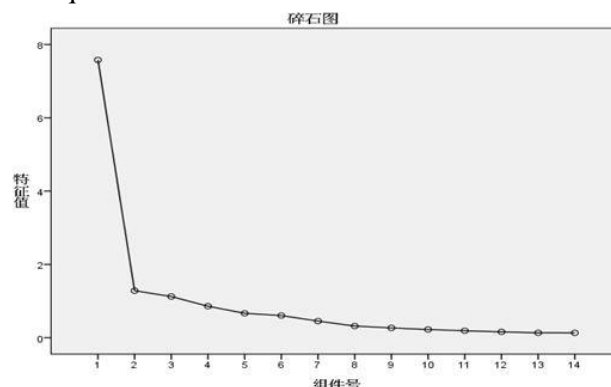

Figure3. *The scree plot of possible factors in the questionnaire*

We know that in exploratory factor analysis, the scree plot shows the possible number of dimensions constructed in the questionnaire designed. As shown in the figure above, of the 14 dimensions we constructed, starting from the seventh one on the abscissa, the curve tends to be gradually smoother downward. Our interpretation is that there may exist certain correlations between many variables in these dimensions we constructed, resulting in overlapping information, so that the latter dimensions become inconspicuous. Or we can also understand that more dimensions than necessary were set while the fewer factors under each dimension were specified.

4. ANALYSIS RESULTS

4.1. Reliability Test

In the reliability analysis of this study, both the Cronbach's Alpha value and the combined reliability exceeded 0.7. Therefore, the reliability can be confirmed (Fornell & Larcker 1981). Table 1 below shows the results.

Table1. *Reliability and Convergent Validity Test*

	Observed variable	Factor loading	Cronbach's Alpha	Combined r	Average Variance Extraction （AVE）
SP	SP1	0.94	0.865	0.937	0.881
	SP2	0.94			
CP	EP1	0.95	0.884	0.945	0.896
	EP2	0.94			
EP	CP1	0.91	0.904	0.94	0.838
	CP2	0.94			
	CP3	0.90			
LS	S 1	0.96	0.911	0.957	0.918
	S 2	0.96			

4.2. Validity Test

To verify the convergent and discriminant validity of the variables used in the study, the authors performed confirmatory factor analysis (CFA) using the PLS system[1]. The convergent validity of the PLS-based structural equation approach can be confirmed by factor loadings and standard errors (Hair, Ringle & Sarstedt, 2011). As shown in Table 1, the factor loading is above 0.7, the average variance extraction (AVE) value is above 0.5, and the combined reliability value is confirmed to be above 0.7. Meanwhile, in order to verify the discriminative validity, the AVE square root value and correlation coefficient value of each variable were compared, as shown in Table 2 below. The square root value of AVE is higher than the value of correlation coefficient between latent variables, and discriminant validity is judged to be valid (Fornell & Larcker, 1981).

Table2. *The Analysis of Discriminative Validity*

	EP	CP	SP	Satisfaction
EP	0.916*			
CP	0.827	0.947*		
SP	0.762	0.846	0.939*	
LS	0.776	0.843	0.863	0.958*

* AVE

4.3. Structural Equation Analysis Results

Structural analysis was carried out using the PLS algorithm. According to Hu and Bentler (1999), the Standardized Root Mean Square Residual (SRMR) value is an absolute measure that can be evaluated as a model fit criterion. The SRMR value was 0.054, which was lower than 0.08, and was judged to be

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[1]PLS,i.e. Partial Least Square, is the latest achievement of partial least squares analysis and development of structural equation model analysis, forming a statistical analysis method of PLS-SEM. The latest version of Smart PLS software is Smart PLS3.0.

suitable. Apart from this, by examining whether there exists multi-collinearity among the analytical latent variables of the structural model, all the VIF values of LS between that of EP, CP, and SP turned out to be below the threshold value of 5 (Hair, Ringle & Sarstedt, 2011). This also confirmed that the explanatory variables in its basic assumptions are independent of each other.

4.4. Hypothesis and Testing

In this study, structural equation models were analyzed using Smart PLS 3.0 to test the hypotheses. Standard errors and t-values were calculated by the Bootstrapping algorithm using 5,000 subsamples (Kang & Hwang, 2021). Table 3 shows the resulting analytical values for the structural equation model path.

Table3. *Direct Effect Verification Results*

Paths	Path parameters	T value	P value	Results	R^2	f^2
SP ->LS	0.475	5.779	0.000	Sig		0.015
EP ->LS	0.106	1.288	0.198	InSig.	0.801	0.094
CP ->LS	0.301	3.487	0.000	Sig		0.292
SP ->CP	0.513	6.994	0.000	Sig	0.794	0.49
EP ->CP	0.433	5.699	0.000	Sig		0.312
SP ->EP	0.618	9.162	0.000	Sig	0.658	0.749

From the above table, we could see, as a direct effect of the structural equation, all are significant except the insignificant effect of emotional presence (EP) on learning satisfaction (LS). Social presence (SP) has a significant effect on LS (ß=.475, p=0.000), cognitive presence (CP) has a significant effect on LS (ß=.301, p=0.000).Our interpretation is that EP is very personal. Learners can express their emotions freely during learning. In the author's opinion, learners are aware of the emotional resonance around them through online learning situations. Such an emotional response has a herd effect, and their EP does not directly affect the judgment of the entire learning effect, but needs to judge and resonate with other learners' EP.

Table4. *Indirect and Total Effect Verification Results*

Paths	Path parameters	T value	P value	Results
SP ->EP->LS	0.066	1.218	0.223	Insig.
SP->EP->CP->LS	0.081	2.596	0.009	Sig
SP ->CP ->LS	0.154	3.405	0.001	Sig
SP ->LS（Total Effect）	0.776	16.771	0.000	Sig

As shown in Table 4, the overall effect of SP was significant through mediating variables. The indirect effect of SP on LS through CP is significant as well, but the effect of EP on LS turned out be not significant through the mediating variable, and the effect of EP on LS has, through the mediating effect of CP, significant impact on LS.

Table 3 shows that SP as an independent variable has a significant direct effect on EP and LS. The overall effect on satisfaction with learning shown in Table 4 was also significant, with a path coefficient of 0.776. SP is the degree to which learners feel and express their social roles, knowing themselves in their interactions with other learners, and develop interpersonal relationships while socializing with them. In this sense, SP is of great significance among Chinese learners, affecting cognition and emotion, and directly and indirectly affecting learning outcomes. When Chinese learners differ between their personal views and the general social cognition in online learning, their personal emotions follow the attitudes towards the learners around them and follow the public cognition, instead. Their personal emotions become blurred in the judgment of the final learning effect, thus unable to generate any direct impact.

Table5. *Moderating Variable Validation Results*

Paths	Path Parameters	T Value	P Value	Results
SP * LR ->LS	0.001	0.037	0.971	Insig
SP * LR ->EP	0.129	3.009	0.003	Sig
SP * LR ->CP	-0.001	0.016	0.987	Insig

The present research examines whether learning readiness (LR), as a moderator, moderates the relationship between SP and LS. Table 5 shows that LR is only significant for the moderating models of SP and EP. This research is an offline learning preparation process before formal online learning. The learning process includes the understanding of the network platform, the use of network tools, the preliminary understanding of Korean language and the primary pronunciation. The LR required by learners in online learning has a significant moderating effect between SP and EP, while the moderating effect between LS and CP is not significant. Therefore, it can be considered that the CP of Chinese online learners basically has a general understanding before and during the learning process, and the degree of readiness for learning cannot affect the above-mentioned cognition. A significant effect was formed under the adjustment of readiness.

5. CONCLUSION

This study analyzed the effects of SP on CP, EP, and LS. Furthermore, analyzed empirically was whether LR has a moderating effect on the above relationship. Through the empirical analysis, the following three conclusions are drawn:

At first, social presence (SP) has direct and indirect effects on learning satisfaction (LS), and the overall effect is significant. The importance of SP in online learning can be confirmed.

Next, cognitive presence (CP) is a mediating effect on LS, and EP also needs a mediating effect through CP. This means that even if the learner is either satisfied or dissatisfied with the learning process, the learning results has no substantial impact on the final LS. The final satisfaction hinges on CP.

Finally, learning readiness (LR) moderates the relationship between SP and EP, and affects LS through CP. In order to increase LS, cognitive and emotional factors need to be considered at the same time. This shows that it is imperative to strengthen training and understanding in teaching design, software and hardware operations, learning methods, etc. What is more, improving the degree of preparation before formal learning is conducive to the smooth learning process, thus to upgrade the level of learner satisfaction.

6. LIMITATIONS

Two limitations remain. The first one is that the sample size is not big enough, and the analysis results did not take into account the subjects' gender, major and grade's perception of the learning content, situational awareness, and the learner's experience in the learning situation. And no detailed analysis was presented of whether any impact on the level of perception, emotion and social sensitivity. The second limitation is that, although 14 dimensions was constructed in the questionnaire, exploratory factor analysis showed that the actual construction of the latter 7 dimensions was not obvious.

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