

A Model for Social Presence in an Online Classroom

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Abstract: In order to better facilitate the social presence in an online classroom, this study attempted to build a model for measuring social presence and its relationships with other factors in online learning based on the social cognitive theory. A total of 535 valid samples were collected and analyzed from three schools in Taiwan. The results show that user interface and mediated communication have significant influences on social presence. User interface also has positive impact on mediated communication. Moreover, this study provided evidence that social presence has significant effects on interaction performance, and then interaction performance has significant effects on learning performance.

Keywords: Online learning, online classroom, social presence, learner interaction, social cognitive theory

Introduction

From the viewpoint of social cognitive theory, social presence is an essential element to promote learner interaction, especially in the context of online learning [9]. Learner interaction refers to a dynamic sequence of social and learning actions between individuals or groups who adjust their actions and thoughts through their interactions with others [5]. Social cognitive theory considers that people learn not only through their own experiences, but also by observation, imitation, and modeling of others. It focuses on the learning that occurs within a social context. Cognitive and other personal factors, environmental events, and behavior are the three major factors which continually interact with each other [1]. Interaction encourages deep learning processes which take place when learners translate new information into engraved concepts and relate it to their life experiences. Learner interaction is also one of the main factors which affect the effectiveness of the learning process [10].

In an online classroom, learners can conduct their interaction via Internet with the help of multiple devices engaging different sensory channels, such as keyboards, mice, headsets, and webcams, for asynchronous and synchronous communication with other participants [12]. These devices allow for creation of a real atmosphere similar to a physical classroom while still retaining the flexibility and convenience of online learning. With these kinds of learning technologies, the interaction among instructors and learners can be greatly improved [7].

The perceived social presence among learners is not the same for everyone. In order to better facilitate the learner interaction in an online classroom, this study aimed to explore what factors would affect social presence based on the perspective of social cognitive

theory. Thereafter, the relationships among social presence, interaction performance, and learning performance were also measured and verified. Finally, the implications of the findings were discussed for further research directions and practical applications.

1. Research Methods

The research framework of this study is shown in Figure 1. In the proposed research framework, there are two important environmental factors, user interface and mediated communication, which would affect personal perception of social presence. A high degree of perceived social presence should have profound effects on learners' interaction behaviors [11]. In this study, the viewpoints of co-presence and psychological involvement were adopted to define social presence in an online learning environment. The second-order construct of social presence is composed of three first-order constructs, co-presence, intimacy, and immediacy [2]. A high degree of perceived social presence can help learners engage in interaction. Besides, learning performance is a major consideration in online learning. In this study, learner satisfaction and goal achievement were considered as two important factors for learning performance measurement.

Social Cognitive Theory

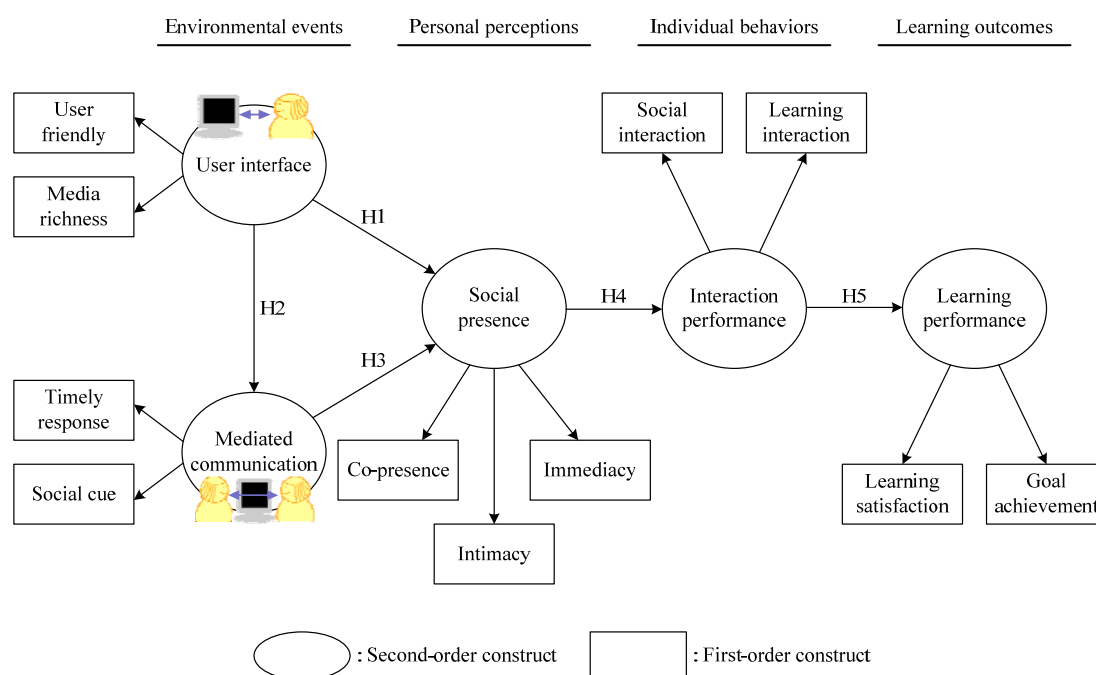


Figure 1. Research framework

Based on the proposed research framework, there are five hypotheses which are to be verified in this study. The theoretical inference and hypothesis statements are described as follows.

H1: User interface has a positive effect on learners' perceived social presence in an online classroom.

H2: User interface has a positive effect on learners' perceived mediated communication in an online classroom.

H3: Mediated communication has a positive effect on learners' perceived social presence in an online classroom.

H4: Perceived social presence has a positive effect on learners' interaction performance in an online classroom.

H5: Interaction performance has a positive effect on learners' learning performance in an online classroom.

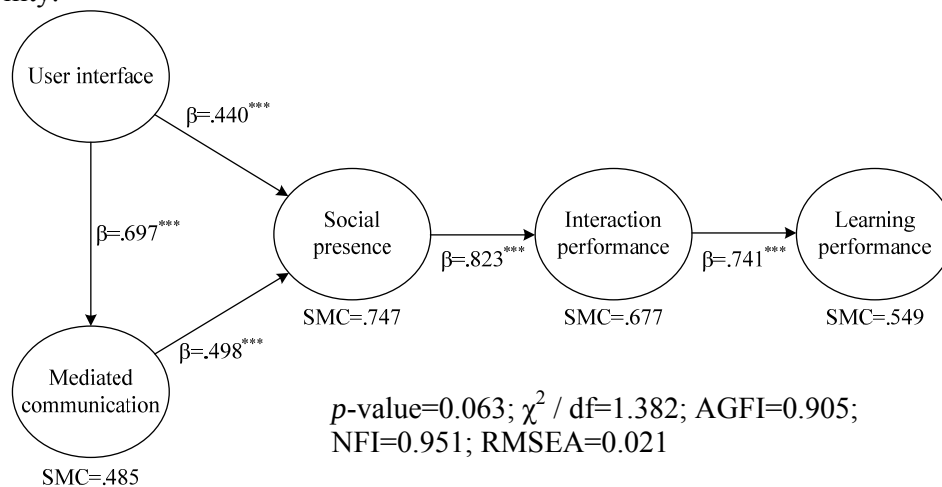
Three institutions, Sansin School of the Future, the Department of Information and Learning Technology of National University of Tainan, and the Department of Information Management of National Sun Yat-sen University, in Taiwan were chosen to participate in this study. These three institutions have been offering online learning courses for several years with good reputations.

An instrument with reliability and validity was developed for measuring the constructs. An initial questionnaire was developed to measure the constructs based on the operational definitions and was then evaluated by 10 domain experts in two rounds in order to establish content validity. After items had been carefully revised based on the domain experts' suggestions, the questionnaire was used in the pilot study to collect demographic information with a nominal scale (7 items) and to measure the degree of learners' perception (44 items) with a five-point Likert-type scale ranging from strongly disagree (1 point) to strongly agree (5 points).

The formal study was carried out with a paper-based questionnaire in one of the participants' classes. The total number of the participants who participated in the formal study was 627. Because 92 learners did not complete the questionnaire, the valid samples remained as 535 (85.53%). The number of females (50.65%) was found slightly more than males (49.35%). In terms of experience of online learning, the highest percentage (46.17%) was of those who took just one online course, followed by those who took two online courses (20.75%) and at least five online courses (20.37). The results show that there were more than 50% of the participants who took at least two online courses. There were 174 participants (32.52%) who had the experience of online synchronous learning with audio and video devices.

2. Results

Structural equation modeling (SEM) was the major method used for data analysis. The reliability of second-order constructs was assessed by composite reliability. The composite reliability must be above .70 for each construct, then, it can be considered as an acceptable internal consistency [8]. All the composite reliability coefficients are ranging from .842 to .907. The results indicate that the second-order constructs has a good composite reliability.



Note: *** $p\text{-value} < 0.001$

Figure 2. Path and squared multiple correlation coefficients in the structural model

Both convergence and discriminability were also examined for second-order constructs. All the factor loadings were higher than the criterion of .70. Moreover, the AVEs of all constructs exceeded the recommended level of .50 ranging from .727 to .817. The results indicate that the second-order constructs has good convergent validity. Discriminant validity was also assessed by the AVE method. The diagonal element for a given construct is larger than any of the correlation coefficients in the same column or row. The results indicate that the second-order constructs has good discriminant validity.

Path coefficients were estimated by maximum likelihood as shown in Figure 2. It can be seen that every path coefficient reaches the significance level of .001. The results show that the proposed framework is suitable to demonstrate the role of social presence and its relationships with related constructs in an online classroom. All hypotheses were supported.

3. Discussion

From the psychological viewpoint, this study provided evidence that social presence can be composed of co-presence, intimacy, and immediacy with adequate reliability and validity examined by SEM. It is a contribution to further research that the questionnaire developed by this study can be directly adopted to measure the perceived social presence in online learning. In an online classroom, learning technologies are necessary to support interaction and learning behaviors. When a learning environment has a friendly user interface and rich media, learners can easily share social cues with each other. Verbal and non-verbal cues are very important resources for perceived social presence. In a physical face-to-face learning environment, learners can receive immediate feedback from interactive people. Actually, both synchronous and asynchronous communications have been recognized as important factors affecting interpersonal communication [6]. In online classrooms, what communication functions should be adopted for learning activities actually depend on learners' demands. When further research attempts to explore the role of social presence in online learning, the factors of user interface and mediated communication should be considered as important predictors.

From the viewpoint of social cognitive theory, learner interaction in an online classroom can encourage deep learning processes. Social interaction helps learners to develop social relationships with a supportive atmosphere. Learning interaction is directly related to the learning processes, contents, and tasks. This study provided evidence that social presence has a high positive impact on interaction performance and learning performance with total effects of .823 and .610 respectively. It indicates that social presence is an important factor in online learning. Besides, interaction performance has a high effect of .741 on learning performance. The results conform to the findings of past studies that learner interaction is a critical factor for learning performance [4]. The relationships among proposed factors in the research framework were examined by rigorous statistical methods. Therefore, this study can be regarded as an important reference for further research.

It is important that online learners become familiar with the online learning environment in the initial learning sessions [3]. Instructors can encourage learners to prepare the equipments, such as headsets, webcams, keyboards, and mice, for transmitting social cues before an online course starts and guide them how to set up and use these equipments. Of course, instructors have to introduce the functions of an online classroom and make learners familiar with these functions. When learners understand how to use the functions, they would feel that the system is easy to use and very friendly. If the learners have ability to handle the equipments and functions to transmit cues, it will be helpful in increasing the social presence.

4. Conclusion

Summing up the prior studies about social presence, the factors affecting social presence can be sorted by human side and media side. This study reviewed the literature to find the factors which may influence social presence. These independent constructs include user friendly, media richness, timely response, and social cue. They were classified into two second-order constructs, user interface and mediated communication, to emphasize the salient features of the constructs. Social presence can be composed of three subjective perception, co-presence, intimacy, and immediacy. Both social interaction and learning interaction were employed to provide evidence regarding the importance of social presence in online learning. These two kinds of interaction have positive impact on learning performance which includes two first-order constructs, learner satisfaction and goal achievement. Social presence has positive influences on interaction performance.

In order to enhance the degree of generalization in the research results, researchers can collaborate with other institutions which engage in online learning to enlarge sample size and increase the variety of samples. Moreover, the time and frequency factors could also be considered as important factors. Researchers can carefully design an experiment to find out the variation of the perceived social presence of learners in various phases.

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