Impact of similarity between avatar and their users on their perceived identifiability: Evidence from virtual teams in Second Life platform

Vishal Midha [a,*], Ankur Nandedkar [b]

[a] The University of Texas–Pan American, 1201 W. University Dr., Edinburg, TX 78539, United States
[b] Cameron University, 2800 West Gore Blvd., Lawton, OK 73505, United States

ARTICLE INFO

ABSTRACT

Research on the application of avatars in the virtual teams is growing. In this study, we examined the effect of perceived similarity of an avatar user with his/her avatar on the perceptions of his/her identifiability within a virtual team. The study utilized a sample of 124 users actively involved in Second Life, a virtual world platform. Results of structural equation modeling utilizing the partial least squares method corroborate the hypothesis. An important contribution of this research is to inform practitioners about the critical role that users' similarity with the avatar plays in enhancing their identifiability. We draw conclusions based on the result and identify some important avenues for future research.

© 2011 Elsevier Ltd. All rights reserved.

1. Introduction

Virtual teams offer several advantages over their traditional face-to-face counterparts. For instance, in order to enhance the depth of information access and task performance effectiveness, virtual teams overcome space and time constraints which particularly limit their collocated face-to-face counterparts (McGrath & Hollingshead, 1994). They make managerial communication more efficient; reduce the expense and difficulty related to distributed work (Galegher & Kraut, 1994).

While both researchers and practitioners have acknowledged the advantages of using virtual teams, these teams also face some unique challenges. They are often formed on a temporary basis where members of the team might be characterized by high degree of anonymity or unfamiliarity (Driskell, Radtke, & Salas, 2003). This has been shown as a hindrance for organizations in effectively utilizing the expertise of individuals in such teams for delivering quality services and products (Iacono & Weisband, 1997). When the team membership is typified by anonymity, the lack of identify associated with any particular individual may lead the members to doubt the individual's expertise (Dennis, 1996). Moreover, extant research suggests that individuals working in anonymous groups believe that their group's decision are less effective, and are often less satisfied as compared to members of teams meetings face to face (Reinig & Mejias, 2004; Valacich, Dennis, & Nunamaker, 1992). Deindividuation theory suggests that anonymous computer-mediated communication, where participants lose their sense of individual identity, is vulnerable to hostile or unethical behaviors (Diener, 1980). This is due to the reduction in their sense of self-awareness and lack of control over their own behavior, which eventually triggers impulses that under normal circumstance would be restricted (Wicklund, 1975). Thus, in order to prevent problems arising due to anonymous communication, individuals supervising virtual teams would prefer team members to be identifiable. Knowledge of the identity of a particular source enhances the source credibility and accountability (Rains, 2007). Therefore, identifiability within a virtual team is crucial for effective functioning of the team.

One way to emphasize the identity salience in virtual teams is through the use of avatars. The term 'avatar', which is derived from Sanskrit language, refers to the temporary human or animal body that a deity assumes (Damer, Gold, & de Bruin, 1999). However, in the virtual world, the avatar refers to "perceptible digital representation whose behaviors reflect those executed, typically in real time, by a specific human being" (Bailenson & Blascovich, 2004). Previous research on avatars has shown that it is an effective tool for revealing the identity of individuals in the cyberspace (Belise & Bodur, 2010); nonetheless, the mechanism thorough which avatar might reflect or enhance the identity of an individual hasn't been explored. Since users have a great deal of alternatives to customize their avatars in a way that suit their needs (Ducheneaut, Wen, Yee, & Wadley, 2009; Lee & Shin, 2004), simply using an avatar may not completely reveal the true identity of a person. Thus, it is imperative that in order to enhance the identifiability (the extent to which a user can be identified) of an individual, avatars should actually reflect the people using them. Consistent with this line of reasoning, we argue that individuals will perceive themselves to be identifiable in virtual teams if their avatars are similar to themselves.

* Corresponding author. Tel.: +1 956 665 2801.
E-mail addresses: vmidha@utpa.edu (V. Midha), ankurn@cameron.edu (A. Nandedkar).

To this end, the primary purpose of the paper is to demonstrate that higher the perceived similarity of an avatar user with his/her avatar, higher will be the identifiability of the avatar user. This research has implications for virtual teams whose members are anonymous and perform their task using avatars. Rest of the manuscript is organized as follows: After presenting related works from literature, we elaborate on the experimental methods used in the study. We then present and discuss our results and findings. Finally, we highlight the implications of the study, acknowledge the limitations and draw conclusions based on our results.

2. Related work

The rapid growth in use of internet has given rise to a number of shared virtual world spaces, such as *CitySpace, ActiveWorlds, and Second Life* (Kumar, Chhugani, Kim, et al., 2008). Initially deemed as environments exclusively meant for play, virtual worlds now have earned a strong reputation within business and educational context for their applicability in distributed collaboration, virtual teamwork, and real-time simulation (Schultze & Orlikowski, 2010).

Research on the use of avatars is expanding because of their importance and utility in the virtual world applications. For instance, drawing on the research in interpersonal communication, Vasalou, Joinson, and Pitt (2007) examined the influence of user's avatar customization on their online interaction with other users. The results demonstrated that the users who customized their avatars had an increased sense of self-awareness during their interaction with other users. The study emphasized that individuals while using avatars were cognizant about themselves. Schmeil, Eppler, and Gubbler (2010) conducted an experiment to compare the effectiveness of collaborative work in virtual teams while using avatars with virtual teams using only text-based chat. Their study demonstrated that virtual teams which made use of avatars were able to share and retain knowledge more effectively. Both these studies supported the notion that individuals were more cautious in their work as well as interacting with others while using self-representative avatars as opposed to using the text-based chat.

In a similar vein, Jin and Park (2009) investigated the effects of video game players' self construal on the involvement with their avatars and the extent to which individuals felt that the avatar was their real self. Results demonstrated that individuals with high interdependent self-construal, an extent to which people identify themselves by their relationships, had more interaction with the avatars and felt that the avatars on screen were their real self when compared to people with low interdependent self construal. The study, conducted in a multiuser team based gaming environment, highlighted that individuals, while using avatars, immerse themselves completely into the environment and closely associate the avatars with their identity.

A research by Garau et al. (2003) examined the impact of avatar realism on the perceived quality of communication in a virtual world, and found evidence that avatar realism had a significant effect on the behavior of individuals. Schouten, Hooff, and Van den Feldberg (2010) used media synchronicity theory to investigate the team collaboration effectiveness in virtual worlds using avatar as compared to text based computer mediated communication. The experiment, conducted on a sample of 70 teams, showed evidence that understanding of shared information was higher in teams using avatars in a 3D virtual space. This enhanced the task performance of the team concerning consensus, satisfaction, and cohesion. Taken together, all of these studies indicate that use of avatars has a significant impact on self-awareness and behavior of individuals in the virtual space. Moreover, research suggests that in virtual worlds, individuals form impressions of other individuals based on visual cues of the target individual's avatar (Bessiere, Seay, & Kiesler, 2007; Rousseau & Hayes-Roth, 1998). If the avatar
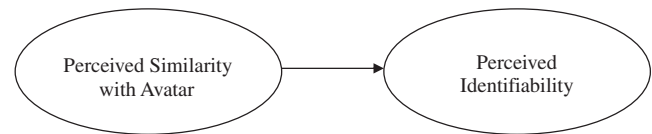

Fig. 1. The hypothesized relationship.

is chosen in a way that does not reflect one's real-self, one can perceive him/her-self to be relatively anonymous, and can deceive others (Galanxhi & Nah, 2007). Clearly, similarity between an avatar and the owner of that avatar will be associated with avatar owner's identifiability perceptions (Fig. 1).

3. Method

3.1. Sample and procedures

A web based questionnaire was utilized to collect data for this study. Requests for participation in an interactive problem solving group activity were sent to 250 Second Life users. The survey questionnaire was hosted online on a third party website where no personally identifiable data was collected from any of the respondents. As suggested by Dillman (1978), we explained the focus of the study to the respondents emphasizing the importance of their participation and confidentiality of their responses on the welcome page. This was done to improve the quality of data and the response rate. The participation in the study was voluntary and the participants were allowed to withdraw participation at any time during the process of filling out surveys. A total of 124 usable responses (response rate = 49.6%) were received. Our sample had a fair mix of gender with males and females. The mean age of the respondents was approximately 24 years, ranging between 18 and 49 years.

3.2. Measures

Scales used in this study were based on the existing literature and were measured using a five point Likert type scale ranging from 1: Strongly Disagree to 5: Strongly Agree. Identifiability was assessed using six items which were adapted from Pinsonneault and Heppel (1997). The items were: '*I believed that my team members could identify me through my avatar,*' '*I believed my avatar had distinguishing characteristics that allowed other team members to identify me,*' '*I believed that I did not know my team members well enough to identify them through their avatars,*' '*I believed it was possible to identify other team members based on their personal characteristics,*' '*I recognized most of the team members through their avatars,*' and '*I believed the group of participants was large enough that it was impossible for anyone to identify my avatar.*'

In order to measure perceived similarity, the current study adapted items developed by Jin (2010). The items of the scale were: '*The avatar I created reflects who I am,*' '*I can identify with the avatar I created,*' '*I feel personal connection to the avatar I created,*' '*I consider the avatar I created the way that I want to present myself to others,*' and '*The avatar I created suits me well.*' In addition, we controlled for participants experience with *Second Life* (*SL*) platform through their frequency of use.

3.3. Data analysis technique

Data were analyzed using SmartPLS which is a partial least squares (PLS) structural equation modeling (SEM) tool. PLS is a robust second generation multivariate technique for analyzing causal models involving multiple constructs with multiple observed items (Fornell, 1982). PLS uses a combination of principal components analysis, path analysis and regression to simultaneously