

An Exploratory Study on Avatar-Self Similarity, Mastery Experience and Self-Efficacy in Games

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Abstract— In virtual worlds, users create their own disembodied characters called avatars. They project themselves through avatars, altering their physical appearances. Despite the recent increasing interests in avatar and self relationship and its psychological aftermath, not much research fully illustrates about the motivations and the consequences. This paper mainly discuss about avatar-real self and self-efficacy of MMORPG players. A total number of 675 South Korean game players participated in an online survey. We explored the relationship between avatar-self similarity and game players' performance. Also, we explored the relationship between mastery experience and players' general self efficacy. The results showed that avatar-self similarity affected the mastery experience and mastery experience influenced players' general self-efficacy. In conclusion, we added a layer of explanation of reasons of avatar-self similarity and its attitude or behavior changes. In terms of self-efficacy, more serious implications of playing online games are also suggested.

Keywords— Online Games, Avatar, Self, Similarity, Mastery experience, Self-efficacy

I. INTRODUCTION

A variety types of virtual environments offer users more chances of creating their own avatars. Especially in games, it is quite natural for one to develop an avatar and interact with others via his disembodied virtual body. In the stream of recent flourishing academic interests on avatar and self relationship, there are a number of papers discussing avatar issues. However, researchers still struggle with the question of what motivations have led people to develop certain types of avatars, what consequences have followed in real life and why.

The most interesting question will be the relationship between the avatar in a virtual world and the self in a real world: under what circumstances, what kind of results players get by using the virtual body? One of interesting research outcomes is Bailenson's 3D virtual self studies [1][2]. His research team found that virtual perception or behavior does influence real life perception or behavior. Generally, people have taken for granted the concept that the real life experience affect their virtual life such as internet

activity including online gaming. Recent rich virtual activities have broadened out our lifestyles so that we are getting reverse ideas that virtual experience are also very influential to our real life.

Then, where would be a nice place for us to live another life? One of the most appropriate answers might be an online game world. In games, we literally transform our physical bodies into virtual bodies. When people play online games, they visually project themselves via avatars and socially interact with others [3]. In order to achieve what they want and be socially interactive, they carefully choose or create their own looks. Some people choose radically different look. And others try to develop as similar as possible to their look. The rest of them might remain somewhere between the spectrum [4].

We focused on game players' similarity of avatar-real self and its real performance. Is an avatar capable of bringing changes into our real life attitudes or behaviour? Does physical similarity of avatar-real self affect mastery experience? If so, does physical similarity of avatar-real self affect general self efficacy? We assumed that the more people feel like their avatars similar to themselves, the better performance they would show. In addition, we also found that such mastery experiences in game will influence player's general self-efficacy.

II. LITERATURE REVIEW

A. Avatar-Self Similarity and Mastery experience

Appearance of avatar is an interesting research issue and recent number of studies reflects academic interests from many fields. Most of them discuss about ones' response, reaction, and judgement to those visual representation in virtual worlds [5]. Other stream of research focused on avatar's anthropomorphism (i.e., human versus non-human form), physical attractiveness, and different perceiving behavior of the users [6]. Users' motivation of creating an avatar and the level of visual reproduction of oneself was researched by many researchers.

Especially in game studies, avatar issues usually were solely investigated from in-game experiences or in-mastery experiences of players. Several experimental studies were

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designed only to look at the relationship between instant avatar watching and reaction which was required for instrumental settings. However, there has been limited research about avatar-self similarity and actual in-mastery experiences. If we find any interesting exploratory relations between those two constructs, it will provide one explanation of what type of experiences users go through under what kinds of circumstances.

B. General Self-efficacy

Self-efficacy is defined as “people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” by Bandura. According to Bandura, self-efficacy beliefs shapes how people feel, think, motivate themselves and behave [7]. It has been widely known that a strong sense of efficacy enhances human accomplishment and individual well-being in many other areas. Many studies in a variety of academic fields have explained the validity of self-efficacy. For example, there is a study elaborating people who have high self-efficacy tend to challenge tasks regardless of difficulty: they tried to put more cognitive effort in it than those who have relatively low self-efficacy [8].

General self-efficacy (GSE) means domain-general self-efficacy. GSE can be applied for general situations rather than specific situations. Task-specific self-efficacy (TSSE) refers to certain situations or tasks so that it is rather a limited construct compared with GSE. Computer self-efficacy is one of good examples of TSSE. Once self-efficacy is enhanced from a specific task/situation, the newly established self-efficacy can be applied to more generalized situations. Bandura said that “improvements in behavioral functioning transfer not only to similar situations but also to activities that are substantially different from those” [9].

C. Mastery Experience and General Self-efficacy

According to Bandura, self-efficacy is constructed by four sources: mastery experience, vicarious experience, verbal persuasion and arousal/physiological affective states [7][9]. Those four main sources of information consist core concept of self-efficacy. Bandura said that “Performance accomplishments provide the most influential efficacy information because it is based on personal mastery experiences” [10] In this paper we solely focused on only one source, mastery experiences which means positive accomplishment in online games.

In game play, we can replace mastery experience with replaced by positive successful experiences such as accomplishing missions/tasks, defeating monsters and achieving valuable items/score/level etc. As a number of research underpin, virtual experience does affect real life beliefs, attitudes and even behaviors. If so, we can assume that mastery game experiences will influence self-efficacy in reality. There has been many works on computer usage history and computer game self-efficacy.

However, there are not much work done in self-efficacy especially related to computer game studies. Few papers investigated game use and self-efficacy. Resalind Thomas et

als. used a interactive computer game “Life Challenge” as a tool for HIV/AIDS education for youth [11]. They confirmed that using an interactive tool helped subjects to better understand information and increase their self-efficacy at the same time. George et al compared the efficiency between using game simulation and general case study in strategic management course. The results showed that game simulation was statistically significant in terms of increasing self-efficacy [12]. Through this paper, we try to confirm that the mastery experiences in online games would influence general self-efficacy.

III. RESEARCH QUESTION

In this paper, we asked the player’s conception on physical similarity between the avatar and the real self. We also asked about player’s general self-efficacy. What we tried to do was to find the relationship between the similarity perception and self-efficacy. In other words, we assumed that creating an avatar similar to player’s real self will somehow influence his/her general self-efficacy. In terms of avatar attachment, a player whose avatar looks similar to oneself, he/she might believe the avatar performs better. To answer those research questions, we developed hypothesis as below.

RQ1: Players’ Avatar and real self similarity in appearance will influence player’s mastery experience.

RQ2: Players’ mastery experience will influence players’ general self-efficacy.

IV. METHODOLOGY

D. Survey Design

We executed an online survey to collect data in 2009. A total number of 679 South Korean college students from 19 to 25 years old, who experienced MMORPGs (massively multiplayer online role-playing games) within last 6 months participated in the survey (average age, $M = 22.18$, $SD = 2.19$). Total 675 samples were used for final data analysis. Of the 679 respondents, 56.1% (379) were males while 43.9% (296) were female. General demographic information such as age and gender, game experience, avatar questions, self-efficacy and other psychological construct were asked. Also, we asked about players’ daily and weekly gaming hours and their any game community activity. The average time to complete a questionnaire was under 20 minutes.

E. Measures

A. Avatar-Self Similarity Question: In order to find game players’ perceptions on their own avatars, we asked one question: Do you think your avatar is similar to your actual appearance? The questions used a 10-point Likert scale ranging from 1 (strongly disagree) to 10 (strongly agree).

B. Mastery experience: We asked participants about their actual mastery experiences in general when playing

MMORPGs: When playing MMORPGs, I often execute good performance including such as accomplishing missions/tasks, fighting over monsters or being leveled up etc. The questions used a 7-point Likert scale ranging from 1 (strongly disagree) to 10 (strongly agree).

C. General Self-efficacy Scale: General self-efficacy (GSE) was measured by the scale developed by Chen, Gully, & Eden [13]. Among Chen, Gully & Eden's GSE scale, we have selected 7 items and according to the validity test results, Cronbach's Alpha was .954. This figure is relatively high level so that the scale proved its validity as a short version of GSE scale. The GSE scale used a 7-point response format ranging from 1 (strongly disagree) to 7 (strongly agree) in which a higher score means stronger agreement.

V. RESULTS

F. Avatar-Self Similarity and Mastery experience

SPSS 12.0 was used for analysis. In order to confirm our first assumptions, we divided sample in group. The mean score ($M = 4.09$) of avatar-self similarity question was used as a reference point to split the sample into two groups. High avatar-self similarity group was over 4.05 and low group was under 4.09. Then we compared the two groups' mastery experience figure.

According to the t-test, the results exhibited that high avatar-self similarity group showed higher average mastery experience score (6.98) than low avatar-self similarity group (6.74). RQ1 was supported and it means the more players create their avatars similar to their self, the better performance they showed statistically.

Table 1. Avatar-Self Similarity and Mastery experience (T-Test)

Avatar-Self Similarity	Mastery experience			t value
	N=675	M	S.D.	
High	300	6.98	1.77	-1.635 ***
Low	375	6.74	2.11	

G. Mastery experience and General Self-efficacy

In this case we also used the mean score ($M = 4.25$) of mastery experience question was used as a reference point to split the sample into two groups. High avatar-self similarity group was over 6.84 and low group was under 6.84. We compared the two groups' general self-efficacy.

Table 2 is t-test results showing that the high mastery experience group relatively had a higher average general self-efficacy (5.31) than the low performance group play group (5.20). RQ2 was also supported and this result explains that the more successful game play they achieved in gaming, the higher general self-efficacy they have than those relatively unsuccessful cases.

Table 2. Mastery experience and General Self-efficacy (T-Test)

Mastery experience	General Self-efficacy			t value
	N=675	M	S.D.	
Successful	392	5.51	0.99	-6.967 ***
Unsuccessful	283	4.90	1.22	

VI. CONCLUSION

This paper explored game player's avatar-self similarity and how it affect the actual game performance. From this finding, we can assume that when players' feel their avatars closer to themselves, it somehow brings better performance in gaming. One of the possible ways to understood the result is identification or emotional attachment between the avatar and the user. There should be a follow-up research to produce more compelling findings. We also examined the mastery experience and its possible impact on general self-efficacy. It means mastery experience in gaming can possibly enhance general self-efficacy. Online games have potential for players to be encouraged by mastering challenges. Games are designed for players to balance well between the mastery and challenge.

According to Klimmt and Hartman, "the design of typical computer game is therefore able to address the self-efficacy factor in players' motivation processes." Game design inherently provides players' mastery experiences to shape game-specific efficacy expectations [14]. This current paper suggested an empirical evidence that explains the mastery in-game experiences and its possible self-efficacy enhancement. This finding provides a meaningful insight on positive effects of gaming experiences in terms of improving self-efficacy. It shows that there would be useful way of playing games for our psychological development and personal well-being as well.

Despite of the current paper's findings, there are several limitations. In case of RQ1, we suggested an exploratory assumption, and it needs stronger link and theoretical background when it comes to avatar-self similarity. Meanwhile, RQ2 was relatively a meaningful question and interesting issue finding for further research. In this paper, we used very few simple questions for analysis, however, in the next line of research we might be able to fully use more scales in the questionnaire with more solid hypotheses. Since we conducted an online survey and responses largely relying on self-reporting, experimental approach would fully support our assumptions.

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