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Extending the Self: Player-Avatar Relations and Presence among U.S. and Chinese Gamers

Zhenyang Luo
North Dakota State University

David Westerman
North Dakota State University

Jaime Banks
Texas Tech University

Abstract

This study investigated how player-avatar interaction (PAX) and player-avatar relationship (PAR) are associated with spatial presence, social presence, and self-presence in video games, and additionally how the associations differ between Chinese and American players. American and Chinese players were recruited to answer a survey king about these variables. The survey was translated from English to Chinese for the different samples. Regression models and ANOVA analysis were used to analyze data, and the results revealed several significant associations between dimensions of PAX and the three types of presence.

Additionally, results indicated that player-avatar relationships characterized by identity play and extension are generally associated with a higher level of presence than the other two relationship types. Cultural differences were also found, with American and Chinese players differing in how PAR associated with social presence. Thus, the present study adds more understanding to presence in video game, avatar-moderated gameplay, and cross-cultural differences in video gaming, and suggests avenues for future research.

1.   Introduction

Avatars, the representations of players in a video game environment (Banks, 2015), are important for gaming experiences and outcomes, and the connections between player and avatar can moderate such experiences and outcomes. For example, these connections have been associated with pro- and anti-social gaming motivations (Bowman, Schultheiss, & Schumann, 2012), as well as enjoyment and appreciation gaming experiences (Bowman et al., 2016) in past research. The purpose of the current research is to examine how two main player-avatar connection frameworks - player-avatar interaction (PAX), a multidimensional framework explaining underlying mechanisms of player-avatar connections (Banks & Bowman, 2016b; Banks, Bowman, Lin, Pietschmann, & Wasserman, 2019), and player-avatar relationship (PAR), a typology of ways a player can relate to his/her avatar (Banks, 2015) - are related to the experience of presence in video games. In addition, this paper takes a cross-cultural perspective to compare Chinese and American players across these relationships.

1.1. Presence in Video Games

Presence refers to a psychological state in which a mediated experience is perceived as real or authentic (Westerman & Skalski, 2010). Consistent with the general definition of presence, presence in video games refers to the psychological state in which the player perceives the video game world as real (Tamborini & Bowman, 2010). Presence is an outcome that players pursue, and industry creates (Tamborini & Skalski, 2006). It also moderates the relationship between gameplay and a variety of outcomes, such as valence and arousal dimensions of emotions (Ravaja et al., 2006), enjoyment (Skalski, Tamborini, Shelton, Buncher, & Lindmark, 2011), mood management (Tamborini & Bowman, 2010), and loyalty to the game (Tseng, Humang, & Teng, 2015). Thus, presence is an important concept for understanding the experience and outcomes of video gameplay.

Presence in video games can be categorized into three sub-types: spatial presence, social presence, and self-presence (Tamborini & Bowman, 2010). Spatial presence refers to a psychological state in which that player feels as if he/she is located in the virtual environment. Social presence occurs when virtual social actors are perceived as actual ones. Self-presence occurs when players feel like the self they are experiencing in the digital environment is the actual self. Bailey et al. (2008) reported that the level of avatar customization (i.e., avatar assigned, avatar chosen from a pool, avatar designed by players themselves) influenced the level of self-reported spatial and social presence during gameplay, and suggested that these differences resulted from different player-avatar connections due to the varied customization levels. Thus, the way that a player relates to his/her avatar might be important for understanding how a player experiences different subtypes of presence in a video game, and one important way of considering this relationship is the PAX framework.

1.2. Player-Avatar Interaction (PAX)

PAX is a comprehensive and explanatory framework for describing four underlying mechanisms of how players relate to avatars (Banks & Bowman, 2016b; Banks et al., 2019). Relational closeness (RC) addresses a player's feelings toward the avatar, which include closeness, love, and appreciation. Anthropomorphic autonomy (AA) refers to how a player perceives the avatar as a distinct social actor, such as whether the avatar has its own feelings or thoughts. Critical concern (CC) is the degree to which players tend to notice and care about the inconsistency or implausibility of an avatar and its world. Sense of control (SoC) refers to the degree to which a player feels in control of an avatar's behaviors.

These four dimensions of PAX are potentially related to the subtypes of presence in video games in different ways. For example, Wirth, Hofer, and Schramm (2012) reported that emotional involvement in a virtual environment was positively associated with spatial presence. Since an avatar

is part of the game world, relational closeness toward the avatar might also contribute to the experience of presence in the virtual environment as a whole. In addition, when a player feels in control of his/her avatar's behaviors, it is more likely that he/she can experience flow, a psychological state where the player is fully immersed without feeling bored or challenged. Jin (2011) reported that flow was positively related to spatial presence, so SoC might, potentially, relate to spatial presence as well. Thus, there is a reason to believe that differences may be found among PAX and presence; however insufficient evidence exists to help make specific predictions across all types. Thus, a general research question is proposed:

RQ1: What relationships exist among the PAX mechanisms and subtypes of presence?

1.3. Player-Avatar Relationship (PAR)

The PAX dimensions, individually or collectively, induce four types of player-avatar relationship (PAR; Banks, 2015; Banks & Bowman, 2016a): avatar-as-object, avatar-as-me, avatar-as-symbiote, and avatar-as-other. The four PAR relationships describe a continuum from nonsocial to social. When the player perceives the avatar as an object, the player-avatar relationship is nonsocial, and the player treats the avatar as merely a game piece or a tool which helps the player to achieve in-game goals; when the player perceives the avatar as him/herself, the player highly identifies with the avatar; when the player perceives as the avatar as a symbiote, the avatar is experienced as part of the player and the player is also part of the avatar; when the player perceives the avatar as another, the player and avatar relationship is social, and the player experiences the avatar as a distinct social entity.

The four types of PAR might be related to different levels of presence in video games. Past research has found that the level of spatial presence increased with the extent to which a player experiences the game world from a first-person viewing perspective (Kallinen, Salminen, Ravaja, Kedzior, & Sääksjärvi, 2007). In addition, based on the definition of self-presence, avatar-as-object and avatar-as-other relationships should associate with lower self-presence than avatar-as-me or avatar-as-symbiote relationships. These studies suggest that some differences may be found; however, again, there is not enough evidence to make specific predictions across all types, and so the following research question is proposed:

RQ2: What relationships exist among PAR types and forms of presence?

1.4. Cultural Differences in Video Gaming

It has been suggested that cultural comparisons in video game studies are important (Anderson et al., 2010; Banks et al., 2019). Notably, comparisons between Eastern and Western players in terms of gaming experience and effects have especially attracted scholarly attention. Western and Eastern players exhibit normative differences, such as gaming habits, game preference, and years of play (Colwell & Kato, 2005), and in general gaming experience and effects, such as association between gameplay and number of close friends (Colwell & Kato, 2005), gaming motivations (Kahn et al., 2015), and attitude toward immoral behaviors in video games (Jackson et al., 2008).

Furthermore, researchers reported Eastern and Western players differed in gaming experience and/or effects specifically enacted by avatars in video games. Yoon and Vargas (2016) found Eastern and Western players differ in preference for types of avatars, and tolerance for the contradictions between the avatar appearance and players' self-concepts. Based on empirical findings concerning cultural differences, it is reasonable to suggest that Western and Eastern players differ in some of the PAX/PAR and presence relationships discussed above. Following the lead of scholarly efforts to examine cultural differences, especially differences between Eastern and Western cultures, a research question is proposed:

RQ3: What differences will there be between Chinese and U.S. players in terms of the relationship between avatar relations and presence?

2.   Method

To answer the research questions above, a survey was conducted. Both an English version and a Chinese version of the survey were designed and then respectively distributed to online gaming communities in the United States and China. Thus, participants were online gamers who were members of these communities.

2.1. Structure of the Survey

Following the procedure used by Banks and colleagues (2016b, 2019), participants were asked about the name of the avatar they used the most in the last month and the name of the game the avatar was from. After that, based on the specific avatar, participants were asked to complete established metrics about PAX and PAR relational characteristics. Next, to help the players recall the last gaming experience with the avatar, an open-ended question was asked players to describe that most recent gaming experience. Then, thinking about that specific gaming experience, participants completed established metrics for felt spatial presence, social presence, and self-presence. In the end, the participants answered several demographic questions, including age, race, and gender.

2.2. Participants

In total, 175 participants filled out complete scales in the survey. Eighty-four of the participants completed the English version of the survey, and 91 filled out the Chinese version. All the participants reported meeting the two inclusion criteria: they were 18 years of age or older and actively played at least one MMOG in the last month. The reported age ranged from 18 to 70 ($M = 25.6$, $SD = 8.5$), with four people not reporting their age. Seventy-six participants (43.4%) were female, ninety-one participants (52.0%) were male, with four participants not reporting their gender and four participants reported their gender as other. Among Chinese participants, reported age ranged from 18 to 50 ($M = 22.4$, $SD = 4.4$), with four people not reporting their age; forty-four participants (48.4%) were male, 45 participants (49.5%) were female, with four people not reporting their gender. Among American participants, reported age ranged from 18 to 70 ($M = 28.9$, $SD = 10.4$); forty-eight participants (57.1%) were male, 32 participants (38.1%) were female, and four participants reported their gender as other.

2.3. Procedures for Data Collection in the USA

After Internal Review Board approval, Invitations to participate were posted in MMOG-related groups on Facebook for 5 weeks. We chose Facebook groups because they were popular among MMOG players in the USA. Groups focused on games such as *World of Warcraft*, *League of Legends*, *Overwatch*, *Blade and Soul*, and *Wildstar*, as large Facebook groups were dedicated to these games at the time of data collection (Spring 2017). For each Facebook group, the researchers requested approval from the administrator first and then posted the invitations in that group. A $100 Amazon gift card drawing was used as an incentive to encourage people to participate. Anyone who completed the survey could participate in a random drawing after data collection was finished.

2.4. Procedures for Data Collection in China

To collect data from Chinese players, a Chinese version of the survey was designed. First, the first author (fluent in Chinese and English) translated the original survey into Chinese. Then, to make sure the two versions of the survey were the same, the back-translation method was used. Two Ph.D.

students (native Chinese-speakers fluent in English) who have MMOG gaming experience translated the Chinese version of the survey back into English. Then a different Ph.D. student with parallel language competencies and gaming experience compared the original version of the survey and the new English version to look for inconsistencies between the two versions of the survey. After reviewing the feedback from that student, the researcher refined some words in the Chinese version of the survey to make sure it matched exactly with the English one. Invitations were posted in MMOG-related groups on two social media platforms - Wechat and QQ. No incentive was used to encourage people to participate.

3.   Measures

3.1. Spatial presence

Spatial presence was measured using the Spatial Presence subscale from the Temple Presence Inventory (Lombard et al., 2000). Participants responded to 12 items using a 7-point scale (1 = not at all, 7 = very much). Example items include 'How much did it seem as if you could reach out and touch the objects or people you saw/heard?' and 'To what extent did the experience seem more like looking at the events/people on a movie screen or more like looking at the events/people through a window?' This cross-media measurement of spatial presence has been found valid and reliable in past research (Skalski et al., 2011), and had excellent reliability (α = .90) in the present study.

3.2. Social Presence

Social presence was measured with the social richness subscale from the Temple Presence Inventory (Lombard et al., 2000). Participants answered 7 semantic differential items on a 7-point scale, and example anchors included 'unemotional/emotional,' and 'dead/lively.' The scale had good reliability (α = .84) in the present study.

3.3. Self-Presence

Self-presence was measured using the Self-Presence Questionnaire (Ratan & Hasler, 2009). Participants answered 6 items using a 7-point scale (1 = not at all, 7 = very much). Example items include 'When playing the game, how much do you feel your avatar is a part of your body?' and 'When happy events happen to your avatar, to what extent do you feel happy?' This scale had good reliability (α = .87) in the present study.

3.4. Player-Avatar Interaction

Player-avatar interaction was measured by mixing the player-avatar interaction (PAX) scale (Banks & Bowman, 2016b) and the common player-avatar scale (cPAX; Banks et al., 2019). Specifically, AA was from PAX, CC was from cPAX, SoC was from cPAX, and RC was from PAX. All of the 18 items were on a 7-point scale (1 = strongly disagree, 7 = strongly agree), and the scale had good reliability (α = .80) in the present study.

3.5. Player-Avatar Relationship

The player-avatar relationship was measured by a multi-choice question which is based on the player-avatar relationship typology (Banks & Bowman, 2016b). There were four choices: 'This avatar is merely an object on a screen.', 'This avatar is me.', 'This avatar and I are part of each other.', and 'This avatar is a separate being.'

4.   Results

To answer RQ1 and corresponding cultural comparisons in RQ3, three multiple regression models were constructed, and for each regression model, three models were generated (see Table 1-3). In model 1, one subtype of presence was entered as the dependent variable, and the four dimensions of PAX were entered as independent variables. In model 2, the country was added as a dummy variable, with American gamers serving as the reference group. In model 3, cross-product terms testing the interaction of relational closeness and country, sense of control and country, critical concern and country, and anthropomorphic autonomy and country were entered.

As for spatial presence (see Table 1), in Model 1, the results revealed that RC (b = .29, p = .000), CC (b = .15, p = .037), and AA (b = .18, p = .025) were positively associated with spatial presence. The nested F-statistic comparing Model 1 to Model 2 was not significant (ΔF = 3.52, p = .063). Model 3 was not a significant improvement over Model 2 (ΔF = .21, p = 0.933) either. This indicated that country did not influence the relationships significantly.

Table 1: Regression Model Predicting Spatial Presence with PAX, Country, and Cross Product as Independent Variables

	Model 1		Model 2		Model 3	
	b	p	b	p	b	p
Intercept	-.28	.686	-.64	.362	-.32	.777
RC	.29	.000	.30	.000	.28	.010
SoC	.12	.119	.14	.066	.10	.448
CC	.15	.037	.16	.026	.18	.087
AA	.18	.025	.16	.058	.19	.098
China			.13	.063	-.07	.946
USA						
RC * country					.28	.782
SoC * country					.46	.650
CC * country					-.24	.814
AA * country					-.45	.651
F	12.88	.000	11.16	.000	6.18	.000
F change			3.52	.063	.21	.933
R^2	.23		.25		.25	
R^2_{adj}	.21		.23		.21	

Note. RC = relational closeness, SoC = sense of control, CC = critical concern, AA = anthropomorphic autonomy.

As for social presence (see Table 2), in Model 1, the results indicated that none of the four PAX dimensions associated with social presence. The nested F-statistic comparing Model 1 to Model 2 was not significant (ΔF = 2.81, p = .095). Model 3 was also not a significant improvement over Model 2 (ΔF = 1.55, p = .190). This indicated that the country did not influence the relationships significantly.

Table 2: Regression Model Predicting Social Presence with PAX, Country, and Cross Product as Independent Variables

	Model 1		Model 2		Model 3	
	b	*p*	*b*	*p*	*b*	*p*
Intercept	3.50	.000	3.17	.000	2.76	.014
RC	.11	.199	.11	.178	.15	.210
SoC	.06	.476	.08	.333	.06	.657
CC	.04	.604	.05	.520	.06	.595
AA	.05	.610	.02	.834	.18	.154
China			.13	.095	.54	.346
USA						
RC * country					-.14	.695
SoC * country					.07	.893
CC * country					-.01	.971
AA * country					-.43	.058
F	1.19	.32	1.52	.185	1.55	.136
F change			2.81	.095	1.55	.190
R^2	.03		.04		.08	
R^2_{adj}	.00		.02		.03	

Note. RC = relational closeness, SoC = sense of control, CC = critical concern, AA = anthropomorphic autonomy.

As for self-presence (see Table 3), in Model 1, the results revealed that RC ($b = .52$, $p = .000$) and SoC ($b = .18$, $p = .008$) positively associated with self-presence. The nested F-statistic comparing Model 1 to Model 2 was not significant ($\Delta F = .09$, $p = 768$). Model 3 was not a significant improvement over Model 2 ($\Delta F = .85$, $p = .498$). This indicated that country did not influence the relationships significantly.

Table 3: Regression Model Predicting Self-Presence with PAX, Country and Cross Product as Independent Variables

	Model 1		Model 2		Model 3	
	b	*p*	*b*	*p*	*b*	*p*
Intercept	-1.33	.055	-1.27	.079	-1.14	.320
RC	.52	.000	.52	.000	.62	.000
SoC	.18	.008	.18	.010	.13	.247
CC	.08	.231	.08	.242	.00	.991
AA	.07	.325	.08	.308	.08	.422
China			-.02	.768	.02	.968
USA						
RC * country					-.43	.142
SoC * country					.15	.717
CC * country					.28	.237
AA * country					-.04	.836
F	27.19	.000	21.65	.000	12.36	.000
F change			.09	.768	.85	.498
R^2	.39		.39		.40	
R^2_{adj}	.38		.37		.37	

Note. RC = relational closeness, SoC = sense of control, CC = critical concern, AA = anthropomorphic autonomy.

To answer RQ2, a one-way ANOVA was used (see Table 4). The results indicated that people who identified as avatar-as-symbiote ($M = 4.28$, $SD = 1.2$) had higher levels of spatial presence than those who were avatar-as-other ($M = 3.23$, $SD = 1.14$) or avatar-as-object ($M = 2.66$, $SD = 1.16$). For social presence, people who identified as avatar-as-symbiote ($M = 5.22$, $SD = 1.21$) had more social presence than people who identified as avatar-as-object ($M = 4.50$, $SD = 1.16$). Finally, people who identified mostly as both avatar-as-me ($M = 5.13$, $SD = 1.28$) and avatar-as-symbiote ($M = 5.34$, $SD = 1.02$) had more self-presence than those who identified as avatar-as-other ($M = 3.76$, $SD = 1.13$) and avatar-as-object ($M = 3.08$, $SD = 1.41$).

A 2 (USA, China) × 4 (avatar-as-me, avatar-as-object, avatar-as-other, avatar-as-symbiote) factorial ANOVA was used to examine the cultural differences in RQ2. The results demonstrated significant differences between the two groups in terms of social presence $F(1, 166) = 4.96$, $p = .027$, $\eta^2 = .02$, but not for spatial presence $F(1, 166) = 2.03$, $p = .156$, nor self-presence, $F(1, 166) = .001$, $p = .978$. Among American players, people who identified as avatar-as-symbiote ($M = 5.32$; $SD = 1.28$) had more social presence than people who identified as avatar-as-object ($M = 4.11$; $SD = 1.13$); for Chinese players, there was no mean difference among the four types of relations for social presence.

Table 4: Reported Presence across PAR types

	Spatial Presence		Social Presence		Self-Presence	
	M	*SD*	*M*	*SD*	*M*	*SD*
1. Avatar-as-me	3.99$_a$	1.37	4.78$_{ab}$	1.29	5.13$_a$	1.28
2. Avatar-as-symbiote	4.28$_{ac}$	1.20	5.22$_a$	1.21	5.34$_a$	1.02
3. Avatar-as-other	3.23$_{abc}$	1.14	4.44$_{ab}$	1.19	3.76$_b$	1.13
4. Avatar-as-object	2.66$_b$	1.16	4.50$_b$	1.16	3.08$_b$	1.41

Note. With presence types, means with different subscripts are significantly different, $p<.05$.

5. Discussion

This study investigated the relationships between PAX/PAR and subtypes of presence in a cross-cultural sample. Aspects of PAX and PAR were significantly related to certain subtypes of presence. Significant cross-cultural differences among these relationships were also found. These results will be discussed in more detail below.

Among PAX types, relational closeness was significantly associated with both spatial and self-presence, which is consistent with the finding that emotional involvement was positively associated with spatial presence (Wirth et al., 2012). Critical concern was also associated with spatial presence, which is consistent with previous research that the suspension of disbelief was positively associated with spatial presence (Hofer et al., 2012), as critical concern is similar to suspension of disbelief. Sense of control was associated with self-presence, and this may occur because being able to control one's avatar seems likely to make it easier to identify with the avatar and treat it more as the actual self. Surprisingly, no PAX types were associated with social presence. Also, there were no differences between the American and the Chinese players. Future research can address the reasons for these findings.

For PAR, avatar-as-symbiote and avatar-as-me generally related to higher levels of all three subtypes of presence than avatar-as-other or avatar-as-object. However, there were cultural differences here, as there were no differences in social presence among the four types of relations among Chinese players. This partly goes against past research (e.g., Kallinen et al., 2007) that found that first-person perspective in a game was related to presence, as we might expect that avatar-as-me would be related

to first-person perspective as well. Future research may further investigate the reasons for the current findings.

Regarding practical significance, these findings could help the industry create more desirable gaming experiences. For example, relational closeness was positively associated with spatial presence. If higher spatial presence is preferable, game developers might consider enhancing ways to enhance the emotional connections between players and avatars to achieve the goal.

There are several limitations of this study. First, the self-reported gaming experience might not be accurate because there may be errors in people's retroactive remembrance of the experience. Second, the recruitment messages were only posted on selected social media platforms, which might cause sampling bias (excluding players who don't normally use these platforms such as age group from 60 to 70 years old). The breadth of the sample is limited due to the narrow recruitment methods used, and future research should attend to whether these patterns emerge in other gaming populations. Third, the different use of incentives across the two cultural groups might influence these results. Fourth, the mean age for the American sample was 28.9 with a standard deviation of 10.4, while the mean age for the Chinese sample was 22.4 with a narrower standard deviation of 4.4. The age differences between the two sample groups might cause differences in the cultural comparison results. However, PAX and PAR are both newly constructed frameworks, and despite these limitations, this study is among the first efforts to test their usefulness in understanding avatar-moderated gameplay, and these findings suggest that PAX and PAR have potential to help better understand avatar-moderated gameplay.

References

Anderson, C., Shibuya, A., Ihori, N., Swing, E., Bushman, B., Sakamoto, A. & Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin, 136*, 151. doi:10.1037/a0018251

Bailey, R., Wise, K., & Bolls, P. (2008). How avatar customizability affects children's arousal and subjective presence during junk food-sponsored online video games. *CyberPsychology, Behavior & Social Networking, 12*, 1-7. doi:10.1089/cpb.2008.0292

Banks, J. (2015). Object, Me, Symbiote, Other: A social typology of player-avatar relationships. *First Monday, 20*, 1-16. doi:10.5210/fm.v20i2.5433

Banks, J., & Bowman, N. D. (2016a). Avatars are (sometimes) people too: Linguistic indicators of parasocial and social ties in player-avatar relationships. *New Media & Society, 18*, 1257-1276. doi:10.1177/1461444814554898

Banks, J., & Bowman, N. D. (2016b). Emotion, anthropomorphism, realism, control: Validation of a merged metric for player-avatar interaction (PAX). *Computers in Human Behavior, 54*, 215-223. doi:10.1016/j.chb.2015.07.030

Banks, J., Bowman, N. D., Lin, J. H. T., Pietschmann, D., & Wasserman, J. A. (2019). The common player-avatar interaction scale (cPAX): Expansion and cross-language validation. *International Journal of Human-Computer Studies, 129*, 64-73. doi:10.1016/j.ijhcs.2019.03.003

Bowman, N. D., Schultheiss, D., & Schumann, C. (2012). "I'm attached, and I'm a good guy/gal!": How character attachment influences pro-and anti-social motivations to play massively multiplayer online role-playing games. *Cyberpsychology, Behavior, and Social Networking, 15*, 169-174. doi:10.1089/cyber.2011.0311

Bowman, N. D., Oliver, M. B., Rogers, R., Sherrick, B., Woolley, J., & Chung, M. Y. (2016). In control or in their shoes? How character attachment differentially influences video game enjoyment and appreciation. *Journal of Gaming & Virtual Worlds, 8*, 83-99. doi:10.1386/jgvw.8.1.83_1

Colwell, J., & Kato, M. (2005). Video game play in British and Japanese adolescents. *Simulation & Gaming, 36*, 518-530. doi:10.1177/1046878105279409

Hofer, M., Wirth, W., Kuehne, R., Schramm, H., & Sacau, A. (2012). Structural equation modeling of spatial presence: the influence of cognitive process and traits. *Media Psychology, 15*, 373-395. doi:10.1080/15213269.2012.723118

Jackson, L. A., Zhao, Y., Qiu, W., Kolenic III, A., Fitzgerald, H. E., Harold, R., & Von Eye, A. (2008). Cultural differences in morality in the real and virtual worlds: A comparison of Chinese and US youth. *CyberPsychology & Behavior*, *11*, 279-286. doi:10.1089/cpb.2007.0098

Jin, S. A. A. (2011). "I feel present. Therefore, I experience flow:" A structural equation modeling approach to flow and presence in video games. *Journal of Broadcasting & Electronic Media, 55*, 114-136. doi:10.1080/08838151.2011.546248

Kahn, A. S., Shen, C., Lu, L., Ratan, R. A., Coary, S., Hou, J., Meng, J., Osborn, J., & Williams, D. (2015). The Trojan Player Typology: A cross-genre, cross-cultural, behaviorally validated scale of video game play motivations. *Computers in Human Behavior*, *49*, 354-361.

Kallinen, K., Salminen, M., Ravaja, N., Kedzior, R., & Sääksjärvi, M. (2007). Presence and emotion in computer game players during 1st person vs. 3rd person playing view: Evidence from self-report, eye-tracking, and facial muscle activity data. *Proceedings of Presence,* 187-190.

Lombard, M., Ditton, T. B., Crane, D., Davis, B., Gil-Egui, G., Horvath, K., & Rossman, J. (2000). Measuring presence: A literature-based approach to the development of a standardized paper-and-pencil instrument. In W. IJsselsteijn, J. Freeman, & H. de Ridder (Eds.), *Proceedings of the Third International Workshop on Presence* (pp.2-4).

Ratan, R. A. & Hasler, B. (2009). Self-Presence Standardized: Introducing the Self-Presence Questionnaire (SPQ). *Proceedings of the 10th Annual International Workshop on Presence*. Los Angeles, USA.

Ravaja, N., Saari, T., Turpeinen, M., Laarni, J., Salminen, M., & Kivikangas, M. (2006). Spatial presence and emotions during video game playing: Does it matter with whom you play? *Presence: Teleoperators and Virtual Environments, 15*, 381-392. doi:10.1162/pres.15.4.381

Skalski, P., Tamborini, R., Shelton, A., Buncher, M., & Lindmark, P. (2011). Mapping the road to fun: Natural video game controllers, presence, and game enjoyment. *New Media & Society, 13*, 224-242. doi:10.1177/1461444810370949

Tamborini, R. & Bowman, N. D. (2010). Presence in video games. In C. C. Bracken & P. D. Skalski (Eds.), *Immersed in media: Telepresence in everyday life* (pp. 87-112). New York, NY: Routledge.

Tamborini, R., & Skalski, P. (2006). The role of presence in the experience of electronic games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses and consequences* (pp. 225-240). Mahwah, NJ: ErIbaum.

Tseng, F., Huang, H., & Teng, C. (2015). How do online game communities retain gamers? Social presence and social capital perspectives. *Journal of Computer-Mediated Communication, 20*, 601-614. doi:10.1111/jcc4.12141

Westerman, D., & Skalski, P. D. (2010). Computers and telepresence. In C. C. Bracken & P. D. Skalski (Eds.), *Immersed in media: Telepresence in everyday life* (pp. 63-86). New York, NY: Routledge.

Wirth, W., Hofer, M., & Schramm, H. (2012). The role of emotional involvement and trait absorption in the formation of spatial presence. *Media Psychology, 15*, 19-43. doi:10.1080/15213269.2011.648536

Yoon, G., & Vargas, P. T. (2016). I see myself through my avatar: Evidence from East Asia and North America for acculturated effects on virtual representation preference. *Asiascape: Digital Asia, 3*, 79-96. doi:10.1163/22142312-12340049