Player Identification in Online Games: Validation of a Scale for Measuring Identification in MMORPGs

Jan Van Looy	Cédric Courtois	Melanie De Vocht
MICT-IBBT Ghent University	MICT-IBBT Ghent University	MICT-IBBT Ghent University
Korte Meer 7-9-11	Korte Meer 7-9-11	Korte Meer 7-9-11
9000 Ghent, Belgium	9000 Ghent, Belgium	9000 Ghent, Belgium
+32 9 264 84 76	+32 9 264 91 54	+32 9 264 84 76
j.vanlooy@ugent.be	cedric.courtois@ugent.be	melanie.devocht@ugent.be

ABSTRACT

In this paper, we present a Player Identification (PI) scale for measuring identification in MMORPGs. Three main dimensions were derived from the literature (1) Avatar (character) Identification, (2) Group (guild) Identification and (3) Game (community) Identification whereby Avatar Identification is a second-order factor consisting of (1a) Perceived Similarity, (1b) Wishful Identification and (1c) Embodied Presence. Based on the results of a cross-sectional survey of 544 World of Warcraft players the measurement instrument's proposed factorial structure was confirmed. Subsequently, the constructs were successfully tested both for convergent and discriminant validity. Finally, evidence for nomological validity was gathered by testing ten theoretically rooted hypotheses regarding the effects of Player Identification. The results showed that Avatar Identification positively predicts Empathy, Proteus effect and the motivations role-play, customization and escapism. Group Identification predicts socializing and relationship, and Game Identification predicts advancement, mechanics and escapism.

Categories and Subject Descriptors

K.8.0 [**Personal Computing**]: General – Games

General Terms

Measurement, Reliability, Human Factors, Standardization, Theory, Verification.

Keywords

World of Warcraft, Identification, MMORPG, Avatar, Measurement Scale.

1. INTRODUCTION

In the past decade, Massively Multiplayer Role-Playing Games (MMORPGs) have become one of the most popular personal computer game genres. The best-known is World of Warcraft (WoW) published by Blizzard Entertainment with worldwide over ten million players [1]. Set in a Tolkienesque fantasy world, players create an avatar (character) with distinct characteristics (gender, race, class, faction) which they then, together with thousands of other players, lead through the virtual lands of Azeroth. They can learn various professions such as fishing, herbalism or blacksmithing; they can fight monsters, collect loot and then sell it or they can just hang around, make friends and chat. The key form of play is to go on quests which involves going to a certain area and carrying out a specific task, often killing a monster or retrieving an item. When a quest is completed the avatar receives experience points and other rewards such as virtual currency or weaponry. An implicit goal of the game is to grow or 'level' your character so that it becomes more powerful, can complete more difficult quests and earn a reputation within the community.

1.1 Identification in fiction

Research has shown that one of the main attractions of book, film and television fiction is the fact that readers and viewers become absorbed in the plot and identify with the characters portrayed. Typically, this phenomenon is opposed to the more distanced mode of reception, i.e. spectatorship, referring to a mechanism facilitating experiencing the fictional world and events 'from the inside', often through the eyes of the main protagonist [2]. Based on a literature review, Schneider [3] enumerates the following factors which have been found to increase identification: specific character types, structural features, fondness of a character, similarity between a character and a viewer and narrative. One of the primary effects of identification is empathy towards the subject of identification [4]. Moreover, Cohen [2] notes, again based on a literature review, that identifying with aggressive characters on TV increases the learning of aggressive behavior by children, that identification with celebrities who promote health messages increases their adoption and that children remember more of the actions and speech of characters with whom they identify. As a function of identification, it is often claimed that it allows for vicarious experience. Thus, by identifying with a fictional character, one can experience from a safe distance events that are socially unacceptable (e.g. violence, adultery), out of reach (e.g. space travel) or generally undesirable in reality (e.g. loss, escape) but attractive to explore cognitively and emotionally. Moreover, identification is said to allow for experimentation with one's identity by temporarily mentally becoming a famous hero, sportsman, gangster or supermodel. In doing this we are able to extend our emotional horizons and social perspectives [2].

The mechanism of identification is generally seen as a twofold phenomenon of (perceived) similarity and wishfulness [5]. Similarity Identification refers to the fact that observers tend to identify with fictional characters with whom they perceive to have common salient characteristics in terms of physical appearance,

mental constitution or social situation. Wishful Identification refers to the desire of an observer to emulate a character in general terms (as a role model for future action or identity development) or in specific terms (resolving a situation or otherwise imitating a behavior) [6]. In a sense, Perceived Similarity and Wishful Identification can be seen as two sides of the same coin. To explain this, Hefner, Klimmt & Vorderer [7] refer to the theory of self-discrepancy [8]. From this perspective, the enjoyment of identification is grounded on the reduction of self-discrepancy for the time of media exposure. A media user who perceives themselves as less courageous than they actually wish to be (high self-discrepancy on the dimension of courage) can temporarily reduce their self-discrepancy by identifying with a courageous fictional character, e.g. James Bond, and thus feel better about themselves [7]. The picture is more complex however, as, in particular cases, similarity may be disliked or dissimilarity appreciated. In these cases, people with low self-esteem search for complementarity and common negative characteristics with attractive characters or people, e.g. celebrities in tabloid magazines [9].

1.2 Identification in games

Despite the prominence of the concept of identification in traditional media enjoyment research, relatively little attention has been devoted to identification in games and no scientifically tested and validated scale for measuring it has been available. One notable exception that does take identification into account is a pilot study by Hefner et al. [7] which found a correlation between Avatar Identification and game enjoyment in the first-person shooter game Battlefield 2.[1] Also of interest in this context is the study by Ducheneaut et al. [10] which found that visitors of online virtual worlds who perceive a smaller psychological difference between their avatar and themselves are generally more satisfied with it and spend more time online. Still, this limited attention is rather surprising in view of the fact that it has often been argued in video game theory that the main characteristic distinguishing video games from other media is precisely the relation between player and avatar, i.e. the fact that the player is given an active role in the fictional world as opposed to that of a 'follower' in traditional media such as literature or film. This phenomenon is often illustrated by referring to the fact that gamers refer to their in-game identity as 'I' and their virtual surroundings as 'here' whereas readers or viewers will rarely relate in this way to a character or environment in a book or film [11-14]. In this respect, Hefner et al. [7] propose to differentiate between what they call dyadic identification in traditional media and monadic in games, referring to the close association between player and avatar (becoming one) as opposed to the more external, dualistic position of a reader or viewer. Based on this difference, Hefner et al. hypothesize but not actually prove that the identification processes between player and avatar will be less Empathy-driven than those between reader/viewer and protagonist, Empathy typically being an emotion towards an external entity. There are also similarities between games and traditional media identification, however, as a number of genres extensively embed game play in a narrative context so as to evoke an emotional bond between player and avatar [15] and this narrative embedding has been shown to have an effect on game enjoyment [3].

In this study, in addition to the traditional dimensions of identification, i.e. Perceived Similarity and Wishful Identification, we propose to add a third, i.e. Embodied Presence as a factor determining Avatar Identification. In this way, we aim to cover

the medium-specific characteristic of games that they attribute an active role to the player which in avatar-based genres induces a specific kind of identification. 'Telepresence' was first coined by Marvin Minsky [16] to describe the sense of being transported to a remote workspace of operators of teleoperating systems. Sheridan [17] adapted this notion for use in a virtual reality setting referring to it as 'virtual presence'. For the purpose of this study, however, the pure notion of (virtual) presence is problematic in that it is associated with a feeling of seeming non-mediation. This can be illustrated by referring to Lee's [18] definition of presence as '*a psychological state in which virtual physical objects are experienced as actual physical objects in either sensory or non-sensory ways.*' For Lee, presence occurs when '*users do not notice … the artificial nature of simulated objects (or environments).*' Research into the Proteus Effect in MMOs [19, 20] which will be discussed more extensively below, has revealed however that the experience of the MMO world is very much mediated, even to the extent that players adapt their behavior according to the type of avatar they are controlling. Hence we propose to refer to the feeling of presence induced by gaming as 'Embodied Presence' with embodiment being a notion that has been used in virtual reality theory to refer to the embodied nature of an experience [e.g. 21], the fact that one experiences one's environment through one's body container, and which has previously been used in relation to game experience, e.g. by Ducheneaut [10]. This allows us to maintain the connection with the notion of presence while at the same time emphasizing the fact that the experience is not unmediated but mediated by an embodied role in the game world.

1.3 Identification and social context

Until now, we have only spoken about the relation between player and avatar and how this can be described through the notion of identification. In this study we will argue that for MMOs, however, Avatar Identification is only part of the answer. Cohen [2] points to the fact that identification is not restricted to fiction but that it is a fundamental human social ability. Identifying with a group is important in the formation and maintenance of a self-identity. Moreover, when discussing the difference between play and games, Mead [22] observes that, as opposed to the solitary nature of play, participating in a game requires that a child anticipate what others will do in reaction to their actions. In doing so the child practices the ability to take on perspectives of others which eventually allows them to internalize the perspective of a generalized other, i.e. to identify with a group or community. Identification with a group strengthens one's feeling of identity and belonging to a superior group is a legitimate way of asserting self-superiority [2]. In this respect, it is also useful to return to the argument that identification with fictional characters functions as a laboratory for trying out different identities [10, 23, 24]. In addition to the medium-specific dimension of Embodied Presence, we believe that the fact that MMOs allow players to experiment with their identity in a social context is a highly relevant dimension of identification in online games. Hence we will add the dimensions of group (guild) identification and game (community) identification to the overall framework for measuring identification in MMOs. But let us first briefly look at how groups are organized in World of Warcraft.

Although interaction in WoW can occur between formally unrelated players – common friendly interactions include of course chatting but also 'buffing' (casting a friendly spell), 'kill assisting' (helping to kill a monster without expecting a reward)

and escorting a weaker character through a dangerous area – most interactions take place within a formalized group context [25, 26]. A party is a temporary group composed of two to five players formed to accomplish a short-term goal such as a quest. A chat channel between the members is used to organize movement and battle and to make arrangements for the division of loot at the end of the quest. For bigger challenges, raids are formed which can consist of up to eight parties (forty players) which are equally connected by a raid chat channel. Whereas parties and raids are groups formed for specific tasks, guilds are long-term affiliations which can consist of a handful of players to several hundred. Guilds can be loose associations or highly organized and goal-driven, almost military-like, organizations. Middle-level members can invite new players and only the highest ranks can remove them. Players can be a member of only one guild [25, 26]. In this study we will construct a measure for the degree to which players identify with their guild called 'Group Identification'. In addition there is the broader game community with which a player can identify and which constitutes a second dimension of group identification which will be referred to as Game Identification.

1.4 Identification, motivations and Proteus Effect

Since the early nineties, researchers have been interested in the motivations for online group play, first in Multi-User Dungeons (MUDs) and later in MMORPGs. Bartle [27, 28] distinguished between four types of MUD visitors: achievers (goal-oriented), explorers (discovery-oriented), socializers (social contact-oriented) and killers (annoyance-oriented). Yee [29-31] criticized Bartle's typology for its unidimensionality and proposed a more elaborate motivational framework consisting of ten first-order dimensions which grouped into three second-order motivations through further exploratory factor analysis.

- **Achievement**: (1) advancement, (2) analyzing game mechanics, (3) competition
- **Social contact**: (4) chatting and casual interactions, (5) developing supportive relationships and (6) teamwork
- **Immersion**: (7) geographical exploration, (8) role-playing, (9) avatar customization and (10) escapism

In this study, we will hypothesize that different dimensions of Player Identification can be used to predict motivations for playing MMORPGs, more particularly the following each time accompanied by a brief description:

- **Advancement:** the desire to gain power, progress rapidly, and accumulate in-game symbols of wealth or status.
- **Mechanics:** having an interest in analyzing the underlying rules and system in order to optimize character performance.
- **Socializing**: having an interest in helping and chatting with other players.
- **Relationship**: the desire to form long-term meaningful relationships with others.
- **Role-Playing**: creating a persona with a background story and interacting with other players to create an improvised story.
- **Customization**: having an interest in customizing the appearance of their character.

- **Escapism**: using the online environment to avoid thinking about real life problems.

Regarding escapism, Heffner et al. [7] note that '*it is plausible that the desire to temporarily forget (or 'leave') one's real-life problems would be fulfilled more effectively if a viewer would not only enjoy the observation of media characters, but if s/he would experience to actually become a different person for the moment.*' Further, based on Ducheneaut et al [10]'s conclusions we will hypothesize that Avatar Identification positively predicts the importance of customization as a motivation for playing.

Another successful strain of research into understanding the nature of the MMO experience is that into the Proteus Effect which is described as '*the process whereby the expectations of one person (typically referred to as the perceiver) cause another person (typically referred to as the target) to behave in ways that confirm the perceiver's expectations*' [32]. This effect was originally observed in an experiment in which male and female undergraduate students interacted by telephone. Male perceivers who believed that a female target was attractive caused her to behave in a more charming and friendly manner regardless of how attractive the target actually was [32]. Yee & Bailenson [19] made similar observations in virtual environments whereby participants with more attractive avatars exhibited increased self-disclosure and were more willing to approach opposite gendered strangers. Moreover, participants who had taller avatars were more willing to make unfair splits in negotiation tasks whilst participants with shorter avatars were more willing to accept these unfair offers. A follow-up study [20] showed that, in addition to causing a behavioral difference within the virtual environment, participants given taller avatars negotiated more aggressively in subsequent real-world face-to-face interactions than participants given shorter avatars. Peña, Hancock, & Merola [33], finally, showed that players with a black-cloaked avatar developed more aggressive intentions and attitudes but less group cohesion than those using white-cloaked avatars and that participants that were assigned a Ku Klux Klan-associated avatar wrote less affiliative stories in comparison to those employing avatars dressed as doctors. In this study we hypothesize that Avatar Identification predicts Proteus Effect.

2. SCALE DEVELOPMENT AND VALIDATION

Identification is a highly elusive concept. Several attempts have been made at defining identification with fictional characters [2, 34], but there are at least two problems with these definitions in relation to this study:

(1) they fail to grasp the specificity of identification in games
(2) they deal only with character identification whereas this study aims to include group identification mechanisms

Hence, because there is no ready definition and because an in-depth attempt to provide one would lead us away from the main topic of this study, we propose to use the broad working definition of identification as '*the degree of association between oneself and a certain role*' loosely based on Livingstone [35].

In this study we hypothesize that there are three distinct yet related roles with which a player of an MMORPG identifies:

(1) their role as a game character (their avatar)
(2) their role as a guild member

(3) their role as a member of the World of Warcraft game community

Consequently, an adequate PI measurement scale should incorporate these three facets. Based on the theory laid out above, we expect:

- **Avatar Identification** to be determined by two dimensions adopted from traditional media identification theory and one medium-specific dimension:

  (1) **Wishful Identification**: the degree to which the player desires to be more like their avatar
  (2) **Similarity Identification**: the degree to which the player sees their avatar as similar to themself
  (3) **Embodied Presence**: the degree to which the player feels as if they *are* their avatar when playing the game

- **Group Identification**, which refers to the degree to which a player identifies with their guild in World of Warcraft, to present a second distinct yet related identification dimension.

- **Game Identification** to present a third distinct yet related identification dimension referring to the degree to which a player identifies with the game World of Warcraft as a whole and the community surrounding it.

In order to verify whether the proposed Player Identification Scale measures the proposed theoretical concepts, its construct validity needs to be assessed. Construct validity refers to the *'extent to which a particular measure relates to other measures consistent with theoreticaly derived hypotheses concerning the concepts (or constructs) that are being measured* [36]. On a practical level, it is broken down into convergent, discriminant and nomological validity [37]. Convergent validity refers to the similarity that is expected between theoretically related constructs, whereas discriminant validity requires evidence of dissimilarity between unrelated constructs [38]. In contrast to these internal validity criteria, nomological validity has an external orientation, referring to the the degree to which constructs accurately predict other constructs, preferably validated in other research, within a shared theoretical model [37].

In the present study, we seek evidence for nomological validity by evaluating the previously described theoretical relation between different identification dimensions and several motivations for playing MMORPGs and between Avatar Identification and Empathy towards the avatar and the Proteus Effect respectively. Thus we propose the following hypotheses:

- H1: **Avatar Identification** positively predicts **role-play** as a motivation for playing

- H2: **Avatar Identification** positively predicts **customization** as a motivation for playing

- H3: **Avatar Identification** positively predicts **escapism** as a motivation for playing

- H4: **Avatar Identification** positively predicts **Empathy** towards the avatar

- H5: **Avatar Identification** positively predicts **Proteus Effect**

- H6: **Group Identification** positively predicts **socializing** as a motivation for playing

- H7: **Group Identification** positively predicts **relationship** as a motivation for playing

- H8: **Game Identification** positively predicts **escapism** as a motivation for playing

- H9: **Game Identification** positively predicts **advancement** as a motivation for playing

- H10: **Game Identification** positively predicts **mechanics** as a motivation for playing

3. METHOD
3.1 Procedure
From November 2009 until January 2010 WoW players were recruited via online game forums and mailing lists to participate in the present study. Due to the large number of items, the data collection was divided in two parts, each consisting of an online questionnaire. In the first phase, alongside general questions about WoW, the identification items were presented. Two weeks later, respondents willing to participate in further research were contacted to take part in the second phase of the study. This second questionnaire measured gamer motivations.

3.2 Sample
A total of (N =) 544 respondents completed the initial phase. The sample's average age is 24.17 (SD = 7.46), and the majority is male (88%). 59% of the respondents in the first phase also completed the second questionnaire (N = 323). The group of respondents differs from non-respondents for gender (respectively 85% male versus 93%, $\chi^2(1)$ = 7.8, p < .05), but not for age ($M_{resp.}$ = 24.41, $SD_{resp.}$= 7.31 versus $M_{non-resp.}$ = 23.82, $SD_{non-resp}$= 7.66, $t(542)$ = -.91, p > .50). In the analysis, we distinguish between Sample 1 (N = 323) which completed both phases and Sample 2 (N = 221), which completed the first phase but did not take part in the second.

3.3 Measures
Gamer motivations. These motivation categories are adopted from earlier research by Yee [39]. All items are measured using Likert items with variable labels. Seven motivations were included in the analysis: Role-Playing (M = 2.53, SD = .85, α = .75), Relationship (M = 2.76, SD = .91, α = .75), Socializing (M = 3.74, SD = .70, α = .70), Mechanics (M = 3.38, SD = .84, α = .78), Escapism (M = 2.83, SD = .85, α = .66), Customization (M = 2.90, SD = .98, α = .75) and Advancement (M = 3.22, SD = .80, α = .78).

Proteus Effect is measured by a 6-item sum scale (M = 2.77, SD = 1.06, α = .87), based on Yee & Bailenson [19; 20]. The items load on a single principal component, explaining 61% of its variance (Eigenvalue = 3.69). See the Appendix section for further item description.

Empathy is measured by a 4-item sum scale (M = 2.12, SD = .91, α = .75), based on Davis [40] and Cohen [2]. The items load on a single principal component, explaining 59% of its variance (Eigenvalue = 2.37). See the Appendix section for further item description.

Player Identification scale. The identification item pool consists of 29 five-point Likert items ranging from '*strongly disagree*' to '*strongly agree*'. The initial and final items (N = 28) are reported in the Appendix section.

4. RESULTS

To explore the initial item pool's factorial structure, Explorative Factor Analysis (EFA) was performed on Sample 1 (N = 323), using a Principal Axis Factoring extraction and an oblique rotation. Table 1 (on the right) summarizes the results. Primary loadings are set in bold, while values below .40 are suppressed. The results show the Perceived Similarity, Embodied Presence and Wishful Identification items share strong cross loadings, indicating substantial correlations between these three constructs. Furthermore, items with primary factor loadings below .60 are omitted from further analysis.

4.1 Confirmatory factor analysis

In the literature section, three constructs were proposed: (a) Group Identification, (b) Game Identification and (c) Avatar Identification. Avatar Identification is defined as a second order factor, consisting of (a) Perceived Similarity, (b) Wishful Identification and (c) Embodied Presence. To test for this three-factorial structure, Confirmatory Factor Analysis (CFA) through Structural Equation Modeling (SEM) is used.

The specified measurement model (figure 1, see next page) yields an acceptable goodness-of-fit on sample 1 (N = 323, χ^2/df = 2.06, CFI = .94, TLI = .94, RMSEA = .057, CI_{90} = .051, .063). Next, the model was cross-validated on sample 2, again attaining an acceptable goodness-of-fit (N = 212, χ^2/df = 1.97, CFI = .92, TLI = .91, RMSEA = .066, CI_{90} = .059, .074). Multi-group analysis including both samples indicates no significant difference between them ($\Delta\chi^2$ (21.77, p > .05)) when measurement weights, structural weights and structural covariances are constrained. This implies that factor loadings and factor structure are invariant across both samples.

Table 1. Explorative Factor Analysis (PFA) on Sample 1 (Primary loadings are set in bold; Values <.40 are suppressed)

| Item Codes	Perceived Similarity	Group Identification	Game Identification	Embodied Presence	Wishful Identification
Sim5	**.89**			.61	.59
Sim6	**.82**		-.43	.65	.59
Sim2	**.81**			.49	.48
Sim3	**.80**		-.46	.68	.60
Sim1	**.74**			.40	.42
Sim4	**.68**		-.44	.63	.60
Group1		**.91**	-.50		
Group2		**.84**	-.44		
Group3		**.74**	-.45		
Group5		**.67**			
Group6		**.65**	-.44		
Group4		**.60**			
Game2		.43	**-.80**		
Game5		.47	**-.79**		
Game3		.48	**-.77**		
Game1		.55	**-.77**		
Game4			**-.72**		
Game6					
EP3	.58		-.43	**.92**	.59
EP 2	.54			**.91**	.57
EP 1	.59			**.90**	.52
EP 4	.54			**.86**	.57
EP 5	.52			**.79**	.59
EP 6	.62		-.41	**.71**	.52
Wish2	.60		-.48	.57	**.89**
Wish1	.50			.51	**.80**
Wish3	.70		-.43	.64	**.74**
Wish4	.57		-.46	.62	**.73**
Wish5	.49		-.40	.53	**.70**
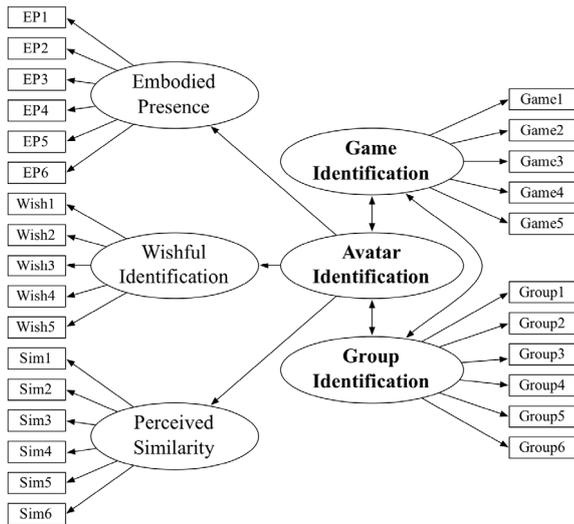
Figure 1. The three-factorial measurement model for Avatar Identification, Group Identification and Game Identification

4.2 Evidence for construct validity

Construct validity, referring to the extent to which measured items reflect the proposed latent constructs, consists of convergent, discriminant and nomological validity [37]. In the following paragraphs, we address these issues drawing upon a methodology for construct validity assessment using Structural Equation Modeling proposed by Hair et al. [41].

Convergent validity refers the degree to which items of an individual constructs share variance. Table 2 summarizes both the dimensions' variance extracted (VE) and internal consistency (coefficient α). The VE, or summed squared factor loadings, reflects the average percentage of variance a factor explains in its indicators. As a rule of thumb, a VE of .50 or higher is considered to be a fair indicator of convergence [41]. The same goes for reliability, in this case represented by coefficient α estimates. As all values exceed .70, the reliability criterion is sufficiently met.

Table 2. Variance Extracted and α coefficients

Dimensions	N items	Variance Extracted		Coefficient α	
		Sample 1	Sample 2	Sample 1	Sample 2
Avatar Identification	17	.77	.74	.96	.95
Group Identification	6	.55	.50	.88	.85
Game Identification	5	.59	.54	.86	.84

Discriminant validity. Although in classic textbooks discriminant validity is referred to as an absence of correlations between measures of unrelated constructs [38], such a clear-cut interpretation of the concept is not useful in the present study. Because all three Identification facets are conceptually related, correlations are evident. Consequently, the attention shifts to the extent to which the Identification constructs, despite their conceptual similarity, are distinct from each other. A more lenient approach to discriminant validity consists of the comparison of the identification constructs' individual variance-extracted estimates with their squared intercorrelations [42]. Table 3 shows that the VE scores are consistently higher than the squared

correlation estimates, indicating a conceptual dissimilarity between all three identification constructs.

Table 3. Squared correlations and VE comparisons

| Construct A*B | Sample 1 | | | Sample 2 | | |
	Squared correlations	VE Construct A	VE Construct B	Squared correlations	VE Construct A	VE Construct B
Game*Avatar	.14	.59	.77	.13	.54	.74
Group*Avatar	.36	.55	.77	.21	.50	.74
Game*Group	.35	.59	.55	.29	.54	.50

Nomological validity refers to the degree to which constructs accurately predict others within a shared theoretical model. As already stated in the literature section, we use Yee's [39] motivations for playing MMORPGs together with measures of Empathy and Proteus Effect to test for this validity criterion. To test for the validation hypotheses, an additional structural model was computed using data from Sample 1 ($N = 323$). The specified structural model yields an acceptable goodness-of-fit, especially considering the large number of variables involved ($\chi^2/df = 2.17$, CFI = .91, TLI = .90, RMSEA = .06, CI_{90} = .056, .065). Furthermore a resampling procedure (bootstrap) was used to calculate 95% confidence intervals (CI_{95}) for each estimate.
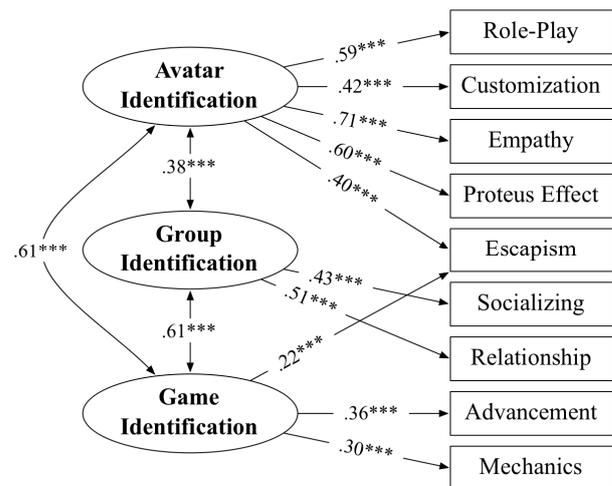

Figure 2. Structural validation model (* $p < .001$).**

The results indicate that *(H1)* Avatar Identification positively predicts Role-Play ($\gamma = .59$, CI_{95} .49, .67, $p < .005$), *(H2)* Customization ($\gamma = .42$, CI_{95} .31, .51, $p < .001$), *(H3)* Escapism ($\gamma = .40$, CI_{95} .25, .55, $p < .005$) *(H4)* Empathy ($\gamma = .71$, CI_{95} .63, .78, $p < .001$), *(H5)* and Proteus Effect ($\gamma = .60$, CI_{95} .50, .69, $p < .001$). Group Identification has positive effects on *(H6)* Socializing ($\gamma = .43$, CI_{95} .32, .53, $p < .001$) and *(H7)* Relationship ($\gamma = .51$, CI_{95} .42, .60, $p < .001$). Game Identification positively affects *(H8)* Escapism ($\gamma = .22$, CI_{95} .06, .38, $p < .001$), *(H9)* Advancement ($\gamma = .36$, CI_{95} .25, .46, $p < .001$) and *(H10)* Mechanics ($\gamma = .30$, CI_{95} .19, .42, $p < .001$).

5. DISCUSSION

This paper's results support the theoretically proposed three-factorial structure of Identification in MMORPGs consisting of Avatar Identification, Group Identification and Game Identification whereby Avatar Identification is a second-order factor consisting of three first-order dimensions, i.e. Perceived Similarity, Wishful Identification and Embodied Presence. Despite the conceptual relatedness of the different constructs, evidence is found for both convergent and discriminant validity, i.e. their indicators share a sufficient degree of variance whilst at the same time the constructs themselves are sufficiently distinct. Moreover, evidence is found for nomological validity as, consistent with the proposed hypotheses, the Identification measures offer strong predictions of Yee's [39] motivation categories and both Empathy and Proteus Effect.

Avatar Identification most strongly predicts Empathy (50% of variance explained). Hefner et al. [7] hypothesized that the identification processes between player and avatar would be less empathy-driven in games than in other media because of the monadic nature of Game Identification. This may well be true and can partly be corroborated by the relatively low mean score for Empathy ($M = 2.12$, $SD = .91$) as compared with other mean variable scores such as Proteus Effect ($M = 2.73$, $SD = 1.01$). This does not imply, however, that Empathy is non-existent in games as is shown by its strong predictability by Avatar Identification. Proteus Effect can also be predicted based on Avatar Identification ($R^2 = .36$) meaning that players who strongly identify with their avatar will also feel and behave differently when they play with another type of avatar. Moreover, players who strongly identify will more often like to role-play and create background stories about their avatars ($R^2 = .35$); they will have a comparatively stronger interest in customizing the appearance of their character ($R^2 = .18$) and they will play WoW more often to avoid having to think about real-life problems ($R^2 = .16$). This confirms Heffner et al.'s [7] hypothesis that the desire to temporarily forget (or 'leave') one's real-life problems is fulfilled more effectively when identifying more strongly whereby the player feels as if they temporarily 'become' a different person.

Furthermore, as could be expected, players who identify strongly with their guild (Group Identification) have a stronger desire to form long-term meaningful relationships with other players ($R^2 = .26$) and have a stronger interest in helping and chatting with other players (Socializing: $R^2 = .18$). Players who identify strongly with WoW itself and the WoW community exhibit a stronger desire to gain power, progress rapidly and accumulate in-game symbols of wealth and status (Advancement: $R^2 = .13$) and they will have a stronger interest in analyzing the underlying game rules and system in order to optimize character performance (Mechanics: $R^2 = .09$). They will also more often play WoW to escape reality, albeit less predictably ($R^2 = .05$) than those players identifying strongly with their avatar ($R^2 = .16$). Overall, it should be noted that the effects of the different Identification dimensions are remarkably strong both in relation to emotional effects such as Empathy and Proteus and to motivations for playing WoW.

It needs to be remarked, however, that construct validity cannot be established by a single study, but needs to be repeated by a series of studies applying the proposed measures in different contexts, relating them to various other construct measures within the same nomological network [36]. Future work on validation could apply the Player Identification scale to other contexts such as different MMOs, demographics, types of avatars and game genres whereby it can be expected that not all dimensions can be applied to all game genres. Group Identification is only relevant for those genres incorporating a strong social component such as MMOs or shooters. Avatar Identification is only relevant to genres in which the player controls a character or at least assumes a definite role. Hence this construct may manifest itself differently in genres such as simulation and strategy games in which the player is given an invisible, managerial role rather than a specific entity to control. Game Identification, finally, may manifest itself to a lesser extent in those genres that are played in a more casual manner whereby the player is less committed to the game and its community. Game genres that fit this category include casual, social and party games. Other constructs to which the different Identification dimensions could be related include game addiction, game enjoyment, buying intention, game preference, personality traits and possibly effectiveness of advergames, in-game advertising and learning in serious games.

Finally, apart from further validation through survey research, future studies should also aim to test and, if needed, adapt the Player Identification scale for use in an experimental context. In this way, it will become possible to carry out research in controlled environments which opens up new possibilities in terms of methodology and validation (e.g. observation, physiological measurements) and scope (e.g. manipulation of various conditions). This paper should thus be seen as a beginning rather than an endpoint as we believe that we are yet only scratching the surface of the phenomenon of Identification in games.

6. CONCLUSION

In this paper, we have proposed a scale for measuring Player Identification in MMORPGs. Based on the literature, three main dimensions were identified, i.e. Avatar Identification (association player-avatar), Group Identification (association player-guild) and Game Identification (association player-game (community)) whereby Avatar Identification is a second order factor consisting of three first order factors: Perceived Similarity (between player and avatar), Wishful Identification (degree to which the player desires to be like their avatar) and Embodied Presence (degree to which the player feels as if they are their avatar whilst playing).

By means of a cross-sectional survey, the measurement instrument's proposed factorial structure was confirmed. Furthermore constructs were successfully tested for both convergent and discriminant validity. Finally, evidence for nomological validity was gathered by testing ten theoretically rooted hypotheses regarding the effects of Identification on 8 motivations for playing MMORPGs and both Empathy and Proteus Effect.

7. ENDNOTES

1: Hefner et al. [7] use an ad hoc scale for measuring identification consisting of 8 items dealing with the feeling of association between player and avatar on the one hand and the adoption of the character's goals on the other. Although the reliability of the scale was good ($\alpha = .84$), we feel that the scale lacks in theoretical foundation and validation and fails to grasp the multifaceted nature of identification in games.

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9. APPENDIX

Table 4. Items for Proteus Effect

(Proteus Effect) Item
When I play with a different character, I feel different
I behave differently when I play with another character
When I play with another character, I feel involved in a different way
The choice of character determines how I experience the game
I have different characters so that I can act in different ways in the game
I see things differently when I play with another character

Table 5. Items for Empathy

(Empathy) Item
It touches me when my character is dying
I am upset when my character dies
I feel emotionally connected with my character
It touches me when something happens to my character

Table 6. Player Identification Scale

Construct	Item ID	Item
Group Identification	Group1	I feel connected with the members of my guild
	Group2	The members of my guild are important to me
	Group3	I regularly go online to meet with others from my guild
	Group4	My guild can count on me
	Group5	I have a lot in common with the members of my guild
	Group6	I find it important how the members of my guild see me
Game Identification*	Game1	World of Warcraft means a lot to me
	Game2	World of Warcraft is more than a game
	Game3	World of Warcraft is more than a hobby to me
	Game4	World of Warcraft is a way of life
	Game5	World of Warcraft is a part of who I am
Avatar Identification		Perceived Similarity
		Embodied Presence
		Wishful Identification
Avatar Identification: Perceived Similarity	Sim1	My character is like me in many ways
	Sim2	My character resembles me
	Sim3	I identify with my character
	Sim4	My character is an extension of myself
	Sim5	My character is similar to me
	Sim6	I resemble my character
Avatar Identification: Embodied Presence	EP1	When I am playing, it feels as if I am my character
	EP2	I feel like I am inside my character when playing
	EP3	In the game, it is as if I become one with my character
	EP4	When I am playing I am transported into my character
	EP5	When playing, it feels as if my character's body becomes my own
	EP6	In the game, it is as if I act directly through my character
Avatar Identification: Wishful Identification	Wish1	If I could become like my character, I would
	Wish2	I would like to be more like my character
	Wish3	My character is an example to me
	Wish4	My character is a better me
	Wish5	My character has characteristics that I would like to have

*Game6 ('World of Warcraft is a work of art') was omitted from the analysis.