

# Me, myself and others: Connecting player identification to gaming social capital

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## ABSTRACT

The social outcomes of Massively Multiplayer Online Role-Playing Games (MMORPGs) have been subject to numerous studies in the past. In these games identification processes and virtual identities are present, yet most research measures game involvement solely through play frequency. This study proposes that time is an insufficient measure, and instead positively relates individual identification to in-game social connections among adult, German MMORPG players. This is done through mixing pre-existing theories, and scales; measuring Player Identification (van Looy et al. 2012), as well as online social capital (Williams 2006). The results from our study indicate that player identification positively predicts gaming social capital, a dedicated form of online social capital dedicated to gaming contexts, while time (measured by game experience) did not moderate this correlation. Hence, this study finds strong evidence for the insufficiency of time as game involvement measure, and the positive correlation between identification and social outcomes in MMORPGs.

## Keywords

Massively multiplayer online role-playing games, player identification, gaming social capital

## INTRODUCTION

During the last couple of years, online and offline games have evolved, becoming a crucial “part of peoples’ everyday lives, social patterns and interactions” (Crawford et al. 2013, 11). One common videogame genre, known as *Massively Multiplayer Online Role-Playing Games* (MMORPGs) attracts a great number of people through their opportunities to explore fantastic virtual worlds, roles, stories and social experiences. In MMORPGs, players can immerse themselves into a virtual world and develop a new identity by trying out different or idealized facets of themselves (cf. Bessi re et al. 2007), all while chasing power, influence, and status through improving their character, completing quests and defeating strong foes (Fritz 2011). Moreover, MMORPGs offer great opportunities for interacting with others, since some are inhabited by millions of people from all over the globe. These huge populations enable multifaceted ways of

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interaction and cooperation, such as becoming a part of a guild, or finding close online friends who might even spill-over into the real world (cf. Domahidi et al. 2014; Hemminger 2011; Cole und Griffiths 2007). Those social ties and networks generated by players have been conceptualized as various forms of *online social capital* (Williams 2006; Molyneux et al. 2015) which are a virtual parallelism of the traditional *social capital* earlier theorized by Putnam (2001).

Virtual worlds, and the identities that users create within them, have been object of numerous research in the past decades (e.g. Cover 2016; Fritz 2011; Heider 2009; Schultze & Leahy 2009; Utz 2002). These previous studies examine the intricacies of identifying with a virtual avatar, ranging from customization to idealization of aspects of their own identity. With recent technological advances, virtual worlds have become more complex, more diverse, and probably more immersive. The possibilities people are given to shape their virtual identity are enormous, especially in MMORPGs. Through visual customization, class or race varieties, and individual development during play, gamers are able to create a unique character in the game environment which is bound to activate identification processes and the formation of a virtual self (Smahel et al. 2008; Hemminger 2011; Watts 2016).

Alternatively, there are also a variety of studies examining social outcomes of MMORPGs. However, these findings are rather conflicting, unable to agree on the exact social outcomes of MMORPG gameplay (Cole & Griffiths, 2007, 577-580; Zhong, 2009, 91; Munn, 2012, 7; Trepte, Reinecke, & Juechems, 2012, 837; Kowert, Domahidi, Festl, & Quandt, 2014, 388; Kaye, Kowert, & Quinn, 2017, 219; Molyneux et al., 2015, 384). This might be caused by an insufficient measure of game involvement, as most of the previous studies focused solely on frequency of game play. Since MMORPGs are a game genre that is highly immersive and multifaceted in story-design, providing a different experience for each individual; involvement in them should also be measured through a similarly complex factor.

In the following study, we attempt to address the gap in researching the social outcomes of MMORPGs by combining a theory of social capital with one concerning player identification (van Looy et al. 2012). Through this combination of theories, we aim to generate insights on the social connections in multiplayer games. This correlation might account for the divergent results of outcomes when measuring game involvement solely through temporal measures. Furthermore, the complex measures combined allow for various levels of identification to correlate with different types of social connections, allowing us to analyse how social connections relate to the identification processes of gamers. Findings from this research will not only contribute to current games research, but they might also be useful for game-designers hoping to improve social elements within their games.

## **THEORETICAL FRAMEWORK**

### **MMORPGs, Groups and Guilds**

The term MMORPG is commonly used in scientific as well as everyday language, yet there is no accurate definition of the genre. However, for drawing a precise framework and selecting games for this study, we propose specific criteria. Games defined as MMORPGs need to show the following characteristics:

- an online multi-player setting allowing “a great number of geographically distributed people to simultaneously play the same game on the same computer server” (Zhong 2009, 11)

- the setting is fantasy or science-fiction themed, and therefore, during the creation of a personalized character, players can choose from different species/races and classes (Pietschmann et al. 2017, 82)
- players are able to influence their game storyline through actions and decisions taken during gameplay (Zhong 2009, 11)
- characters increase their level, and in turn their abilities and power, when fulfilling challenges or tasks
- the game is designed to demand cooperation with other players in order to achieve specific goals (Pietschmann et al. 2017, 82)

### ***Groups and Guilds***

Within common MMORPGs there exists two types of social groupings, varying in their intention as well as lifespan:

- To succeed in difficult tasks, such as clearing dungeons or defeating certain bosses, players might team-up spontaneously. These formations are called “groups” or “raids” (Zhong 2009, 13–14; Hemminger 2011, 93).
- Guilds or clans, on the other hand, are longer lasting alliances with hierarchical structures, dedicated communication channels, and sometimes out-of-game resources, such as websites or forums (Zhong 2009, 14). The size of guilds ranges from a handful of individuals to hundreds (Zhong 2009, 14) with usually one or more core subgroups of tightly knit and stable members, while others are peripheral and changing players (Ducheneaut et al. 2006, 411–412). Guilds are characterized by their membership structure: “A typical guild is also stratified along a status hierarchy, with a self-appointed or elected leader, officers who oversee different classes, and the general body of players. Some guilds may also have treasurers who handle the guild's collective winnings” (Boyns et al. 2009, 78).

Social connections between guild members foster continued play (Ducheneaut et al. 2006, 415), and facilitate the gamer’s “rise within ranks, as well as securing and increasing the status of each guild within the game” (Crawford et al. 2013, 13). Guild membership generates not only loyalty towards guild-mates, but also feelings of pride and satisfaction (Boyns et al. 2009, 78).

However, for both types of grouping, an individual’s avatar might be a deciding factor on their involvement. As Dickey observed “skills, attributes, and adornments often indicate the potential contribution a player may provide when participating in collaborative events, which in turn may impact the type and amount of invitations to collaborate with other players” (2007, 257). In line with that, Ducheneaut et al. (2006, 410) also observed that time spent in groups varies for different avatar classes, since some are better able to succeed in the game on their own.

### **Player Identification**

MMORPGs are designed to enable players immerse in the game and its story (Boyns et al. 2009, 71). Yee even proposes immersion as one of the main motivations for gaming (2006, 773–774). Virtual worlds are especially inviting as they differ from the real world, with the potential to become an alternative to reality, blurring the difference between a virtual avatar and a player’s real identity (Fritz 2011, 91, 110). van Looy et al. find that what is distinct about avatar-based games is that contrary to the passive observer role in traditional media, players can actively engage in the story and with the main character in it (2012, 127). Additionally, Lim and Reeves find that the opportunity to customize the visual representation (which then enables the player to engage more

with the storyline) leads to more stimulation compared to games with a pre-set avatar (2009, 364). Customization “may help players to get into the mindset of the character, immerse themselves in the game context, resulting in increased likelihood of affecting player's real self-identities,” as well as functioning as predictor for motivation (Turkey und Kinzer 2017, 48–49).

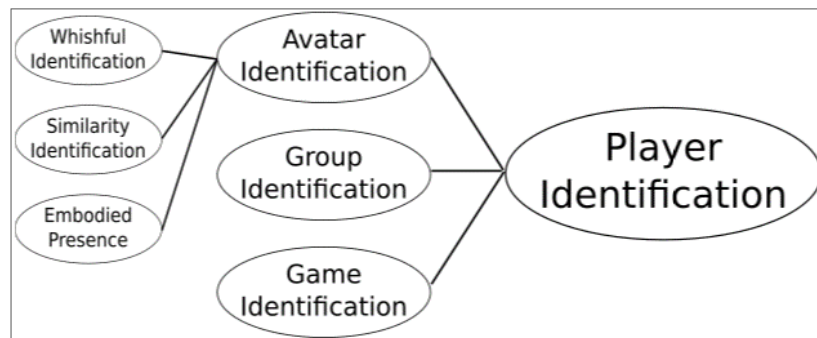
However, identification is a process in MMORPGs that appears to occur on several levels, including not only the personal virtual representation, but also interaction with others in the game world. Building on this notion, van Looy et al. (2012) propose a *player identification scale*, which provides a precise measure for this multidimensional in-game identification, consisting of three levels:

### **Avatar Identification**

*Avatar identification* represents the micro-level of player identification processes and refers to the connection between players and their avatars. van Looy et al. (2012) assume that this avatar identification consists of three sub-components:

- Wishful identification: “allows the player to use their avatar to bridge the gap between the actual self and the ideal self” (Watts 2016, 14) and therefore measures the degree to which the player wishes to be more like the avatar (van Looy et al. 2012, 129).
- Similarity identification: refers to the degree to which the player considers their self and the avatar as similar (van Looy et al. 2012, 129).

These two dimensions stem from the identification measures in traditional media, where recipients identify with the presented characters of the narration such as in books



**Figure 1:** conceptual model of player identification according to van Looy et al. (2012).

or movies. An additional characteristic, specific to MMORPGs, and highlighting the active role of gamers is embodied presence, which refers to players’ perception of actually being their avatar during gameplay (van Looy et al. 2012, p. 129).

They find that avatar identification positively correlates with Yee’s (2006) immersive gaming motivations of role-play, customization, and escapism (van Looy et al. 2012, 131). In a follow-up study, van Looy et al. (2014) find that players with higher avatar identification perceive their visual representation to be more ideal than their real-selves (240–241). Additionally, Soutter and Hitchens (2016, 1031, 1035) find that higher identification with one’s character leads to more flow, which is considered a high level of immersion.

### **Group Identification**

On the meso level of identification, van Looy et al. (2012, 129) note the concept of *group identification*. The player extends the identification process from their virtual

representation to consistent groups, often called guilds or clans, which are formed within the gaming world. Again, there are positive correlations between this type of identification and motivations for gameplay, more specifically socialization and forming relationships with others (van Looy et al. 2012, 131; Yee 2006, 773). van Looy et al. (2012, 131) also find a positive correlation between avatar identification and group identification.

### ***Game Identification***

On the macro and final level of identification, van Looy et al (2012, 129) note *game identification*, “the degree to which a player identifies with the [MMORPG] as a whole and the community surrounding it”.

Building on game and group identification, van Looy et al. (2012, 127) define the concept of gamer identity, measured partly by indicators of group identification (Kaye et al. 2017, 218). Hence, the social context of identity development confirms the importance of group and game identification in the overall framework of player identification (ibid., 127). In addition to its theoretical soundness, the concept of van Looy et al.'s (2012) player identification shows fair construct validity and internal reliability in all three dimensions, especially for avatar identification.

### **Social Capital and Gaming Social Capital**

Friendships, relationships, and social connections are a central aspect of human nature. Those connections are usually mutual, but they “can be a double-edged sword...Friends can provide companionship, and support in time of need, but relationships with others can also impose costs. Friends require time, may need emotional support or may betray trust” (Green und Brock 1998, 533). This benefits-versus-costs modelling perspective is noted by several scholars researching social connections in using *social capital* theory. However, it was Putnam who coined the term with his work, and dividing social connections in two different types: *bonding* and *bridging* social capital (Putnam 2001, 22). An earlier form of this classification of social relationships was already part of Granovetter’s research in 1973, distinguishing between strong and weak ties.

- *Bonding social capital* refers to strong, close and exclusive relationships (Putnam 2001, 22, 363). Within these ties the “continued reciprocity... provides strong emotional and substantive support and enables mobilization” (Williams 2006, 597). These relationships are characterized by socioeconomic homogeneity between individuals, bound by closeness and trust (Coffee und Geys 2007, 124, 133). Moreover, Granovetter (1983, 209) argues that friends with strong ties are more willing and available to provide support.
- *Bridging social capital*, on the other hand, is known as more wide-reaching relationships, which are broad and numerous rather than deep (Putnam 2001, 22, 363). Hence, they provide sources of information, worldviews or other forms of capital, beyond the limited access of the close bonded circle (Granovetter 1983, 209; Williams 2006, 597). Granovetter points out that these types of connections function as an entrance to existing communities, enabling people to be integrated into those networks (1973, 1378).

### ***Gaming Social Capital***

MMORPGs generate a social vitality (“*Soziodynamik*”) and interactions considerably similar to offline contexts (Fritz 2011, 34). Hence, social capital can also apply to the online gaming context. In his work, Williams proposes the internet social capital scale, mirroring the two types of traditional offline social capital (2006, 599). Although this scale was developed for more general Internet use rather than specific online RPGs, it

still provides strong evidence for the similarity of offline and online social mechanisms or practices.

More specific to multiplayer gaming, Molyneux et al. (2015, 384) introduce the concept of gaming social capital, “defined as one’s sense of belonging to and participating in a gaming community. ... [This concept] focuses on the social ties among gamers, the positive interactions and teamwork that may arise during digitally collocated, collaborative gameplay”. While this scale was specifically designed for MMORPGs, in contrast to Williams’s (2006) more general internet social capital scale, the gaming social capital scale does not distinguish between bridging and bonding social capital (Molyneux et al. 2015, 388). This differentiation of social connections is not only central to the study of Williams (2006), but also a main aspect of Putnam’s (2001) definition.

The importance of different types of social capital is exhibited in Boyns et al.’s (2009, 79) research, which observed different types of relations between players of *World of Warcraft*, ranging from loose connections based on trivial conversations about the game (bridging social capital), to virtual marriages (bonding social capital). These findings emphasize the importance of distinguishing between different forms of social capital among MMORPGs gamers, as not all online relationships are created equal. Therefore, in this study we define gaming social capital according to Williams’ (2006) definition, noting distinct types of relationships within the context of games and gaming.

Gaming social capital includes the sum of all in-game online social connections and ties to other players, divided in two sub-forms: *bonding gaming social capital* refers to stronger relationships in-game, based on Putnam’s (2001, 22–23) bonding social capital. While *bridging gaming social capital* denotes weaker in-game ties, based on Putnam’s (ibid) bridging social capital.

### **Linking Player Identification and Gaming Social Capital**

So far, literature dealing with MMORPGs has paid little attention to a possible link between player identification and online social capital as a central aspect of play. Previous work mostly focuses on the social outcomes of gameplay and framing play aspect in temporal measures instead of identification processes (e.g. Cole und Griffiths, 2007; Kowert et al., 2014; Molyneux et al., 2015; Domahidi et al., 2014). However, we assume that gameplay frequency as a measure, which appears to be the gold standard in MMORPG research, might not be sufficient in capturing the complexity of game involvement (cf. Kaye et al. 2017, 221).

Some researchers execute more than temporal measures and influences of game involvement. Kaye et al. (2017, 218) combined frequency with other participation factors to create a concept of gamer identity which is linked to online social capital. Earlier, Ducheneaut et al. (2006, 413) emphasized the importance of reputation for MMORPG players in their the community, forming a significant audience for personal identity presentation (2006). More recently, Watts (2016, 29-30) tried to indicate the effect of avatar identification on self-esteem and perceived offline social capital; however, there is still no study linking player identification directly to online social capital. The present study aims to address this shortcoming in game and MMORPG research.

First, this study will test for general correlation between the concepts of player identification and gaming social capital, which is our adaption of Molyneux et al.’s (2015) term (and context) and Williams’s (2006) theory of online social capital. Next,

the aim is to confirm the assumption of a directional influence moderated by other factors.

*H1: Player identification positively correlates with gaming social capital.*

In line with the findings of Cover (2016) and Ducheneaut et al. (2006), who note the function of virtual identity requiring players as audience, this study further proposes the following correlation:

*H1a: Avatar identification positively correlates with bridging gaming social capital.*

By playing in a guild, players not only identify with a group, they also feel less social distance to their co-members, indicating rather strong ties between these members (Zhong 2009, 88), leading to the following assumption:

*H1b: Group identification positively correlates with bonding gaming social capital.*

Finally, the central argument of this study is based on indications that frequency and duration of MMORPG usage are not sufficient to predict gaming social capital. In previous research, temporal aspects have been in focus; generating divergent results. While some studies could not identify play frequency to be positively correlated to gaming social capital (Domahidi et al., 2014; Zhong, 2009), other studies did indeed find a link (Cole & Griffiths, 2007; Eck, 2011; Molyneux et al., 2015). According to Utz, in the formation of in-game friendships, time plays an important role – however, she refers here to overall time spent together, not frequency (Utz, 2002, 174). Due to these assumptions, and conflicting previous studies, our final hypothesis assumes that the correlation between player identification and gaming social capital is positively moderated by the overall time spent using the MMORPG, labelled as *gaming experience* in this study:

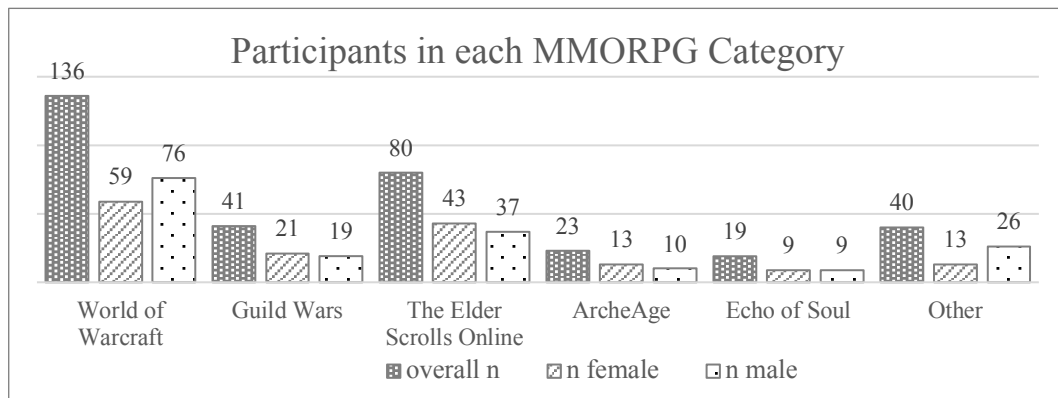
*H2: The correlational link between player identification and gaming social capital is stronger the more gaming experience a player has.*

## **METHODOLOGY**

Data for this study was collected using an online questionnaire. Initially, the questionnaire asked for general gaming habits, as well as for current guild membership status. For participants who at the time of study were members of a guild, a software filter displayed the group identification subscale of player identification. Those who stated to currently not be, or never have been member of a guild, were met with an exclusive item set where they had to state whether they play in non-guild groups or not. For individuals who participated in neither guilds nor groups, the questionnaire skipped directly to the game identification sub-scale of player identification. This is then followed by bonding and bridging gaming social capital scales. Finally, participants were probed about their demographics. A pre-test conducted found various questions within the sub-scales to be quite irritating due to similar phrasing. Still, no items had been excluded since the scales were adopted from the original text with the least possible alteration intended. Two items of the avatar identification sub-scale, however, were phrased differently.

### ***Participants and Sample***

The questionnaire was available online and posted on 21 German Facebook groups dealing with various MMORPGs, a reddit forum specifically used for research recruitment (/r/samplesize), and two sub-forums dealing with games from our sample.



**Figure 2:** distribution of participants by gender in selected MMORPGs.

The post was written in German and asked for German-speaking participants only. During the questionnaire's time online, it had been clicked 2219 times, with 697 people taking part – of which 486 participants completed the questionnaire to the last page; making the drop-out rate 30.27%.

After data collection, the dataset was purged of incorrect records. Cases with invalid inputs in age, such as under 18 (in Germany parental consent has to be acquired for minor participation), or joke (99 for example), or missing inputs, as well as invalid country of residence (where German is not the official language or nonsense answers), and invalid game input (not an MMORPG or nonsense) were excluded; leaving a dataset of 429 cases. An additional 90 cases were removed due to missing group identification values, leaving the final sample size of  $n = 339$  cases.

The final sample was 46.6% female ( $n = 158$ ) and 52.2% male ( $n = 177$ ). The ages range from 18 to 62 with a mean of 30 years old ( $M = 29.64$ ,  $SD = 9.14$ ). From the valid cases, 91.2% of participants currently live in Germany ( $n = 309$ ), 8.3% in Austria or Switzerland ( $n = 28$ ) and 0.6% in other Western-European countries with German as an official language ( $n = 2$ ).

## Measures

Initially, participants were probed about which MMORPGs they played. This is done as sampling criteria to reduce game effects, with a wide selection of MMORPGs (see Fig. 2). Next, *gaming experience* is a scale developed for this study to measure how long participants were playing their MMORPGs: in order to test the moderation of temporal aspects on identification and social capital. Participants were asked to rate their average number of hours played per week in various ranges, and how long they have been playing their respective game. Due to not all games having the same lifetime, some games provided much lower experience values than others. Hence to reduce this game (group) effect, an experience index was created dividing the sum of the player's gaming experience with the time the game has been on the market with the resulting index ranging from 0.25 to 1.33 with  $M = 0.82$  ( $SD = 0.23$ ,  $n = 399$ ).

### Player Identification

To measure player identification, the scale of van Looy et al. (2012) was used with all subscale items. The questions were translated into German and adapted to the context of the study. All questions for identification were translated and rated on a 5-point-Likert scale, ranging from totally disagree to totally agree. Additionally, a "no opinion" option was included for every item, which was coded equal to missing values.



Avatar identification included 17 items measuring the degree to which the participants identify with their game characters (van Looy et al. 2012, 134). Included were six items of perceived similarity, six items of embodied presence and five items of wishful identification. Scores of all 17 items were summed and averaged to a general avatar identification score (van Looy et al. 2012, 131–132). Table 1 shows excellent internal consistency of the subscale.

Scale	Subscale	Items	Cronbach's $\alpha$	<i>M</i>	<i>SD</i>
<b>Player Identification</b>	(overall)	28	.947	2,60	0,83
	<i>Avatar Identification</i>	17	.952	2,28	0,99
	<i>Guild Identification</i>	6	.893	3,44	1,01
	<i>Game Identification</i>	5	.896	2,64	1,12

Guild identification, the degree to which the participants identify with their guild, was measured using six items stated by van Looy et al. (2012, 134). The scale for guild identification showed good internal consistency (Table 1). van Looy et al.'s (ibid) group identification focusses on guild members only, however; MMORPGs enable various ways of collaboration and social connections even outside of guilds (Nardi & Harris 2006, 155). Hence, an adapted version of the guild identification subscale was implemented to measure a more general level of group identification by replacing the term "members of my guild" with "my co-players". However, due to a lacking number of cases in the sample belonging to this category (only eight), the scale was excluded from further analysis.

Game identification, the third component of player identification was measured using the five items of the original subscale (van Looy et al. 2012, 134). A software filter inserted the name of the chosen MMORPG or individual game-input into each item. Finally, to generate a score for overall player identification the scores of all 28 single items were summed and averaged. The internal consistency for this scale (shown in Table 1) is also excellent.

### ***Gaming Social Capital***

This study uses an adapted version of the internet social capital scale developed by Williams (2006) to measure participants' gaming social capital. The subscales for bridging and bonding social capital were adapted to the gaming context by replacing the term "online/offline" with the value of game variable (name of played game). All

**Table 1:** means and internal consistencies of all player identification scales used in the present study, ranging from 1 = totally disagree to 5 = totally agree.

items were scaled on a 5-point-Likert measure, ranging from totally disagree to totally agree. Again, a "no opinion" option was included.

Bonding gaming social capital was measured through 10 items, adapted from Williams bonding social capital subscale (2006, 606–607). The items deal with stronger connections to other people in the MMORPG played by the participants. The subscale for bonding gaming social capital in this study showed excellent internal consistency (see Table 2), which is slightly better than the original value of Williams (2006, 606).

Bridging gaming social capital subscale measured weaker relations to other people in the game using 10 items (Williams 2006, 607–608). Again, the scale showed excellent internal consistency (Table 2), exceeding the original scale by Williams (ibid).

Overall gaming social capital was measured by summing and averaging all single items from the two subscales. The internal consistency for the overall scale was again excellent (Table 2) and the alpha exceeded the original online social capital scale (Williams 2006, 605).

## RESULTS

A row of Kolmogorov-Smirnov tests indicated that several indices used deviated from normal distribution (except overall gaming social capital). Therefore, analysis and hypothesis testing used statistical procedures that are robust to this violation.

A scatter plot indicated a positive linear correlation between overall player identification and overall gaming social capital can be assumed. To adapt to the lacking normal distribution of several scales, the non-parametric rank-correlation Spearman's Rho was computed testing the general correlation between player identification and gaming social capital. The results show a highly significant positive correlation, Spearman's  $\rho = 0.59, p < .001$ . Hence, H1 is supported.

Furthermore, there is a highly significant positive correlation between avatar identification and bridging gaming social capital, Spearman's  $\rho = 0.46, p < .001$ , supporting hypothesis H1a.

For testing H1b, guild identification and non-guild group identification were meant to be combined. However, since there were missing values for the non-guild group identification scale in most cases, only guild identification was used to examine the correlation between group identification and bonding gaming social capital. The results indicate a highly significant positive correlation between guild identification and bonding gaming social capital, supporting H1b for players who are part of guilds,

Scale	Subscale	Items	Cronbach's $\alpha$	<i>M</i>	<i>SD</i>
Gaming Social Capital	(overall)	20	.914	3.02	0.88
	<i>Bonding</i>	10	.908	2.82	1.07
	<i>Bridging</i>	10	.903	3.21	0.97

**Table 2:** means and internal consistencies of all gaming social capital scales used in the present study, ranging from 1 = totally disagree to 5 = totally agree.

Spearman's  $\rho = .56, p < .001$ .

Finally, a moderation analysis was conducted using the SPSS macro PROCESS by A. F. Hayes<sup>1</sup> Model 1 with overall player identification as the independent variable, overall gaming social capital as the dependent variable and experience index as the moderator. Our results indicated no proven moderation effect of gaming experience on the correlation between player identification and gaming social capital.

## DISCUSSION

Our research results proved a positive correlation between overall player identification and overall gaming social capital among German MMORPG users. Following regression analyses further revealed that there is a directional link where overall player identification positively predicts overall gaming social capital, again on a highly significant level. As there were no significant group effects of game played on either of these two measures, the development of social connections through identification in MMORPGs seems to apply similarly for all games of this genre.

Additionally, our results show a positive medium-strength correlation between avatar identification and bridging gaming social capital on a highly significant level. Avatar identification consists of three facets: wishful identification, similarity identification and embodied presence (van Looy et al. 2012, 129). Players feel connected with their characters through immersion (Cover, 2016, 119; Fritz, 2011, 46–47), but mostly they develop highly individualized avatars by making numerous decisions at the character creation screen, as well as during the gameplay when altering skills and equipment of their characters. Throughout this process, MMORPG characters are likely to become virtual parallels (Bessière et al. 2007, 531; Cover, 2016; Fritz, 2011), and hence, lead to the identification of players with their virtual representations.

Bridging gaming social capital, on the other hand, was defined as loose, yet widespread connections between players of these games. Compared to stronger, more exclusive ties implied by bonding gaming social capital subscale, bridging was proposed to be greater in number and easier to develop. The positive correlation between avatar identification and bridging gaming social capital confirms the assumption that the identification with one's avatar includes the presentation of earned achievements, skills and the powerful equipment of the virtual self to an audience, which requires the presence of other gamers; paralleling the performative nature of virtual identities conceptualized by Cover (2016,10). As this form of identification focusses more on the self, the individual's virtual identity in the form of one's avatar rather than on the surrounding social network, interaction with others might only be "a means to an end" as Ducheneaut et al. (2006, 413) put it. Therefore, social connections associated with this type of player identification are numerous, but weak and rather shallow: a.k.a bridging gaming social capital.

The second sub-concept of player identification includes items that measure loyalty and commitment to the group (van Looy et al. 2012, 134). In MMORPGs two different forms of groups occur: spontaneous task-centred groups or raids, and longer-lasting guilds or clans, with dedicated communication channels and hierarchies. The commitment to such an affiliation is one of the motivations to begin and continue playing MMORPGs (Chee et al. 2006, 162; Zagalo & Gonçalves 2014, 141). However, social connections might also evolve from spontaneous non-guild collaborative play, as even quest-groups or raids require a certain level of commitment to be successful. The stronger social connections established through interaction in those games imply the formation of bonding gaming social capital. Hence, it was assumed in this study that guild identification – as well as a more general and not guild-restricted form of group identification – would positively correlate with bonding gaming social capital. The results partly support this hypothesis with a highly significant, medium-strength, positive correlation between guild identification and bonding gaming social capital.

Overall, these results confirm assumptions drawn from previous studies, as well as gaps in research on MMORPGs; confirming that not only are player identification processes and gaming social outcomes both important consequences of MMORPG play, but these two concepts are also closely interrelated.

## **CONCLUSION**

Previous research relied on measuring game involvement as a predictor for social outcomes, through relying on temporal aspects such as frequency of gameplay. However, there have been some recent studies recognizing a shortcoming of this measure and focussing on identifying more complex predictors for social outcomes (Zhong 2009; Watts 2016; Kaye et al. 2017). Zhong included measures of collective play in his work which consisted of questions about the feeling of belongingness to a group or guild within MMORPGs (2009, 67). On the other hand, Kaye et al. (2017) measure the role of social identity and social capital on psychosocial outcomes of MMORPGs players. Building on these previous studies, and attempting to mix and combine new theories, we addressed gaps in game studies literature dealing with player identification and social capital in MMORPGS. While we do not provide something drastically different from Kaye et al.'s (2017) research, we do focus on combining two original theories: van Looy et al.'s (2012) player identification and a modification of Williams (2006) online social capital (now gaming social capital) to provide insights on the social connections and identification processes of MMORPGS users in a wide selection of games within this genre.

The results confirm the central assumption drawn in this study that player identification and gaming social capital in MMORPGs significantly and positively correlate. Further analysis revealed that overall player identification does predict overall gaming social capital. Looking into the sub-types of player identification, this study found strong evidence for the positive correlation between avatar identification and bridging gaming social capital, as well as guild identification and bonding gaming social capital. The results confirm the notion that identification in games strongly affects social outcomes and further reveals that time seems to play a negligible role in this correlation.

This study provides important insights on the effect of MMORPG-play on social outcomes. To the best of the authors' knowledge this study was the first to investigate the link between player identification and gaming social capital, and hence, contributes to game studies through enhancing understanding of game aspects that lead players to meaningful social interactions. Our results might assist game-designers in implementing gameplay features to enhance a user's identification processes, and therefore, their social experience. Such design traits are likely to foster the success and popularity of a game.

## **LIMITATIONS**

The correlational link between player identification and gaming social capital in MMORPGs found in the present study is highly significant. However, one must consider that only a snapshot of a restricted sample was examined. Although a sample size of more than 300 participants might be considered a significant base for statistical analysis, the results are far from representative. This is because the sample is limited to German-speaking participants, and gamers from other countries might identify or develop in-game social ties differently.

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## ENDNOTES

<sup>1</sup> available at <http://www.processmacro.org/index.html>.