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Avatar Creation and Video Game Enjoyment

Effects of Life-Satisfaction, Game Competitiveness, and Identification with the Avatar

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Abstract. Based on the model of complex entertainment experiences (Vorderer, Klimmt, & Ritterfeld, 2004), the competitiveness of a computer game (media prerequisite) and the individual life satisfaction (user prerequisite) are hypothesized to influence game enjoyment. Avatar-player similarity was hypothesized to determine identification with the avatar, which in turn was suggested to enhance the enjoyment experience. In a quasi-experimental study, ($N = 666$) participants were asked to choose the personality features of an avatar for six different game scenarios. The results demonstrate that the games' competitiveness as well as the participants' life satisfaction influenced avatar choice and identification. In noncompetitive games, similar avatars were created, whereas in competitive games, dissimilar avatars were created. Participants who were well satisfied with their lives created avatars that resemble themselves in terms of personality factors, whereas dissatisfied users created dissimilar avatars. Player-avatar similarity was positively related to identification. This correlation was significantly stronger for noncompetitive games. Identification with the avatar was strongly related to game enjoyment. When controlling for the influence of identification on enjoyment, player-avatar similarity was negatively related to enjoyment, suggesting that identity play can be an independent source of enjoyment in computer games.

Keywords: video games, avatar, life-satisfaction, identification, enjoyment

Introduction

With regard to video and computer games, avatars are considered computer generated visual representations of people (Nowak & Rauh, 2005; Schroeder, 2002). The term "avatar" is a Sanskrit word and identifies the god Vishnu's manifestations on earth (Castronova, 2004). Player representations as a part of a game can be traced back to ancient games that were played more than 4000 years ago, but the 1985 multi-user virtual world *Habitat* was the first to use the term "avatar" for user representations in virtual worlds (Castronova, 2004). Avatars are not only used in games, but also as users' representations in e-commerce applications, social virtual environments, and in geographically separated workplace meetings (Schroeder, 2002).

Avatars are now an integral part of video and computer games. For example, in *The Sims 2*, players are not only able to change their avatar's appearance, but also personality traits. Especially in MMORPGs (e.g., *World of Warcraft*, *Eve Online*), users are able to choose from a variety of features in order to manipulate the appearance, character, skills, and in some games even the ancestry of their

avatars. Accordingly, Chan and Vorderer (2006) suggest expanding the rather technical definition of avatars as graphical representations to defining avatars as characters that represent users in a virtual environment and community. Avatars are not just the interface players use in order to control the game, but conceivably represent also the players' own or created identity (Asimina & Joinson, 2009; Bessière, Seay, & Kiesler, 2007; Kafai, Fields, & Cook, 2007; Kang & Yang, 2006). While players can choose different avatar features and appearances, such as in MMORPGs, they are required to use avatars with pre-defined appearance, character, and history in many other games.

In previous research, players gave preference to similar avatars in terms of gender role, outward appearance, and even biological sex (Hsu, Lee, & Wu, 2005; Rymaszewski et al., 2007; Trepte, Reinecke, & Behr, 2009). Hsu et al. (2005) conducted a qualitative study with 16 frequent buyers of computer games. Participants assigned 28 different "Pac-Man" games to three groups in terms of perceived fun, and afterward they compared games from different groups according to design features. Hsu et al. (2005) reported that players enjoyed games with characters similar

to their own more than games with dissimilar characters. A preference for same-sex avatars can also be found for virtual environments such as *Second Life*. Research on users' gender preference in *Second Life* has shown that 4% of females chose to play a male character and 14% of men chose a female character. 82% of users remained with their real world gender (Rymaszewski et al., 2007).

Nevertheless, in some situations, players might also want to play with *dissimilar* avatars. First exploratory studies revealed that gamers tried gender swapping as a form of identity play (Hussain & Griffiths, 2008). Kafai et al. (2007) investigated the virtual world *Whyville*. In their interview study, they found that players also generated avatars dissimilar to the user's self to allow for identity play and ameliorated self-representation. In the *World of Warcraft* study conducted by Bessi re et al. (2007), players reported that their characters are dissimilar in terms of extraversion, conscientiousness, and neuroticism. Other authors have argued that game characters are perceived as role models that enable players to act out possible selves and try out different personalities (Konijn & Bijvank, 2009; McDonald & Kim, 2001). According to Konijn and Bijvank (2009), adolescents who are in the process of developing their own identities are particularly prone to engage in wishful identification with game characters. Consequently, they may choose avatars that possess characteristics and qualities they would like to possess themselves. Considering the empirical studies cited above, it can be assumed that dissimilar avatars are preferred to compensate deficits in real-life personality (e.g., depressive affect or introversion). Dissimilar avatars are also chosen if the game requires specific avatar features (e.g., extraversion, risk-taking, fearlessness in action games) in order to succeed in the game.

Thus, previous research shows that players' preferences in avatar creation are twofold: Similar avatars seem to enhance enjoyment experiences, and dissimilar avatars are able to serve self-related motives such as identity-play and ameliorated self-presentation. In turn, it can be assumed that both factors might also foster media enjoyment.

The goal of the present study is to consider both strategies of avatar creation, the creation of similar and dissimilar avatars, and to analyze how game enjoyment is affected by applying one or the other strategy. The creation of a dissimilar avatar may serve the need to compensate for unsatisfactory life circumstances. Thus, the choice of avatar features may vary as a function of life-satisfaction. Also, avatar-player similarity may be determined by game requirements, such as the game's task-structure or competitiveness. Depending on the player as well as the game characteristics, both similarity as well as dissimilarity might lead to identification, which, in turn, will influence experiences of enjoyment. It is proposed here that the fit between game and player characteristics is a presupposition of game enjoyment. The "right" combination of user attributes and media stimulus makes an entertainment experience enjoyable and fun.

Game enjoyment, similar to the enjoyment of other en-

tertaining media stimuli, varies according to media and user prerequisites (Vorderer et al., 2004). Media entertainment research indicates that media prerequisites such as screen size and user prerequisites such as psychological needs (Brock & Livingston, 2004), moods (Oliver, 2003; Zillmann, 2000), motives (Vorderer, Hartmann, & Klimmt, 2003), and personality dimensions (Hartmann & Klimmt, 2006b; Weaver, 2000), have been considered to determine media enjoyment. Accordingly, media enjoyment depends on the interplay of media characteristics and user characteristics. Based on the "Model of Complex Entertainment Experiences" (Vorderer et al., 2004), it will be supposed in the present investigation that media enjoyment is determined by a fit of media and user prerequisites. The game competitiveness will be considered as a media prerequisite and life satisfaction will be considered as a user prerequisite.

Accordingly, in the next section, the model of complex entertainment experiences will be outlined. Within the following three paragraphs, the model components (1) game competitiveness as a media prerequisite, (2) life satisfaction as a user prerequisite and (3) avatar-player similarity as a result of a primary action and identification as a consequence of the reappraisal of action are considered.

Complex Entertainment Experiences

In their model of complex entertainment experiences Vorderer et al. (2004) assume media users search for positive media experiences. The model is used here as a frame of reference to emphasize that both user and media prerequisites must be taken into account for a systematic consideration of media entertainment. Of course, the empirical study presented in this paper will not be able to prove the model as a whole. In this section, the entire model will first be presented by elaborating on its theoretical groundwork. A new component, the "primary action," will be added to the model and recent work on the "reappraisal of action" will be incorporated into the model (Vorderer & Hartmann, 2008). The model will be modified with the aim to increase its fit to interactive entertainment experiences.

Within the model of complex entertainment, Vorderer et al. (2004) integrate Zillmann's (1988a, b) assumption of the media user as a hedonistically driven agent, and research in neuroscience (Davidson, 2002). Zillmann (1988a, b) has proven in numerous experiments that media users strive for positive experiences and optimize their level of stimulation (Bryant & Zillmann, 1984; Knobloch, 2003; Knobloch & Zillmann, 2002; Oliver, 2003; Zillmann, 2000). His mood management theory posits that recipients learn pleasurable experiences and search for media content fitting their needs for hedonism and optimal stimulation. Zillmann's (1988a, b) approach is situated in emotional psychology. Correspondingly, neuroscience is of growing importance for research in media psychology, because it may reconcile the divide of cognitive and affective approaches to entertain-

ment effects. Research in neuroscience found simultaneously activated affective and cognitive circuits in the brain during information processing. Thus, Vorderer et al. (2004) propose that media enjoyment refers to physiological, affective, and cognitive dimensions. They formulate a broad conceptualization to improve the understanding of entertainment premises. In this understanding, media entertainment is accompanied by a pleasant state termed enjoyment. Media enjoyment may have different kinds of manifestations such as suspense, serenity, and laughter, as well as sadness or melancholy.

In this first conceptualization, the authors posit user prerequisites, media prerequisites, and motives as conditions for media enjoyment. User prerequisites comprise empathy (Zillmann & Bryant, 1985), presence (Lombard & Ditton, 1997), interest (Greenwald & Leavitt, 1985), or affinity to the character (Cohen, 2006). In order to feel entertained, at least one of the media user's prerequisites must be addressed. The design and content of media are identified as media prerequisites that may elicit pleasurable media experiences. In terms of user motives, the authors consider escapism (Katz & Foulkes, 1962; Moskalenko & Heine, 2003) as well as achievement or competition (Sherry, Lucas, Greenberg, & Lachlan, 2006). The motives have been omitted in more recent work (Vorderer & Hartmann, 2008) and will not be considered in detail here.

Vorderer and Hartmann's (2008) recent work underlines the emotional access to media use. They state that the interaction between the user and the media environment leads to a subjective perception of the salient situation and elicits *primary responses* such as physiological reactions, as well as positive and negative emotional responses. In the second step, this primary response is reappraised according to mood-regulation and self-realization goals. Media users may feel entertained after this reappraisal. User prerequisites (e.g., personality or life-satisfaction) and media prerequisites (e.g., competitiveness of the game) may determine the users' preliminary reactions, such as positive and negative emotions. In traditional entertainment media, such as television, the first reaction may be emotional, wherein television makes people happy or sad (Oliver, 1993), or cognitive, wherein television makes individuals think about their own lives and their identity (Trepte, 2006). These preliminary responses occur also in computer games, but they are often accompanied by overt behavior. Gamers might feel anger toward an enemy (Mullen & Skitka, 2006), think about how they might react, and additionally, take action in the gaming environment. Complementary to emotional and cognitive responses, preliminary responses in computer games are behavioral. They are observable as moves and strategies. One of the very first active steps in many games is the choice of an avatar. This usually takes place right before a game or when a game-session begins. To create an avatar and to decide what the avatar should be like, players may be influenced by their individual goals and thoughts, as well as the game's requirements and its scenario (Kafai et al., 2007; Trepte et al., 2009). Different

strategies of avatar creation are possible (cf. section "Effects of Avatar-Player Similarity on Identification and Enjoyment").

After preliminary responses, the users reappraise how media use fulfills their goals and needs (e.g., mood regulation or self-realization goals), and how they feel in the present situation (Vorderer & Hartmann, 2008). Reappraisals are necessary and useful to comprehend primary emotional reactions and connect them with elaborated reference-frames (Fiske & Taylor, 1991). The reappraisal of preliminary reactions may be consolidated as a sense of identification (Cohen, 2001, 2006), interest, or involvement (Greenwald & Leavitt, 1985). On the contrary, the reappraisal may also lead to a sense of denial or even disgust.

Summing up the model of complex entertainment experiences (Vorderer & Hartmann, 2008; Vorderer et al., 2004), it can be stated that the interplay of media prerequisites and individual user prerequisites leads to a primary user response. In the case of computer games, this primary response is accompanied by overt behavior such as the creation of an avatar. After their primary response to the game, players reappraise their primary action with respect to their individual situation and their goals. With regard to avatar creation, one result of this reappraisal can be that the player feels close to and connected with the avatar. Players may identify with the avatar and identification should elicit feelings of game enjoyment (Hefner, Klimmt, & Vorderer, 2007).

In this paper, the interaction of game competitiveness, satisfaction with life, player-avatar similarity, and identification will be taken into account to predict media enjoyment. Whereas game competitiveness represents a media prerequisite and life-satisfaction a user prerequisite, identification can be considered the result of an appraisal process that is directly influenced by the interaction or fit of media and user prerequisites. Both game competitiveness and the user's life-satisfaction are likely to influence the choice of avatar features and, as a result, player-avatar similarity and game enjoyment. The interrelations of the variables, namely game competitiveness, life-satisfaction, avatar creation, identification, and media enjoyment, and their reference to the model of complex entertainment experiences, will be elaborated in the following three paragraphs.

Game Competitiveness as a Determinant of Avatar Creation

Technical media prerequisites have fascinated numerous scholars particularly in computer and engineering sciences, but also in communication research and media psychology (Biocca, 1996; Gosling, Rentfrow, & Swann, 2003; Heeter, 1995). Hardware details such as the screen size (Reeves, Lang, Kim, & Tatar, 1999), a game's design (e.g., game dynamics and mechanics, for a discussion cf. Sellers,

2006), as well as the game's content (e.g., narrative or game characters) have been applied as independent variables affecting media enjoyment (e.g., Hsu et al., 2005; Ravaja et al., 2004; Vorderer et al., 2003). In media psychology, game prerequisites have primarily been investigated in relation to the user needs they address. In psychological research on video and computer games, competition has received considerable attention as a key prerequisite for the enjoyment of games (Vorderer et al., 2003). Games grant their users a high degree of control over the gaming environment (Grodal, 2000) and the player's actions result in immediate feedback from the game (Klimmt & Hartmann, 2006). While experiences of mastery and self-efficacy are crucial components of the entertainment experience elicited by most games, the degree of competitiveness differs substantially between games. While some games challenge the player by setting high demands on the player's problem solving skills (e.g., adventures, puzzle games, or simulations), others include human or computer-controlled opponents that the user has to compete against (e.g., shooters or action adventures). The positive effect of competitiveness on game enjoyment is illustrated in an experiment by Vorderer et al. (2003). Participants read verbal descriptions of a gaming situation that either featured the necessity to compete against opponents or no such competitive elements. Participants were then asked to rate the enjoyment associated with the respective gaming situation. The data illustrates that participants rated game descriptions featuring competitive elements as significantly more entertaining than gaming situations that do not offer the chance to compete against opponents.

In addition to game enjoyment, the competitiveness of a game is also likely to influence the choice of avatar features. Trepte et al. (2009) argued that in games with clearly pre-defined game requirements, users can be expected to show a stronger tendency to create avatars with features very close to the game requirements. Trepte et al. (2009) asked players to create their own avatars for seven different game descriptions. The players were advised to create avatars that they would enjoy playing with. Both male and female participants created avatars with gender attributes that best met the games' requirements, even if these attributes conflicted with the players' sex role. Accordingly, women created "manly" avatars if the game asked for (pre-tested) male characteristics and men created "female" avatars if the game asked for (pre-tested) female characteristics. At the same time, both male and female players rated those gaming scenarios that allowed them to choose avatar features that were in accordance with their respective gender role as more entertaining. These results reveal that the avatar's features are chosen in accordance with the game's demands to facilitate mastery of the game.

In a competitive shooter game, an extraverted and dominant avatar appears to be more effective in reaching the game's goals than a creative and benevolent character. Furthermore, avatars in competitive games often require supernatural powers, and thus are likely to differ substantially

from the player's personality profile. In contrast, noncompetitive games (e.g., simulations such as *The Sims*) are less likely to require highly specialized avatar features. Consequently, players are likely to experience greater freedom in their choice of avatar features and are less restricted by game requirements compared to more competitive games (Klimmt, Hartmann, & Frey, 2007). As competitive games allow for a lesser degree of freedom in avatar creation than noncompetitive games, these observations allow for the conclusion that users will prefer similar avatars as long as the gaming environment grants them the freedom to choose. We thus propose the following hypothesis (all variables and their hypothesized interrelations are depicted in Figure 1):

H 1: In noncompetitive games, players will equip their avatars with personality attributes that bear a higher resemblance to their own personality than in competitive games.

Life-Satisfaction as a Determinant of Avatar Creation

The media user's appraisal of his/her life may interact with entertainment experiences. Previous research addressed how the use of entertainment media affects life-satisfaction (for an overview cf. Schreier, 2006). Recently, the first steps have been taken to explore the effect of life-satisfaction on entertainment choices. In self-discrepancy theory, Higgins (1987) suggests that we have three types of self-schema: the actual self (who we currently are), the ideal self (how we would like to be), and the 'ought' self (how we think we should be). The ideal self is associated with promotional goals that individuals strive for and the 'ought' self with prevention goals. Discrepancies between the actual self and the ideal or 'ought' selves can motivate change to reduce discrepancies. McDonald and Kim (2001) demonstrated that video game characters are treated as ideal selves by young players and that the comparison between the actual self and the game character can elicit feelings of dejection. Bessière et al. (2007) applied self-discrepancy theory to show that players in the MMPORPG *World of Warcraft* rated their character as having more favorable attributes than they rated themselves on the same dimensions. Particularly, players with lower self-esteem and depressive affect rated themselves (actual self) as being significantly less conscientious, less extraverted, and more neurotic than they rated their avatar. Thus, players with low levels of psychological well-being equipped their avatars with more favorable personality attributes than they felt themselves to possess. Players with high self-esteem and no depressive affect rated their actual self and their game character similar in terms of personality structure. The authors indicate that the game world offers players, regardless of their actual situation, the freedom to create successful and favorable virtual selves (Bessière et al., 2007).

Applying the aforementioned research results to the creation of avatars, it may be conceded that people who are dissatisfied with their lives strive to create an avatar that has personality features very dissimilar from their own. The creation of a dissimilar avatar would change the focus from an unpleasant or dissatisfactory “real-world” personality to a more satisfying representation within the virtual world. The creation of an avatar in terms of personality allows for altering exactly those personality features that players perceive as bothersome and that interfere with their aims.

H 2: Participants scoring high in life-satisfaction will equip their avatars with personality attributes that bear a higher resemblance to their own personality than participants scoring low in life-satisfaction.

Effects of Avatar-Player Similarity on Identification and Media Enjoyment

Media and user prerequisites, as described in the two preceding paragraphs, are interrelated and are likely to affect the player's actions (i.e., avatar creation) prior to gameplay. Before creating an avatar, the player evaluates the plot of a game, its goals and features (media prerequisites), and his own state of mind at this point in time (user prerequisites). Based on both evaluations, the primary action is initiated. This primary action reflects the interplay of user and media prerequisites. In the following, the avatar creation as an example of the primary action will be considered. After the creation of an avatar, players are likely to reappraise whether their avatar serves their goals and needs, such as mastery of the game or sociability (Jin & Park, 2009; Klimmt et al., 2007). The players may consider how the avatar fits in with their personal aims and the game requirements (Derrick, Gabriel, & Tippin, 2008). We suggest that the result of this appraisal process (positive vs. negative appraisal) influences identification with the avatar. Identification depends on how well the avatar suits the player's aspirations in terms of the game (e.g., winning the game) and in terms of personal aspirations (e.g., overcoming a feeling of dissatisfaction with life).

Identification has been defined by Cohen (2001) as “an imaginative process through which an audience member assumes the identity, goals and perspective of a character” (p. 261). Identification goes far beyond similarity. Identification not only describes whether a character and the user match, but also whether they are “merging” (Klimmt, Hefner, & Vorderer, 2009). The more the user ‘becomes’ the media character, the more he or she identifies with the character. Identification is an imaginative process and it defines whether a user and the avatar are connecting emotionally and cognitively (Cohen, 2006). During gameplay, users imagine themselves being the avatar and act out from the avatar's perspective (Klimmt et al., 2009). For players, it

should be easier to “merge” with a character that has a personality structure similar to their own. Thus, identification should be stronger if the avatar and the player are more similar.

H 3: Players with a personality profile similar to their avatar's profile identify more with their avatars than players with a personality profile dissimilar to their avatar's.

Following the model of complex entertainment experiences (Vorderer et al., 2004), we suggest that identification is an outcome of the reappraisal of primary user action. Identification may ‘produce’ media enjoyment, if the user feels that his strategy of avatar creation is successful in terms of his personal goals. On the contrary, an ineffective strategy could cause boredom or disappointment. Identification seems particularly interconnected with the enjoyment of computer games, because the user influences how much he or she ‘becomes’ a certain character (Klimmt et al., 2009). The gamer has the possibility to create avatars and can actively influence the avatar-player relationship. Identification has been shown to predict enjoyment of computer games. Hefner et al. (2007) conducted an experiment with 30 participants who either played the game *Battlefield 2* for six minutes or watched a video with a recording of the game. The players experienced significantly higher identification with the game characters than the participants in the (video-exposure) control group. The authors reported a significant correlation between identification and enjoyment of $r = .58$ ($p < .001$). Thus, the following hypothesis seems justified:

H 4: Identification with the avatar is positively related to video game enjoyment.

Previous research demonstrates a positive relationship between avatar-player similarity and enjoyment (Hsu et al., 2005; Rymaszewski et al., 2007). It now seems crucial to understand the how and why of this relationship. Why does avatar-player similarity seem to determine media enjoyment? It will be suggested here that identification is the mechanism through which avatar-player similarity determines media enjoyment. As suggested above, avatar-player similarity might elicit higher levels of identification (cf. H3). If the player-avatar similarity is high, players feel closer to and more connected with their avatar (cf. Klimmt et al., 2009). Furthermore, identification is expected to increase media enjoyment (cf. H4). The closer players feel to their avatar, the more enjoyment they experience (Hefner et al., 2007). In other words: Avatar-player similarity influences identification, which, in turn enhances game enjoyment. Based on these presuppositions, a mediation hypothesis is derived:

H 5: Identification mediates the relationship of avatar-player similarity and game enjoyment.

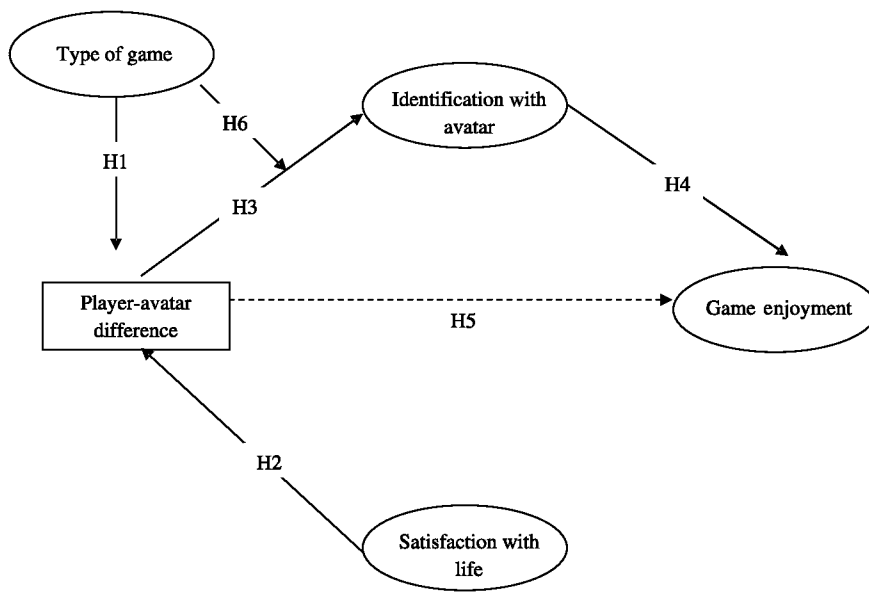


Figure 1. The hypothesized model of the relationship of satisfaction with life, player-avatar difference, identification, enjoyment experience, and game type.

As discussed above, users are likely to identify with similar avatars, if their life-satisfaction and the game prerequisites ask for a similar avatar. But if game requirements and their life-situation demand for a dissimilar avatar, they may identify with a dissimilar avatar. In their experiment, Hefner et al. (2007) asked players how close a game description corresponded to their self-image. The results demonstrated that a higher fit correlated with higher identification with the avatar. This suggests taking a closer look at the interaction between identification and a user's evaluation of the game's content. It is plausible to assume that players are more likely to identify with a game character, if they generally support the game's narration or wish to be like the character. It is suggested here that a game's competitiveness moderates the relation between avatar-player similarity and identification: In competitive games, players try to meet the game's requirements as much as possible and thus identify best with an avatar whose personality is very dissimilar to their own personality. On the contrary, in non-competitive games, identification processes such as the experienced merging of avatar and player are best achieved by similar avatars.

H 6: The negative effect of the difference between player and avatar on identification with the avatar will be stronger for noncompetitive games than for competitive games.

Prior research demonstrates the relevance of exploring gender differences in the uses and effects of interactive entertaining media (Hartmann & Klimmt, 2006a; Lucas & Sherry, 2004; Trepte et al., 2009). The hypothesized interrelations between media and user prerequisites under investigation in this study (cf. Figure 1) may differ between male and female video game users for a number of reasons. Male and female players exhibit different preferences for

game genres. Violent and highly competitive games are more popular among male players than among female players (Hartmann & Klimmt, 2006a). Women show a lower need for competition (Hartmann & Klimmt, 2006a; Lucas & Sherry, 2004) and competitive behavior is more strongly related to male sex-stereotypes than to female sex-stereotypes (Lueptow, 2005). Results from Trepte et al. (2009) demonstrate that both men and women prefer games that require avatars consistent with their own sex role. It thus appears reasonable to assume that the correlational patterns among avatar-player similarity, identification, and enjoyment addressed in the hypotheses above may differ for men and women. To address these potential gender differences, the following research question was posed:

RQ: Do the correlational patterns addressed in hypotheses 1 to 6 differ among male and female participants?

Method

Pretest of Stimulus Material: Competitive vs. Noncompetitive Games

In a pretest, 28 participants (29% men, 71% women; mean age = 26.54 yrs., *SD* = 5.15) rated the competitiveness of six descriptions of computer games. The six game descriptions were largely taken verbatim from those of existing computer games (*Grand Theft Auto: San Andreas*, *Crysis*, *Urban Chaos*, *The Sims*, *My Animal Hospital*, and *Second Life*). They were obtained from the official product websites. All cues referring to the original games (e.g., titles or character names) were excluded from the descriptions (see Appendix).

Competitiveness was assessed with two items: "This game is about winning" (scale ranging from 1 = "does not apply at all" to 5 "does fully apply") and "This game contains competition with other players or competitors" (scale ranging from 1 "very little" to 5 "very much"). The two items showed high internal consistency over all game descriptions (Cronbach's $\alpha = .808$) and were summed up to form a single index of competitiveness. Mean competitiveness ratings were computed for every game description and one-sample t tests were computed to test for significant deviations from the scale midpoint (3.0). Descriptions that were rated significantly higher than 3.0 were categorized as "competitive" games. This was the case for game one (*GTA: San Andreas*, $M = 4.36$, $SD = 0.62$), game two (*Crysis*, $M = 4.43$, $SD = 0.88$), and game three (*Urban Chaos*, $M = 4.14$, $SD = 0.71$), all $t(27)s > 8.57$, all $ps < .001$. Analogously, descriptions that were rated significantly lower than 3.0 were considered "noncompetitive" games. This was the case for game four (*The Sims*, $M = 1.73$, $SD = 0.73$), game five (*My Animal Hospital*, $M = 2.25$, $SD = 0.83$), and game six (*Second Life*, $M = 1.63$, $SD = 0.94$), all $t(27)s < -4.75$, all $ps < .001$.

Main Study

Participants

A total of 666 persons participated in the main study. Participants were recruited in introductory psychology classes at a large University in Germany ($n = 233$) and on the website of a popular German gaming magazine (www.gamestar.de) ($n = 433$). Student participants received course credit for participation. The sample comprises 457 men (68.6%) and 209 women (31.4%). Their ages ranged from 14 – 51 years ($M = 23.2$ yrs.; $SD = 5.37$ yrs). None of the participants of the stimulus pretest took part in the main study.

Measures

Personality factors

The 10-item version of the Big Five Inventory (BFI-10, Rammstedt & John, 2007) was used to measure the personality profiles of the participants and the avatars they created for each of the six game descriptions. The BFI-10 comprises five subscales measuring the Big Five personality factors (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness), with two items per subscale. Participants rated each item (e.g., "I see myself as someone who is outgoing, sociable") on a 5-point scale ranging from 1 "disagree strongly" to 5 "agree strongly." For the rating of the six avatars, the prefix of each item ("I see myself as someone who") was changed to "This Avatar" (e.g., "This Avatar is outgoing, sociable"). Despite the small number

of items, the BFI-10 shows sufficient validity for research purposes (Rammstedt & John, 2007). In a principle components factor analysis, the five-factor structure found by Rammstedt and John (2007) could be replicated for the personality ratings of the participants of this study. The mean factor loadings ranged from .790 for Agreeableness to .884 for Extraversion, whereas the Cronbach's α s of the two-item subscales ranged from $\alpha = .435$ for Agreeableness to $\alpha = .819$ for Extraversion.

Player-avatar difference

To compute a global indicator for the difference between the personality profiles of the players and their avatars', the participants' five BFI-10 sub scores (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness) were subtracted from the respective sub scores of avatar personality. The absolute values of these differences were averaged to form a single indicator of player-avatar difference for each of the six avatars.

Identification with avatar

Two items ("I could fully identify with this avatar" and "I could fully immerse myself in this avatar") were used to measure identification with each of the six avatars created by the participants. Participants rated the two items on a 5-point scale ranging from 1 "strongly disagree" to 5 "strongly agree." The items showed high internal consistency across all game descriptions (Cronbach's $\alpha = .79$).

Game enjoyment

The entertainment expectation regarding the six game descriptions were assessed with two items ("I could have a lot of fun with this game" and "I could have a lot of fun with this avatar") rated on a 5-point scale ranging from 1 "strongly disagree" to 5 "strongly agree." Internal consistency of the items was high (Cronbach's $\alpha = .89$).

Satisfaction with life

Participants' general life satisfaction was assessed with the Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985). The SWLS consists of five statements (e.g., "In most ways my life is close to my ideal.") regarding an individual's general satisfaction with life. Participants were instructed to rate each item on a 7-point scale ranging from 1 "strongly disagree" to 7 "strongly agree." The items of the SWLS showed a satisfactory internal consistency (Cronbach's $\alpha = .86$).

Procedure

Participants recruited in university classes and on the gaming website received the same online questionnaire. In contrast to the web-sample, student participants answered the survey in a university computer lab. Upon arrival on the project website, participants read an introductory text informing them about the scientific purpose of the research project and granting them anonymity for their participation. On the following pages of the survey, participants received the six pretested computer game descriptions in random order. After a game description was presented, participants were asked to think of an avatar "they would like to play with" for the respective game. Participants were instructed to create an avatar by equipping it with personality traits assessed with the 10-item version of the Big Five Inventory (BFI-10, Rammstedt & John, 2007). Furthermore, participants rated identification with the self-created avatar and the entertainment value of every game description. In the final section of the survey, participants rated themselves on the Satisfaction with Life Scale (Diener et al., 1985) and the BFI-10, and reported age, sex, the average number of times they play video or computer games per week, and the average length of a usual gaming session.

Game descriptions were based on existing games to assure high *external* validity. Cues leading to game identification were removed, because game recognition may have influenced the participants' choices. As described above, the participants read game descriptions and indicated their preferred avatar's personality through a questionnaire. They did not create avatars in real games. This approach was chosen to improve *internal* validity. Although various computer and video games allow users to create their own avatars, this is not always the case. Moreover, avatar creation processes and tools vary across games. By using vignettes, we kept features of avatar creation invariant across different games and eliminated variables that may have caused confounding effects, such as visual game characteristics or different sounds.

Results

For data analysis, the original data file was restructured. To allow for the analysis of all avatars in a single statistical model, every avatar designed by the participants was taken as a separate unit of analysis. Thus, the player-avatar difference, identification with the avatar, and media enjoyment scores from all six avatars designed by each participant represent separate cases in the data file, resulting in 666 (number of participants) \times 6 (number of avatars per participant) = 3,996 cases. All four variables considered in hypotheses two to six showed significant zero order correlations. Satisfaction with life was negatively re-

lated to the player-avatar difference ($r = -.16, p < .01$), to identification with the avatar ($r = -.06, p < .01$), and to media enjoyment ($r = -.06, p < .01$). The player-avatar difference showed significant negative correlations with identification with the avatar ($r = -.24, p < .01$) and with media enjoyment ($r = -.06, p < .01$). Finally, identification with the avatar was positively correlated with media enjoyment ($r = .62, p < .01$).

Hypothesis one predicted that in noncompetitive games, players will equip their avatars with personality attributes that bear a higher resemblance to their own personality than in competitive games. An independent samples *t* test was computed to compare the player-avatar difference of avatars created for competitive vs. noncompetitive games. Games were categorized as competitive (*GTA: San Andreas, Crysis, Urban Chaos*) or noncompetitive (*The Sims, My Animal Hospital, Second Life*) according to the results of the pre-test reported above. The results of the *t* test revealed that avatars created for competitive games showed a significantly higher player-avatar difference ($M = 1.15, SD = .47$) than avatars created for noncompetitive games ($M = .88, SD = .45$), $t(3994) = -18.66, p < .001, r = .28$. Accordingly, participants showed a preference for dissimilar avatars in competitive and for similar avatars in noncompetitive games. Therefore, the first hypothesis was supported by the data.

Hypotheses two to six were tested with a structural equation model computed with AMOS 7.0 (Arbuckle, 2006). The hypothesized model is depicted in Figure 1. All variables, except player-avatar difference, were modeled as latent variables. The five items of the Satisfaction with Life Scale (Diener et al., 1985) were used to estimate the latent construct of satisfaction with life. The latent constructs of identification with the avatar and media enjoyment were estimated from the four items listed in the measures section. Player-avatar difference was measured with a single indicator (cf. measures section) and thus was entered into the model as an observed variable. The measurement models led to a satisfactory description of the latent constructs.

The relationships between the studied variables outlined in hypotheses two to six were all tested in the model. Three indicators were used to assess the fit of the predicted model, the χ^2 test, the root mean square error of approximation (RMSEA), and the comparative fit index (CFI). The model fit the data well, $\chi^2(32) = 460.12, p < .001$, RMSEA = .058, CFI = .977). Although the significant χ^2 value indicates suboptimal model fit, this is most likely an effect of the large sample size of the present study [pls. note that 3,996 cases were included in the file = 666 (number of participants) \times 6 (number of avatars per participant)]. As Byrne (2001) notes, the χ^2 test tends to significantly underestimate model fit for larger samples. In contrast to the χ^2 statistic, the RMSEA ($< .08$, Browne & Cudeck, 1992) and CFI ($> .9$, Bentler, 1990) values of the tested model indicated adequate fit (MacCallum, Browne, & Sugawara, 1996).

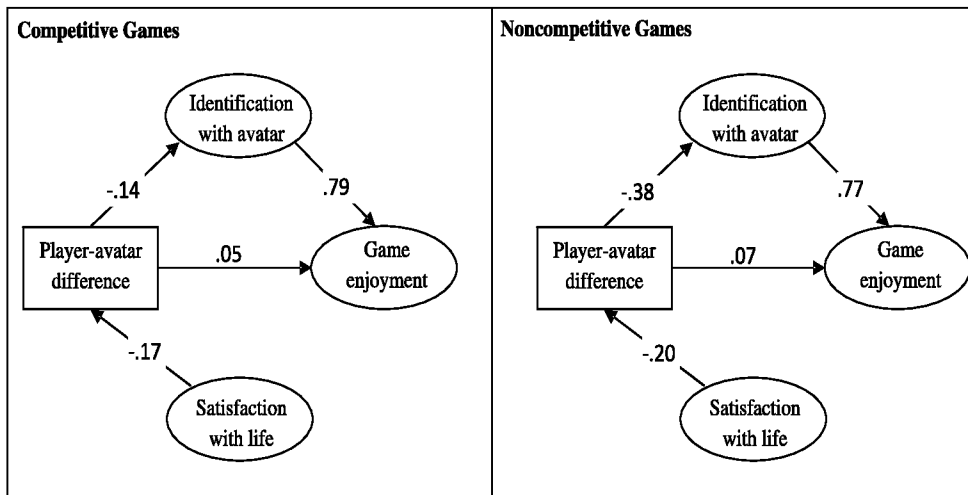


Figure 2. Unconstrained two group model of the relations among satisfaction with life, player-avatar difference, identification, and game enjoyment for competitive vs. noncompetitive games ($\chi^2(80) = 503.99, p < .001, RMSEA = .041, CFI = .977$). Coefficients represent standardized betas significant at $p < .01$.

As predicted in *hypothesis two*, the model revealed a significant negative relationship between satisfaction with life and the difference between player and avatar personality ($\beta = -.17, p < .001$). Accordingly, players with higher life satisfaction created avatars that show a higher resemblance to themselves than participants with lower life satisfaction. Therefore, the second hypothesis is supported by the data.

Hypothesis three predicted that the observed difference between the players' personality profile and their avatars' is negatively related to identification with the avatar. It was assumed that players with similar avatars find it easier to 'become' their avatars. This assumption was supported by the data. The player-avatar difference was negatively related to identification with the avatar ($\beta = -.26, p < .001$). Accordingly, the participants tended to identify more strongly with avatars that showed a higher resemblance to themselves than with avatars that showed a stronger difference to the player. Furthermore, as predicted in *hypothesis four*, the model indicated a strong relationship between identification with the avatar and game enjoyment ($\beta = .77, p < .001$). Accordingly, participants experienced greater media enjoyment in the case of games that allowed a stronger identification with the avatar. This supports hypothesis four.

As predicted in *hypothesis five*, when controlling for identification with the avatar, the model showed a significant positive correlation between player-avatar difference and media enjoyment ($\beta = .11, p < .001$). Accordingly, the original negative direct relationship between the observed player-avatar difference and media enjoyment ($r = -.06, p < .01$) turned into a positive relationship when controlling for the mediating effect of identification with the avatar. Thus, hypothesis five was supported by the model.

To test the moderating effect of game competitiveness on the relation between player-avatar difference and identification that was predicted in *hypothesis six*, a two-group model differentiating between competitive and noncom-

petitive games was computed (pls. see Figure 2). Again, games were categorized as competitive or noncompetitive based on the results of the pretest reported above. Accordingly, the cases of all avatars created for games one to three were used to estimate the model for the group of competitive games, whereas the remaining cases of avatars created for games four to six were used to estimate the model for the group of noncompetitive games. All variables were modeled as described for the initial model that tested hypotheses two to six. The resulting model fit the data well, $\chi^2(64) = 503.99, p < .001, RMSEA = .041, CFI = .977$. This final model is presented in Figure 2. Player-avatar differences showed a significant negative relation to identification with the avatar for both types of games. However, this path was considerably stronger for noncompetitive games ($\beta = -.38, p < .001$) than for competitive games ($\beta = -.14, p < .001$), as was predicted in hypothesis six. To test this difference for significance, the path between player-avatar difference and identification was tested for invariance across both groups. This constrained model showed a significant increase of χ^2 compared to the freely estimated initial model ($\Delta\chi^2(1) = 51.63, p < .001$). Accordingly, the type of game (competitive vs. noncompetitive) significantly moderates the relation between player-avatar difference and identification. Thus, the negative effect of the difference between player and avatar on identification with the avatar is significantly stronger for noncompetitive games than for competitive games. Therefore, this supports hypothesis six.

To explore potential gender differences addressed in RQ1, the causal paths of the final statistical model (see Figure 2) were tested for invariance among male and female participants. Only one path-coefficient differed significantly among male and female players: The player-avatar difference had a significantly stronger influence on identification in competitive games for female ($\beta = -.36, p < .001$) than for male players ($\beta = -.08, p < .01$), $\Delta\chi^2(1) = 22.03, p < .001$. All other causal paths of the model were invariant between male and female participants.

Discussion

This study explored the impact of satisfaction with life and of computer game type on avatar creation, as well as the relationship between player-avatar differences, identification with the avatar, and enjoyment. We argued that users optimize the combination of their prerequisites and the attributes of the media stimuli they choose with the aim to maximize media enjoyment. Games offer players the chance to react to unsatisfactory structures they experience in their lives by creating an avatar with a satisfactory personality structure. The results supported our hypotheses: Players preferred avatars resembling their own personality (1) in noncompetitive games, and (2) when they were satisfied with their own lives. Contrastingly, players tended to choose dissimilar avatars (1) for competitive games and (2) if they were less satisfied with their own lives. Higher similarity between player and avatar personality led to increased identification with the avatar. This relationship was stronger for noncompetitive games compared to competitive games. In both competitive and noncompetitive games, identification was positively related to video game enjoyment.

The player's identification with the avatar seems to be crucial for experiencing entertainment, but is not necessarily tied to similarity. Players might identify with dissimilar avatars, depending on the type of game and on their satisfaction with life. In competitive games, avatars designed in accordance with the game requirements are promising in terms of mastery experiences and control, but do not necessarily match the player's personality attributes. Mastering challenges and controlling the game successfully, in turn, are strong predictors of video game play and enjoyment (Grodal, 2000; Klimmt et al., 2007; Sherry et al., 2006).

As suggested in the model of complex entertainment experiences (Vorderer et al., 2004), our research underlines that user prerequisites and media prerequisites should be considered when trying to explain media enjoyment. In terms of user prerequisites, the users' competitiveness (Hartmann & Klimmt, 2006a) is also a variable that may influence the relationship between player-avatar similarity and entertainment. For players with high trait competitiveness, playing with an avatar designed to match the game requirements and thus allowing for mastery of the game should be more important than player-avatar similarity. In contrast, players with low trait competitiveness may prefer similarity to the avatar over matching the game requirements. In terms of game prerequisites, the structures of video and computer games as determinants of identification processes and entertainment deserve further attention. In our study, we investigated who people would like to be in games that are prototypically competitive or noncompetitive in nature. However, in many current video and computer games, it is up to the players to decide whether to play a game in a very competitive or noncompetitive way, for

example in MMORPGs (Williams et al., 2006) or in action-adventures such as the *Grand Theft Auto*-series (Gillespie, 2002). Thus, further research should also investigate the impact of different game concepts and different gaming strategies applied by the users on avatar choices, identification, and entertainment experience.

Some limitations of the present study have to be considered in the interpretation of the results. Participants received game descriptions as stimuli and they were subsequently asked to imagine an avatar they would like to play with. Although investigating which avatars participants create in *real* games could measure designing behavior more directly, we decided to use this type of experimental manipulation for reasons of internal validity. Regarding internal validity, games allowing avatar creation often encompass very distinct features. In some games, players can only change their avatar's appearance; in others, appearance and biological sex; and in less restricting games even personality traits and physical attributes can be manipulated. However, future research will have to address the external validity of the present investigation by using actual games rather than vignettes, and thus implementing a less artificial setting of avatar creation.

Though the use of vignettes kept the available avatar features constant among gaming conditions, other confounding variables remained. The game descriptions used in this study were categorized as competitive vs. non competitive gaming scenarios based on a pretest. However, in addition to competitiveness, the stimuli differed in a variety of other factors (e.g., game genre, narrative setting, etc.). Future research could address this problem of confounding variables by manipulating competitiveness within one game (e.g., through different instructions). Furthermore, although all cues referring to the original games (e.g., titles or character names) were excluded from the vignettes, experienced players may still have recognized the games. As a result, familiarity with the original games may have influenced the choice of avatar features. A final potential concern regarding the experimental stimuli might be the use of *Second Life* as one of the noncompetitive gaming contexts. As a virtual online environment, *Second Life*, in contrast to most video games, does not feature a narrative or set goals. On the other hand, *Second Life* does offer many gratifications that are also experienced during the use of games, such as: exploring the game environment, role-playing, customization of the avatar and accessories, socializing, and relationship formation (Yee, 2006). Furthermore, a growing number of contemporary games, such as *Animal Crossing* (Nintendo), feature a very minimalistic narrative and are solely based on the exploration of the game world, social interaction with other inhabitants, and gathering of objects and accessories. We therefore believe that the use of *Second Life* as one of our noncompetitive settings was justified.

Current research clearly demonstrates that women and men, as well as boys and girls have different motives to play (Lucas & Sherry, 2004), are interested in different

game genres (Hartmann & Klimmt, 2006a), and are represented differently in video games (Williams, Martins, Con-salvo, & Ivory, 2009). The results of the present study demonstrated a significant difference between male and female participants in the effect of player-avatar difference on identification. In competitive games, player-avatar difference exhibited a stronger negative effect on identification for female users as compared to male users. This gender difference was not found for the effect of avatar-player difference on identification in noncompetitive games. This pattern of results may be due to the different sex-roles of men and women. Competitive games require avatar features that are more in line with male sex-role stereotypes. Both men and women have been shown to prefer games that require avatar features that are in accordance with their gender role (Trepte et al., 2009). It thus appears plausible to assume that in the case of competitive games, player-avatar difference negatively affects identification for female users in two ways: the respective avatars do not only differ from their *actual* selves, but also from their gender role, that is their *ought* self (Higgins, 1987). Male players may also be forced to choose game characters that differ from their own personality in competitive game. This deviation between their actual self and the avatar appears to be less critical for men, however, because the avatar features required by competitive games are not in conflict with male sex-role stereotypes. Future research, therefore, may benefit from addressing the effects of the *social desirability* of avatar-player differences on identification. This is also the case for other potential moderating variables, such as genre preferences or experience with digital games and game related self-efficacy expectations.

In sum, our study provides evidence for the impact of players' identification with their preferred avatars on video game enjoyment. The study revealed that video game enjoyment does not necessarily depend on similarity between players and the avatars they would choose to play with. Similarity, in turn, is influenced by game type and by the players' satisfaction with life. Particularly in the light of the growing number of games that make avatar or character creation their main feature, understanding the processes involved in avatar creation seems to be a promising way to better understand the capability of video and computer games to elicit experiences of video game enjoyment.

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Appendix

Descriptions of the computer games used in this study. The games' titles (in parentheses) were not presented to participants.

Game One (*Grand Theft Auto: San Andreas*)

Five years ago you managed to escape from the problems of Los Santos, a city in the state of San Andreas that is drowning in gang wars, drugs, and corruption. A city in which movie stars and millionaires try to get out of the way of dealers and gangs as much as they can. Now – we're in the early 90ies – you have to go back. Your mother has been murdered, your family has broken apart, and your old friends are on the road to perdition. But shortly after returning to your old home, a bunch of corrupt cops are chasing you for a murder you didn't commit. You have to get away and the trip must lead you through San Andreas to rescue your family and gain control over the streets.

Game Two (*Crysis*)

In the year 2019, a massive asteroid crashes into an island chain belonging to North Korea. The country's government isolates the whole island chain immediately, claiming the secrets of the mysterious asteroid for themselves. The United States send an elite team of the Delta Force Operators to analyze the situation and to send a report to the Pentagon. As the tensions between the USA and North Korea start to escalate, the asteroid bursts open and reveals a huge, extraterrestrial spaceship, more than 2 kilometers high. It is surrounded by a huge dome of energy which freezes most parts of the island. The invasion of the earth has begun. The two rivaling nations form an alliance to stop the aliens and to save the human race. The allies fight epic battles against the aggressive aliens. While hope is waning rapidly, you are guiding an elite troupe through the deep jungle, frozen landscapes and, eventually, into the heart of the aliens' ship where the ultimate battle with the enemy forces is fought in zero gravity.

Game Three (*Urban Chaos*)

A city at the verge of total chaos is terrorized by a gang. You and your elite crew T-Zero, especially trained for the

war against terror, are the last hope in this fast-paced game. Take over the role of a T-zero member, get a reputation, expand your armory and make life miserable for the gang members. Intense hostage scenarios: Keep your nerves to place the perfect shot. Take over control and command America's best firemen, paramedics, and policemen.

Game Four (*The Sims*)

In this game it is your job to manage a neighborhood inhabited by a variety of different game characters – their lives are in your hand. Create a character and build a house for it. Help your character to make a career, earn money, make friends, and fall in love – or turn its life upside down! There is no right or wrong in this game. Test your character's skills by confronting it with the blows of life – challenging and entertaining situations. Family and friends, career and chaos – you're the only one who can help your character to get through all of this!

Game Five (*My Animal Hospital*)

This is an exciting game where you can run your own animal hospital. You examine and medicate fully-grown and baby animals, from puppies to foals. Bit by bit you can build and equip new vivariums, buy new medical instruments, and even found a horse clinic. While building your career, you can earn lots of awards.

Game Six (*Second Life*)

This is a virtual world that is created and continuously shaped by its residents. You can find a never-ending variety of possibilities here! Explore this world full of surprises and adventure. Visit neighborhoods, shopping malls, night-clubs, sports stadiums, churches, libraries, and many more. Almost everything existing in the real world can be found in here. Make your dreams come true. Stroll around, take a train, or board a plane. Meet new and interesting people. Become a member of this continuously growing and multifaceted community and get to know people from all around the world. Have fun and be active together with other residents of this entertaining online world.