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I am (not) my avatar: A review of the user-avatar relationships in Massively Multiplayer Online Worlds

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Abstract

Literature currently presents many studies on the self in the context of Massively Multiplayer Online Worlds, many of which have explored both the self of the user (offline self) and the avatar (online self). Nevertheless, a review of the results obtained by these studies has never been conducted until now. The present work aimed to fill this gap, analysing forty-three empirical studies with the specific purpose of detecting the kinds of user-avatar relationship that have been identified by literature and of exploring how these kinds of relationship are related to other psychological variables, e.g. game addiction. Results showed that literature explored the user-avatar relationship by investigating four self-dimensions (i.e., physical aspects, self-concept, self-needs, and identifications). Two kinds of user-avatar relationships recurred more frequently: actualisation and idealisation, of which, considering the correlations with other variables, idealization appears to be riskier. The theoretical contribution and practical applications of this work are discussed.

Keywords: Self; avatar; MMO; online worlds; review

Introduction

Massively multiplayer online worlds (MMOWs) are virtual environments that visually recreate physical spaces in which a large number of people from different parts of the world can interact with virtual objects and with other people online, and in which the users are represented by virtual characters (Bainbridge, 2007). At present, two main kinds of MMOWs are identifiable: the game-oriented worlds and the socialisation-oriented worlds (Bessière, Ellis, & Kellogg, 2009; Ducheneaut, Wen, Yee, & Wadley, 2009; Gupta, Jin, Sanders, Sherman, & Simha, 2014). World of Warcraft (WoW) and Second Life (SL) are examples of these two subcategories, being also the two most famous MMOWs (Bedekar & Goyal, 2012) in terms of both the number of subscribers and money exchange (Andreas, Tsiatsos, Terzidou, & Pomportsis, 2010; Blizzard Entertainment, 2010).

The scientific study of MMOWs has attracted researchers from many disciplines, including psychology. In fact, due to their characteristics, MMOWs offer many different psychological aspects to investigate such as motivations (e.g., Yee, 2006), online sociality and communications (e.g., Steinkuehler, 2006), psychopathological consequences (e.g., Hussain, Griffiths, & Baguley, 2012) and of course also aspects related to the self, which is exactly the issue on which this review is focused. In social psychological literature, the self has been studied from different epistemological and theoretical perspectives (e.g., Mancini, 2010), resulting as a multi-dimensional construct that different theoretical models operationalised in terms of various self-components and/or self-processes. Some examples of self-components are: the personality traits that influence identity development and self-expression processes (e.g., Costa & McCrae, 1994); the concept of 'self-schemas', which includes what individuals think they are, who they would like to be, who they are afraid to become (Markus & Nurius, 1986), and/or who others think they have to be (Higgins, 1987); some specific aspects of the self-concept such as the body image (Schilder, 1935);

the distinction between personal and social identity (Tajfel & Turner, 1986). According to their theoretical frameworks (Mancini, 2010), psychological studies associated specific self-processes to these self-components. For example, cognitive approaches outlined self processes such as self-presentation tactics (Goffman, 1959) and self-disclosure behaviours (Archer, 1980); motivational approaches highlighted self processes such as self-esteem, self-efficacy, and the sense of personal sameness, continuity, and uniqueness (Breakwell, 1986; Erikson, 1950); social approaches outlined social identification processes (Tajfel & Turner, 1986).

The adequacy of MMOWs as environments in which to study the self is not new in literature. In fact, MMOWs are environments where users acknowledge an authentic experience of their 'inner diversity' (Turkle, 1995, p. 254) and create avatars whose virtual life is subjectively meaningful and relevant to the user (Wallace, 1999). By playing their avatars, users can experiment with various identities ranging from possible selves similar to the actual one (Kendall, 2002) to selves that are completely different from it (Bruckman, 1992). Moreover, the avatars, as digital self-representations, may change depending on contextual and cultural variables such as the avatar customization features offered by the platform, the kind of audience with which the user interfaces through the avatar, and the gender of the user (Triberti, Durosini, Aschieri, Villani, & Riva, 2017a). With respect to the context, a relevant factor is the MMOW setting. MMOW setting can have an influence on the identity exploration that can be done and on the distance that the avatar can have from the actual self of the user. Specifically, in MMOWs, identity exploration possibilities are often favored by the presence of identities, roles, and social categories that the user can choose and that do not exist in the offline world. For example, in WoW, only one of the 13 available races is realistic (i.e., the human race), while all the others are unrealistic races typical of the fantasy setting (e.g., orcs, undead, etc.).

In light of all this, many authors wondered about the relationship between the self of the user (offline self) and the avatar (online self), generally basing their studies on the major psychosocial theories on self and identity. Many of these studies (e.g. Bessière, Seay, & Kiesler, 2007; Mancini & Sibilla, 2017), in fact, drew from Higgins's (1987) self-discrepancy theory (SDT), identifying and comparing three domains of the self that co-exist when people use MMOWs: the actual self, i.e. the user's perception of what s/he is like in the real life; the ideal self, i.e. the user's perception of what he/she would like to be; the avatar self. In this perspective, SDT provides some indications referred to the user discomfort, considering that a great discrepancy between the actual and the ideal self leads to negative symptoms such as low self-esteem. Other studies (e.g. Gabbiadini, Mari, Volpato, & Monaci, 2014; van Looy, Courtois, de Vocht, & de Marez, 2012) were inspired by the Social Identity (Tajfel & Turner, 1979) and Social Categorisation (Oakes & Turner, 1980) theories, focusing on the social identities that can emerge using MMOWs, such as those related to guild or to community memberships. In this sense, these studies explored online social memberships, online social identifications and their correlates, such as differences among groups or inter-group bias. Also Self-Determination theory (Ryan & Deci, 2000) was in some cases applied to analyse the self in the context of MMOWs (e.g. Turkay & Kinzer, 2014), focusing on how in these virtual environments people are motivated to fulfil the three innate psychological needs of competence, relatedness and autonomy. In fact, using MMOWs implies that the user creates an avatar, performs actions, interacts with other players, and often achieves goals; this suggests that the user's self needs can be satisfied within these environments.

Despite the amount of studies that investigated the relationship between the self of the MMOW user and the avatar, a review of their empirical results has never been conducted until now. The present work wanted to fill this gap, having the specific aim of detecting the kinds of user-avatar relationship that have been empirically identified by this literature—e.g., the avatar being similar to or different from the actual self of the user—and of describing how these relationships are related to other psychological variables such as game motivations and attitudes, sociality, and psychopathological correlates. This investigation will be done considering the context of MMOWs because, as mentioned above, they are particularly adequate contexts to study the self. In fact, they offer great possibilities in terms of avatar creation and customization and, therefore, in terms of identity exploration, which also occurs within a particularly rich social context. In this sense, MMOWs allow a more in-depth and rich exploration of the user-avatar relationships than other virtual contexts. Given its aim, this work constitutes a review of the results, which will then focus on the results obtained by the studies that investigated the topic of interest.

Method

Data Collection

The collection of publications has been limited to the scientific articles or reviews published from 01 January 2003 to 14 December 2017. In 2003, in fact, Second Life—one of the most important MMOWs—was launched online (Linden Lab, 2003). The publications have been collected in three steps referred to three types of sources: a) scientific databases, b) scientific journals about cyberpsychology, and c) the references of the papers collected in the steps a) and b).

Specifically, four databases were considered in step a): *Psychology and Behavioral Sciences Collection*, *PsycINFO*, *Scopus* and *Web of Science*[1]. Since our intent was to collect contributions focused on the study of the offline and online self in its wide conceptualisation, and on the MMOWs as the study context, the search string used was: *(self* OR identit*) AND ((mmo* OR muve*) AND 'online gam*')*[2]. The string has been applied considering the title, abstract, and keywords of each publication. This research led to a corpus of 92 publications, 10 of which were from *Psychology and Behavioral Sciences Collection*, 31 from *PsycINFO*, 24 from *Scopus*, and 27 from *Web of Science*.

In order to integrate any relevant publications not emerged in step a), another research was carried out (step b) using a more inclusive string and investigating five cyberpsychology journals, i.e. '*Computers in Human Behavior*', '*CyberPsychology and Behavior*', '*Cyberpsychology, Behavior and Social Networking*', '*Cyberpsychology: Journal of Psychosocial Research on Cyberspace*', '*Games and Culture*'. The five journals were chosen on a subjective basis, including journals that explicitly declare interest in cyberpsychology and games. The examination was conducted using the string *(self* AND gam*)* searched in the title, abstract and keywords of publications. This research led to 188 results.

In the step c), 23 pertinent publications were extracted from the references to the articles collected in the two previous steps.

Selection Criteria

From the total corpus of the 303 publications collected, 47 were duplicates and have been eliminated. Four filters were then applied to the remaining 256 publications. To collect an internally consistent set of articles to analyse, it was first decided to consider only empirical studies, so 14 articles were excluded. Secondly, the thematic appropriateness of each publication was evaluated using the judgements of two independent evaluators: one of the authors (FS) and one external expert. The two evaluators screened the title, abstract and keywords of the research results and discussed it in order to reach 100% agreement: in this step, 172 articles were excluded because they did not actually consider MMOWs and/or self-variables, leaving a corpus of 70 articles. Thirdly, only works written in English were selected, so 3 papers were excluded. Lastly, only works that investigated the self in both the online and offline contexts—i.e. that investigated both the self of the user and the avatar—were selected, so 24 articles were excluded. These filters led to a corpus of 43 papers that have been published in English from 2006 to 2017.

Data Analysis

A content analysis of the 43 studies was conducted, firstly extracting the variables regarding the self (*self-variables*) which they examined. Following the theoretical conceptualisations of the self used in the psychosocial literature and based on the theoretical frameworks of the studies, these self-variables were aggregated into more general *self-dimensions* (physical aspects, self-concept, self-needs, identifications; Table 1; Figure 1). Any doubts concerning the categorization were discussed and resolved reaching agreement between the authors. Self dimensions were used as criteria for systematically analysing the selected studies and extracting the kinds of user-avatar relationship they have identified. Then the associations between these kinds of relationship and other psychological variables (e.g. motivations, sociality, psychopathology) have been analysed.

In Appendix, the methodological details of the 43 studies are reported.

Results

Table 1. *Self-Dimensions Obtained from the Aggregation of the Self-Variables Analysed in the 43 Studies, the Self Variables Included in Each of Them, and the Number of Studies That Investigated Each Dimension.*

Self dimension	Self variables	Number of studies (out of 43)
Physical aspects	Perceived similarity between user and avatar/customization motives; gender swapping	12
Self-concept	Discrepancy between user's and avatar's personality traits; discrepancy between offline and online self-concept	13
Self-needs	Self-expression/self-presentation/self-disclosure; self-esteem/self-efficacy	12
Identifications	Avatar identification/attachment; online sense of community/game identification; group identification	19

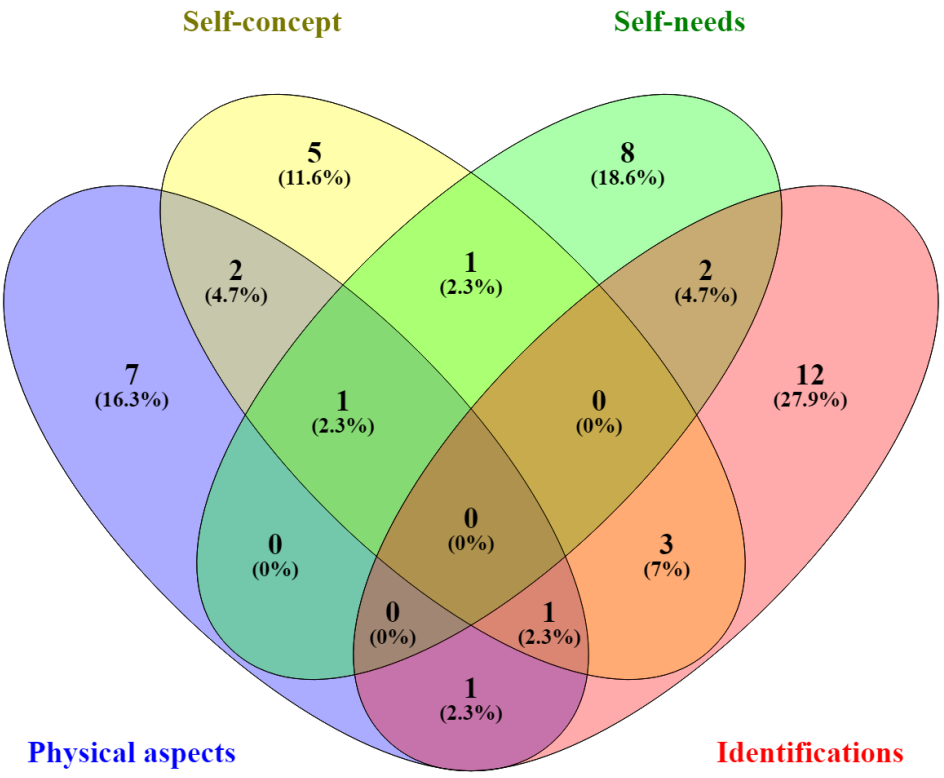

Figure 1. Venn diagram representing the four self dimensions and their overlaps, together with the number and percentage of the related studies.

Physical Aspects

The physical appearance of the avatars has been explored by twelve studies. Most (eleven) of them explored the perceived similarity between the user and the avatar, that is the motives guiding avatar customization, and identified different kinds of user-avatar relationship. In general, based on the SDT (Higgins, 1987), these studies showed that the creation of an avatar that is better than the user, resembling the ideal self more closely than the actual self does—i.e., the idealisation of avatar appearance—is the most common trend, although not the only one. The prevalence of this kind of relationship was suggested by the results obtained by Ducheneaut et al. (2009). In this study, it emerged that in all users there was the tendency to create avatars that were physically better than themselves—with the greatest discrepancies being related to attractiveness, physical fitness, and the characteristic of 'standing out from the crowd'—and that this tendency was prominent among users with a high body mass index. The avatar idealisation has been detected also by Messinger, Ge, Stroulia, Lyons, and Smirnov

(2008), who found that, balancing motives for self-enhancement and self-verification, users tended to create avatars that resembled their real looks, but with moderate enhancements.

Nevertheless, different motives beyond the mere avatar idealisation emerged from other studies. For example, Costello (2012) identified two kinds of users: the ones thinking that the avatar must resemble the actual physical appearance of the user ('ciscarnate realists'), and the ones thinking that the avatar should reflect the real soul of the user, independently of how he/she actually looks ('transcarnate realists'). Consistently, it was found that the avatar could totally resemble the offline appearance (Cacioli & Mussap, 2014; Parmentier & Rolland, 2009), partially reflect it (Kafai, Fields, & Cook, 2007, 2010), or be a slightly improved version of the user (Cacioli & Mussap, 2014; Ducheneaut et al., 2009; Parmentier & Rolland, 2009). In other cases, the avatar appeared to be distant from the user, overstepping the boundaries of real life. In this case, the avatar was customised in order to have characteristics that the user could not have in the real life (Kafai et al., 2007), and there was a complete transformation or metamorphosis of the user's look (Parmentier & Rolland, 2009).

Some other authors identified customisation motives with no reference to the offline look of the user. This is the case of mere aesthetic and affiliative motives, in which the avatar is customised in order to resemble a fictional character (Kafai et al., 2007) or a popular trend (Ducheneaut et al., 2009; Kafai et al., 2007, 2010). Finally, motives functioning to elicit reactions in the other users (Kafai et al., 2007, 2010), to stand out from the other avatars (Ducheneaut et al., 2009), or to conform to the character or the role playing (Cacioli & Mussap, 2014) were found in the literature reviewed. Consistently with these results, observing SL avatars, Costello (2012) noticed a great variety in their looks: most of them looked consistent with the culturally shared models of beauty, but, together with these 'beautiful' avatars, other kinds of avatar were also present in the virtual world, such as older, ethnically different, plump, pedestrian, fanciful or non-humanoid avatars.

A specific theme we included in the self-dimension of physical aspects—and that has been investigated by one study—is gender swapping, i.e. the creation of an avatar of the gender opposite to the user's one. Gender swapping involves the majority (57%) of MMORPG users, and significantly more males than females. Furthermore, gender swapping turned out to be unrelated to gender identity, while it was found that, in male users, it was positively correlated with the perceived virtual world anonymity and with the perceived benefits of playing with female characters, such as a greater chance of receiving help from other users. Beyond social amiability and its consequent benefits, other possible motives for gender-swapping emerged, such as having fun or experimenting with some aspects of one's personality (Hussain & Griffiths, 2008).

The physical distance the users put between themselves and the avatar was found to be related to attitudes towards the virtual world. In particular, three studies (Costello, 2012; Parmentier & Rolland, 2009; Wang, Yang, & Shen, 2014) showed that the users who maintained a shorter distance between themselves and their avatars saw the virtual world as not separated from the real one or as an extension of it, while the users whose avatars were distant from themselves saw the virtual world as separate from the real one, thus being able to expand human possibilities beyond the limits imposed by the real world. It was this last kind of user who also experienced a higher presence when playing. Furthermore, it was found that the perceived physical similarity between the avatar and the user was positively predicted by the user's self-esteem (Pringle, 2015) and homophily—i.e. the perception of similarity between avatar and user in terms of attitudes and beliefs (Hooi & Cho, 2014)—even if the physical discrepancy between the avatar and the user tended to remain larger than the psychological discrepancy (Lin & Wang, 2014).

Self-Concept

Thirteen studies have studied the self-concept of the user and the avatar. Seven of these studies have done this analysis by investigating personality traits, i.e. user and avatar characteristic patterns of thinking, feeling and behaving, also in this case generally relying on SDT (Higgins, 1987). Comparing the personality traits of both the user and the avatar, these studies showed that, just as the physical aspects, avatar personality usually tended to be a 'better' version of the user's personality (Bessière et al., 2007; Ducheneaut et al., 2009), that avatar behaviour was similar to but less inhibited than the user's behaviour (Messinger et al., 2008), and that the avatar agreeableness (McCreery, Krach, Schrader, & Boone, 2012; McCreery, Schrader, Krach, & Boone, 2013) and attractiveness (Messinger et al., 2008) were predicted by the respective user's personality traits. Based on SDT,

these studies explored the personality traits of the avatar assuming that it can oscillate between the actual and the ideal personality of the user, and that the user's ideal personality is better than his/her actual one. However, as the study conducted by Mancini and Sibilla (2017) showed, the avatar personality can be better than the ideal self of the user, or worse than their actual self, thus not being necessarily positioned between the actual and the ideal self of the user. In this study, four discrepancy profiles (idealised, actualised, alter ego, negative hero) common to the personality factors extroversion, consciousness, agreeableness and emotional stability and stable within players emerged. They converged into four kinds of user-avatar relationship in which the avatar was respectively similar, an extension, other than self, and an antithesis of the self of the user.

Some associations between the personality user-avatar relationships and other psychological variables emerged from the studies reviewed. Specifically, it emerged that a greater avatar idealisation was associated with high depression, low self-esteem (Bessière et al., 2007), and high avatar identification (Ducheneaut et al., 2009; Mancini & Sibilla, 2017) which was also associated with a pathological gaming tendency (Courtois, van Looy, de Vocht, & de Marez, 2011).

The other six studies instead explored the self-concept of the user and the avatar without referring to personality trait models. This literature has shown that the proximity between the user's actual self-concept and the avatar—i.e., having an actualised avatar—was greater in younger and single/unmarried users (Blinka, 2008). The similarity between the user's self-concept and the avatar also emerged as an important element for game involvement, increasing identification with the guild (Gabbiadini et al., 2014) and presence while playing, thus resulting in a greater flow (Jin, 2012). Flow, or optimal experience, is a state of consciousness in which the person is totally immersed in the activity he/she is doing, becoming unaware of the surrounding physical environment and experiencing a sense of time distortion (Csikszentmihalyi, 1990). Furthermore, having an actualized avatar was found to be correlated with the appearance similarity between the user and the avatar (Hooi & Cho, 2014). On the other hand, a greater actual-avatar discrepancy—i.e. having an idealised avatar—emerged as an unhealthy condition, being associated with low self-esteem, high online disinhibition (Wang et al., 2014) and game addiction (Leménager et al., 2013).

Self-Needs

Twelve studies of the analysed corpus have investigated self-needs. In this case, no direct comparisons between the user and the avatar have been made, but the user-avatar relationship has been analysed investigating how the avatar can satisfy some user's self-needs, specifically self-presentation, self-expression, self-disclosure, self-esteem, and self-efficacy.

Seven studies have explored self-presentation, self-expression, and self-disclosure needs. First of all, this literature has shown that expressing and presenting one's self online are important needs that the avatar can satisfy. In fact, it emerged that users used avatars in order to manage their self-images (Guitton, 2010) and that in the online context people felt more protected and less judged, thus feeling 'more themselves' and disclosing more (de Larios & Lang, 2014). Specifically, self-disclosure was higher in female users (Cole & Griffiths, 2007), and was positively influenced by personal innovativeness (Park & Chung, 2011). On the other hand, it was found that revealing one's true self online more than offline predicted problematic internet use (Lee & Leeson, 2015). Moreover, the desire to present oneself through the avatar was associated with game design quality and online game trust (Park & Chung, 2011); with the interactions among the users (Park & Chung, 2011; Reer & Krämer, 2014); with trust towards the other users (Ratan, Chung, Shen, Williams, & Poole, 2010); and with social capital acquisition (Reer & Krämer, 2014).

Beyond self-presentation, self-expression, and self-disclosure, other self-needs have been investigated by five studies, which especially focused on self-esteem and self-efficacy. For example, Bessière et al. (2007) and Wang et al. (2014) studies showed a negative correlation between the user's self-esteem and avatar idealization. The individual and collective efficacy resulted to be positively correlated with the avatar identification and community identification respectively in the study by Kim, Lee, and Kang (2012). Finally, self-esteem (e.g., You, Kim, & Lee, 2017) and self-efficacy (Snodgrass, Dengah, Lacy, & Fagan, 2013) were found negatively correlated with problematic gaming. In particular, Snodgrass et al. (2013) found that problematic gaming was negatively correlated with the offline self-efficacy and positively correlated with the online self-efficacy, suggesting that users with a low

self-needs' satisfaction in real life try to compensate for this lack in the MMORPG context, and that this attempt is correlated with problematic gaming.

Identifications

As in the case of self-needs, also the studies which investigated identifications did not make a direct comparison between the user and the avatar, but the user-avatar relationship has been investigated by studying the degree of overlap between the user and the avatar, i.e., the identification. In fact, using MMOWs, many identifications can emerge, towards both the avatar in itself (avatar identification) and the social groups—at many levels, e.g. the game community or the guild (van Looy et al., 2012)—the user/avatar can belong to. Nineteen studies of the analysed corpus investigated the identifications that can emerge in MMOWs, relating them with many different psychosocial variables.

Twelve of the nineteen studies explored avatar identification, which can be defined as the degree of association between the user and their avatar (van Looy, Courtois, & de Vocht, 2010). Three subcategories of avatar identification have been defined by van Looy et al. (2012): perceived similarity, embodied presence, and wishful identification. Furthermore, a form of emotional attachment towards the avatar has been observed in MMOW users, who did not consider avatars only as a form of self-presentation, but also as a form of self-construction, allowing the users to experiment with different selves (Vicdan & Ulusoy, 2008). Also in the study by Costello (2012), SL users appeared to be connected, embodied, and identified with their own avatars, as well as to feel affection also for the avatars of their friends. Avatar identification/attachment has been found to be higher in male, younger, and single users (Blinka, 2008; Smahel, Blinka, & Ledabyl, 2008) and in those with more idealised avatars (Courtois et al., 2011; Ducheneaut et al., 2009). Avatar identification/attachment was also found to be positively influenced by avatar attractiveness (van Looy et al., 2012) and by the customisation process (Turkay & Kinzer, 2014), and to be associated with motivations of role playing, customisation, and escapism (van Looy et al., 2012). Furthermore, prosocial motivations were found to be higher in users with a high character attachment, while antisocial motivations were higher in users with a low sense of responsibility towards the avatar (Bowman, Schultheiss, & Schumann, 2012). Avatar identification also resulted in an increase of interpersonal trust among game community members in Kim et al.'s (2012) study. On the other hand, an excessive attachment towards the avatar turned out to be unhealthy in the study by Smahel et al. (2008), in which users who were more proud or ashamed of their virtual character had a higher tendency towards gaming addiction. Consistent results have been obtained by You et al. (2017), in whose study avatar identification resulted in being negatively correlated with social skills and positively correlated with gaming addiction and depression. Finally, a theoretically relevant study on this topic is the one conducted by Banks and Bowman (2016). In this work, the authors investigated the character attachment and the player-avatar relationships, integrating two different approaches in studying the user-avatar relationship, i.e., respectively, the parasocial approach—that considers the one-way user's attitude towards the avatar (Lewis, Weber, & Bowman, 2008)—and the social approach—that considers the two-way, mutual connection between the user and the avatar (Banks, 2013). The analysis conducted on the WoW users' interviews revealed strong associations among language patterns, dimensions of character attachment, and player-avatar relationships types, suggesting the adequacy of an integrated model of player-avatar relationship.

Online sense of community and game identification have been explored by six studies. This literature has shown that online community involvement was positively influenced by game self-efficacy and by interdependent self-construal (Markus & Kitayama, 1991), and that community involvement increased the knowledge that the user acquired through the game (Hopp, Barker, & Schmitz, 2015). On the other hand, the tendency to obtain a sense of community from online relationships predicted problematic internet use, while the tendency to obtain a sense of community from offline relationships prevented it (Caplan, Williams, & Yee, 2009). Some other studies investigated the identification with the game, which was found to be positively correlated with community engagement (Badrinarayanan, Sierra, & Martin, 2015), to be positively influenced by the "image of virtual community", and to have an impact on the trust expressed towards the community members and on the perceived collective efficacy of the community (Kim et al., 2012). Furthermore, MMOW community identification resulted to positively affect MMO engagement as well as user's self-esteem and social competence, while it had a negative effect on user's loneliness (Kaye, Kowert, & Quinn, 2017). Finally, results have been obtained that show how MMOWs users not only identified as MMOWs users (game identification) but also introjected the cultural stereotypes on MMOWs users (Bergstrom, Fisher, & Jenson, 2014).

Finally, two studies have explored group identification. While game identification was generally associated with social identity variables, group identification—i.e. the identification with one's in-game group, e.g. the guild or the faction—was more frequently associated with personal identity variables, such as the user's self-needs. Group identification, in fact, was found to be positively predicted by the need for self-esteem, the need for physical/social uncertainty reduction, the need for optimal distinctiveness, and the inclusion of the avatar in the self, while membership duration and the need for uncertainty reduction concerning values did not have a significant impact on it (Gabbiadini et al., 2014). Nevertheless, group identification also emerged as being correlated with intergroup bias (Guegan, Moliner, & Buisine, 2015).

Discussion

How the self of the MMOW user and the avatar are related? This work aimed to provide a wide answer to this question by detecting the kinds of user-avatar relationship that have been empirically identified in literature and to describe how these kinds of relationships are related to other psychological variables. In order to do this, 43 empirical studies investigating the online and offline self of MMOW users have been collected, selected, and analysed. First of all, four different self-dimensions have been extracted from the analysed literature: physical aspects, self-concept, self-needs, and identifications. Although they all regard the self, these dimensions appear quite diverse from each other. This result, which can be considered the first important result of the review, confirms the internal variety of the construct of self and the variety of epistemological and theoretical perspectives adopted in studying it. Nevertheless, the studies referred to the four dimensions show some form of consistency in terms of obtained results. Regardless of the specific self-dimension considered, the literature often offered a comparison between the avatar and offline self of the user (Bessière et al., 2007; Blinka, 2008; Cacioli & Mussap, 2014; Costello, 2012; Courtois et al., 2011; Ducheneaut et al., 2009; Gabbiadini et al., 2014; Hooi & Cho, 2014; Hussain & Griffiths, 2008; Jin, 2012; Kafai et al., 2007, 2010; Leménager et al., 2013; Lin & Wang, 2014; Mancini & Sibilla, 2017; McCreery et al. 2012; McCreery et al., 2013; Messinger et al., 2008; Parmentier & Rolland, 2009; Pringle, 2015; Wang et al., 2014), and identified different kinds of user-avatar relationship showing that the avatar is generally a better version of the user's self (Bessière et al., 2007; Ducheneaut et al., 2009; Messinger et al., 2008). Furthermore, the user-avatar relationships were often connected with other psychological variables, especially with attitudes towards MMOWs (Costello, 2012; Parmentier & Rolland, 2009; Wang et al., 2014), motivations for playing (Bowman et al., 2012; van Looy et al., 2012), sociality (Bowman et al., 2012; Gabbiadini et al., 2014; Hussain & Griffiths, 2008; Kim et al., 2012; Wang et al., 2014), and psychopathological indicators such as gaming addiction (Courtois et al., 2011; Lee & Leeson, 2015; Leménager et al., 2013; Smahel et al., 2008; Snodgrass et al., 2013; You et al., 2017).

Thus, the studies reviewed reveal that the avatar is usually an idealised version of the user, but also that many customisation possibilities exist beyond idealisation, possibilities that are gladly explored by the users. In particular, it appears that the avatar can either be similar to the user, replicating or slightly improving the user's actual physical or psychological characteristics (actualized avatar) (Bessière et al., 2007; Cacioli & Mussap, 2014; Costello, 2012; Ducheneaut et al., 2009; Kafai et al., 2007, 2010; Mancini & Sibilla, 2017; McCreery et al., 2012; McCreery et al., 2013; Messinger et al., 2008; Parmentier & Rolland, 2009), or very different from the user, being a greatly transformed version of them (utopian avatar) (Costello, 2012; Kafai et al., 2007; Mancini & Sibilla, 2017; Parmentier & Rolland, 2009). It is interesting noting that these customisation possibilities are correlated with different attitudes towards the virtual worlds, and that these various cases appear to be ascribable to two main possibilities: users with avatars that resemble or are very similar to themselves tend to see the virtual world as an extension of the offline world, and to be suspicious about it; in the other case, users with avatars that are quite distant from themselves tend to see the virtual world as completely separate from the offline world and are enthusiastic about it, recognising its revolutionary potential (Costello, 2012; Parmentier & Rolland, 2009; Wang et al., 2014).

This dichotomy could be linked to two theoretical approaches of social psychology: the relational approach and the socio-constructionist approach, respectively (Mancini & Sibilla, 2017). In the relational approach, the avatar is seen as a means to 'explore' the user's identity, i.e. it is used to experiment with a possible self, different but still similar to the actual one (Baym, 2002; Kendall, 2002; Kennedy, 2006). In this case, the proximity between the online and the offline actual self allows the transfer of some self-characteristics from the online to the offline world (Dunn & Guadagno, 2012; Wang et al., 2014). In the socio-constructionist approach, the avatar is instead seen as a means to 'experiment' with identities that are distant from the offline one, disconnected from what the user actually is:

in this case, the transfer of self-characteristics does not occur and the avatar is used to experiment with identities that the user cannot experiment with in real life (Bruckman, 1992; Curtis, 1996; Turkle, 1995; Vicdan & Ulusoy, 2008). However, it is important to specify that very rarely (with a few exceptions, e.g., Cacioli & Mussap, 2014; Ducheneaut et al., 2009; Kafai et al., 2007, 2010) the studies considered the possibility that the avatar could be customised without reference to the user's actual or desired self, thus being independent from the offline self: in this sense, these studies do not actually have a socio-constructionist approach since they do not consider the possibility of the avatar being a mere artifact. In fact, the reviewed studies often investigated the distance between the avatar and the offline self, comparing the characteristics of the avatar with the ones of the actual or the ideal self of the users and assuming that the avatar is positioned between them, remaining within the offline self domain (Bessière et al., 2007; Cacioli & Mussap, 2014; Costello, 2012; Ducheneaut et al., 2009; Gabbiadini et al., 2014; Hooi & Cho, 2014; Kafai et al., 2010; Leménager et al., 2013; McCreery et al., 2012; McCreery et al., 2013; Messinger et al., 2008; Wang et al., 2014). Consequently, actualisation or idealisation have emerged as the most frequent customisation strategies.

Comparing these two main customisation strategies, the results obtained from the analysed literature outline that a great distance between the user and the avatar— i.e. an excessive idealisation—is unhealthy. In fact, while using an avatar that is close to the actual self of the user was correlated with high self-esteem (Bessière et al., 2007; Pringle, 2015), good online sociality (Gabbiadini et al., 2014), and good game experience in terms of presence and flow (Jin, 2012), using an avatar that is very distant from the actual self— i.e. an excessively idealised avatar—was correlated with problematic gaming (Courtois et al., 2011; Leménager et al., 2013). In this sense, it seems that constructing an avatar that is far from what the user actually is and near to what he/she would like to be, represents an attempt to obtain, in the virtual context, what is lacking in the offline one. Also the studies that did not make a direct comparison between the user and the avatar but have investigated other self dimensions (self-needs and identifications), obtained consistent results. In fact, these studies show that obtaining a sense of community and of self-efficacy from the online context more than from the offline one is correlated with pathology (Caplan et al., 2009), excessive game involvement (Badrinarayanan et al., 2015) and high avatar attachment (Kim et al., 2012). Coherently, studies that have investigated self-needs suggest that the offline satisfaction of the user's self-needs, such as self-esteem and self-efficacy, is a protective factor against problematic gaming (Caplan et al., 2009; Snodgrass et al., 2013; You et al., 2017). In summary, it emerges that, through their avatars, MMOW users both explore possible selves and experiment with unrealizable but desirable selves, even if the exploration of close, possible selves appears to be the most frequent case, as well as the most satisfying and healthy. Furthermore, this literature suggests that users with some offline deficiencies are more exposed to problematic gaming.

As mentioned above, this literature has investigated the user-avatar relationship mainly considering an avatar that oscillates between the actual and the ideal self of the user, keeping Higgins (1987) theory as the main theoretical framework and showing that, comparing actualisation and idealisation, idealisation is the riskier strategy. Other customization strategies are not adequately investigated in this literature: only a few studies have evaluated and confirmed the possibility of an avatar that oversteps the offline self from a physical (Kafai et al., 2007; Parmentier & Rolland, 2009) or psychological (Mancini & Sibilla, 2017) point of view. In particular, the study by Mancini and Sibilla (2017) showed that this kind of user-avatar relationship was associated with a lower avatar identification, suggesting that a simulacra avatar could prevent from online game addiction. Nevertheless, other studies are needed to confirm this results, as well as other studies would be useful to better explore how variables such as well-being, self-needs' satisfaction, and pathology are associated with the different possible customisation strategies.

Of course, this review presents some limitations. For example, no differentiation has been made among the various studies, analysing together studies characterised by different qualities, approaches, and methods. The analysed studies were published from 2006 to 2017. This wide temporal range allowed to obtain a broad picture of literature. On the other hand, the results obtained by these studies have not been positioned in the temporal continuum. Therefore, there are no indications about any changes over time due for example to the evolution of technologies and/or of users. Furthermore, we have not analysed grey literature, articles published in non-indexed journals, and articles published in languages other than English (even if the latter were few). Also the keywords chosen for collecting papers (« online gam* »; gam*) may have led to an under-representation of papers regarding socialization-oriented MMOWs. Finally, another limitation is not having analysed experimental studies. This lack is due to the choice to analyse a corpus of papers emerged from the systematic research, from which such studies

did not emerge. Nevertheless, the experimental studies appear to be relevant, since they permit to assess the effect of specific variables and to draw conclusions about causality. For example, this literature permitted to identify the role in avatar creation of variables related to the user—such as sex roles (Trepte, Reinecke, & Behr, 2009), race (Lee & Park, 2011), age/phase of development or self-perception (Villani, Gatti, Triberti, Confalonieri, & Riva, 2016)—and of contextual variables—such as ideal/actual self-priming (Jin, 2010), game context (Triberti, Durosini, Aschieri, Villani, & Riva, 2017b), or game characteristics (Trepte et al., 2009). Future reviews may focus on experimental research, which still stands as non-reviewed at this point. The systematic collection of articles has also led to the lack of studies pertaining to the effects of avatars on behaviour. Yet, users tend to customize the appearance of their avatars consistently with how they intend to behave in the virtual world (Vasalou & Joinson, 2009). In this sense, it would have been useful to analyse studies such as that by Yee, Bailenson, and Ducheneaut (2009), concerning the effects of the embodied avatar, or such as those by Eastwick and Gardner (2009) and Waddell and Ivory (2015), concerning the effects of the avatar of the user with whom the participant interacts.

Nevertheless, this work has shed light on the relationship between the offline and online self of MMOW users, and appears to be a useful starting point for future research focused on this topic. In fact, many gaps can be recognised in this literature, and future studies could contribute to filling them. For example, this literature has been considerably focused on the risks and negative outcomes of gaming, while very few studies have considered positive variables such as well-being. In this sense, it would be advisable to deepen the knowledge about the benefits that can be associated with online gaming and avatar usage, and to understand if benefits such as high self-esteem are the actual consequence of a specific kind of user-avatar relationship, rather than its cause. Furthermore, it would be useful to conduct further studies in order to shed light on whether and how there is a transfer of characteristics between the offline and online self—especially in the actualisation case—and, in this sense, whether and how there is an impact of MMOW fruition and avatar usage on the user's identity development. In particular, with an applicative perspective, it would be useful to explore whether some specific kinds of user-avatar relationship can promote some technical (e.g. working) abilities and social competencies (e.g. the tolerance to social diversity): this evidence could thus be used to develop programs for people who need to improve these abilities. Similarly, specific trainings could be developed in order to help MMOW users to satisfy in real life needs such as self-esteem and self-efficacy. Finally, it would be advisable to develop some strategies to educate MMOW users—and especially the most vulnerable categories of users—to use their avatars in a healthy way, by maintaining an adequate relationship between themselves and their virtual characters (i.e. without idealising them too much) and a good balance between their offline and online lives.

Notes

1. The research conducted on *Scopus* and *Web of Science* has been limited to the psychological area.

2. 'MMO' stands for massively multiplayer online; 'MUVE' stands for multi-user virtual environment. Since the abbreviation 'MMO' is also used with other meanings, it was assured that the research results dealt with online games by adding the term 'online gam*' to the string.

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Appendix

AUTHORS (YEAR)	SELF-DIMENSIONS	DESIGN (DATA COLLECTION METHOD)	VIRTUAL CONTEXT	NUMBER OF PARTICIPANTS: Number of males; age data *(when specified)*
Badrinarayanan, Sierra, & Martin (2015)	Identifications	Cross-sectional (Survey)	MMORPGs	970: 825 males
Banks & Bowman (2016)	Identifications	Cross-sectional (Interview)	WoW	25: 12 males; M = 29.7, SD = 7.6, Range = 19-49
Bergstrom, Fisher, & Jenson (2014)	Identifications	Longitudinal (Archival data; Survey)	MMOGs	215
Bessière, Seay, & Kiesler (2007)	Self-concept - Self-needs	Cross-sectional (Survey)	WoW	51: 43 males; M = 21.0, Range = 18-27
Blinka (2008)	Self-concept - Identifications	Cross-sectional (Survey)	MMORPGs	532: 450 males; M = 25.0, Range = 12-unknown
Bowman, Schultheiss, & Schumann (2012)	Identifications	Cross-sectional (Survey)	MMORPGs	450: 375 males; M = 22.7, SD = 5.1, Range = 14-49
Cacioli & Mussap (2014) – STUDY 1	Physical aspects	Cross-sectional (Survey)	Online communities	133: 133 males; M = 32.1, SD = 11.0, Range = 18-62
Caplan, Williams, & Yee (2009)	Identifications	Cross-sectional (Archival data; Survey)	EverQuest II	4278: 3465 males; M = 32.5, SD = 8.7, Range = 18-65
Cole & Griffiths (2007)	Self-needs	Cross-sectional (Survey)	MMORPGs	912: 641 males; M = 23.6, SD = 7.6, Range = 11-63
Costello (2012)	Physical aspects - Identifications	Cross-sectional (Interview; Observation)	SL	90
Courtois, van Looy, De Vocht, & De Marez (2011)	Self-concept - Identifications	Cross-sectional (Survey)	WoW	304: 255 males; M = 24.5, SD = 7.4
De Larios & Lang (2014)	Self-needs	Cross-sectional (Focus group; Survey)	WoW	*Focus group* 15; *Surveys* 195: 115 males
Ducheneaut, Wen, Yee, & Wadley (2009)	Physical aspects – Self-concept - Identifications	Cross-sectional (Archival data; Survey)	WoW, SL, Maple Story	180: 115 males; *WoW* M = 29.8, SD = 10.5, *SL* M = 41.1, SD = 9.6, *Maple Story* M = 18.1, SD = 6.2
Gabbiadini, Mari, Volpato, & Monaci (2014)	Self-concept - Identifications	Cross-sectional (Survey)	WoW	92: 81 males; M = 24.9, SD = 8.7
Guegan, Moliner, & Buisine (2015) –STUDY 2	Identifications	Cross-sectional (Interview)	WoW	200: M = 24.3, SD = 5.7
Guitton (2010)	Self-needs	Cross-sectional (Archival data)	WoW	1261
Hooi & Cho (2014)	Physical aspects – Self-concept	Cross-sectional (Survey)	SL	209: 75 males
Hopp, Barker, & Schmitz Weiss (2015)	Identifications	Cross-sectional (Survey)	MMORPGs	547: 333 males; M = 30.9, SD = 8.5
Hussain & Griffiths (2008)	Physical aspects	Cross-sectional (Survey)	MMORPGs	119: 83 males; M = 28.5, SD = 9.6, Range = 18-69
Jin (2012) – STUDY 1	Self-concept	Longitudinal (Survey)	SL	117: 44 males
Kafai, Fields, & Cook (2007)	Physical aspects	Cross-sectional (Interview)	WhyVille	35: Range = 9-12
Kafai, Fields, & Cook (2010)	Physical aspects	Cross-sectional (Archival data; Interview; Survey)	WhyVille	*Interviews* 35: Range = 9-12; *Surveys* 438: 140 males; M = 12.3, Range = 10-14
Kaye, Kowert, & Quinn (2017)	Identifications	Cross-sectional (Survey)	MMOGs	708: 470 males; M = 29.7, SD = 9.6
Kim, Lee, & Kang (2012)	Self-needs - Identifications	Cross-sectional (Survey)	Second Life	111
Lee & Leeson (2015)	Self-needs	Cross-sectional (Survey)	MMORPGs	626: 505 males; M = 24.8, SD = 6.6, Range = 18-64
Leménager et al. (2013)	Self-concept	Cross-sectional (Interview; Survey)	MMORPGs	45: 30 males; M = 26.3, SD = 4.9
Lin & Wang (2014)	Physical aspects	Cross-sectional (Survey)	MMORPGs, Virtual Worlds	244: 162 males; M = 26.8, SD = 7.0, Range = 18-55
Mancini & Sibilla (2017)	Self-concept	Cross-sectional (Survey)	MMORPGs	854: 618 males; M = 27.4, SD = 9.0, Range = 14-62

McCreery, Krach, Schrader, & Boone (2012)	Self-concept	Cross-sectional (Observation; Survey)	WoW	39: 30 males; M = 29.0, SD = 7.0, Range = 18-49
McCreery, Schrader, Krach, & Boone (2013)	Self-concept	Cross-sectional (Observation; Survey)	WoW	39: 30 males; M = 29.0, SD = 7.0, Range = 18-49
Messinger, Ge, Stroulia, Lyons, & Smirnov (2008)	Physical aspects - Self-concept	Cross-sectional (Survey)	SL	97: 43 males; M = 30.5
Park & Chung (2011)	Self-needs	Cross-sectional (Survey)	MMORPGs	340: 306 males
Parmentier & Rolland (2009)	Physical aspects	Cross-sectional (Interview)	SL	19 + 15: Range = 18-45
Pringle (2015)	Physical aspects	Cross-sectional (Survey)	Elder Scrolls Online	40: 17 males; M = 22.6, SD = 3.1, Range = 20-35
Ratan, Chung, Shen, Williams, & Poole (2010)	Self-needs	Cross-sectional (Archival data; Survey)	EverQuest II	3500: M = 31.9, SD = 9.9, Range = 12-65
Reer & Krämer (2014)	Self-needs	Cross-sectional (Survey)	WoW	391: 615 males; M = 23.9, SD = 7.7, Range = 14-73
Smahel, Blinka, & Ledabyl (2008)	Identifications	Cross-sectional (Survey)	MMORPGs	548: 464 males; M = 25.0, Range = 12-unknown
Snodgrass, Dengah, Lacy, & Fagan (2013)	Self-needs	Cross-sectional (Interview; Observation; Survey)	WoW	252: 195 males; M = 26.6, SD = 9.0
Turkay & Kinzer (2014)	Identifications	Longitudinal (Interview; Survey)	Lord of the Rings Online	66: 33 males; M = 25.6
van Looy, Courtois, De Vocht, & De Marez (2012)	Identifications	Cross-sectional (Survey)	WoW	544: 479 males; M = 24.2, SD = 7.5
Vicdan & Ulusoy (2008)	Identifications	Cross-sectional (Interview; Observation)	SL	8
Wang, Yang, & Shen (2014)	Physical aspects – Self-concept - Self-needs	Cross-sectional (Survey)	MMORPGs	337: 235 males
You, Kim, & Lee (2017)	Self-needs - Identifications	Cross-sectional (Survey)	MMORPGs	163: 71 males; Range = 14-15

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