Offline personality and avatar customisation. Discrepancy profiles and avatar identification in a sample of MMORPG players

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Abstract

This study examined the relationship between offline personality and avatar customisation in Massively Multiplayer Online Role-Playing Game (MMORPG) players, and questioned whether the offline personality is always the starting point for the customisation of an avatar. The aims were: to analyse the discrepancy profiles which emerge when players are asked to rate their primary avatar, actual self and ideal self with respect to certain personality factors; to explore whether these profiles varied across personality factors and within players; and to analyse the relation between discrepancy profiles and the extent to which players identified with their avatars.

A sample of 845 MMORPG players completed an online questionnaire consisting of a short version of the Big Five Personality Inventory and an avatar identification scale.

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 kind of offline personality-avatar relationship differently related with avatar identification that was higher when avatar was similar to self or an extension of self, and lower when avatar was other than self, or antithesis of self. The practical implication of these finding are discussed.

1 Introduction

Massively Multiplayer Online Role-Playing Games (MMORPGs) are now well established in the field of contemporary global entertainment and in recent years several studies have investigated the psychological issues involved in them, in particular the factors underlying the choice and manipulation of avatars (Lim & Revees, 2009). There has been

interest in the relationship between players' offline personalities and the characteristics of the avatars they create or customise. Nevertheless, there is at present no consensus on this issue, some studies have reported that players use their offline self as a starting point for the construction of their characters, and some others reported that players sometimes build characters which are totally disconnected from their offline self. This study tried to fill this gap, investigating the self-avatar discrepancies that emerge when MMORPG players' actual and ideal offline personality characteristics are compared with those of their primary avatar. The aim also was to determine whether these discrepancy profiles vary across personality factors and within players and to explore the relationship between discrepancy profiles and the extent to which a player identifies with his or her avatar.

1.1 Real and virtual self in Computer Mediated Communication (CMC) studies

CMC scholars have developed different epistemological models of what an avatar is and what sorts of relationship between avatar and player are possible (Evans, 2012). Avatars have been viewed from many different perspectives: as a doll to be dressed up and played with (Liao, 2011), as a product or a tool (Cui, Aghajan, Lacroix, Halteren, & Aghajan, 2009; Galanxhi & Nah, 2007; Loker, Ashdown, & Schoenfelder, 2005), as a prosthetic limb, separate, yet part of the player (Veerapen, 2011), as an entity to which he or she feels psychologically connected (Bessière, Seay, & Kiesler, 2007), as an externalisation of the user's self (Turkle, 1997), as an extension of the self (Gee, 2003; Reid, 1994) that helps the user to explore different facets of his or her identity (Webb, 2001), as 'another self' that simulates the characteristics of a person (Bailenson & Yee, 2005; Balsamo, 2000; Jordan, 1999; Kafai, Fields, & Cook, 2007; Kang & Yang, 2006; Yee, Bailenson, Urbanek, Chang, & Merget, 2007), and as an element that encourages the player to behave in unexpected ways (Evans, 2011; Taylor, 2002; Yee, Bailenson, & Ducheneaut, 2009).

These conceptualisations of the avatar suggest that there are two kinds of relationship between the avatar and the player (Castronova, 2003), one in which the avatar is a virtual embodiment or a digital projection of the player's offline self and one in which the avatar is a mere artefact. These different relationships correspond to two of the main approaches in CMC studies. The relational perspective treats the avatar as a means of experimenting with possible selves who are generally 'better' than the offline self but similar to it (Baym, 2002; Kendall, 2002; Kennedy, 2006). Moreover, the relational perspective conceptualises the avatar as closely related to the offline self, thus allowing the transfer of the avatar's abilities to the offline self of the players (Dunn & Guadagno, 2012; Wang, Yang, & Shen, 2014). The socio constructionist perspective instead considers the avatar as a means by which the player can explore identities that overstep the boundaries of real life (Bruckman, 1992; Curtis, 1996; Turkle, 1995; Vicdan & Ulusoy, 2008); according to the constructionist perspective, the avatar's characteristics are so different from those of the player's offline self that the former cannot be transferred to the latter.

Comparisons between the avatars and the players who customise them are usually based on physical or psychological characteristics (Authors, 2016a). Some studies have investigated physical similarity between players and their avatars (e.g., Messinger et al., 2008) whilst others have explored psychological resemblance (e.g., Bessière et al., 2007). The aim of this study was to extend the understanding of the psychological resemblance by investigating the personality characteristics that MMORPG players attributed to their primary avatar, and to their actual and ideal self.

1.2 Previous research on self-avatar discrepancies

Most research on the relationship between players' primary avatar and their offline self has taken a relational perspective rather than a social constructionist approach (Bessière et al., 2007; Blinka, 2008; Ducheneaut, Wen, Yee, & Wadley, 2009; Dunn & Guadagno,

2012; Jónsson & Snorrason, 2012; Messinger et al., 2008; Authors, 2016a; Wang et al., 2014). Many of these studies drew on Higgins's (1987) self-discrepancy theory (SDT) and identified three dimensions of self, which co-exist in people playing MMORPGs: the actual self, the ideal self and the avatar. The actual self and the ideal self are constructs which represent, respectively, the player's perception of what s/he is like and would like to be in real life; they are both offline dimensions of self, whereas the avatar represents the player's online self. The *Virtual Identity Discrepancy Model* (VIDM; Jin, 2012) defined the "virtual self-discrepancy" as "the degree to which a user's virtual identity represented in the form of an avatar in the VE (Virtual Environment) deviates from the user's actual identity in the real world" (p. 2161).

Research based on the SDT has consistently demonstrated that MMORPGs allow players to experience their ideal self. In other words, an avatar is likely to be assessed more positively than the actual self of the player who created it, but more negatively than his or her ideal self. An analysis of the personality traits that 51 *World of Warcraft* (*WoW*) players attributed to their actual and ideal self and to their avatar (Bessière et al., 2007) showed that participants rated their avatar as better – i.e., more conscientious, more extrovert and less neurotic – than they considered themselves to be, and as worse than they would like to be; especially for players with lower psychological wellbeing. Messinger et al. (2008) reported similar results: *Second Life* residents made their avatar physically and behaviourally similar to themselves, but somewhat more attractive, more outgoing, more superficial and more willing to take risks than their offline self. In a sample of users of three virtual worlds (*Maple Story*, *WoW* and *Second Life*), Ducheneaut et al. (2009) also showed that users viewed their avatar as an idealised version of their own offline personality, rating their avatar as more conscientious, more extrovert and less neurotic than themselves, although the differences were fairly small and negatively correlated with the satisfaction for the avatar and with the

attachment to it. Therefore, all these studies tended to draw the avatar as an idealised version of the player's personality.

But why do players create avatars that are idealised versions of themselves? From a psychodynamic perspective, some authors (Bessière et al., 2007; Hefner, Klimmt & Vorderer, 2007; Authors, 2016b; Przybylski, Weinstein, Murayama, Lynch, & Ryan, 2012; Van Looy, Courtois & De Vocht, 2014) argued that it is a way of alleviating the psychological tensions arising from a large perceived discrepancy between the actual and the ideal self. This explanation is also consistent with SDT (Higgins, 1987). Players can achieve a temporary reduction in actual-ideal self discrepancy (Klimmt, Hefner & Vorderer, 2009) by attributing the desired characteristics to their avatar (Blinka, 2008); and this gives them access to abilities and experiences that would be difficult to achieve in real life (Rigby & Ryan, 2011). Some studies have shown that players with more idealised avatars are more attached to their avatar and identify more closely with it (Ducheneaut et al., 2009; Van Looy et al., 2014; Authors, 2016b) as well as with the guild (Gabbiadini, Mari, Volpato, & Monaci, 2014).

1.3 This study

The studies summarised above suggest that avatars tend to share features of the players' actual and ideal self. Two types of self-avatar discrepancy profiles have been identified. In the first the avatar represents the outcome of an *actualisation* process and is customised as an enhanced version of the actual self; in the second the avatar is the product of an *idealisation* process, which involves differentiating the avatar from the actual self so that it resembles more closely the ideal self. In both cases, the offline personality appears to be a point of reference for the customisation of an avatar: being between the actual and the ideal self of the player, the avatar is a "better self", i.e., more socially desirable than the actual self, more conscious, extraverted, open, and less neurotic than the user (Ducheneaut et al., 2009; Kim, Lee, & Kang, 2012; Authors, 2016b). Previous research has instead largely

ignored other possible types of self-avatar discrepancy. Some of these other self-avatar discrepancy profiles are facilitated by the characteristics of MMORPG environments. These are generally based on fantasy or on science-crime fiction worlds (Wikipedia, 2016) and enable users to overcome social constraints, giving them the opportunity to create avatars that represent a completely new identity (Bruckman, 1992; Reid, 1994), or an anti-hero (Messinger et al., 2008) who is free of the offline self or of the online social inhibitions (Kiesler & Sproull, 1992; Turkle, 1995). Few studies have investigated socially undesirable avatar characteristics (e.g., 'evil' avatars) and their effects on offline personality. Some of these studies showed that playing with avatars that glorify and reward immoral behaviour was negatively associated with extroversion, agreeableness and empathy (Triberti, Villani, & Riva, 2015), reduced self-control and increased cheating and aggression, especially in people who were high in moral disengagement (Gabbiadini, Riva, Andrighetto, Volpato, & Bushman, 2013). However, to date there has been no direct comparison between the social undesirable characteristics of avatars and the players.

The first question this study sought to answer was: *Is offline personality always the starting point for the customisation of an avatar?* (Q1). A cluster analytic approach was used to explore discrepancies between players' avatars and their offline actual and ideal self in a large sample of MMORPG players. The use of cluster analysis to define subtypes of gamers is not a new approach; for example Billieux and colleagues (2015) used a similar approach to identify subtypes of problematic online gamers. Although we did not formulate specific hypotheses about the nature of gamers sub-types, nevertheless we predicted that self-avatar discrepancy profiles other than those in which offline personality is a standard point for the customisation of the avatar – i.e., profiles derived from actualisation and idealisation processes –, would emerge from the data. In particular, we predicted that there might be instances in which the avatar would be totally detached from the player's offline (actual and

ideal) self or would be more socially undesirable or would be an anti-social version of the player's offline actual self, e.g., less conscientious, less extrovert, less emotionally stable, less open and more disagreeable.

The second question the study was designed to address was twofold: *Do self-avatar discrepancies depend on the personality characteristics considered?* (Q2.1), and *Do players have a stable preference for a particular type of self-avatar discrepancy?* (Q2.2). Two levels of analysis were considered in order to answer these questions and two hypotheses were formulated based on results of studies that confirmed that the avatar-self discrepancies were similar for some of the Big Five personality dimensions such as consciousness, extroversion and emotional stability (Bessière et al., 2007; Ducheneaut et al., 2009; Van Looy et al., 2014). Accordingly to these results, we assumed in our study that self-avatar discrepancies would be similar for consciousness, extroversion and emotional stability personality factors (H1); furthermore, we assumed that MMORPG players' preference for a particular self-avatar discrepancy profile would depend not on the personality characteristics, but on the extent to which they preferred avatars that were similar or better than themselves (e.g., Ducheneaut et al., 2009; Kim et al., 2012) – i.e., in which offline personality is a reference point for customisation of the avatar –, or avatars that are simply different, other, or antithesis of themselves (e.g., Kiesler & Sproull, 1992; Messinger et al., 2008) – i.e., in which offline personality is not a reference point for customisation of the avatar (H2).

The third and final question the study investigated was *Is self-avatar discrepancy profile related to the degree to which a player identifies with his or her avatar?* (Q3). Some previous studies (Ducheneaut et al., 2009; Gabbiadini et al., 2014; Authors, 2016b; Van Looy et al., 2014) have found that using offline personality as a reference for customisation of the avatar – i.e., an actualized or idealized avatar – was correlated with a greater identification towards the avatar itself. Drawing on these studies we hypothesised that players would

identify more strongly with their avatar if the avatar was constructed with reference to their offline personality, especially if the avatar was designed as an idealised version of the offline self (H3).

2 Material and methods

2.1 Participants and procedures

In 2014 we administered an online questionnaire to a sample of MMORPG players recruited via advertisements posted on websites, forums, Facebook pages and groups dedicated to five MMORPGs: *Age of Wulin/Age of Wushu*, *EVE Online*, *Star Wars: The Old Republic*, *Guild Wars 2* and *World of Warcraft*. The composition of this sample was due to the goal of collecting data from players of different typology of MMORPGs, in terms of both game type (sandbox or theme park) and costs (free-to-play, pay-to-play, buy-to-play). To be eligible to participate in the study, individuals had to have an account for one of the above MMORPGs. Participants' anonymity was guaranteed and completion of the online questionnaire was taken as an implicit expression of consent to participation. To minimise the risk that participants would suffer harm or psychological discomfort in the course of completing the questionnaire the instructions stated that they could abandon the questionnaire at any point; participants were invited to contact the principal investigator by email or telephone if they felt upset or offended by anything in the questionnaire.

In total 1195 participants started the questionnaire; 341 (28.54%) were excluded from analysis because they completed less than 30% of the items. Most of the final sample (N = 854) was men (72.4%). The sample ranged in age from 14 to 62 years (M = 27.38, SD = 9.01; 16 did not report their age). Participants lived in Europe (438, 51.3%), North America (246, 28.8%), Asia (36, 4.2%), Centre and South America (32, 3.7%), Australia and New Zeeland (31, 3.6%), and Africa and Middle East (5, 0.6%); 66, 7.6% did not report where they lived. The distribution of reported occupational status was as following: student (n = 300, 35.1%);

employed (*n* = 391, 45.8%); unemployed (*n* = 112, 13.1%); did not report this information (*n* = 51, 6.0%). These data are consistent with those obtained by Graham & Gosling (2013) and Billieaux et al. (2015) studies.

The distribution of MMORPGs played was as following: *World of Warcraft* (*n* = 238, 27.9%); *EVE Online* (*n* = 162, 19.0%); *Guild Wars 2* (*n* = 159, 18.6%); *Star Wars: The Old Republic* (*n* = 137, 16.0%); *Age of Wulin/Age of Wushu* (*n* = 75, 8.8%); *Others* (*n* = 83, 9.7%). The mean number of hours spent playing MMORPGs in the previous week was 19.95 (*SD* = 18.96, range: 0-168); these data are consistent with those obtained by Bailenson and Yee (2005).

2.2 Measures

The questionnaire began with demographic items and a few items dealing with MMORPG usage. These questions were followed by a mandatory question about which MMORPG the respondent played most and which avatar s/he used most frequently in the indicated game (primary avatar).

An adjective rating method was used to assess actual, ideal and avatar selves. A short version (10+1 items) of the Big Five Personality Inventory (BFI-10; Rammstedt & John, 2007) was used. This method emulates the one used in the studies by Bessière et al (2007) and Van Looy et al. (2014). Participants used a five-point scale (1 = totally false to 5 = very true) to indicate the extent to which each characteristic applied to their actual self ("In my real life, I see myself as someone who…"), ideal self ("In my real life, if I could choose, I would like to be someone who…") and primary avatar ("When I play, my avatar is a character who…"). To eliminate order effects, the order in which the 10+1 items and dimensions were evaluated (for actual self, ideal self and avatar) was randomised across participants. With the exception of the pair of items measuring avatar openness (*r* = 0.05), correlations between pair of items measuring extroversion, consciousness, emotional

stability, and agreeableness personality dimensions were significant for assessments of actual self, ideal self and avatar. For this reason, openness factor was excluded from the analysis, whereas the other four personality factors were used to construct scores for actual self, avatar and ideal self (Table 1).

Participants also completed the Avatar Identification Subscale (Van Looy, Courtois & De Vocht, 2010), which consists of 17 items dealing with perceived similarity to one's avatar (e.g. "I resemble my character"; 6 items, $\alpha = .91$), wishful identification (e.g. "I would like to be more like my Character"; 5 items, $\alpha = .87$) and embodied presence (e.g. "When I am playing, it feels as if I am my character"; 6 item, $\alpha = .92$). Responses were given using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The alpha score for the scale as a whole was very good ($\alpha = .95$).

Descriptive statistics and correlations between variables of interest are presented in Table 1.

Table 1. Descriptive statistics and correlations between variables of interest in the study.

		N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
Avatar	1. Extroversion	824	3.34	0.91	.09*											
	2. Agreeableness	824	3.43	1.20	.26***	.65***										
	3. Consciousness	823	3.81	0.87	.16***	.20***	.05									
	4. Emotional stability	823	3.79	0.90	.23***	.25***	.32***	.17***								
Actual self	5. Extroversion	840	3.02	1.01	.35***	.04	.04	.07*	.45***							
	6. Agreeableness	840	3.89	0.83	.19***	.41***	.13***	.18***	.15***	.39***						
	7. Consciousness	840	3.31	0.87	.10**	.02	.32***	.14***	.21***	.12**	.26***					
	8. Emotional stability	840	3.35	1.08	.13***	-.02	.04	.29***	.38***	.09*	.29***	.49***				
Ideal Self	9. Extroversion	841	3.60	0.85	.35***	.09***	.11**	.130**	.45***	.21***	.08*	.13***	.16***			
	10. Agreeableness	841	3.98	0.91	.24***	.43***	.16***	.20***	.07*	.62***	.08*	-.01	.24***	.49***		
	11. Consciousness	843	4.12	0.77	.08*	.05	.29***	.15***	.03	.12**	.30***	-.01	.30***	.24***	.14***	
	12. Emotional stability	842	4.34	0.75	.09*	.04	.14***	.27***	-.01	.14***	.01	.13***	.33***	.22***	.45***	.26***
	13. Avatar identification	854	2.38	0.98	.03	.27***	.13***	.12***	-.08*	.11**	-.06	-.12**	.02	.16***	.04	.02

Note: Coefficients above the diagonal are correlation between pair of items of BFI-10.
2-tailed *Pearson* correlations: ****p* <.001; ** *p* <.01; * *p* <.05.

2.3 Data analysis

Scores for the actual self, ideal self and avatar on the four personality dimensions (extroversion, agreeableness, consciousness and emotional stability) were Z-transformed and then used in the construction of three discrepancy scores: avatar-actual self (A-Ac) discrepancy scores for extroversion, agreeableness, consciousness and emotional stability were obtained by subtracting the actual self score from the corresponding avatar score. A similar procedure was used to calculate the series of avatar-ideal self (A-I) discrepancy scores and the series of actual self-ideal self (Ac-I) scores.

To explore self-avatar and ideal-actual self discrepancies in our sample of MMORPG players (Q1) we conducted four data-driven cluster analyses – one for each of the four personality dimensions measured – using the three discrepancy scores (i.e., A-Ac, A-I and Ac-I). We used a two-step clustering procedure that combined hierarchical and non-hierarchical procedures (Gore, 2000; Hair, Black, Babin, & Anderson, 2010). From three to six cluster solutions were examined, taking into consideration their theoretical meaningfulness, parsimony and capacity to explain at least 50% of the variance. After selecting the best solution for each of the four personality dimensions we used their cluster centres as non-random starting points in an iterative k-means clustering procedure, which was applied to the entire sample. Finally, one-sample *t*-tests (test value = 0) were used to assess A-Ac, A-I and Ac-I discrepancy scores within each cluster.

Cluster solutions were compared (Q2.1) to assess whether discrepancy profiles were similar among participants for the personality factors extroversion, agreeableness, consciousness, and emotional stability (H1).

To assess whether players' discrepancy profiles varied according to the personality dimensions evaluated (Q2.2; H2) we conducted multiple correspondence analysis (MCA) using the SPAD v6.5 program (Lebart & Morineau, 1984; LeRoux & Rouanet, 2010). Active

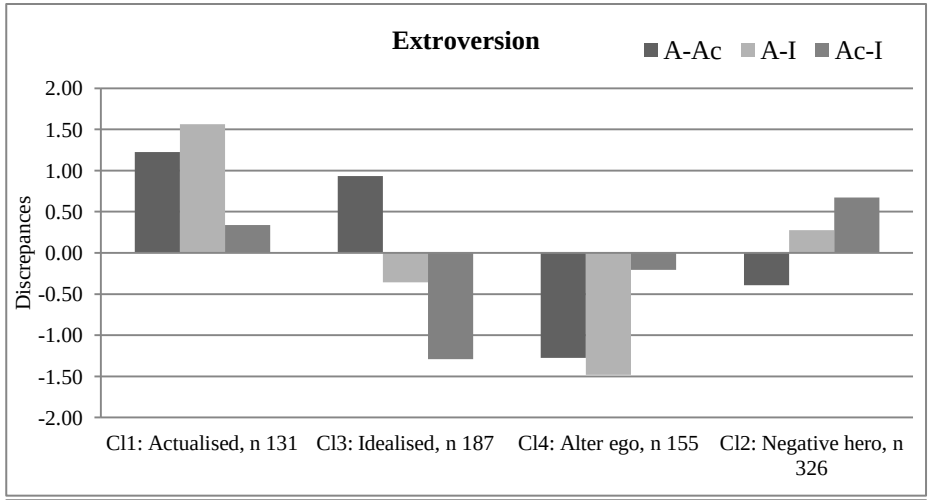
variables corresponded to the discrepancy profiles that emerged from the cluster analyses. A subsequent hierarchical cluster analysis (nearest neighbours) was computed on the first three factorial axes of the MCA. Finally, the cluster membership that emerged from this analysis was used as an independent factor in an analysis of variance in which identification with the avatar was the dependent variable (Q3; H3).

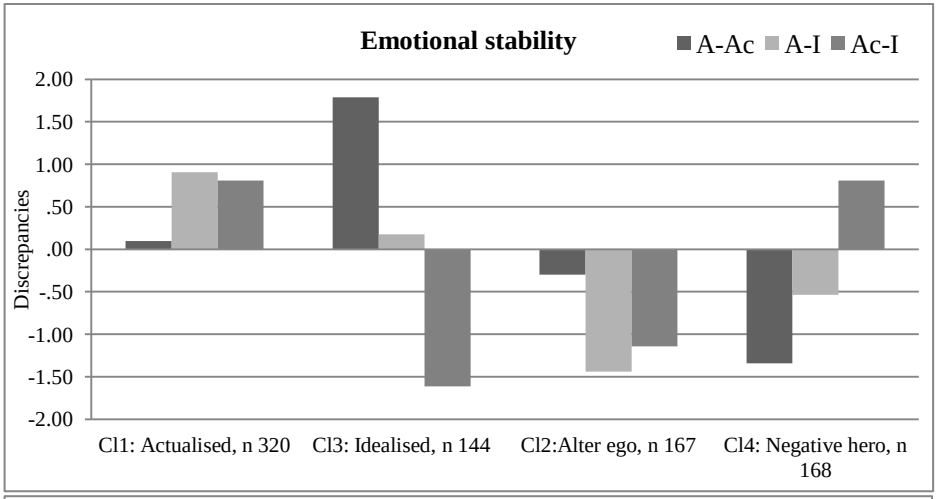
3 Results

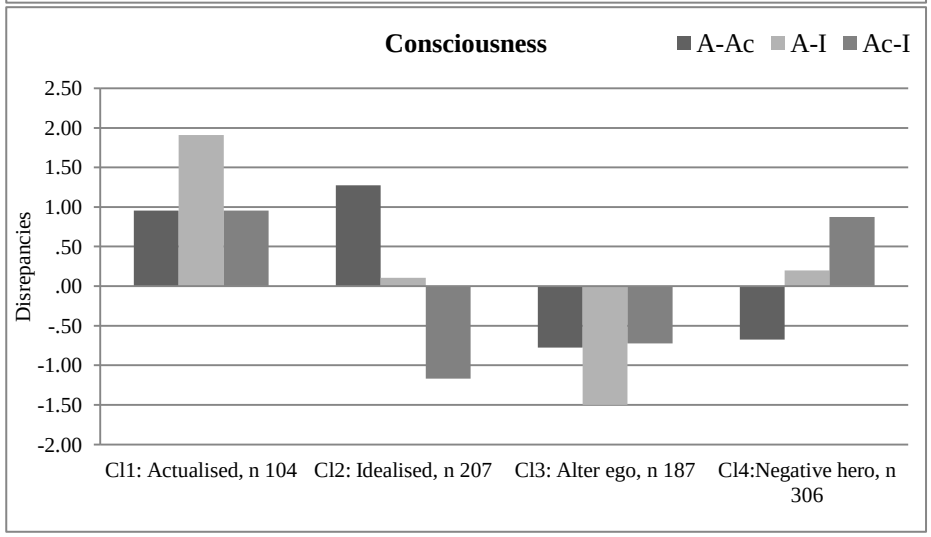
3.1 Is offline personality always the starting point for customisation of an avatar? (Q1)

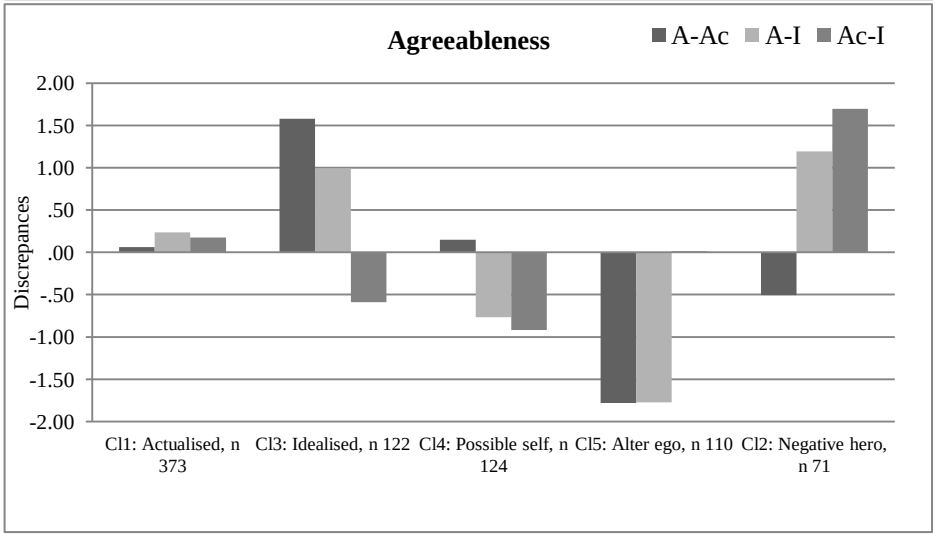
Figure 1 shows the discrepancy profiles that emerged from cluster analyses performed for each of the four personality dimensions together with their frequencies. A four-cluster solution was selected for extroversion, consciousness, and emotional stability, but for agreeableness a five-cluster solution explained a higher percentage of variance and was therefore preferred[1].

[1] Extroversion: A-Ac, A-I, and Ac-I self-discrepancies explained 51%, 72%, and 50% variance. Consciousness: A-Ac, A-I, and Ac-I self-discrepancies explained 62%, 56%, and 60% variance. Emotional Stability: A-Ac, A-I, and Ac-I self-discrepancies explained 59%, 59%, and 59% variance. Agreeableness: A-Ac, A-I, and Ac-I self-discrepancies explained 72%, 64%, and 58% variance.









Note: A-Ac: Avatar– Actual Self; A-I: Avatar – Ideal Self; Ac-I: Actual – Ideal Self.

Figure 1. Self-discrepancy profiles of the subgroup of players.

In *actualised* profiles the avatar (A) was rated better than the actual self (Ac), which was in turn rated better than the ideal self (I; I < Ac < A) regardless of the personality dimension considered. One-sample *t*-tests revealed a positive A-Ac discrepancy that reached statistically significance for extroversion ($p < .001$), agreeableness ($p < .01$), and consciousness ($p < .001$). There was also a positive A-I discrepancy for all four personality dimensions ($p < .001$), whilst the positive Ac-I discrepancy only reached statistical significance ($p < .001$) for consciousness and emotional stability.

In *idealised* profiles the avatar was rated better than the actual self, and also slightly better than the ideal self, except for extroversion (Ac < I < A). One-sample *t*-tests revealed positive A-Ac discrepancies for all four personality dimensions considered ($p < .001$). The A-I discrepancy was positive for agreeableness ($p < .001$), but negative for extroversion ($p < .001$). Ac-I discrepancies were negative and significant for extroversion, consciousness, and emotional stability ($p < .001$) and approached significance for agreeableness ($p = .06$).

The *alter ego* profile was characterised by an avatar which was rated worse than both the actual and ideal selves of the player, who described his or her ideal self as better than his or her actual self regardless of personality dimension (A < Ac < I). One-sample *t*-tests showed that A-Ac discrepancies were negative and significant for extroversion ($p < .001$), agreeableness ($p < .001$) and consciousness ($p < .001$), and approached significance for emotional stability ($p = .06$). There were negative A-I discrepancies for all four personality dimensions ($p < .001$). The Ac-I discrepancy was negative, but only significant for consciousness and emotional stability ($p < .001$).

Similarly, the *negative hero* profile was characterised by an avatar that was less extroverted, conscious, emotional stable, and agreeable than the actual self. It is important to note, however, that in this profile the avatar fell between the actual and ideal self; the ideal self was rated less socially desirable than the actual self (I < A < Ac). One-sample *t*-tests

showed that there were negative A-Ac discrepancies for all four personality dimensions (extroversion, consciousness and emotional stability: $p < .001$; agreeableness: $p < .01$). There were positive A-I discrepancies for extroversion, agreeableness and consciousness ($p < .001$), but there was a negative discrepancy for emotional stability ($p < .001$). There were positive Ac-I discrepancies for all four personality dimensions ($p < .001$).

3.2 Do self-avatar discrepancies depend on the personality characteristics considered?(Q2.1)

The discrepancy profiles for extroversion, consciousness and emotional stability were similar, thus confirming H1. However some differences emerged in the case of agreeableness; five profiles explained the variability in players' responses better than four. As Figure 1 shows, when participants' evaluations of agreeableness were considered, a fifth reliable profile emerged from the cluster analysis. We named this profile *possible self* because it was characterised by an avatar positioned between the player's actual and ideal selves (Ac < A < I); one-sample *t*-tests showed that the avatar was very similar to the actual self and worse than the ideal self ($p < .001$), which was better than the actual self ($p < .001$).

3.3 Do players have a stable preference for a particular type of self-avatar discrepancy? (Q2.2)

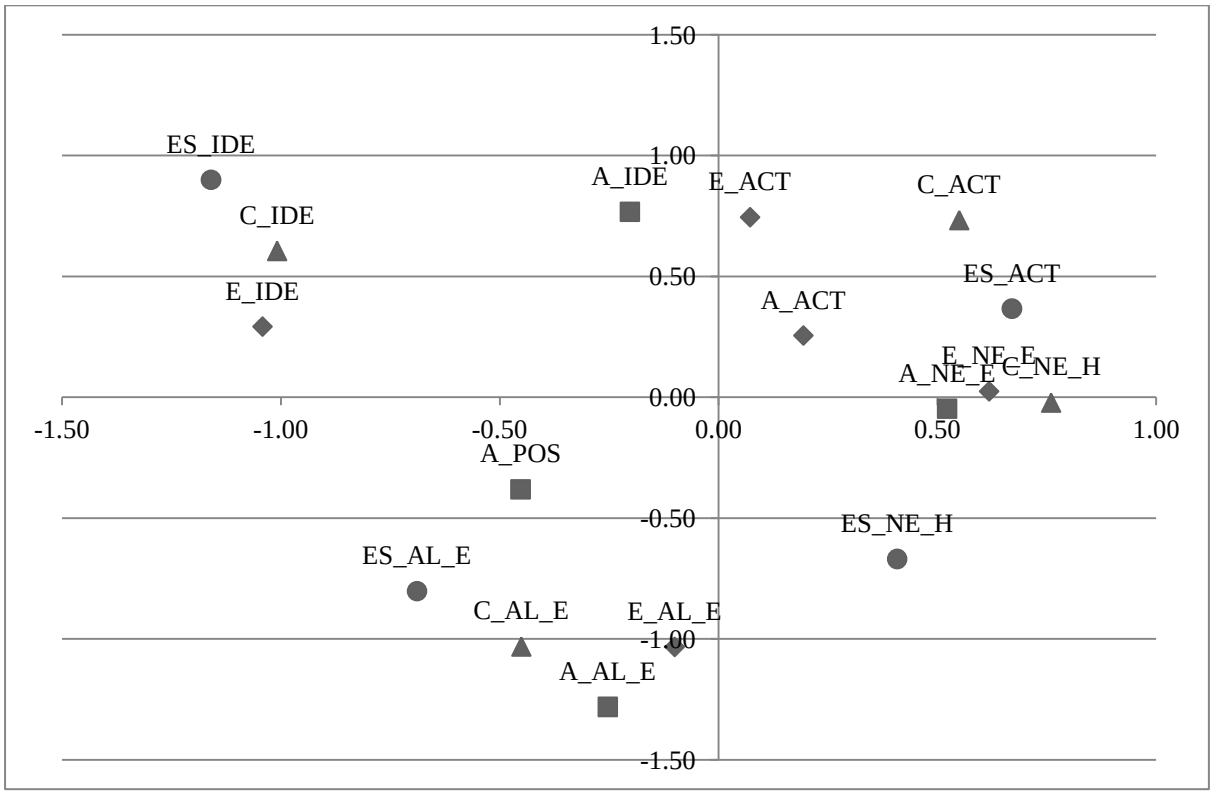
Table 2 reports the results of the MCA conducted on the 17 discrepancy profiles that emerged from the cluster analyses presented in Figure 1. Figure 2 shows the projection of these discrepancy profiles on the first two factorial axes (24.13% of variance) emerging from the MCA.

Table 2. Content of Axes (MCA) and macro-cluster characterizations (Cluster): t-values.

			MCA Axes		**Clusters:** *Avatar as …*			
	Profiles	*n*	A1	A2	1/4: *n* 168 *… extension of self*	2/4: *n* 204 *… other than self*	3/4: *n* 181 *… similar to self*	4/4: *n* 248 *… antithesis of self*
Extroversion	ACT	131	0.90	9.31***	0.49	-4.95***	10.93***	-7.67***
	IDE	187	-16.27***	4.56***	11.99***	-0.40	-5.06***	-6.81***
	AL_E	155	-1.39	-14.31***	-5.88***	11.62***	-2.77**	-4.55***
	NE_H	326	14.49***	0.57	-7.56***	-6.19***	-2.45**	14.57***
Agreeableness	ACT	373	5.12***	6.74***	2.31*	-7.90***	-3.03**	8.02***
	IDE	122	-2.43**	9.20***	1.41	-3.98***	9.52***	-8.14***
	POS	124	-5.48***	-4.61***	0.37	4.92***	-2.81**	-2.80**
	AL_E	108	-2.83**	-14.30***	-3.31***	9.51***	-4.96***	-2.75**
	NE-H	71	4.61***	-0.42	-3.53***	-0.44	1.31	1.99*
Consciousness	ACT	104	6.00***	8.01***	-5.90***	-5.40***	16.16***	-7.94***
	IDE	203	-16.63***	9.97***	16.08***	-3.50***	-6.16***	-6.75***
	AL_E	187	-7.03***	-16.09***	-3.58***	15.54***	-6.52***	-7.24***
	NE_H	306	16.90***	-0.48	-9.41***	-7.94***	-1.69*	16.68***
Emotional Stability	ACT	320	15.47***	8.46***	-9.01***	-8.86***	9.66***	6.59***
	IDE	144	-15.36***	11.91***	16.42***	-6.94***	-3.73***	-7.24***
	AL_E	167	-10.01***	-11.65***	-1.41*	12.46***	-3.76***	-8.61***
	NE_H	168	5.94***	-9.75***	-9.01***	2.68**	-4.76***	5.94***

Note: ACT = Actualised; IDE = Idealised; AL_E = Alter Ego; NE_H = Negative Hero; POS = Possible self.
*** p <.001; ** p < .01; * p < .05

Figure 2. Projection of self-discrepancies profiles (active variables) in the first two factorial axes resulting from the MCA.



Note: E_ = Extroversion; A_ = Agreeableness; C_ = Consciousness; ES_ = Emotional Stability.

ACT = Actualised; IDE = Idealised; AL_E = Alter ego; NE_H = Negative hero; POS = Possible self.

The same typology of discrepancy profiles almost always fell in the same quadrant (Figure 2), confirming that players' discrepancy profile did not depend on the personality characteristic they were evaluating (H2). Instead, players' discrepancy profile depended on the content of the two axes. The first (horizontal) axis relates to the comparative evaluation of the actual self and the ideal self: evaluation of the *actual self as better than the ideal self* (positive polarity) was contrasted with the evaluation of *the actual self as worse than the ideal self* (negative polarity). Negative hero profiles and actualised profiles emerged in agreeableness, consciousness and emotional stability, significantly ($p < .001$; t-values, Table 2) contributed to the positive polarity; idealised profiles and alter ego profiles emerged in

agreeableness, consciousness and emotional stability, together with possible self profile emerged in the agreeableness dimension, significantly ($p < .001$ and $p < .01$) contributed to the negative polarity of the axis.

The second axis (vertical) represents the tendency to customise an avatar with either *socially desirable* (positive polarity) or *socially undesirable* (negative polarity) personality characteristics. Actualised and idealised profiles contributed to the positive polarity ($p < .001$); alter ego profiles, together with the agreeableness possible-self profiles, and the emotional stability negative hero profiles contributed to the negative polarity ($p < .001$).

The hierarchical cluster analysis computed on the first three factorial axes (33.14% of variance) of the MCA statistically confirmed that players' preference for an avatar similar to or different from their actual or ideal self was not dependent on the considered personality dimensions. The four-cluster solution aggregated similar discrepancy profiles. The first cluster ($n = 168$; 20.97%), named *avatar as an extension of self*, was statistically characterised by the idealised profiles emerged in extroversion, consciousness, and emotional stability personality dimensions ($p < .001$; Table 2) and by the actualised profile emerged in agreeableness ($p < .05$). The second cluster ($n = 204$; 25.47%), named *avatar as other than self*, was characterised by alter ego profiles ($p < .001$) together with possible self profile in agreeableness ($p < .001$), and negative hero profile in emotional stability ($p < .01$). The third cluster ($n = 181$; 22.60%), named *avatar similar to self*, was characterised by actualised profiles ($p < .001$ and $p < .01$) and by idealised profile emerged in agreeableness ($p < .001$). Lastly, the fourth and largest macro-cluster ($n = 248$; 30.96%), named *avatar as antithesis of self*, was characterised by negative hero profiles ($p < .001$ and $p < .05$), together with actualised profiles emerged in agreeableness and emotional stability personality dimensions ($p < .001$).

3.4 Are discrepancy profiles related to the degree to which a player identifies with his or her avatar? (Q3)

The analysis of variance revealed a small but significant effect of cluster (levels were the four final clusters) on players' identification with their avatar, F (3, 797) = 10.97, p < .001, η_p^2 = .04. Post hoc analysis (Tukey test) revealed that players that tended to use an avatar that was an *extension of self* (M = 2.72) identified more strongly with their avatar than those that tended to play both with an avatar considered as *other than self* (M = 2.16) and with an avatar considered as *antithesis of self* (M = 2.33; p < .001); players that used a *similar to self* avatar scored higher on avatar identification (M = 2.46) than those that preferred an *other than self* avatar (p < .05). Thus, in line with our hypothesis, identification with one's avatar was greater among players who used avatars that were fairly similar to their offline self, especially when the avatar resembled their ideal self, confirming that players used their offline personality as a point of reference in creating these kind of avatar.

4 Discussion

This research confirmed that the relationship between a gamer's offline personality and his or her avatar can take several forms. When a sample of MMORPG players were asked to evaluate their actual self, ideal self and primary avatar with respect to four personality factors, four types of discrepancy profile emerged: *idealised*, *actualised*, *alter ego* and *negative hero*. Some of the discrepancy profiles – *idealised*, *actualised* and *possible self* – in which the avatar is generally rated as better (more socially desirable) than the player's offline self – are reminiscent of the idealisation processes already identified in the literature; whereas others – *alter ego* and *negative hero* – show that some players choose to customise their avatar to be less socially desirable than their offline self.

As previous research had suggested (e.g., Bessière et al., 2007; Ducheneaut et al., 2009; Van Looy et al., 2014), we found that in the *idealised profile* the avatar was evaluated

as more extrovert, more agreeable, more conscientious and more emotionally stable than the offline self; nevertheless, with the exception of agreeableness possible self profile, the personality of the avatar did not fall between that of the player's actual and ideal self, as earlier studies found. Instead we found that the avatar was more socially desirable than even the player's ideal self. A different sort of idealisation characterised the *negative hero* profile; in this profile, contrary to the postulate of the SDT (Higgins, 1987), the player's ideal self was less socially desirable than his or her actual self. In the negative hero profile the avatar was less socially desirable than the actual self and the ideal self was also less socially desirable than the actual self. The negative hero profile seems to refer to results of Messinger et al.'s (2008), in which players' depicted their avatars as more outgoing, more extrovert, more risk-taking and louder than they themselves offline. The negative hero discrepancy profile is also reminiscent of Triberti et al.'s (2015) results, confirming that the preferences for 'evil' avatars is probably associated with the desire to experience characteristics that are difficult to access in everyday life because of their socially undesirable nature (Rigby & Ryan, 2011).

In the other two profiles the avatar more closely resembled the player's actual self. In the *actualised* profile the player's avatar was more socially desirable than his or her offline self, but still closer to the actual self than to the ideal self. In the *alter ego* profile the avatar was less socially desirable than the player's offline self and closer to the player's actual self than to his or her ideal self. As in the negative hero profile, players with an alter ego profile constructed avatars that seemed to give expression to the desire to break free from the constraints of the offline world. This desire seems better represented by the alter ego profile, as this was the only profile in which the avatar was depicted as distant from the offline (both actual and ideal) self. Negative hero and alter ego profiles choose avatars which seem to allow players to explore identities that overstep the boundaries of offline self; for this reason

we may say that in these cases the primary avatar is customised without having the offline personality as a starting point. This is consistent with the social constructionist approach to player-avatar relationships (Bruckman, 1992; Turkle, 1995; Curtis, 1996; Vicdan & Ulusoy, 2008). We want to highlight how in negative hero and alter ego profiles the avatar is described as possessing characteristics that being socially undesirable cannot be advocated for the offline self. In contrast the idealised and actualised profiles seem to indicate an avatar that is customised having the offline personality as a starting point. Therefore, these profiles align better with the relational approach (Baym, 2002; Kendall, 2002; Kennedy, 2006) since players with these profiles seem to use their avatar as a means for experimenting with traits that would, in the offline world, make them more socially desirable.

With the partial exception of agreeableness, for which a fifth profile emerged, the data confirmed that discrepancy profiles did not vary across personality factors and within players. Consistent with other studies (Bessière et al., 2007; Ducheneaut et al., 2009; Van Looy et al., 2014) our data suggest that discrepancy profiles do not vary at least for the personality dimensions of extroversion, consciousness and emotional stability, and that MMORPG players' profiles do not depend on the personality factor they rated. Four clusters emerged from the MCA cluster analysis and, based on the relationship they represented between avatar and offline self, they were labelled *extension of self, other than self, similar to self* and *antithesis of self.*

Finally, in line with previous research (Ducheneaut et al., 2009; Gabbiadini et al., 2014; Authors, 2016b; Van Looy et al., 2014), our data also indicate that the more the avatar was similar to the player, the more the player identified with it.

5 Conclusions

What sorts of relationship between a MMORPG player's offline self and his or her customised avatar are possible? Is the player's offline personality always the starting point

for the customisation of his or her primary avatar? This study has answered these questions. Extending the findings of previous investigations, it tried to fill the gap between studies that demonstrated that offline self is always a starting point for the construction of characters generally better than the offline self, and studies that reported avatars totally disconnected from the player's offline self. In summary, our data show that among MMORPG players many types of relationships between offline self and avatar are possible, and that avatars may be customised as more or less desirable, in terms of what it can be considered good for one's personality, than the player's offline self. Avatars may be closer to either the player's actual offline self (actualisation) or his or her ideal offline self (idealisation). Nevertheless, even more often, avatar may be also different from (alter-ego) or antithesis (negative hero) of player's offline personality. In this sense the player's offline personality is not always the starting point for avatar customisation; sometimes an avatar embodies the socially desirable characteristics that the player would like to have, sometimes it embodies socially undesirable characteristics (Kiesler & Sproull, 1992; Messinger et al., 2008; Triberti et al., 2015), and occasionally it represents a self desired by the player. Identification with avatars endowed with socially undesirable characteristics tends to be low, confirming that such avatars are detached from the player's offline self and that the offline self is not the starting point for the customisation of such avatars. We can suppose that it occurs because psychodynamic processes such those described by Higgins's discrepancy theory, are not activated, i.e. people do not feel a need to use their avatar to reduce actual-ideal self discrepancy. However, it could also occur because the type of game environment and the primary goals within it relate to factors others than players' personality, e.g. reaching the game goals, collecting items, etc.

In partial contrast with studies by Gabbiadini et al. (2013) and Triberti et al. (2015), which showed that playing and preferring avatars that glorify and reward immoral behaviours were associated with offline personality, our research suggests that customising avatars other

than or oppose to self in terms of socially desirable personality characteristics, discourages deep involvement with the avatar. Given that identification with avatars has often been associated with lower psychological wellbeing (Bessière et al., 2007) and with gaming addiction (Van Looy et al., 2014; Authors, 2016b), we can reasonably conclude that players who construct an avatar which is distant from their offline personality and violates social desirability norms, are better protected against the negative consequences of MMORPG's usage than players who construct an avatar which is similar to their offline personality and is socially desirable.

As we have already mentioned, the discrepancy profiles, which emerged in this study, were relatively stable across personality traits and within players. This suggests that players' intentions are formulated not at the level of individual personality factors but at the level of overall social desirability, i.e., rather than setting out to construct an avatar which is more (or less) extrovert than his or her actual (or ideal) self, a player focuses on the overall personality of the avatar. Researchers should take this into account when choosing scales for assessing player and avatar characteristics.

This research has some limitations. Firstly, we are unable to draw a conclusion about the predictive utility of the discrepancy profiles with respect to players' psychological wellbeing. Secondly, wonting to explore the personality resemblance between the player and their primary avatar, we had to choose the self-report methodology; yet we are aware that we do not have an objective assessment of the degree of similarity between players' offline personality and their avatar. An instrument for assessing the dimension of self with greater validity is also desirable. Gender and age of participants, their profession, and their culture of origin, as well as other variables related to the MMORPG environment, such as the player experience with the game and the motives that guided the players choices would have been useful to further interpret the results. Further research is needed to validate our results and to

consider the potential effects that different avatar customisations could have on psychological wellbeing. Nevertheless, to the best of our knowledge, this study is one of the first to shed light on the range of relationships between players and their avatars in term of personality characteristics, showing that whether several types of discrepancy profile are possible, only some of these reflect the players' need to reduce the distress derived from the perception of a discrepancy between actual and ideal self.

The exploratory nature of this study makes it difficult to suggest specific practical implications. However results suggest that psychologists have to question whether particular types of avatar can improve the wellbeing of their clients, especially when the clients' use of video games represents a clinical problem. These results could also encourage gaming industry to provide players with tolls and customisation features that do not encourage them to create avatar that simulates their offline characteristics. Finally results here presented can advise players that perceiving the MOORPG environment as an extension of the real life couldn't solve the dissatisfaction that they fell about their identity.

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