The Virtual Self: Avatar and Individual Determinants of Mood

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ABSTRACT. Given the relevance of self-related process in avatar-based virtual environments, examining the role of avatar-self representation was intended for better understanding of its function in media users' experiences. The current study examined the differences between actual- and ideal-self avatars in terms of impact on mood, as measured through positive and negative affect. Undergraduate students ($N = 81$) participated in an avatar-based gaming experiment, which assessed pre- and post-game play affect. Overall, participants experienced a statistically significant decrease in negative affect after game play, $t(80) = 4.18$, $p < .001$, $d = 0.41$, regardless of their avatar group condition. However, avatar group influenced the user experience in terms of positive affect, $t(79) = 2.06$, $p = .04$, $d = 0.46$, in that participants of the actual-self avatar group were associated with higher positive affect than those in the ideal-self avatar group post-game play. Self-esteem was found to be a statistically significant covariate in predicting both posttest positive affect, $F(1,78) = 6.03$, $p = .02$, $\eta_p^2 = 0.07$, and negative affect, $F(1,78) = 13.27$, $p < .001$, $\eta_p^2 = 0.15$. Avatar group intervention proved significant in predicting positive affect, despite the covariance of self-esteem, $F(1,78) = 4.44$, $p = .04$, $\eta_p^2 = 0.05$; however, it was no longer statistically significant in predicting negative affect once the variance shared with self-esteem was accounted for, $F(1,78) = 0.04$, $p = .84$, $\eta_p^2 = 0.001$. Specific mechanisms by which virtual self-representation might regulate affect were clarified; subsequent theoretical and realistic implications of the results are discussed further in the study.

Stereotypically, "gaming" has been a concept considered to be within the domain of the adolescent boy, equipped with a game console and eyes that never strayed from the television screen. However, the reality is that the reach of games runs far wider than one might imagine. In recent years, rapid development of sophisticated technology has expanded the original target audience to include a multifaceted demographic pool, ranging from the traditional adolescents, to early adult professionals, middle-aged homemakers, and even retirees—contradicting the stereotype that video gamers only exist within the bounds of a youth subculture (Yee, 2006b).

Motivation for Engaging in Game Play

Collaborative virtual environments (CVEs) make games appealing and effortless to join because they serve as digital systems that connect individuals worldwide via networking technology such as through virtual reality or, more commonly, video games (Yee, Bailenson, & Ducheneaut, 2009). These CVEs provide settings for entertainment purposes through outlets of stand-alone games, local or wide area network games, and the increasingly popular massively multiplayer online role-playing games (MMORPGs). MMORPGs alone, on a daily basis, garner up to millions of users, who each accumulate an average of approximately 22 hours of game play per week (Yee, 2006a). Players

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approach these games with varying motivations; Yee's (2006b) five-factor model encompasses these user motivations under categories of achievement, relationship, immersion, escapism, and manipulation—with escapism proving to be the best predictor of pathological gaming (Li, Liau & Khoo, 2011; Yee, 2006a). In this case, escapism refers to the tendency of an individual to "[use] the virtual world to temporarily avoid, forget about, and escape from real-life stress and problems" (Yee, 2006b, p. 319). When immersed in the virtual world, users have the freedom to do what they want, and have the ability to become anyone they want to be through their avatars—their virtual identities.

Avatars

One of the most significant departures that avatar-based video games, computer games, and virtual reality technologies make from traditional media (e.g., television, movies) is the users' ability to see a visual representation of themselves in the media. In third-person perspective games, players can observe embodied manifestation of the self and its visually presented actions, facilitating the formation of a relationship between players and their avatars (Jin & Park, 2009).

Avatars are digital representations of the self—in other words, extensions of the individuals who created them (Yee & Bailenson, 2007). In a virtual world, the avatar functions not only as the representation of one's physical appearance, but also the mode through which an individual's offline identity is expressed (Behm-Morawitz, 2013). Thus, the avatar may come to be more meaningful to the individual than just a virtual shell. The user has control over every detail during avatar creation. Therefore, virtual self-representation can vary across a vast spectrum because factors such as age, gender, ethnicity, and height are determined with the click of a mouse (Yee & Bailenson, 2007).

The way users choose to display their avatars is influenced by a number of factors. For instance, in competitive games, avatars are created more dissimilar to the actual self, assumedly to fit the requirements of the media stimuli (e.g., increased weapon equipment in *World of Warcraft*); in non-competitive games, on the other hand, avatar selection choices are more ambiguous because avatars need not be armored with strategic survival-directed customizations (Trepte & Reinecke, 2010). In noncompetitive games, users have the choice of creating an avatar similar or dissimilar to the self, with less consequence to their survival in the virtual environment. However, a study conducted by Trepte and Reinecke (2010) found a relationship they noted to be stronger in noncompetitive game settings, in which users who identified more with the avatars showing higher resemblance to their selves, also reported greater game enjoyment. When the factor of identification was mediated, avatar-user discrepancy still demonstrated a positive relationship with game enjoyment, leading the researchers to theorize that players' preferences in avatar creation are twofold; although similar avatars seem to enhance the enjoyment experience, dissimilar avatars can serve self-related motives such as playing with different identities and ameliorating actual-self representation—both factors that may result in media enjoyment, though through different mechanisms of affect management (Trepte & Reinecke, 2010).

Given the increase in visual representation of the self and relevance of self-related process in avatar-based virtual environments, examination of the role of avatar-self representation may allow for better understanding of its function in media users' experiences. Consequently, the specific mechanisms by which virtual self-representation might regulate affect must be clarified.

Self-Discrepancy Theory and Actual-Ideal Self-Discrepancy (AISD)

Higgins' (1987) categorized self-discrepancies under three types of self-schema: the actual self, the ideal self, and the *ought* self. Higgins' self-discrepancy theory claimed that, although the actual self personifies who individuals currently are (i.e., perceived self-concept), the ideal and ought selves represent who the individuals would would like to be (i.e., assessing hopes, wishes, and aspirations), and how the individuals believe they should be (i.e., assessing duties, responsibilities, and obligations).

Self-discrepancy theory proposes that if people possess an AISD—in other words, if their understanding of their own own actual attributes do not align with the ideal condition they wish to achieve—the individuals will likely experience dejection-related emotions such as disappointment, dissatisfaction, and other negative affects associated with symptoms of depression (Higgins, 1987). Li, Liau, and Khoo (2011) supplemented this theory, as their findings revealed that, among adolescent gamers in Asia, those with higher levels of AISD tended to have higher levels of depression and were more likely to engage in escapism into games.

Possession of high AISD offers an explanation

as to the negative affective mechanism underlying the self-discrepancy theory. However, negative affect may also be generated through a process by which an individual's attention is specifically brought upon AISD, facilitating the recognition and acknowledgement of potentially high AISD through automatic and immediate comparison of the actual and ideal selves.

Objective Self-Awareness Theory

In this way, objective self-awareness theory builds on Higgins' self-discrepancy theory, proposing the idea that focusing attention on the self brings forth objective self-awareness, which triggers an automatic juxtaposition between the self and standards (Silvia & Duval, 2001). In this context, objective self-awareness refers to when individuals are the object of their own conscious attention, and a standard is defined as a construct of correct behavior, attitudes, and characteristics (Duval & Wicklund, 1972). According to objective self-awareness theory, if a discrepancy is found between the self and a standard, the individual will likely experience negative affect—a response similar to that predicted by self-discrepancy theory. In order to reduce this uncomfortable state of dissociation, individuals can either change to better align with the expectations of the standard, or instead avoid the circumstances that make them evaluate themselves in the first place (Duval & Wicklund, 1972). Silvia and Duval (2001) developed new additions to this theory, focusing on expectations in relation to self-awareness; they found that, when AISD is high, focusing on the standard should lead to a negative evaluation of the standard. In a virtual environment, this theory can have significant implications regarding the avatar customization process because there are nearly endless combinations of possible avatar-persona creations, and thus potential for generating negative emotion when employing an ideal-self avatar.

Objective self-awareness theory suggests that, in the context of avatar-based virtual environments, directing an individual towards ideal-self avatar customization brings conscious attention to the self, triggering automatic comparison between the actual and ideal selves, and thus priming the individual with the mindset of AISD. According to both objective self-awareness theory and self-discrepancy theory, simply focusing on AISD produces negative affect, which in turn, can color the media user's virtual experience. Drawing on these theories, one possible hypothesis is that participants who are instructed to create an ideal-self avatar (thereby priming AISD) would express higher negative affect than participants who were instructed to create an actual-self avatar.

Self-Presence Dimension

Although proponents of the self-discrepancy theory and objective self-awareness theory could argue that players experience more negative affect creating an ideal-self avatar, theorists of self-presence could argue the opposite. When users don virtual embodiments in the digital world, they often experience a sense of self-presence: a feeling of connectedness between their virtual selves and their actual selves, regardless of whether or not the avatars accurately represent their actual selves.

Self-presence occurs when media users experience either a physically manifested or psychologically imagined representation of their self, but as suggested by Trepte and Reinecke (2010), positive user experience may not necessarily depend on high levels of similarity between players and their avatars. In a series of exergame (i.e., interactive exercise-focused game) studies, researchers found that participants who created Mii avatars for the Wii game console actually felt stronger avatar-self connection and greater perceived interactivity when instructed to create a Mii reflecting their ideal-self rather than a Mii reflecting their actual-self (Jin, 2009, 2010). Jin (2010) speculated that creating an ideal-self avatar may have more positive effects on self-presence partially due to the intrinsic human satisfaction of projecting a more positive self-image —even if only to oneself.

Just as self-presence defines the connection between the user and avatar, the extent to which self-presence is experienced can reflect the user's level of immersion. Defined as "the degree to which users of interactive media feel involved with, absorbed in, and engrossed by stimuli from the media environment," immersion is not only a key factor in motivating game play, but is also an important outcome variable that comes from interactive media experiences, as it can be examined and understood as a positive affective dimension of interactive media use (Jin, 2009, p. 762; Yee, 2006b). Thus, given the evidence in favor of ideal-self avatars promoting stronger self-presence and immersion, a contradictory hypothesis is that participants who are instructed to create an ideal-self avatar (thereby priming AISD) would express more positive affect than participants who were instructed to create an actual-self avatar.

Psychological Well-Being

Although these theories provide the basis to argue that ideal-self avatar creation will guide users toward certain affective states, it can also be argued that affective states may guide users' choices in avatar creation. For instance, levels of psychological well-being can also come into play when determining the avatar's appearance because individuals reporting higher life satisfaction also tend to create avatars higher in similarity to their actual selves, and individuals reporting lower life satisfaction tend to create avatars lower in similarity to their actual selves (Trepte & Reinecke, 2010). Other studies have suggested that low self-esteem is similarly correlated with higher levels of discrepancy between the participant and avatar created (Dunn & Guadagno, 2012).

Virtual worlds offer players the opportunity to create and live through idealized characters without physical world consequences, which may speak to why Bessiere, Seay, and Kiesler (2007) found the participants of their study, on average, rated their avatar as having favorable characteristics including being higher in conscientiousness and extroversion and lower in neuroticism. Although their study employed a competitive game setting, thus priming dissimilar avatar creation for participants of all psychological well-being levels, the pattern of idealized avatar customization manifested most prominently in participants with low self-esteem or higher levels of depression. Furthermore, those with lower levels of well-being rated their avatars significantly better than they rated their actual selves, whereas those with higher levels of well-being did not rate their avatars much better than they rated themselves (Bessiere, Seay, & Kiesler, 2007). Because lower ratings of psychological well-being have been distinctly associated with biased avatar-self representation, particularly in ideal-self avatar creation, factors of well-being have reason to be considered when clarifying the independent effects of avatar-self representation.

The Current Study

On the basis of the theories described, two contradictory hypotheses could be considered for predicting the effect of being asked to create an avatar that represents one's ideal self (thereby priming AISD). First, in alignment with the self-discrepancy theory and the objective self-awareness theory, participants who have AISD primed would express higher negative affect than those who do not. Second, in alignment with the immersive nature of self-presence connection, participants who have AISD primed would express higher positive affect than those who do not. Although these two expected possibilities are contradictory, they are both theoretically plausible outcomes, which brings us to the question this current study sought to answer: How does AISD priming through avatar creation and use subsequently affect the moods of game play participants?

Aiming to identify whether creating and using an ideal-self reflecting avatar in game play would ultimately increase positive or negative affect, the current study was concerned with examining the impact of avatar-self representation on mood, differentiating the influence of actual-self versus ideal-self focus through separate priming conditions. With the increase in opportunity for virtual self-representation, as well as the relevance of self-related process in avatar-based virtual environments, examining the factor of avatar-self representation on mood may help clarify the avatar's function in media users' affective experiences.

The current study examined the role that avatars in a noncompetitive environment play in mood state among individuals outside of a gaming community because past research has relied heavily on populations of registered gamers and their pre-existing avatars in competitive game settings, not controlling for the possible interference of extraneous customization factors in avatar creation. Additionally, much of the existing literature involving avatar-self representation consider it an outcome variable, only observing the resulting avatar in relation to the individual. Consequently, very few studies introduce avatar-self representation as a predictor variable, and it has not yet been incorporated with the specific factor of mood. Previous studies regard positive user experience under concepts of connection, interactivity, or game enjoyment, whereas the current study measured user experience in terms of positive and negative affect levels of mood. Finally, although previous research used self-esteem primarily as a predictor variable, self-esteem has also shown evidence of being associated with biased avatar-self representation. Thus, to account for the possible interaction between psychological well-being and avatar-self representation, the factor of self-esteem was considered as a possible covariate.

We hoped the current study would provide insight on how the moods of players may be affected by the variation of AISDs in their respective avatars. In order to thoroughly explore the possible

role of AISD on mood, the factors of actual- versus ideal-self assignment (i.e., low AISD priming versus high AISD priming) and self-esteem were assessed in regard to their effects on positive and negative affect.

Method

Participants

As a preliminary analysis, an a priori power analysis was conducted with G power. With parameters set for a two-tailed between-subjects design ($d = .5$, power = .65, $p < .05$), the recommended number of participants was 90. Thus, desired number of participants per group was set at 45. We used a convenience sample of 81 full-time undergraduate students (32 = men, 49 = women) from a small, private liberal-arts university in Southern California. All participants completed the full study, so attrition did not impact the number of participants. All students were at least 18 years or older ($M = 19.16$, $SD = 1.89$) and enrolled in a psychology course. The participant group included students of all school year levels (48.1% first-years, 23.5% sophomores, 21% juniors, 7.4% seniors), as well as varying races/ethnicities (46.9% White/European American, 12.3% Hispanic/Latino, 7.4% Black/African American, 1.2% Native American/American Indian, 23.5% Asian/Pacific Islander, 8.6% Biracial/Multiracial). The study was conducted under the oversight of the Pepperdine University Institutional Review Board.

Measures/Instrumentation

A survey was created, consisting of a demographic questionnaire, a measure of self-esteem, pretest and posttest measures of mood, and a posttest questionnaire.

Basic demographic survey. The basic information survey included demographic items for which the participants indicated their respective sex, age, school year level, and ethnicity.

Self-esteem scale. A self-esteem survey from the International Personality Item Pool (Goldberg et al., 2006) was used, measuring participants' self-esteem with five positively keyed statements such as "I know my strengths," as well as five negatively-keyed statements such as "I am less capable than most people." Scores could range from 10 to 50 because the scale was measured on a five-point Likert-type scale, from 1 (*very accurate*) to 5 (*very inaccurate*). A reliability estimate of .84 has been previously reported for a normative sample (Goldberg et al., 2006); we obtained a reliability estimate of .75 for our sample. This portion of the survey also included a measure of the Five Factor model of Personality, but the scores from these scales are not included in these analyses.

Positive and Negative Affect Scale. The Positive and Negative Affect Scale (PANAS) was used in a pretest-posttest format to examine levels of positive affect and negative affect in immediate moods prior to game-play and after game-play in order to gauge participants' overall changes in mood (Watson, Clark & Tellegen, 1988). Whereas the self-esteem scale measured a static variable, the PANAS was intended to measure immediate mood, asking participants to identify their agreement with 20 words describing different feelings and emotions (e.g., excited, irritable, and ashamed), using a 5-point Likert-type scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). The PANAS scale score ranges from 20 to 100. The development of the PANAS revealed excellent factorial and external validity because it was found to provide effective, largely independent measures of positive and negative affect (Watson, Clark & Tellegen, 1988). The score also appears to be internally consistent and effectively reflects one's general affective level through momentary moods ($\alpha = .89$ for positive affect and .85 for negative affect; Watson, Clark & Tellegen, 1988). The reliability estimates of our sample were .88 for both positive affect and negative affect.

Closing questions. The survey closed with a few questions, some of which involved a general inquiry regarding familiarity with avatar-based games (e.g., Out of a day that you play avatar-based games, how many hours do you play?).

The Sims 2. The CVE utilized was the computer-necessitated life simulation game, *The Sims*, which allowed for avatar customization and noncompetitive game-play in a virtual environment.

Design

Students who registered for participation in the study ($N = 81$) were randomly assigned to one of two experimental groups. The independent variable of avatar type consisted of two conditions: (a) instructions to create an actual-self avatar and (b) instructions to create an ideal-self avatar. The dependent variable, in turn, was postgame play mood. The participants in the actual-self priming condition ($n = 42$) were instructed to construct an avatar that accurately represented themselves in terms of physical appearance, and the participants in the ideal-self priming condition ($n = 39$) were

instructed to construct an avatar that mirrored the ideal-selves they hoped to achieve. In addition to a series of self-report surveys, participants completed a pretest-posttest measure of mood, separated by a brief game-play session in which they utilized their self-created avatars in *The Sims*.

Procedure

The study was first advertised through the web-based software for managing research participation, Sona Systems, to the convenience sample. Students received research credit in a psychology course for participating. Students registered for appointment times in the university's computer lab, where they had 90 minutes to complete the study; at designated arrival times, students were randomly assigned to one of two sets of instructions. Each time slot accommodated a group maximum of three, as to limit participant interaction and prevent possible discussion of assignments; small group size was also preferred so that adequate guidance could be given if participants experienced technical difficulties with the game.

The computers were automatically brought to an opening page that presented the IRB-approved informed consent form; only upon completion of the consent form could students continue to the surveys: demographic questionnaire, self-esteem survey, and the PANAS pretest. After finishing the PANAS pretest, they were instructed to minimize the survey window, revealing the Sims software opened to the avatar-creation page. Participants proceeded to follow the instructions slip, which detailed different steps depending on which group the individual had been assigned to. They spent ten minutes creating either (a) an actual-self avatar that from an objective point of view accurately represented themselves or (b) an ideal-self avatar that from their point of view they would ideally like to achieve. The next steps were relatively uniform as the participants were informed that they had fifteen minutes to choose a desired household and complete everyday tasks using their newly created avatar. However, participants assigned to the actual-self avatar group were instructed to act with their avatar as they would realistically (e.g., "If you cook on a daily basis, you can have your avatar cook a meal"), while participants assigned to the ideal-self avatar group were instructed to act with their avatar as they would ideally (e.g., "If you wish to be a great cook, you can make your avatar cook a meal"). After the appropriated time, the researcher marked the end of the game and students were guided back to the online survey, which presented the post-game-play PANAS; in closing questions, game familiarity was assessed as participants were asked about some aspects of previous avatar-based gaming experience. The session was concluded by providing participants with additional contact information, should any questions arise.

In the process of completing the surveys, a number of participants left a few questions unanswered. With regard to the four incomplete answers on the self-esteem scale, a response of 3 (*neither inaccurate nor accurate*) was substituted for the missing responses. A more conservative approach was taken on the PANAS, as the 11 missing data cells out of 3,240 total were coded with a response of 1 (*very slightly or not at all*); this approach was conducted to prevent the appearance of stronger affect due to inflated mood scores.

Results

Prior Gaming Experience

Participants were generally unaccustomed to avatar-based games, as 71.6% of the sample reported that they did not play them at all; participants who reported playing avatar-based games reported playing an average of 1.44 hr ($SD = 0.82$ hr) on any given day that they did play: 16% reported playing less than 1 hr, 9.9% reported playing between 1–3 hr, and only 2.4% reported playing more than 3 hr.

Preliminary Analyses

A dependent-samples *t*-test was used to evaluate whether positive and negative mood changed from pretest to posttest within the full sample. The two-tailed, paired-samples *t*-test used to analyze the pretest-posttest affect data yielded no significant change in positive affect, $t(80) = 1.52$, $p = .13$, 95% CI [-0.43, 3.20], $d = 0.34$. However, a statistically significant change was observed in negative affect, as the avatar game play experience was associated with decreasing negative mood, $t(80) = 4.18$, $p < .001$, 95% CI [1.28, 3.61], $d = 0.41$. Before game play, the participants' measure of negative mood was, on average, 16.37; after game play, the participants' measure of negative mood was averaged at 13.93 (see Table 1).

An independent-samples *t*-test was conducted to determine if the two avatar groups (i.e., actual and ideal) were comparable in mood at the onset of the study. The *t*-test results revealed no statistically significant differences between groups in either pretest positive affect, $t(79) = 1.12$, $p = .27$, 95% CI [-1.55, 5.48], $d = 0.25$, or pretest negative affect,

$t(79) = 0.74$, $p = .46$, 95% CI [-1.88, 4.10], $d = 0.17$, indicating that random assignment resulted in two groups that were comparable in mood at the beginning of the study. For this reason, another independent-samples *t*-test was conducted to determine if the two avatar groups were still similar in mood after the avatar game play experience. The two avatar group conditions were statistically different in terms of posttest positive affect, $t(79) = 2.06$, $p = .04$, 95% CI [0.12, 7.39], $d = 0.46$; avatar group intervention influenced the user experience in that those assigned to the actual-self avatar group were associated with higher positive mood ($M = 32.21$, $SD = 7.31$) after game play, relative to those in the ideal-self avatar group ($M = 28.46$, $SD = 9.07$). However, because both the actual- and ideal-self avatar groups were indeed still similar in posttest negative affect, $t(79) = -0.21$, $p = .84$, 95% CI [-2.54, 2.06], $d = 0.05$, the avatar group intervention appeared to prove statistically insignificant in directing negative mood.

Primary Analyses: ANCOVA

Two Analyses of Covariance (ANCOVAs) were employed to combine the variables of avatar group condition and self-esteem in predicting postgame play mood. ANCOVA allowed us to determine the significance of the contribution of the covariate, self-esteem, as well as whether the independent variable of avatar group intervention significantly predicted posttest mood over self-esteem.

To serve as the basis for the ANCOVA, Pearson correlational analyses were conducted to examine the relationship between self-esteem and posttest affect scores (see Table 2). Linearity found in the association between self-esteem and the dependent variable of posttest mood confirmed self-esteem as a possible covariate, as scores on the self-esteem scale were associated with change in both posttest positive affect scores, $r(81) = .26$, $p = .02$, and negative affect scores, $r(81) = -.38$, $p < .001$.

The first ANCOVA was used to determine whether the avatar group intervention influenced posttest positive mood above and beyond the variance caused by self-esteem. Levene's Test of Equality of Error Variances was not significant, $F(1,79) = 1.42$, $p = .24$, meaning that the homogeneity of variance assumption of ANCOVA was not violated. On the basis of the ANCOVA, we found posttest positive affect to be associated with both avatar group intervention and self-esteem levels (see Table 3) and the variable of avatar group condition was statistically significant in influencing posttest positive mood even after the statistically significant covariate of self-esteem was accounted for, $F(1,78) = 4.44$, $p = .04$, $\eta_p^2 = 0.05$. That is, even when controlling for self-esteem, the difference between avatar group means was statistically significant (see Table 4).

A second ANCOVA was used to determine whether avatar group intervention influenced posttest negative mood above and beyond the variance caused by self-esteem. Levene's Test of Equality of Error Variances was again insignificant, $F(1,79) = 2.28$, $p = .14$, not violating the assumptions of ANCOVA. However, the results of the analysis showed that posttest negative affect was not associated with avatar group intervention, $F(1,78) = 0.04$, $p = .84$, $\eta_p^2 = 0.001$, once accounting for the variance shared with self-esteem (see Table 3). That is, when statistically controlling for self-esteem, the difference in posttest negative affect means between avatar groups was not significant (see Table 4).

Discussion

When comparing pretest and posttest mood in our sample as a whole, we found that participants, regardless of avatar-group condition, experienced an overall significant decrease in negative affect after game play, a finding not unlike that noted in a study conducted by Trepte and Reinecke (2010); like they speculated, enjoyment may not necessarily depend solely on similarity between players and

TABLE 1

Actual Pretest and Posttest Means of Positive and Negative Mood

		Positive Affect		Negative Affect	
	N	Pretest	Posttest	Pretest	Posttest
Actual-Self Avatar Group	42	$M = 32.74$ $SD = 7.27$	$M = 32.21$ $SD = 7.31$	$M = 16.90$ $SD = 6.45$	$M = 13.81$ $SD = 4.03$
Ideal-Self Avatar Group	39	$M = 30.74$ $SD = 8.61$	$M = 28.46$ $SD = 9.07$	$M = 15.79$ $SD = 7.06$	$M = 14.05$ $SD = 6.21$

TABLE 2

Pearson Correlations for Self-Esteem and Posttest Positive and Negative Affect

	Posttest Positive Affect	Posttest Negative Affect
Self-Esteem	$r = .26$ $p = .02$	$r = -.38$ $p < .001$
Posttest Positive Affect	-	$r = -.06$ $p = .57$

their avatars. However, upon further examination, similarity may have distinguishing effects, as participants of our actual-self avatar group were associated with higher levels of positive affect after game play than participants of our ideal-self avatar group. It may be because players with similar avatars find it easier to identify with them, as suggested by Trepte and Reinecke (2010), who found that stronger identification with similar avatars corresponded with higher levels of game enjoyment, particularly in noncompetitive games such as the one employed in the current study.

As the actual-self avatar group experienced stronger positive affect in response to interactive media use, the association possibly reflects higher levels of immersion (Jin, 2009), though Jin's corresponding studies also claim that immersion and self-presence are experienced more strongly in favor of ideal-self avatars (Jin 2009, 2010). Or, as Jin (2009) qualified, priming the ideal self can elicit varying degrees or even opposite directional effects on the affective state of individuals, depending on their view of themselves. In the current study, we attempted to control for such factors that could possibly interfere with the mechanisms of affect direction, consequently explaining self-esteem as our covariate.

In using the variable of avatar group intervention to predict mood, self-esteem proved to be a key factor in predicting posttest affect. In terms of regulating positive mood, the avatar group intervention was statistically significant, even after accounting for the variation caused by self-esteem, suggesting that avatar-self representation may play a more substantial role in managing positive affect. In this case, participants who projected the actual-self avatar experienced higher levels of positive mood than participants who projected the ideal-self avatar. Meanwhile, in terms of regulating negative mood, self-esteem may present as a stronger predictor, because once its variance was accounted for, the factor of avatar group intervention was no longer significant, suggesting that self-esteem may be more salient in managing negative affect than positive affect. Previous studies have highlighted associations between lower levels of self-esteem and greater levels of avatar-self discrepancy, though the findings of this study suggest that self-esteem may potentially manage negative affect more than avatar-self representation (Bessiere et al., 2007; Dunn & Guadagno, 2011). Seeing as lower levels of psychological well-being have also been linked with escapism motivations, those factors in combination may have been contributory to the overall negative affect decrease in our sample—reflecting the players' escape into the anonymity and fantasy of the virtual world, and muting negative mood states in the process (Li et al., 2011).

Neither self-discrepancy theory nor objective self-awareness theory were supported in our findings, as the ideal-self avatar group did not experience an increase in negative affect. In fact, those who created an ideal-self avatar even tended to experience a decrease in negative affect (Higgins, 1987; Silvia & Duval, 2001). Although these theories founded the hypothesis that creating an ideal-self avatar would bring focus toward the depressing discrepancy between the ideal-self and actual-self, and thus increase negative mood, it may just be that the opposite occurred due to the lack of opportunity for the ideal-self avatar group to experience strong character expression and immersion in an ambiguous, noncompetitive game such as *The Sims*—especially for inexperienced game players, such as the participants comprising majority of our sample. Additional limitations, in terms of the study sample, were that participants were drawn as a convenience sample from a small,

TABLE 3

ANCOVA Comparing Avatar Group Conditions on Posttest Mood While Controlling for Self-Esteem

	Posttest Positive Affect ($R^2 = .10$)				Posttest Negative Affect ($R^2 = .12$)			
	F	*df*	Sig.	η_p^2	*F*	*df*	Sig.	η_p^2
Self-Esteem	6.03	*1*	*p* = .02	*0.072*	*13.27*	1	*p* < .001	0.145
Avatar Group Intervention	4.44	*1*	*p* = .04	*0.054*	*0.04*	1	*p* =.84	0.001
Error		*78*				78		

Note. R^2 = Adjusted R Square; Sig = statistical significance; η_p^2 = Partial Eta Square.

TABLE 4

Positive and Negative Mood Means Before and After Accounting for Covariate of Self-Esteem

		Posttest Positive Affect		Posttest Negative Affect	
	N	SE Unacct.	SE Acct.	SE Unacct.	SE Acct.
Actual-Self Avatar Group	42	*M* = 32.21 *SD* = 7.31	*M* = 32.20 *SE* = 1.228	*M* = 13.81 *SD* = 4.03	*M* = 13.82 *SE* = 0.75
Ideal-Self Avatar Group	39	*M* = 28.46 *SD* = 9.07	*M* = 28.48 *SE* = 1.27	*M* = 14.05 *SD* = 6.21	*M* = 14.04 *SE* = 0.77

Note. PA = SE Unacct. = Self-esteem unaccounted for; SE Acct. = Self-esteem accounted for; SE = Standard error of the estimate.

Christian, Liberal Arts University in Southern California, which may not be representative of many other geographical areas, much less representative of the wide-ranging demographic pool of users of avatar-based media today (Yee, 2006b). The sample size was also relatively small, with a total of 42 participants in the actual-self priming group and 39 participants in the ideal-self priming condition.

Although the literature offers a number of studies looking at avatar-self discrepancies in relation to the media user, this study is among few that introduce actual- and ideal-self groups as predictors rather than observational supplements, and may be one of the first to examine them in relation to mood and the affective experience. That being said, although specifically creating an ideal-self avatar (high AISD) did not have any noticeable independent effects on mood like hypothesized, it is worth recognizing that creating an actual-self avatar (low AISD) did. This can suggest that, in terms of avatar-self representation, choosing an actual-self reflecting avatar (low AISD)—or even just not choosing an ideal-self reflecting avatar (high AISD)—may possibly have a more positive effect on the player's experience. In order to improve the clarity and effectiveness of relevant studies involving avatar-self discrepancy and mood, significant changes should be considered.

Future studies should consider gathering data from a more wide-ranging and representative sample of the population, including individuals both familiar and unfamiliar with avatar-based virtual environments, as to observe whether or not user experience plays any mediating or moderating roles. Future studies could also explore different media selections (i.e., competitive vs. noncompetitive, computer vs. video game), as different immersive aspects of games could influence character expression and interactivity, intensifying the effects of AISD between avatar and individual. Previous studies have used the Wii, a console with key motion-sensing capabilities that empower players to manipulate and interact with characters on screen via movement, but the Wii's Mii avatars may not necessarily provide a mode of substantially realistic avatar customization (Jin & Park, 2009).

Thus, it could also be interesting to see a similar process executed in a virtual-reality environment, in which participants would have a similarly, if not more, hands-on approach to using their avatars, yet have access to more realistic customization options. A virtual reality setting may also allow the variable of avatar-self representation to be tested more objectively; for example, in testing the effects of actual-self avatars, virtual reality avatars can be created in the accurate image of participating individuals, and they could enter the simulation completely blind to conditions assigned to any other participant. Because the current study provided no objective measure of accuracy in comparing actual-self avatars to their respective participants, future studies should consider a virtual reality method to better control for possibly confounding variations in accuracy of avatar-self representation. In addition, participants had to be given written instruction to create an actual- or ideal-self avatar, so it is possible that demand characteristics could have influenced the results; once aware that other participants are assigned different instructions, participants might have responded with more or less incentive to act correspondingly to their assigned instructions. Virtual reality would be a suitable alternative for media selection, as it can also encourage a stronger sense of self-presence and immersion; consequently, it may result in a more visible impact on participants' moods, allowing researchers to better observe how actual- and ideal-self appearance priming can affect the individual.

Finally, although the current study measured enjoyment in terms of mood and its positive and negative affective states, implications of user experience can only be inferred as far as affect can be interpreted. Main findings of the study revealed a decrease in negative affect for all participants, as well as a higher level of positive affect for participants of the actual-self avatar group; although these positive and negative affect effects can be considered "beneficial" mood developments, the reasons behind them are more ambiguous. For instance, the decrease in negative affect could be interpreted as a straightforward reduction of negative mood, but can also be interpreted as a reflection of escapism, causing debate for how "beneficial" these affect states are. Because the current study measured mood in terms of affect, future studies may consider supplementing direct measures of participant enjoyment of avatar-based gaming tasks, as it may help to more effectively interpret mood measures into more definitive implications of user enjoyment.

As avatar-based representation becomes more common in computer games, video games, and other virtual environments, understanding the role of avatar-self representation may allow for better understanding of its function in the affective experiences of media users. Although negative mood

decreased for participants as a whole, the potential influence of avatar-self discrepancy in this particular game context might have been overshadowed by the factor of self-esteem. However, the current study highlights an association between actual-self avatar creation (low AISD) and higher post-game play positive mood, suggesting that low avatar-self discrepancy may contribute to a more enjoyable game experience. Ultimately, in examining the concept of AISD and its relation to avatar customization and utilization, our findings hope to provide insight into the mechanisms by which avatar-self discrepancies might influence positive and negative mood states through game play.

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