The Ideal Elf: Identity Exploration in World of Warcraft

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ABSTRACT

As they hunt monsters in the fantasy world of online role-playing games, players act through characters who may resemble an idealized self. We studied players of World of Warcraft. We found that players realized aspects of their ideal self in their characters. On average, participants rated their virtual characters as being more conscientious, extraverted, and less neurotic than they themselves were. This phenomenon was stronger among those having lower psychological well-being. We discuss implications for the theory of self discrepancy, for the study of online social interaction, and for design and applications.

Author Keywords

Online games, identity, immersion, social impact, virtual self, self discrepancy, self exploration.

ACM Classification Keywords

J4. Social and Behavioral Sciences; H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Whether lured by the high stakes action of virtual poker rooms or the roaring crowds of digital soccer stadiums, online games attract hundreds of millions of users. An estimated 430 million people worldwide played video games in 2003 [24]. Over one quarter of this group did so online, and the percentage of gamers online continues to grow. One popular type of online game is the Massively Multiplayer Online Role Playing Game (MMORPG).

An MMORPG is a persistent, immersive online world in which people create and enact characters that pursue adventure, success in war, and other social and nonsocial goals (see Figure 1 for two examples of MMORPG characters). Subscribers to MMORPG's play on average 15 hours each week; 30 hours or more is not rare [17, 23].

Figure 1: Two characters in World of Warcraft, a massively multiplayer online role playing game.

In some ways MMORPGs are like bowling, quilting, and "reality" TV; they are entertaining, hobby-like, and offer a convenient escape from everyday cares [17, 22, 23]. Further, for many users the robust audio-visual experience of play results in measurable feelings of perceptual immersion [3, 16].

Fun, convenience, and a hi-fidelity sensory experience do not fully account for users' emotional involvement and fervent commitment to particular MMORPG worlds [17, 23]. For many, these games offer a unique opportunity for ongoing personal expression, competence building, and social interaction. In this paper, we focus on these social psychological dimensions of the MMORPG, applying theories of virtual identity and self discrepancy to an analysis of survey data from a sample of MMORPG players.

Our study of players of one MMORPG, World of Warcraft, demonstrates that players' online characters are linked psychologically to their self worth and to the persons they would like to be. This research demonstrates an effective methodology for examination of the relationship between the virtual and ideal selves, and provides empirical data supporting theory in the existing body of research. Our results provide a useful foundation for future investigation into aspects of virtual identity in various online venues as well as the psychological consequences of online gaming.

Based on our findings, we detail a set of implications for game design, the design of therapeutic technologies, and interaction design.

BACKGROUND

MMORPGs have several critical features that particularly affect players' psychological experience. For example, they are persistent dynamic social structures, sustained in their essence but always changing as people interact and events unfold over time. Further, they are an occasion for imaginative self expression. Players create a character as an embodied representation of themselves. Players often keep their characters for months or years, accumulating knowledge, skills, and resources for them. In addition, MMORPGs are intensely competitive games, often in (virtually) violent ways involving death and destruction. Characters cannot survive alone. Players rely on other players for training, information, and resources, forming groups and intergroup collaborations. Players' reliance on others gives rise to robust communities in which players transact their relationships through their virtual characters not only in the game but also through Instant Messenger, web forums, email, and voice over IP networks.

Since the emergence of multiuser online games in the 1980s, and well before the advent of fast moving action with complex 3D characters and scenery, these games' attributes of persistence, imaginative self creation, and social interaction gave rise to speculation that they offered players compelling opportunities for identity exploration. The term "identity" refers to people's mental model of themselves, or "self schema" [9]. Identity is composed of the various meanings and self-expectations attached to the multiple roles that people play in their social environment (e.g., daughter, sexual partner, coworker, president of the hunting club). Virtual communities, which emulate "real-life" communities, thus become arenas for the creation and construction of new, multiple selves.

The predominant notion of the construction of identity and self on the Internet is based on this idea of a multiplicity of selves. Sherry Turkle is perhaps the main espouser of this multiplicity of selves online, stating that in today's society of networked computers and the windows interface, multiple windows provide opportunities for parallel selves interacting in different environments at the same time. [20]. Not only do multiple windows allow for the creation of multiple new selves, but the ability to cast off or recreate different aspects of the self online allows individuals to explore multiple aspects of their identity [15]. In other words, users not only have the opportunity to adopt different personae for different communities and environments, playing different roles in each, but they also have the opportunity to try out new roles that could differ markedly from the roles which they play in real life. Virtual worlds provide a place where individuals can be whomever they wish to be; they can lay aside their unwanted character traits if they so wish and enact traits

considered more ideal. The Internet provides individuals with a never ending supply of people who have no expectations of them, allowing them to try out new virtual selves that may embody personal characteristics both actual and of their ideals.

The ability to create a new self that is more ideal has direct implications for psychological well-being. Self discrepancy theory suggests that psychological well being is closely related to the discrepancy between the actual self (me as I am) and the ideal self (me as I would like to be) [6]. More precisely, a large discrepancy between the actual and ideal self (termed the actual-ideal self discrepancy, or simply, self discrepancy) is associated with higher depressive affect and lower self esteem [6, 13].

Enacting a virtual self that approximates how one would like to be could have positive consequences for the individual. One possibility is a reduction of the actual-ideal self discrepancy through the creation and enactment of a virtual self that is more like the ideal self. Enactment of this more ideal virtual self could lead to changes in the self-concept offline [11], leading to permanent and adaptive reduction in depressive affect over time. When unable to do so in the real world, individuals could become more like who they want to be through the creation and enactment of online personas, perhaps reaping psychological benefits similar to those associated with real life change.

In this study we examine the identity exploration possibilities presented to MMORPG players. The construction of an online identity could occur in a variety of ways. An individual might enact his or her new identity through participation in online groups and communities, creating a new virtual self through interactions with others. In this scenario, the individual might choose to highlight strengths and de-emphasize weaknesses in interactions with others: presenting more ideal qualities to others. Alternately, the individual might go through a graphical process of creation in which software allows the individual to construct an actual avatar or character that will serve as the visual personification of the online identity. In many games and graphical online environments, users choose a model to represent them and modify it to their specifications as much as the software will allow. In these fantasy worlds, the avatar has a potentially fictional element and may have little relationship to the offline self. The player can enact an identity, whether a ruthless orc or a beautiful elf, that is completely orthogonal to their offline identity.

Many online environments provide their users with both the social/transactional and visual mechanisms of identity construction mentioned here. However, it is important to note that the creation of an online identity need not involve a physical/visual dimension. As such, discussions of online identity need not be limited to graphical environments. Thus, our discussion not only applies to graphical environments, but to those identities people create and

maintain via any number of conventional, text based communication modalities.

Online multiplayer games offer players an attractive opportunity to create a representation of themselves through their character that reflects and approximates an idealized version of themselves. That said, the amount of this "virtual enhancement" engaged in might reasonably differ from person to person based on the individual's satisfaction with their actual self. Those dissatisfied with some aspect of themselves might well engage in more virtual enhancement than those who are fairly content with the way they are.

This study explores this phenomenon, asking a simple question: do individuals create virtual selves that are more like their ideal? In other words, will the discrepancy between virtual and ideal be smaller than the discrepancy between the actual and ideal self? We believe that it will be. Further, we examine whether real world personality characteristics such as depressive affect and self esteem moderate the disparity between these various identities

World of Warcraft
The study described here was conducted using a popular MMORPG titled World of Warcraft (WoW), published by Blizzard Entertainment. One of the most commercially successful online games to date, WoW boasts an international user base of over 1.5 million people who each pay 40USD to buy the game and 15USD per month to play. WoW is a persistent, dynamic graphical online world that exists and changes 24 hours a day even when the player is not logged in.

World of Warcraft is a typical Role Playing Game (RPG), in which the player creates a character and travels around the virtual world gaining skills, experience, and riches, all the while defeating monsters, discovering new locations, and interacting with other players. Players can choose to participate in the online world's economy by gathering resources, creating items, and selling those items to other players. Players are also offered the opportunity to compete against other players in various forms of player vs. player combat. Individual players typically subscribe to these types of games and play for several months, often for years.

Before entering the game world, a player must create a "character," a digital avatar that will serve as their physical representative in the digital world. The character creation process includes making decisions about the appearance and profession the character will assume. Here the player might decide whether to be a gnome thief wandering the shadows, a human priest spreading truth and light, or a troll warrior crushing all in its path; whether to have flowing blonde hair and a radiant complexion or a red Mohawk and a menacing facial scar.

Though not offering as many appearance and customization options as some similar games (e.g Star Wars Galaxies, published by Sony Online Entertainment), WoW does allow the player the ability to create a digital persona that can reflect aspects of their personality, style, and taste. However, as mentioned earlier, the appearance of one's digital avatar can compliment or contrast with the more robust social/transactional aspects of their virtual identity, the way the player acts toward and interacts with other players.

People, in some sense, *are* their characters while playing World of Warcraft. Others refer to them by the name of their character, and they interact with others as that character. The comparative anonymity offered by the Internet allows players, as their characters, to escape real world norms and expectations and to act out roles and try out personas that range from enhanced versions of their real-life self to alter-egos that behave in reprehensible ways. The player's character, therefore, is one instance of a possible virtual self.

Hypotheses
Massively multiplayer online role playing games are not just environments for personal expression and fun, but also are an arena for enacting imagined self identities through character creation. Previous research on online groups suggests that in some cases the representations people make of themselves online are an amalgamation of their actual and ideal self, that is, that the virtual self is a somewhat idealized self [11, 8]. Indeed, as exposure to computer-mediated communication increases, virtual selves and ideal selves increase in similarity [8]. McKenna & Bargh also found that individuals presented idealized versions of self when interacting with unknown others online, and were more successful in presenting these ideal qualities [11]. They also found that individuals were more likely to claim that they could express their 'true' selves online [12].

Thus, there is some evidence that individuals enact ideal qualities when interacting in online groups. This behavior may reflect misrepresentation for a purely instrumental purpose, such as finding an attractive date [4], but it also may reflect a desire to be someone better. This desire may be realistic. Acting out one's ideal self online may have a beneficial effect in terms of bringing that quality out into real life, as well as increasing feelings of acceptance and self-worth [10]. In therapy, visual imagery techniques can help drug addicts create ideal self representations, which in turn help them reject the addictive actual self [1] and become their 'true' self.

We extend this argument to the domain of the MMORPG. That is, we predict that players, on average, will create characters that (a) represent aspects of themselves, and (b) that the characters will resemble not just their actual selves but also their ideal selves. Thus it is hypothesized that, on average, the character in an MMORPG will be viewed as embodying more ideal characteristics than the actual self. In other words, the difference between one's virtual and ideal self, henceforth referred to as the *character discrepancy*, will be smaller than the difference between

one's real and ideal self, henceforth referred to as the *self discrepancy*.

Hypothesis 1. *Players will view their characters as being more similar to their ideal selves than they themselves are, thus making the character discrepancy smaller than the self discrepancy.*
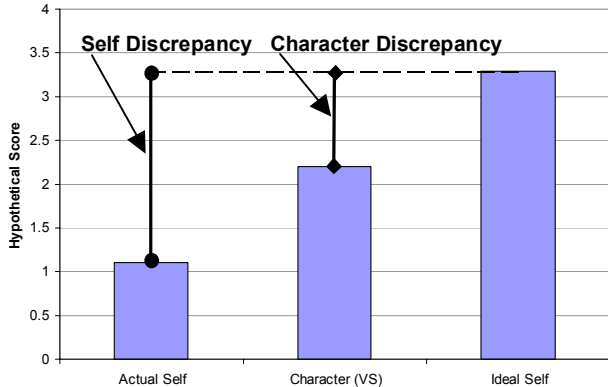

Figure 2. Hypothetical graph showing the calculation of self discrepancy and character discrepancy

Figure 2 shows how these two discrepancy scores are calculated. In the hypothetical figure, hypothesis 1 is supported in that the character discrepancy is smaller than the self discrepancy.

High depressive affect and low self esteem are significantly associated with having a large self discrepancy [6, 13]. Additionally, there is some evidence that people who are psychologically fragile use the Internet differently than those who are not, for instance that those with higher depressive affect are more likely to use the Internet for escape [2]. Moreover, over time, using the Internet for escape reduces their depressive affect [2]. McKenna and Bargh also argue that those with a more marginalized self identity may seek affirmation in their use of the Internet [10].

It is possible that those with poorer psychological well-being (and thus larger self discrepancies) would be more likely to turn to the creation of alternate selves as an escape from or remedy for negative self-regard. As such, we pose a second hypothesis about how differences in the psychological well being of individuals will moderate the strength of the relationship proposed in our first hypothesis.

We believe that players with poorer psychological well being and self regard will be more likely to create characters that they view as substantially different from themselves than people with better psychological well being and self regard. The chance to exist in a persistent online world, where their character can interact with others freely and anonymously may give the former group a means to escape poor self evaluation by eschewing negative traits and becoming a better virtual self. We predict that individuals with high depressive affect and lower self

esteem will take great advantage of this ability to enhance themselves virtually, creating characters that are just as close to their ideal as those created by players with higher levels of psychological well-being. We expect players with poorer psychological well being to have larger self discrepancies than players with higher psychological well-being [6]. We predict that the former group will create virtual characters that are much more ideal than their actual selves, while the latter group will not. In other words, the difference between the actual and virtual selves will be larger for those with lower psychological well being.

Hypothesis 2. *The relationship proposed in our first hypothesis will be strongest for those with lower psychological well-being. The difference between the self discrepancy and the character discrepancy will be larger for participants scoring less positively on the measures of depressive affect and self esteem.*

METHOD
We administered a survey via the Internet to a sample of players of World of Warcraft as part of a larger study of the WoW game. Emails soliciting participation in the online survey were sent to a listserv at a local university and to a local gaming group. Participants received no compensation for completing this survey.

Participants
Sixty-eight participants responded to the email query for World of Warcraft players and subsequently completed the survey. From the answers to filtering questions about their play, we determined that 17 respondents were not World of Warcraft players. They were dropped from the sample, leaving 51 valid participants. The valid participants' ages ranged from 18 to 27 years old with a mean of 21 years of age. Participants were primarily male (43 men, 8 women).

Measures
The survey was conducted in the spring of 2005. Respondents were asked a battery of questions about World of Warcraft, their actual selves, their character, and their ideal selves.

Big Five Personality Inventory
We predicted that participants would attribute personality traits that they themselves admired to their WoW character.

An adjective rating method was used to assess the different self views. We decided to use the Big Five Personality Inventory for this purpose as it is a widely used, highly reliable measure of personality [5]. Participants rated how similar each of 44 personality characteristics was to their actual and ideal selves. This same rating scale was also used for ratings of their virtual character. Each of the self measures was separated by other questions and scales to ensure a separation between the responses. The five personality dimensions are described in Table 1.

Conscientiousness	Thoroughness
	Reliability
	Organization
Extraversion	Talkative
	Energetic and enthusiastic
	Assertive
Neuroticism	Depressed or blue
	Worries a lot
	Nervous
Agreeableness	Trusting
	Forgiving
	Kind and considerate
Openness/Intellect	Creative
	Artistic
	Inventive

Table 1. The Big Five personality dimensions and examples of adjectives used to measure each dimension.

The administration of the Big Five was identical across the three targets (actual self, ideal self, character) except for the way the questions were introduced. When the participants rated their actual self, the question was worded "Please think of yourself and answer the following questions. 'I see myself as someone who _____.'" Participants then rated themselves on the 44 characteristics using 7-point Likert-type scales ranging from "disagree strongly'" to "agree strongly."

Participants also completed the Big Five inventory with respect to their ideal self. The question was worded, "Now think of yourself as you would like to be, ideally, and answer the following questions. 'Ideally, I would like to be someone who _____.'"

Finally, participants completed the Big Five inventory with respect to their main World of Warcraft character, regarded as an instance of a virtual self. The question was worded, "Please think of your main character in World of Warcraft and answer the following questions. 'I see my main character in World of Warcraft as someone who _____.'" The items were identical to those presented when the participants rated their actual and ideal self.

Depressive Affect
Several scales measuring psychological well being were used to test our second hypothesis that a poorer sense of well being may increase players' likelihood of investing their characters with idealized traits they would like in themselves. In this paper, we report findings from two well known scales, and those deemed most relevant to self-discrepancy theory (results are similar for other scales). A large difference between one's actual self and one's ideal self is associated with both high depressive affect and low self esteem, and these measures were chosen for our analyses.

The first of these is the CES-D, which measures depressive affect [14]. High scores on the scale indicate sadness or dysphoria, not necessarily clinical depression. Participants reported how frequently in the past week they had experienced symptoms of depressive affect including "I felt that everything I did was an effort," "My sleep was restless," and "I had trouble keeping my mind on what I was doing."

Self Esteem
We used a measure of self esteem from a subset of the PANAS mood scale [21]. Eleven items indicate the participant's current confidence in his or her abilities and intelligence. Participants were asked to indicate how they felt at the present moment. Items included "competent," "effective," and "smart."

RESULTS
In this section, we present results from our analysis of the data with regards to the two hypotheses. Our first prediction was that the character discrepancy would be smaller than the self discrepancy. Secondly, we hypothesized that this effect would be moderated by depressive affect and self esteem, namely that this effect would be strongest for those with lower levels of psychological well-being.

An Idealized WoW Character
Our premise was that players create a character that is an amalgamation of their actual self and their ideal self. We began our analysis by verifying that players created characters more like themselves than like other players. This resulted in the expected main effect showing that each participant's character was more similar to the participant's actual self than to a random other participant's actual self ($F [1, 36] = 5.3, p = .02$).

Next we turned to the question of whether a player's character (the virtual self) was viewed as more ideal than the player's actual self. Our prediction was that the character discrepancy would be significantly smaller than the self discrepancy for each of the five personality dimensions. We tested this hypothesis using a paired t-test to examine whether the differences between the self discrepancy and the character discrepancy were significant. The hypothesis was supported for three of the five personality dimensions: conscientiousness (paired $t = 5, p < .001$), extraversion (paired $t = 3.2, p < .01$, and neuroticism (paired $t = 4.89, p < .0001$). These effects can be seen in Figure 3.

The hypothesis was not supported for the personality dimension of agreeableness. There was no difference between agreeableness ratings of the actual self and the virtual character (means: actual = 3.56, character = 3.60, ideal = 4.0).
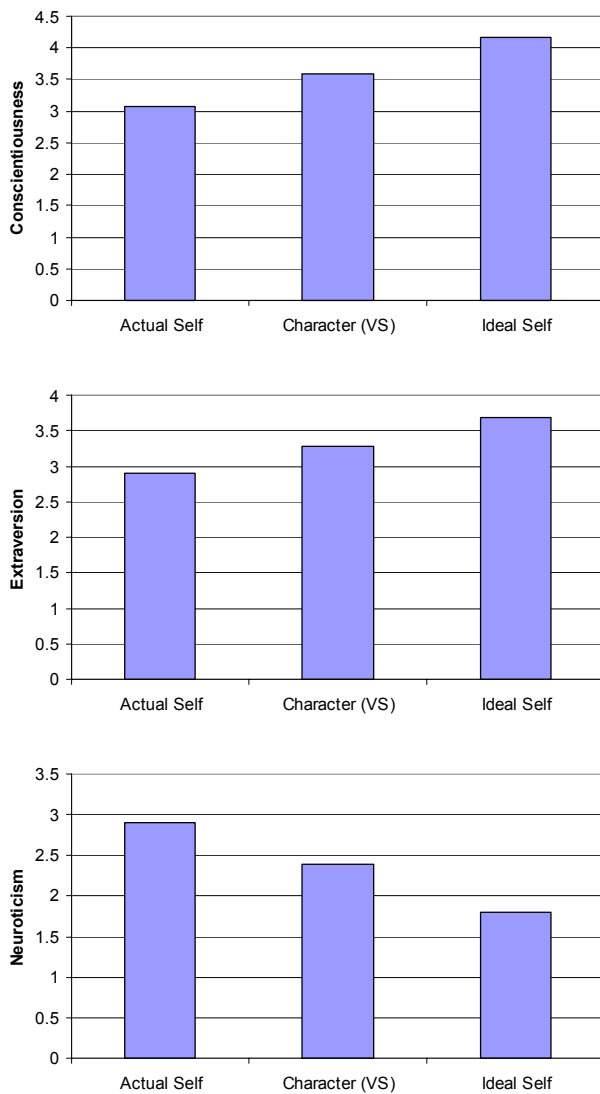
Figure 3. Conscientiousness, extraversion, and neuroticism Big Five scores reflecting participants' ratings of their actual self, character, and ideal self. (For neuroticism, a lower score is better.)

The hypothesis also was not supported for the dimension openness to experience, a measure of artistic talent, creativity, and reflection. <consider mentioning intellect or renaming intellect/openness> Indeed the character rating for openness to experience was lower than ratings of either the actual or the ideal self, and the character discrepancy was significantly larger than the self discrepancy (paired $t = 3.8$, $p < .001$; see Figure 4). Though unexpected, upon closer examination this result makes sense. Characters in World of Warcraft do not typically play a creative role. Thus players may create the character to be more reliable than they are (conscientious), a more energetic, outgoing personality (extraversion), and someone stronger with fewer hang-ups (neuroticism), but they probably see themselves as "pulling the strings" and playing the creative role. These results also

show nicely that participants did not simply rate their character positively across all personality dimensions, but did so selectively, presumably for those characteristics activated while on the Internet [7].
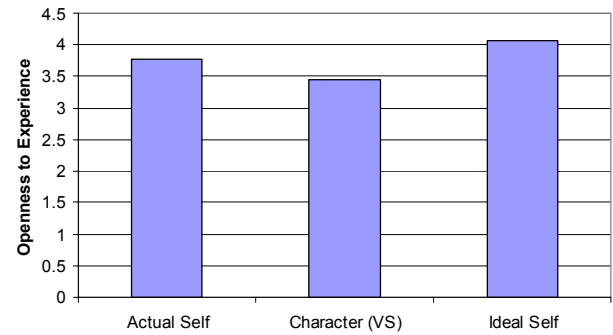

Figure 4. Openness scores for the actual, virtual, and ideal selves

Depressive Affect and Low Self Esteem

We hypothesized that individual differences in psychological well being and self regard would moderate the relationship between self discrepancy and character discrepancy. Our prediction was that those having more depressive affect and lower self esteem would be more likely to see their character as realizing aspects of their ideal self. Thus, the difference between the self discrepancy and the character discrepancy should be larger for participants scoring less highly on the measures of depressive affect and self esteem.

To test this hypothesis, we conducted repeated measures MANOVAs on the personality dimensions. Discrepancy types (self, character) are the within-subjects, repeated measures variable and the moderating characteristic (depressive affect or self esteem) was a continuous between subjects variable. The results are identical using mixed model regression. We expected an interaction effect between discrepancy type and depression/self esteem, the moderator variables.

When depressive affect was used as the moderator, we found support for the hypotheses for three of the Big Five personality dimensions. That is, those with higher depressive affect also showed a larger disparity between self discrepancy and character discrepancy for conscientiousness ($p = 0.04$), neuroticism ($p = .004$), and agreeableness ($p = .02$).

These interaction effects are shown in Figure 5, using the depressive affect scores split at the median into high and low depressive affect groups. These figures use line graphs so that the slopes for both groups can be seen easily.
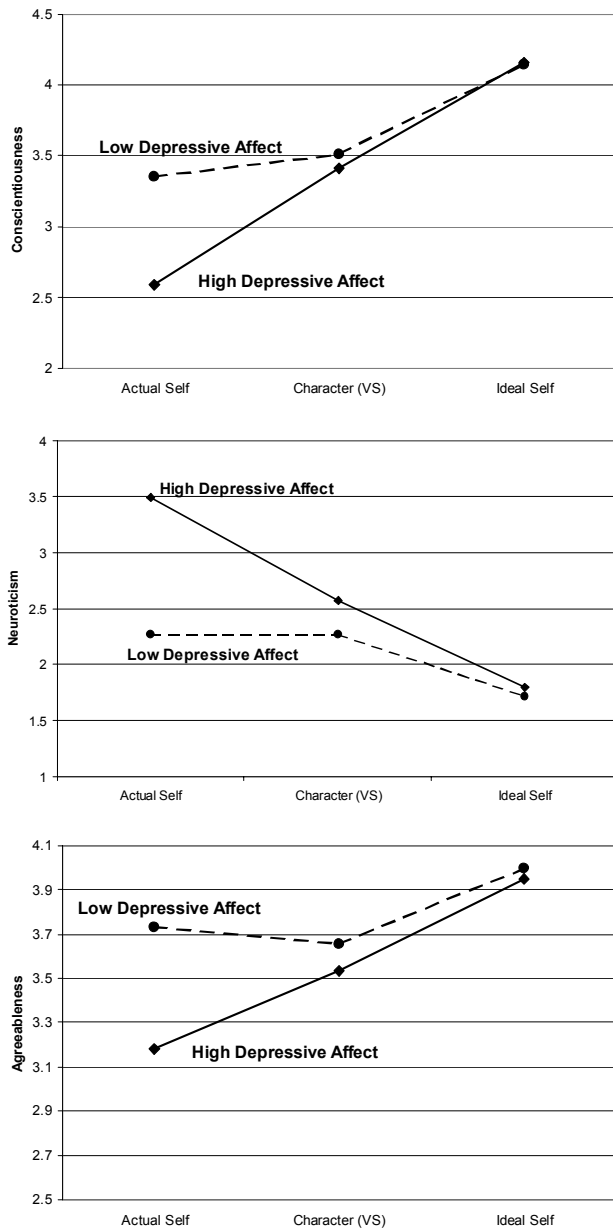
Figure 5. Consciousness, neuroticism, and agreeableness Big Five scores reflecting participants' ratings of their actual self, ideal self, and character, divided into low and high depressive affect groups. (For neuroticism, a lower score is better.)

From Figure 5, it can be seen that the main reason for the interaction effect derives from the more negative ratings of actual self personality traits of those with high depressive affect. Thus there is no evidence that the characters of those with high depressive affect have more idealized traits than the characters of those with low depressive affect. Nor is there any evidence that their ideal selves differ from those with low depressive affect. Instead, it seems that those with high depressive affect are able to create characters in the game that are as positive and close to an ideal self as are

those with low depressive affect. The game, in a sense, releases them from the reality of their actual self. In their imagination and through the game, the character is just as good as other people's characters. It is also noteworthy that those with low depressive affect do not evince this pattern at all, but rather view their virtual characters as highly similar to their own selves.

We also found support for the hypothesis using self esteem as the moderator variable. That is, we hypothesized that those with lower self esteem would be more likely to perceive their character as realizing their ideal self than those with higher self esteem. This phenomenon should be found in a larger difference between the self discrepancy and the character discrepancy for those with lower self esteem. This hypothesis was confirmed for four of the Big Five personality dimensions: conscientiousness ($p = .007$), neuroticism ($p = .01$), agreeableness ($p = .05$) and openness to experience ($p = .05$). Figure 6 shows the basic pattern, using conscientiousness as an example. The other dependent variables showed the same effects (except that neuroticism is a reversed scale).
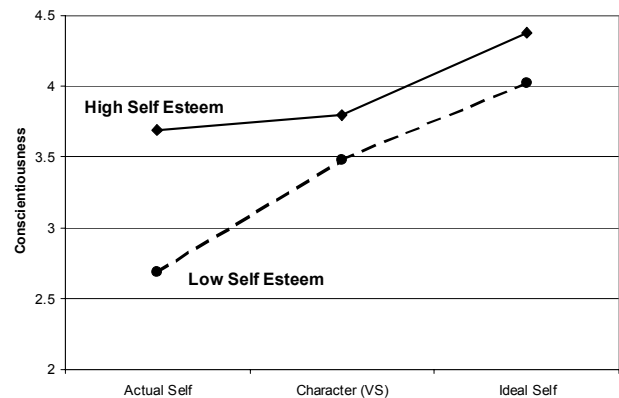

Figure 6. Conscientiousness Big Five scores reflecting participants' ratings of their actual self, ideal self, and character, divided into low and high self esteem groups. (The group* discrepancy effects were also significant for neuroticism, agreeableness, and openness to experience.)

DISCUSSION

We have shown that massively multiplayer online role player games provide players with the opportunity to create a new, idealized self online. On average, participants viewed their virtual characters as being more conscientious, extraverted, and less neurotic than they themselves were. Also we found that players with high measured depressive affect and low self esteem had actual self descriptions that were less similar to their ideal self than were the descriptions of those with low depressive affect and high mood self esteem, replicating previous results [6, 13]. The actual-ideal self discrepancy for those with lower psychological well-being was larger than for those who were better off psychologically. However, despite this larger discrepancy, those with lower actual self ratings rated

their characters and ideal selves as positively as those with higher self ratings. In other words, both groups had equivalent virtual and ideal selves.

The ability to create a new self online is one that may have consequences for individuals, enabling them to assume traits that they wish to have and cannot achieve offline. Individuals may enact traits that they do not have in their 'real' lives, they may shirk or de-emphasize unwanted traits, or they may role play at being something completely different. Our results show that when given this opportunity, individuals are creating characters that are more like their idealized versions of themselves. This is particularly true for those who score low on two different measures of psychological well-being: depressive affect and self esteem. These individuals are taking advantage of the opportunity that the internet provides them to create a virtual self that is more ideal than their actual selves. If this virtual self is more ideal than the actual self, the implication is that the benefit from enacting a more ideal self may translate into one's offline life [11].

Limitations
The cross sectional nature of the study does not allow us to determine the process through which the players came to view their characters as embodying ideal characteristics. There are many possibilities for why players rated their characters in the manner in which they did. One possibility is that the simple act of creation allows players to invent characteristics and personalities associated with the actual physical avatar and the role that this avatar may play in the game. Clerics, for example, may be viewed as kinder than a fierce warrior. Another possibility is that aspects of the game itself induce the perception of the character as an idealized version of the self. In this instance the player would view the character as an entity in and of itself but would apply his or her ideal standard to it nonetheless, much as one would a celebrity or other important person. Positive attributes of this character (success, appearance, ability) may then match the ideal standard that the player has set for judging others.

A third possibility is that the virtual self is enacted through the actual playing of the game, through interactions not only with the other players in the game but with objects in the game, and the physical objects which are associated with the game (keyboard, mouse). Through these interactions, the player develops a persona of his own: one which fits into the world, knows how to navigate it confidently, and has the technical and social skills with which to continue on. These interactions combine into a process of self formation, whereby a virtual self emerges.

This study focused solely on players of the MMORPG World of Warcraft. These results may not generalize past the World of Warcraft to other games, though we have little reason to think that they would not. In addition, this particular sample of mostly male college and graduate students might differ from a broader sample. In particular,

the personality characteristics relevant to World of Warcraft may not be relevant to other types of online communities, and research into these domains will help elucidate what distinctions may exist. While evidence in other domains supports our findings [10, 12], more research is needed to expand the scope of this study.

Implications
Our results suggest that playing massively multiplayer role player games provide social and emotional opportunities for players. Through their characters, players can realize skills and achievements that they do not have in their offline lives, they can cast off unwanted attributes, and they can role play at being someone completely different. Given this opportunity, our results show that players are creating characters that are more like their idealized versions of themselves than they themselves are.

Individuals using the Internet for escape and entertainment are more depressed than others, but this use of the Internet for entertainment is associated with a reduction in depression over time [2]. One possible mechanism for this reduction might be through a reduction of the actual-ideal self discrepancy through this creation and enactment of virtual selves that resemble in some respects the ideal self. Users might very well stand to reap real-life benefits from any expansion of their capacity to enact a robust persona. Individuals are both identifying and addressing perceived deficits in their actual selves by creating and enacting online personas that approximate their ideal selves. Enacting a virtual self with a smaller self discrepancy that approximates how one would like to be could have positive implications for one's identity and well-being, particularly for those with large actual-ideal self discrepancies. Given that large discrepancies are associated with higher levels of depression, this enactment of a virtual self with a smaller discrepancy could lead to a reduction in depression, both temporarily and over time. Indeed, previous research has shown that real world changes can be achieved as a result of online interaction [10, 11]. This possibility seems a fruitful area for future research.

There are a variety of different arenas in which to construct a virtual identity on the Internet: homepages, blogs, chat rooms, listservs, to name a few. While we can only speculate, our results suggest that individuals could present idealized aspects of themselves in these forums as well. What is interesting here is the possibility of lasting emotional effects that presentation of an alternative self can have for the user; the therapeutic potential of adopting a virtual persona and having robust interactions with a community of other people. It stands to reason that this type of experience does not demand the high fidelity visual component offered by MMORPGS and can be transacted through more conventional online communication modalities, like those listed above. Future studies should address the universality of the real and character

discrepancy relationships demonstrated here, investigating their appearance in more text-dominated domains.

These results have implications not only for social research but for the design of online games as well. If online games do indeed serve as a valuable therapeutic escape and behavioral testbed, these benefits can be spread by expanding the appeal of gaming to a wider audience. As it is, the most social of online games fall largely within the Role Playing genre. These games often require long hours of repetitive play in a high fantasy setting. People who do not have lots of free time and an interest in swords and sorcery are unlikely to be attracted to these domains. The current implementation of sustainable communities surrounding sports titles, card games, and other genres seems far less robust. Further, developers must move beyond the relatively simple ability to customize one's appearance or build and decorate a virtual home, by continuing to share with their user communities in finding new ways to allow users to express themselves online within the context of social virtual worlds. The sharing of content creation tools, though almost unheard of in the major contemporary MMOG market, may be one important way forward.

Designers of learning and therapeutic technologies should find support in these results as they investigate the potential effectiveness of online environments in helping to address and overcome personality deficits and other outcomes associated with actual-ideal discrepancies. Online implementations of therapeutic programs in the form of games or other social activities hold many advantages over in-vivo techniques, including enhanced availability and consistency. In addition, research into the design of healthy online venues for self-exploration could be fruitful. Online support groups are becoming more prevalent, ranging from major disabilities, diseases, weight loss, or support for those with marginalized identities. Products and services for those in need of support, particularly those in major life transitions, which enable individuals to explore who they are and who they might become could be particularly useful.

Interaction designers and those interested in the emerging field of emotion and design might also find interest in our results. It is quite possible that our findings are partially caused by or heightened by the artifacts of the game themselves, whether virtual or physical. The virtual objects and entities with which the players interact can serve to heighten emotions, especially if the object is frightening or exciting. Additionally, in a world in which skill and speed are vitally important, the interaction between the player and input device can literally mean the difference between success and failure. Improving these interactions could increase the ability of the player to immerse himself in the experience of the virtual world through a reduction of cognitive load. This might allow for more opportunities for self exploration. New interaction techniques incorporating more natural methods of input such as motion will enable the player to more seamlessly integrate themselves into the virtual world enhancing the player's ability to enact their virtual self.

CONCLUSION

Our study should serve as a foundation for further research on the role of the ideal self in virtual self formation and its effect on the offline self. We have demonstrated the creation of virtual selves that are more ideal than the offline self. This may serve as the beginning of an explanation of the reduction in depressive affect over time when using the Internet for escape and entertainment.

In addition, we have shown that individual differences are important when considering virtual self formation. Individuals with deficiencies in various aspects of the self (self-esteem, depression) viewed their characters as much less like their actual selves and more like their ideal selves, whereas those who had no deficiencies viewed their characters as much like themselves.

This study is a starting point in examining the relationship between the virtual and ideal selves, and serves as empirical evidence of the role the ideal self plays in the creation of online identities, particularly for those who are psychologically disadvantaged.

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Contribution and Benefits Statement.:

This study contributes to literature on online identity and consequences of Internet Use. It also provides implications for self discrepancy theory, the study of online social interaction, design and applications.