Visualizing ideal self vs. actual self through avatars: Impact on preventive health outcomes

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ABSTRACT

The self-discrepancy between one's actual self and one's ideal self, which is associated with negative emotional states (e.g., depression) or unhealthy lifestyles (e.g., eating disorders), is mostly caused and intensified by exposure to unrealistic images of others (e.g., celebrities or magazine models). Drawing from regulatory focus theory, the current study examines whether creating self-resembling avatars, especially those that resemble our ideal selves, could counteract this negative effect of self-discrepancy. The results of a between-subject experiment ($N = 95$) indicated that user-created self-reflecting avatars made salient different mental images of their bodies based on whether they customized their avatars to look like their actual or ideal selves, and consequently influenced their perceptions toward their physical body through two different self-regulatory systems (i.e., promotion-focused and prevention-focused), with consequences for health outcomes. Theoretical and practical implications are discussed.

1. Introduction

Self-perception of one's physical body is highly associated with one's emotional state as well as health behaviors. In particular, negative self-perceptions about one's body image can cause depression and, in turn, lead to negative health behaviors, such as eating disorders, substance use, and negative lifestyle choices, including unhealthy diets and lack of exercise (Harrison & Cantor, 2001). Body image is a self-perception defined by how an individual "thinks" and "feels" about his/her looks or how he/she "wants" to look (Alipoor, Goodarzi, Nezhad, & Zaheri, 2009). It is a subjective perception about one's physical body image. No matter how skinny or fat an individual *is*, how one *views* his/her body shape determines his/her dissatisfaction with body image. Previous studies have shown that most women tend to see themselves as overweight and feel less happy with their body shape (Cash & Henry, 1995; Cash, Winstead, & Janda, 1986). In fact, the issue of body dissatisfaction has been more pronounced among women than men (Demarest & Allen, 2000). Most male participants in studies of body-shape perceptions rated their current body figures as ideal (Leon, Carroll, Chernyk, & Finn, 1985) and were relatively satisfied with their current body shape (Fallen & Rozin, 1985). However, recent evidence suggests that body dissatisfaction is becoming increasingly prevalent among men as well (Adams, Turner, & Bucks, 2005; Garner, 1997).

According to self-discrepancy theory (Higgins, 1987), body dissatisfaction is mainly caused by a discrepancy between one's current actual image and his/her ideal image. Several scholars have noted that cultural preferences for a slender body can be attributed to increased discrepancy between one's actual and ideal body (Cash & Henry, 1995), and that mass media have played a critical role in creating unrealistic ideal body images and altering individuals' perceptions of their body shape (Harrison & Cantor, 2001; Myers & Biocca, 1992; Tiggemann & Mcgill, 2004; Tiggemann & Slater, 2004). In other words, individuals tend to internalize most ideal body images based on their exposure to unrealistic images of celebrities and models on TV and magazines. This internalization can cause negative emotional states and lead to decreased motivation and self-efficacy to achieve body-related goals, resulting in negative health behaviors (Higgins, 1987).

In an effort to prevent such unhealthy behaviors caused by actual/ideal body discrepancy, we tested the effectiveness of creating a virtual character as a self-representative (i.e., avatar) in a virtual environment for helping motivate people to achieve their ideal body image and maintain a healthy lifestyle. There is growing interest among scholars and health practitioners in the use of virtual experiences through avatars in virtual environments (VEs) as a therapeutic tool (Boulos, Hetherington, & Wheeler, 2007; Weiss, Naveh, & Katz, 2003). VE is a real-time computer-generated 3-D environment. It simulates a real environment, so users feel presence (i.e., the feeling of physically being in the environment) and

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can experience things that they have never experienced before or could potentially experience in the future (Wald & Taylor, 2000). Indeed, VE has become an effective therapy tool for treating various kinds of phobias, such as spider phobias (Carlin, Hoffman, & Weghorst, 1997; Garcia-Palacios, Hoffman, Carlin, Furness, & Botella, 2002), anxiety (Parsons & Rizzo, 2008), social phobias (e.g., fear of playing a musical instrument in a concert) (Klinger et al., 2005), acrophobia (Paul, Bruynzeel, Drost, & van der Mast, 2001), public speaking phobias (Pertaub, Slater, & Barker, 2001), and driving phobias (Wald & Taylor, 2000).

Given that VEs allow users to explore and interact with the virtual world through their self-created avatars, users are able to see themselves (in the form of their self-representations) from a third-person perspective. This has been shown to influence the avatar user's self-confidence and self-disclosure (Yee & Bailenson, 2007), the reduction of negative stereotyping (Yee & Bailenson, 2006), and exercise behaviors (Fox & Bailenson, 2009). These studies demonstrate that avatar users feel somewhat connected to their self-representing avatars while interacting through them and that the avatars' physical appearances may, in turn, influence the avatar users' real-world behaviors. We extend this line of reasoning to investigate whether avatars resembling the user's ideal self can serve to reduce the actual/ideal self-discrepancy and therefore positively affect their motivation to maintain healthy behaviors.

2. Conceptual and theoretical framework

2.1. Avatar as a virtual model

Avatars allow users to create representations reflecting their physical appearances and also afford users the opportunity to see their virtual self-figures in the third person. Particular characteristics of these self-figures can influence users' offline judgments and behaviors. For example, one study found that avatar's attractiveness influenced the avatar user's behavior in interaction contexts, such that when users were assigned attractive avatars in an immersive virtual environment (IVE), they were more likely to walk closer to the partner and disclose personal information than users who were assigned unattractive avatars, and those with taller avatars tended to negotiate harder than users assigned shorter avatars (Yee & Bailenson, 2007). Similarly, Fox and Bailenson (2009) found that when users observed their self-resembling avatars being rewarded for performing exercise behaviors (i.e., seeing their avatars losing weight as participants physically exercised) and being punished for not performing exercise behaviors (i.e., seeing their avatars gaining weight) in IVE, they were more likely to repeat the physical exercises in the real world than users who observed avatars that resembled other individuals exercising in IVE. Based on this finding, the researchers claimed that seeing self-resembling avatars' bodily consequences (e.g., changes in the avatar's body shape) can help avatar users project and visualize their future body images and can serve as a self-model for motivating their offline health behaviors. That is, avatars could help visualize an ideal version of their own future selves (i.e., their desired end states) and thereby motivate users to put forth their best effort to achieve such ideal images. This idea is similar to a dentist encouraging patients to receive treatment by showing them possible future versions of their teeth after treatment, using computer graphics.

According to social learning theory, one can learn simply by observing the behavior of a social model (Ormrod, 1999). For example, as shown in the famous Bobo doll experiments (Bandura, Ross, & Ross, 1963), children who observed an adult model's violent behavior toward a Bobo doll imitated the adult and showed the same patterns of behavior as those of the observed model. Social learning theory has also been broadly applied to explain

audiences' personal body perception through body image exposure on TV and magazines. Harrison and Cantor (1997) found that exposure to thin models was highly associated with female audience members' drive for thinness as well as their body dissatisfaction. Audiences tend to construct their own internalized ideal body image, called "self-schema" (Myers & Biocca, 1992), resulting from exposure to socially represented ideal body images (e.g., magazine model's body image) in the media. As such, observing an avatar that reflects one's ideal body image is meaningful for an individual in terms of visualizing or projecting his/her internalized ideal body image through the avatar. When they create an ideal version of themselves in the form of avatars, they are able to observe their distorted self-representations from a third person perspective just like they observe social models on TV or in magazines. This could further influence avatar users' mental body images and, in turn, affect their own physical body perception, in the same way that individuals' public self-presentations influence their future behavior. Bem's (1972) self-perception theory and cognitive dissonance theory (Festinger, 1957) together posit that public displays of the self (e.g., an avatar that represents one's ideal image) carry over to subsequent self-evaluations and, in turn, influence one's behavior. A number of findings from various fields, including social psychology and medicine, have shown the positive impact of public self-presentations, particularly ideal self-presentations, on emotional states and behaviors. For example, Leake, Friend, and Wadhwa (1999) found that when chronic renal dialysis patients publicly presented their self as successful copers, they exhibited less depression and fewer physical symptoms from the disease after one month. Therefore, we can expect that avatar users who create their avatars to look like their ideal/desired versions of themselves ("desired avatar creators") would envision their ideal body image through their avatars, whereas users who create their avatars to reflect their actual/current physical body ("actual avatar creators") would have increased concerns about their physical body image. Accordingly, we hypothesize:

> **H1a**: Desired avatar creators will show higher visualization of their ideal body image than actual avatar creators.
> **H1b**: Actual avatar creators will show higher perceived risk to their physical body than desired avatar creators.

Both actual avatars and desired avatars could help motivate users to pursue health-related actions, but perhaps through different mechanisms as discussed in the next section.

2.2. Regulatory focus theory

According to regulatory focus theory (Higgins, 1997), there are two different types of regulatory goals that individuals can pursue: promotion and prevention. Promotion goals are pursued through proactive strategies for achieving positive outcomes, while prevention goals are pursued through preventive strategies for avoiding negative outcomes. Aaker and Lee (2001) illustrated the self-regulatory focus with two students' cases. A student who wakes up early to stand in line for a ticket to attend a rock concert chooses a proactive strategy to achieve the desired end state (i.e., attending the concert) by maximizing the presence of a positive outcome, while another student who does not register for classes scheduled before 9:30 a.m. to avoid rush-hour traffic chooses a preventive strategy to achieve the desired end state (i.e., not being caught in rush hour traffic) by minimizing the presence of negative outcomes. Strategies for promotion-focused goals concentrate more on hopes or aspirations to achieve gain or success, whereas strategies for prevention-focused goals concentrate more on duties or obligations to avoid loss or failure (Higgins, 1997). The fundamental premise of this theory is that all individuals want to reach