
Before and After Avatar Exposure: The Impact of Body Scanning Technology on Body Satisfaction,
Mood, and Appearance Management

Jessica L. Ridgway, Ph.D. and Mary King, Florida State University, USA

Keywords: body image, body scanning, appearance management

Research published in *Clothing and Textiles Research Journal (CTRJ)* initiated a call for research investigating how the third dimension affects one's perception of their body. Specifically, Loker, Ashdown, and Carnrite (2008) raised the following questions: "Will the ability to see ourselves in three dimensions (3D) increase body acceptance of normal variations and counteract the popular media images of what constitutes a beautiful body? Or will three-dimensional views increase dissatisfaction with our real bodies?" (p. 175). In response to this call, this study investigated the unique experience of viewing one's body in 3D on participants' self-reported levels of body satisfaction, mood, and appearance management. The current study tested Self Discrepancy Theory (SDT; Higgins, 1987) by examining whether participants' (N = 101)¹ Actual-Ideal (AI) discrepancy (a discrepancy construed based on their own mental representation of their body) increases after viewing their 3D avatar (a discrepancy construed based on their actual body size measurements). It was predicted that participants would report an increase in their AI discrepancy after viewing their 3D avatar, as the scan confronts the participant with their actual body size (H1). SDT predicts that an increased AI discrepancy (e.g., post avatar scan) would result in fewer reports of body satisfaction (H2), decreased mood (H3), and increased likelihood to manage one's appearance (H4) compared to participants' baseline reports.

Method

Participants completed the experiment one at a time in the body scanning laboratory at a large southeastern university. Participants were seated at a computer terminal in the research lab to complete the baseline questionnaire, which consisted of demographic questions, and assessed body satisfaction (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002), mood (BMIS; Mayer & Gaschke, 1988), and appearance management behaviors (AMB; Lennon & Rudd, 1994). Additionally, participants were asked to identify their actual and ideal body size using the Gardner Figure Rating Scale (Gardner, Jappe, & Gardner, 2009). Upon completing the online questionnaire, participants were body scanned.² Once the scan was completed, participants were reseated at the computer terminal to view and interact with their customized avatar created from their body scan. Participants had 3 minutes to view and interact with their avatar. Afterwards, the participants were prompted by the researcher to take the post body scan online questionnaire. Their avatar was not available for viewing during the post-questionnaire. The post-questionnaire contained the same items from the baseline questionnaire (not including demographic questions) and contained additional items, which measured avatar perceived realism as a check of the manipulation. The self-report items were randomized within subjects, such that no participant received the questions in the same order.

Participants. The participants' ages ranged from 18 to 35 years old ($M = 19.87$, $SD = 2.02$). Most participants (66%) were Caucasian, 22% Hispanic, 6% African American, 6% Other. A majority of participants (67%) were female.

Avatar Similarity. The Avatar Similarity Scale (Suh, Kim, & Suh, 2011) was used to assess how similar the participants felt that their avatar resembled themselves. Responses were based on a 7-point Likert-type scale ranging from 1=*strongly disagree* to 7=*strongly agree*.

¹ A priori power analysis was conducted to determine necessary sample size

² Equipment and software details were excluded to abide abstract length guidelines.

Actual-Ideal Discrepancy. The Gardner Body-Image Assessment tool, based on known Body Dimensions (BIAS-BD; Gardner, 2009), was used to measure participants' AI discrepancy before and after exposure to their avatar. The figure drawing scale consists of 17 male and 17 female contour-line drawings that use known anthropometric body dimensions. Participants were asked to select which figure on the scale most closely represented their actual (question 1) and ideal (question 2) body size.

Body Image Satisfaction. The Body Image State Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002; $\alpha = .87$) was used to measure participants' state body satisfaction pre and post exposure to their avatar. Responses were based on a 9-point Likert-type scale ranging from 1=extremely dissatisfied to 9=extremely satisfied and 1=*a great deal worse* to 9=*a great deal better*.

Mood. The Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988; $\alpha = .83$) was used to measure participants' mood pre and post exposure to their avatar. Responses were based on a 7-point Likert-type scale ranging from 1=*completely disagree* to 7=*completely agree*.

Body Sculpting. The body sculpting subscale of the Appearance Management Behavior Scale (Lennon & Rudd, 1994) was used to assess the participants' likelihood to manage their appearance. The subscale consisted of three items asking participants their likelihood to diet, exercise, and fast, on a response scale anchored by 1 = *very unlikely* to 5 = *very likely*.

Results

A check of the manipulation that avatars were similar to the participants' bodies revealed that, on average, participants agreed that their avatar represented their actual appearance ($M = 5.53$, $SD = 1.00$; Range = 2.25 – 7.0). **H1.** Participants' actual-ideal discrepancy was computed as their "actual self" value minus their "ideal self" value. Participants' AI discrepancy pre avatar was significantly smaller ($M = 1.23$, $SD = 3.27$) at baseline compared to post-avatar viewing ($M = 2.24$, $SD = 4.20$); $t(100) = 3.99$, $p < .001$. H1 was supported. **H2.** Data analysis revealed a significant difference between conditions on body satisfaction, such that body satisfaction was greater in the pre-body scan condition ($M = 5.58$, $SD = 1.53$) compared to post-avatar viewing ($M = 5.11$, $SD = 1.98$); $t(100) = 4.18$, $p < .001$. H2 was supported. **H3.** Data analysis revealed a significant difference between conditions on mood, such that mood was greater in the pre-body scan condition ($M = 2.96$, $SD = .41$) compared to post-avatar viewing ($M = 2.84$, $SD = .50$); $t(100) = 3.70$, $p < .001$. H3 was supported. **H4.** Data analysis revealed that participants were more likely to engage in dieting, exercising and fasting after viewing their avatar ($M = 3.69$, $SD = .95$) compared to baseline ($M = 2.86$, $SD = .80$); $t(100) = 8.55$, $p < .001$.

Discussion

Guided by Self-Discrepancy Theory (SDT), this pre-posttest experiment demonstrated that viewing one's avatar in 3-dimension (3D) increases peoples' actual-ideal (AI) discrepancy. Participants reported less body satisfaction and decreased mood after viewing their avatar compared to baseline reports. Moreover, participants indicated to be more likely to engage in appearance management behaviors associated with body sculpting after viewing their avatar relative to their baseline reports. These findings support SDT, which predicts that as an individual's AI discrepancy increases as does dejection related emotions. These results also have implications on retail stores who incorporate body scanning. Although a body scan may aid the consumer in identifying the correct size for apparel, it may also create negative affect, which might hinder the shopping experience.

References

- Cash, T. F., Fleming, E. C., Alindogan, J., Steadman, L., & Whitehead, A. (2002). Beyond body image as a trait: The development and validation of the Body Image States Scale. *Eating Disorders*, 10(2), 103-113.
- Gardner, R. M., Jappe, L. M., & Gardner, L. (2009). Development and validation of a new figural drawing scale for body-image assessment: the BIAS-BD. *Journal of Clinical Psychology*, 65(1), 113-122.
- Higgins, E. T. (1987). Self-discrepancy: a theory relating self and affect. *Psychological review*, 94(3), 319.
- Lennon, S. J., & Rudd, N. A. (1994). Linkages between Attitudes toward Gender Roles, Body Satisfaction, Self-Esteem, and Appearance Management Behaviors in Women. *Family and Consumer Sciences Research Journal*, 23(2), 94-117.
- Loker, S., Ashdown, S., & Carnite, E. (2008). Dress in the third dimension: Online interactivity and its new horizons. *Clothing and Textiles Research Journal*, 26(2), 164-176.
- Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. *Journal of personality and social psychology*, 55(1), 102.
- Suh, K. S., Kim, H., & Suh, E. K. (2011). What if your avatar looks like you? Dual-congruity perspectives for avatar use. *MIS Quarterly*, 711-729.