

## The Effects of Avatar Customization on Body Image

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### Abstract

The use of avatars has become prevalent through mobile and virtual reality applications, which grow daily. This study explored whether avatar customization influences body image and whether creating a self-resembling avatar, as opposed to a random celebrity avatar, increases body satisfaction. In a mixed design, 36 participants, aged 16 to 30, were randomly assigned to customize either a self-resembling ( $n = 18$ , 72% women) or a celebrity avatar ( $n = 18$ , 61% women). Participants completed a body image satisfaction questionnaire before and after creating their assigned avatar. Although we hypothesized that creating a self-resembling avatar would have a more positive effect on body image than creating a celebrity avatar, the results of the ANCOVA with pre-test body satisfaction as a covariate, indicated that avatar customization had no significant effect on body satisfaction. Our findings demonstrate that continued avatar use is not only viable, given the lack of negative effect on body image, but also sustainable in the growing media world.

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## **The Effects of Avatar Customization on Body Image**

Since the early 1990s the rise of the internet has overcome the world, presenting individuals with the opportunity to connect and express themselves in novel, innovative ways. One way in which people can express themselves is through the use of an avatar. From video games to social media apps, avatar customization has a grip on the world. Bailenson and Blascovich (2004) defined an avatar as a virtual prototype of a person used in social media, video games, virtual reality, and online applications. Avatars can be anything from the likenesses of stylized or fictional characters to photo-realistic depictions of human figures, depending on how much leeway the given platform offers (Nowak & Rauh, 2005). They can also be designed to look how a user wants to appear, in various digital settings through the customization of the clothing, body shape, facial features, and even personality of their avatars (Kim, 2020). Avatars are not merely there to amuse; they influence behavior, social relations, and the way individuals view themselves (Fox et al., 2009). For example, it has been noted that people's self-esteem and body image may be influenced by the subconscious imitation of the qualities of their avatars, a phenomenon known as the Proteus Effect (Yee & Bailenson, 2007). This is an important phenomenon that developers of research on avatar customization and its psychological implications should take into consideration, since body satisfaction and well-being of people can be influenced by the way they design and use their avatars (Kleemans et al., 2018). Knowing about avatars in this case is crucial for determining their psychological and emotional consequences, especially regarding body image and self-concept in the virtual world. For this reason, our study aims to explore the effects that avatar customization has on the body image of men and women.

### **Media and Body Dissatisfaction**

Through the years, there has been an increase in body dissatisfaction and poor body image due to many sociocultural factors; the media being the most prevalent factor (Fioravanti et al., 2022; McComb & Mills, 2020; Mingoia et al., 2017). This discrepancy between ideal bodies shown in the media and what is realistically attainable has been shown to have a negative effect on emotion (Fioravanti et al., 2022). In addition to body dissatisfaction through ideal body depiction in the media, it also impacts individual's psychological (eating disorders, anxiety, depression) and physiological (weakened immune system, sexual dysfunction) health (Allen & Robson, 2020; He et al., 2020; Mingoia et al.,

2017; Maister et al., 2021). Overall, many individuals who interact with the media are experiencing a negative effect on their body image.

In response to this negative impact on society, the media has done some relevant research pertaining to media, body image, and dissatisfaction (McComb & Mills, 2020). To start, researchers McComb and Mills (2020) found that the media is beginning to distribute cost-effective disclaimers alongside their edited images, letting populations around the world become aware of the modified appearances in these photos, in an attempt to lessen the effects of body dissatisfaction. Through a systematic review exploring the effects of disclaimers, it was found that they generally had no effect on mitigating people's body dissatisfaction and could even increase the effect depending on whether the individual already had a poor body image (McComb & Mills, 2020). In another review, researchers looked at the effects of social networking sites on body image (Fioravanti et al., 2022). They discovered that viewing images that depicted unattainable, ideal body standards (i.e. attractive, thin, and fit) negatively affected body image. Additionally, it was found that the negative effect of social networking sites on body image was strengthened through sight and exposure (Mingoia et al., 2017). In other words, individuals must *see* the images for the strong negative effect to occur, and the length and severity of exposure increases the effect. The more interaction that individuals have with social networking sites and body image-related content, the more body dissatisfaction they feel (Mingoia et al., 2017).

### **Gender and Body Satisfaction**

Researchers have also demonstrated that there are gender differences in body image and dissatisfaction (He et al., 2020). In terms of ideals, men tend to admire lean and muscular body types, while women admire bodies that are wider in the bust and butt, but thin and toned everywhere else (Bradley University, 2021; He et al., 2020). Due to the high exposure to such a single-standard ideal for body types, women tend to compare themselves more harshly to others and perceive others as superior (He et al., 2020).

In terms of body satisfaction, researchers found that men have a higher level of body appreciation than women (He et al., 2020). That is, men tend to feel more acceptance and respect toward their self. As a result of this respect and acceptance, men feel more satisfaction in life due to the positive psychological and physiological effects of body satisfaction (He et al., 2020). Body satisfaction, otherwise known as a positive body image,

has been associated with many positive benefits for both men and women with little difference in the presentation across genders (Gillen, 2015). Defined as an “individuals’ appreciation for, protection and acceptance of, and connection with their physical selves, a positive body image is vital to quality of life and is recommended by health care providers” (Gillen, 2015, para. 2). Gillen (2015) executed a study looking at the health-related benefits of a positive body image and found that, regardless of BMI, individuals with a higher positive body image demonstrated less symptoms of depression, higher self-esteem, less unhealthy dieting behaviours, a lower drive for masculinity, and a greater drive to protect their skin from UV damage.

### **Avatars, Body Image, and Self-Perception**

With the prevalence of social media and self-portraits continuing to grow, it has become important to research the effects that this new technology has. To observe these effects, Kleemans (2018) randomly assigned participants to view either an original or a digitally altered image of themselves from Instagram. These alterations included filters offered on the base Instagram settings, changes to brightness and shadows, and the erasure of body blemishes (i.e. wrinkles, under eye bags, impurities, and fat on the body). Afterwards, they discovered that having access to manipulated images of oneself significantly lowered body image scores and perceptions among the participants (Kleemans, 2018).

Initially proposed by Yee and Bailenson (2007), the Proteus Effect is a theory in virtual reality and avatar customization that states that by changing your self-representation (in an online environment) you will be inclined to change your behaviour to coincide with your current self. Research has found supporting evidence for the Proteus Effect (Peña et al., 2022; Fox & Bailenson, 2009). In one study, researchers took the opportunity to recreate the infamous Milgram experiment in a virtual reality space, utilizing modified avatars that resembled either a hero, anti-hero, or villain, to examine the Proteus Effect (Peña et al., 2022). They were hypothesizing, in line with Bailenson and Lee (2007), that the mere act of operating an avatar would affect participants' behaviour, and this was demonstrated when the hero archetype avatars consistently delivered more subdued shocks (Peña et al., 2022). Furthermore, in another experiment, the Proteus Effect was demonstrated when participants who observed their self-resembling avatar exercising went on to exercise more rigorously than those who did not witness their look-alike do so (Fox & Bailenson, 2009).

While looking at the effects of avatars on participants, it was discovered that individuals who utilize a self-resembling avatar tended to feel more embodied in their virtual form (Radiah et al., 2023; Ratan et al., 2022). Radiah and colleagues (2023) wanted to observe the effect that avatar personalization could have on a participant's emotions within a virtual reality environment. They assigned participants a type of avatar and had them interact with a virtual reality environment. These researchers discovered that having a more self-resembling avatar resulted in feeling significantly higher levels of illusion toward the experience, resulting in higher embodiment levels.

Higgins (1987) explored the Self-Discrepancy Theory, which explains the emotional discomfort caused by the gap between the actual self and the ideal self. In this paper, Higgins suggested that when individuals interacted with avatars that are idealized versions of themselves, they may experience increased self-criticism or dissatisfaction. In contrast, avatars that resemble one's actual self may foster self-acceptance and reinforce a more realistic body image (Higgins, 1987).

### **Effects of Avatar Customization**

Avatar customization can have many positive and negative influences on the self. This is because every stage of the avatar customization process can impact self-esteem since virtual characters are a mode of expression that represents users (Koek & Chen, 2024). For example, Koek and Chen (2024) suggested that personalizing avatars to reflect your features, along with positively interacting with virtual characters, may increase state self-esteem. Thus, an avatar can personify their user through positive communications with other avatars and facial self-similarity, which further impacts body image and emotional states (Koek & Chen, 2024). Additionally, grades are highest in undergraduate courses when students customize an avatar based on their actual-self compared to their ideal-self or future-self (Ratan et al., 2022). This suggests customizing an avatar to be an overly idealized version of oneself is not as effective as customizing an avatar reflecting the user's current perception of their appearance on motivation and learning (Ratan et al., 2022). Moreover, Kang and Kim (2020) found that avatar customization can reveal and positively affirm aspects of the self that the user deems important. However, avatars have a mirror-like effect on individuals, which can increase public self-awareness (Wu et al., 2023). This can explain why, when social media images are altered to be more attractive, they can impact adolescent girls' levels

of body dissatisfaction negatively (Kleemans et al., 2018). In sum, avatar customization based on the user's appearance can enhance state self-esteem, learning, and self-affirmation, but idealized avatars tend to have the opposite effect.

### **Purpose of the Present Study**

The exact psychological effects of avatar customization are still unknown, even though more businesses are creating platforms that let users design and customize their avatars. Avatar production may spread widely and result in a global decline in emotional health and self-esteem if it has a detrimental impact on body image and self-perception. To avoid future negative effects, it is essential to comprehend the psychological effects of avatar customization. Additionally, the lack of direct precedent in this field of study makes it challenging to predict precise results. Virtual reality (VR) environments are the focus of most of the research on avatar customization and body image (Koek & Chen, 2024; Nowak & Rauh, 2005; Peña et al., 2022; Radiah et al., 2023). However, very few individuals have access to this equipment, even now, therefore VR's usefulness in researching avatar customization is limited, even though it enables immersive self-representation. Analyzing avatar creation on web-based platforms or mobile apps, which are more accessible and frequently used, is a more useful strategy. Finally, in most previous research, the focus of the study is on women. This is easy to understand considering the long-standing cliché that women are body-obsessive and men are not, however, this is not truly the case, and it is vital that research involving body image examines the relationship across gender and sex. We hypothesized that creating an avatar that resembles oneself will have a greater positive effect on body image and self-perception compared to creating an avatar that resembles a random celebrity.

## **Methods**

### **Participants**

In this study, a convenience sample of 36 participants from Lower Mainland, BC were recruited by approaching individuals who were accessible and willing to participate in our research. Participants were between the ages of 16 and 30, split between two groups: Celebrity Avatar ( $n = 18$ ) and Self-Resembling Avatar ( $n = 18$ ). The Celebrity Avatar group had an average age of 17 ( $SD = 3.99$ ), with 7 (39%) men and 11 (61%) women. The Self-Resembling Avatar group had an average age of 18 ( $SD = 3.60$ ), with 5 (28%) men and 13

(72%) women. See Table 1 and Table 2 for the frequency and percentage of participants past avatar usage and how they used them.

**Table 1**

*Table Detailing the Frequency (n) and Percentage (%) of Whether the Participants, in Each Condition, Have Used Avatars Prior to this Study.*

Condition	Have You Used an Avatar Before?	n	%
Celebrity Avatar	Yes	8	44.44
	No	8	44.44
	Maybe	2	11.11
Self- Resembling Avatar	Yes	12	66.67
	No	5	27.78
	Maybe	1	5.56

**Table 2**

*Table Presenting the Frequency (n) and Percentage (%) of How Participants, in Each Condition, Have Used Avatars Prior to the Completion of this Study*

Condition	Type of Use	n	%
Celebrity Avatar	Gaming (i.e. Wii)	4	44.44
	Social media (i.e. Snapchat, Instagram, Bitmoji)	4	44.44
	Other	1	11.11

Self-Resembling Avatar	Gaming/Social media	5	38.46
	Gaming	1	7.69
	Social media	7	53.85

*Note.* Total participants in each condition listed in this table does not equal the total population of our study due to the optional basis of this question.

### Measures

For this study, the independent variable was the avatar customization task. The avatar customization software utilized was a free online website: *Cartoonize Avatar Maker* ([cartoonize.net](http://cartoonize.net)). Participants were randomly assigned to either the self-resembling avatar or celebrity-avatar condition (Taylor Swift and Chris Evans).

#### *Body Appreciation Scale-2*

The dependent variable was body image, specifically measured by the Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015). The BAS-2 contains 10 items that were measured on a 5-point Likert scale (1 = *Never* to 5 = *Always*). The higher the score that was given on each item indicated higher levels of body appreciation. The reliability for the BAS-2 in the pre-test ( $\alpha = .95$ ) and the post-test ( $\alpha = .96$ ) indicated high reliability. See Appendix A for the BAS-2.

### Procedures

All data was collected online anonymously through Qualtrics ([www.qualtrics.com](http://www.qualtrics.com)). Once participants read the electronic consent form and agreed, participants answered the demographic questions and the pre-study questionnaire, which included the BAS-2 scale. Participants were randomly assigned using a random assignment website to one of the two experimental conditions. Participants completed the avatar customization task with a time limit of ten minutes for both conditions. For the self-resembling avatar condition, the participants were instructed to create an avatar based upon how they look, while the participants in the celebrity-avatar condition were given a photo of either Chris Evans or Taylor Swift to base their avatar on. The celebrity photos were intentionally gender matched to the opposite gender of the participant (e.g., a photo of Taylor Swift given to a participant

that identified as a man) to increase body discrepancy. While there was a gender difference among participants, this study was aimed at seeing the difference between avatar creation on one's body image, thus, having a discrepancy amongst participants was seen as necessary so that we could affirm the dissimilarity between one's own body and another one. Once the participant was done customizing their avatar, they answered the post-study questionnaire, which included the BAS-2 scale. After the post-study questionnaire, they were presented with a debriefing statement and granted 0.5 bonus credits if they were a student at Kwantlen Polytechnic University.

Ethical approval was obtained from the KPU Research Ethics Board at Kwantlen Polytechnic University.

## Results

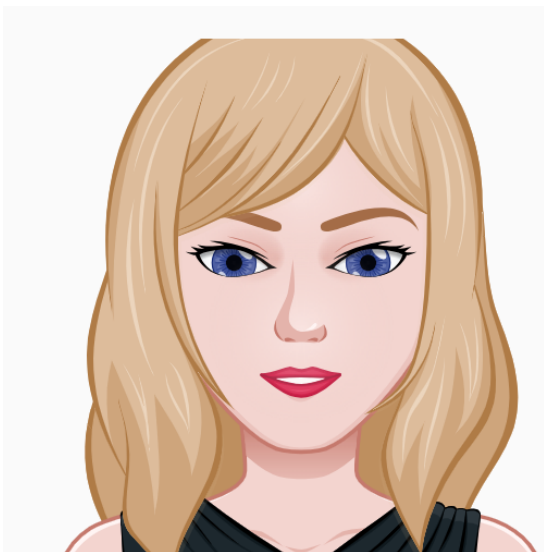
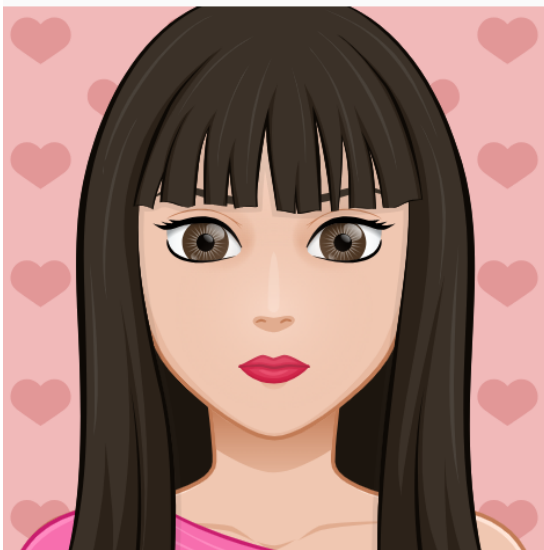
A one-way between-subjects ANCOVA was conducted using the Statistical Package for the Social Sciences (SPSS) software program to examine if there were differences in body image satisfaction after customizing an avatar, while controlling for their pre-test body image score. See Table 3 for descriptive statistics. See Figure 1 for examples of avatars. The covariate, the pre-test body image score, was found to be statistically significant in relation to post-test body image satisfaction,  $F(1, 33) = 212.95, p < .001, \eta^2_{\text{partial}} = .87$  (large effect). These results mean that one's pre-test scores were a strong indicator of their post-test scores. That is, if they tended to score highly on their pre-test, they also scored highly on their post-test. However, there was not a statistically significant effect of avatar customization type in relation to body image satisfaction,  $F(1, 33) = 0.15, p = .702, \eta^2_{\text{partial}} = .01$  (small effect). Again, these results indicate that participants' original feelings about their bodies had a more significant effect on how they felt after the study, and the effect of the customized avatar (Celebrity or Self-Resembling) did not make a significant difference in how satisfied they were with their body image at the end. Therefore, our hypothesis was not supported.

**Table 3**

*Means and Standard Deviations for the Celebrity Avatar and Self-Resembling Avatar Conditions.*

Celebrity Avatar	Self-Resembling Avatar
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	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
BAS-2 (pre)	3.58	0.98	3.13	1.02
BAS-2 (post)	3.66	1.19	3.24	1.08

**Figure 1***Examples of Avatars*

*Note.* The top two avatars represent self-resembling avatars. The bottom two avatars represent celebrity-resembling avatars.

## Discussion

The purpose of this research was to determine whether the act of customizing an avatar influenced an individual's body image. While we hypothesized that customizing an avatar that resembled oneself would have a greater positive effect on an individual's body image than creating an avatar that resembled a celebrity, our results did not support our hypothesis. This suggests that the act of customizing an avatar, regardless of condition, had no effect on the individual's body image; their initial feelings of body image were the same as their final feelings.

Our results did not fully support what was found in past literature. In many studies, researchers have found that body dissatisfaction appeared to be at an all-time high because of many different sociocultural factors, particularly the media (Fioravanti et al., 2022; McComb & Mills, 2020; Mingoia et al., 2017). However, in our study, we found that participants' mean scores across both conditions demonstrated a more neutral view of body appreciation. Therefore, as our participants' ratings of body image fell in the middle of the scale, we can readily assume that our participants have a more positive body image than was suggested in the literature (Fioravanti et al., 2022; McComb & Mills, 2020; Mingoia et al., 2017). Finally, the Self-Discrepancy theory stated that when people use avatars that resemble one's actual self, they may feel more acceptance and it will reinforce a more realistic body image (Higgins, 1987). In our study, we had the participants create a self-resembling avatar that represents their actual self. If the Self-Discrepancy theory is to be believed, then our participants in this condition should have felt more acceptance in their body image, making it more likely for them to have a higher body appreciation score due to the latent positive emotions. However, in opposition to the Self-Discrepancy theory, participants who created a self-resembling avatar did not seem to feel better than those in the celebrity condition. In short, much of our study did not seem to correlate with past literature as what we have found shows the opposite of what past researchers have suggested. That is, instead of having more body dissatisfaction our participants were largely neutral, and instead of having the self-resembling avatar condition inflate their self-acceptance it had little effect.

### Strengths and Limitations

One limitation of our study was the lack of detail and diversity in our avatar customization software. The software was limited to only the shoulders and head, which may

influence the participants' ability to consider their body image as it does not encompass the whole figure. Additionally, the software lacked diversity regarding body weight and cultural representation. Avatars were limited to one size and there were no options for cultural or religious clothing (i.e. hijabs, turbans). Consequently, this could have influenced people's body image as they may not be able to accurately represent themselves in the self-resembling condition. Another limitation of our study was our convenience sampling method, which we used due to time and cost effectiveness, limiting our generalizability to the general population. Further, there are possible experimenter expectancy effects, given that the researchers were in the room with the participants during the study.

On the other hand, our study had multiple strengths. Our measurement scale (BAS-2) was high in reliability, and we used a pre-test post-test experimental design which allowed us to have comparison within the groups across both conditions as well as control and manipulation of the variables, granting more confidence in a cause-and-effect relationship.

### **Implications and Future Directions**

The purpose of our study was to discover any effects that avatar customization may have on individuals' body image given the increasing avatar usage around the world through video games, social media, and virtual reality technology to discover whether intervention is needed should the effect be negative. However, we found that there was no effect of avatar customization on people's body image. Thus, it is safe to continue using avatars in the same manner as we currently do as we found no negative effect.

It may be beneficial to conduct this study with more realistic and encompassing avatar customization software, given the limitations that it presented in this study from the lack of detail and diversity. Additionally, carrying out a study with an additional condition looking at the participants using the avatars, either over a single long interval or multiple short intervals in a world simulation would be worthwhile. Our study focused on the immediate effects of avatar customization on body image, therefore, studying the effect over a longer period may prove lucrative in the study of avatars on body image.

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## Appendix

### Body Appreciation Scale-2 (BAS-2) Items

1. I respect my body.
2. I feel good about my body.
3. I feel that my body has at least some good qualities.
4. I take a positive attitude towards my body.
5. I am attentive to my body's needs.
6. I feel love for my body.
7. I appreciate the different and unique characteristics of my body.
8. My behavior reveals my positive attitude toward my body; for example, I walk holding my head high and smiling.
9. I am comfortable in my body.
10. I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses/actors).

*Note.* BAS-2 items for the survey were derived from Tylka & Wood-Barcalow (2015).