Exploring Self-Discrepancies Through Customizable 3D Avatars using MySelf Desktop Tool

Giulia BRIZZI [a,b, 1], Maria SANSONI [a,b, 1, 2], Luca CHITTARO [c], Clelia MALIGHETTI[b] , Valentina MANCUSO [d], Daniela VILLANI [a,e], and Giuseppe RIVA [a,b,f]

[a] *Department of Psychology, Università Cattolica del Sacro Cuore di Milano, Italy*
[b] *Humane Technology Lab, Università Cattolica del Sacro Cuore di Milano, Italy*
[c] *Human-Computer Interaction Lab, Department of Mathematics, Computer Science and Physics, Università di Udine, Italy*
[d] *Department of Theoretical and Applied Sciences, eCampus University, Novedrate, Italy*
[e] *Research Centre in Communication Psychology, Università Cattolica del Sacro Cuore di Milano, Italy*
f Applied Technology for Neuro-Psychology Lab, I.R.C.C.S. Istituto Auxologico Italiano, Italy
ORCiD ID: Maria Sansoni https://orcid.org/0000-0002-5189-7159
Giulia Brizzi https://orcid.org/0009-0000-7472-742X
Luca Chittaro: https://orcid.org/0000-0001-5975-4294
Valentina Mancuso https://orcid.org/0000-0002-4198-3723
Daniela Villani https://orcid.org/0000-0002-2435-4036

Abstract. Body image is shaped by internal self-perceptions and external influences which can reinforce unrealistic beauty ideals and amplify self-discrepancies. This study employed *MySelf*, a desktop tool based on self-discrepancy theory, to calculate three indices: Body Image Social Attribution (BI-SA), Body Image Social Desirability (BI-SD), and Body Image Discrepancy (BI-D). We investigated whether these indices predicted body image-related outcomes and if social media engagement shaped such self-perceptions. Multivariate multiple regressions showed that only BI-SA and BI-SD, indices reflecting perceived social evaluations, were significantly associated with body esteem and body appreciation, while BI-D was not. Additionally, social media variables were also linked to BI-SA and BI-SD. Specifically, engaging in social media activities involving friends' content was a positive predictor of interpersonal discrepancies (BI-SA and BI-SD), while Instagram appearance comparisons were negatively associated with them. These results may suggest that externalized and interpersonal self-discrepancies rooted in how individuals believe they are seen by othes, are more salient predictors of body image concerns than internal ideals. These findings support theories such as the Tripartite Influence Model, Objectification Theory, and the Looking-Glass Self

[1] These authors equally contributed
[2] Corresponding author: Maria Sansoni, maria.sansoni@unicatt.it

Theory, highlighting the increasing social nature of bodily self-evaluation. Interventions aiming to improve body image should move beyond personal self-esteem enhancement to address social comparison dynamics and external validation processes. The *MySelf* tool offers a valuable means for assessing these multidimensional constructs and has potential applications in both clinical and preventive settings.

Keywords. Body Image, Self-Discrepancy, Body Representation, Social Media, Avatar, Body Image Assessment.

1. Introduction

Body Image (BI) refers to the mental representation that individuals hold about their bodies, including the interplay of cognitive, perceptual, attitudinal, and behavioral dimensions [1]. Even if BI is usually assessed through self-reported questionnaires [2], their ability to capture the multifaceted nature of this construct remains limited. Customizable 3D avatars (i.e., digital graphic representations of a person) offer innovative methods for assessing BI, especially in aspects that individuals may not explicitly recognize [3, 4]. Avatar-based assessments have the potential to foster engagement (e.g., reducing drop-outs), customize the assessment to the individual (e.g., overcoming fixed response options that may fail to capture unique experiences), provide greater flexibility (e.g., allowing individuals to represent a broader range of physical characteristics) [5,6], and offer an indirect measure of attitudes and perceptions (e.g., overcoming conscious self-reflection difficulties) [7]. However, avatars' use in BI research is still scarce. This is especially relevant for psychological constructs like self-discrepancy, as individuals are often unaware of the gaps between different representations of the self and may be unable to consciously access them. Self-Discrepancy Theory distinguishes between three fundamental representations of the self: actual (i.e., the qualities the person believes to possess), ideal (i.e., the characteristics they wish to have), and ought self (i.e., the features they feel they should have). Differences between these self-states, known as "self-discrepancies", can lead to negative emotional experiences [8].

The relationship between self-discrepancies and various psychological outcomes has been well-documented in the literature, especially among young women [3]; however, BI research has primarily focused on the real–ideal discrepancy, leaving other discrepancies less investigated [9]. People with greater discrepancies between their real and ideal self tend to experience low body esteem and poor appearance evaluation, impacting their psychological well-being [10]. Factors such as the magnitude of the discrepancy, its accessibility, contextual relevance, and perceived importance influence this relationship and play an important role in how self-discrepancies impact the individual [8]. These considerations are particularly relevant when considering social media, as such platforms frequently depict unrealistic beauty standards that can exacerbate self-discrepancies when users engage in appearance comparisons with them [10]. Although the relationship between BI and self-discrepancies has been partially explored, for instance in connection with self-esteem [8], less is known about how discrepancies influence other BI constructs, such as body appreciation (i.e., accepting and respecting one's body) or how interpersonal discrepancies—defined as the perceived

gaps between how individuals believe they are seen by others and how they wish to be seen or see themselves—shape known bodily experience (e.g., self-esteem). Additionally, limited research has examined the role of specific social media activities that may trigger self-discrepancies (e.g., self-focused behaviors like photo editing or others-focused behaviors like browsing influencer profiles). Gaining a deeper understanding of these dynamics could meaningfully inform interventions aimed at fostering healthier body image and more mindful social media use. To address this gap, the current study uses an avatar-based tool, *MySelf*, to examine how self-discrepancies relate to two key BI constructs—body esteem and body appreciation—and whether different types of Instagram use and appearance-based comparisons impact these relationships.

2. Methods

Participants: A total of 124 healthy females took part in the experiment (mean age = 22.9, SD = 3.11); 65% reported using Facebook, 99.2% Instagram, 7.3% Snapchat, 46% TikTok, and 3.2% Twitch. All participants reported being active users and employing social media daily. The sample consisted of college students and women recruited through snowball sampling. The study was approved by the Ethical Committee of the Department of Psychology of the Catholic University of the Sacred Heart (n. 61-21).

Procedure: Participants were asked to fill out sociodemographic information, social media use, body-related questionnaires, as well as to create the three avatars of themselves through Myself (i.e., how I am, how I would like to be, how others see me).

Measures

-*MySelf Tool*: This desktop-based software platform, created by the Human-Computer Interaction Lab of the University of Udine, allows the study of BI through the creation of tailored representations of the body (Figure 1). Through this tool, it is possible to modify different body parts and create an avatar representing how individuals perceive themselves, how others see them, and how they would like to be. The participant can adjust several body parameters (e.g., height, weight, aging, skin tone, width of the face, hair color ans style). The comparison of the three generated avatars supports the computation of three self-discrepancy indices: *Body Image Social Attribution* (BI-SA) (How others see me - How I would like to be), *Body Image Social Desirability* (BI-SD) (How others see me - How I am), and *Body Image Discrepancy* (BI-D) (How I would like to be - How I am).

Figure 1. A screenshot from the Myself tool usage. In this example, the participant had to adjust the avatar to create a body that better fit her current body size/ shape.

-*Body Esteem Scale* (BES; [11]): It consists of 14 items on a 5-point Likert scale ranging from 1 (Have strong negative feelings) to 5 (Have strong positive feelings). The scale is composed of three subscales: weight, appearance, and attribution (i.e., beliefs about how others perceive one's body and appearance). Higher scores indicate greater body esteem (Cronbach's alpha = 0.88).
-*Body Appreciation Scale - 2* (BAS-2; [12]): It consists of 10 items on a 5-point Likert scale (from 1 = Never to 5 = Always). Higher scores indicate higher body appreciation (Cronbach's alpha = 0.94).
-*Instagram Appearance Comparison Scale* (IACS; [13]): Di Gesto et al., 2019): It consists of 15 items on a 5-point Likert scale (from 1 = Never to 5 = Very often). Greater scores indicate greater comparison behaviors (Cronbach's alpha = 0.95).
-*Instagram Image Activity Scale* (IIAS; [13]): The IIAS consists of 13 items on a 5-point Likert scale (from 1 = Almost never to 5 = Almost always) measuring image-related activities on Instagram. The IIAS presents three subscales: "self" (i.e., the frequency of image-based activities related to the self - IIAS_self), "friends" (i.e., activities related to friends - IIAS_friends), and "celebrities" (i.e., activities related to celebrities - IIAS_celebrities) (Cronbach's alpha = 0.76).

3. Analysis and Results

Analyses were performed using Jamovi 2.3.28. All variables were approximately normally distributed. Multivariate multiple regressions were employed to investigate if MySelf discrepancy indices were associated with body-image-related features. Because of multicollinearity between MySelf discrepancy indices, three separate models were conducted. Results revealed significant main effects of BI-SA (P = 0.307, F(4, 119) = 13.2, p < .001). BI-SA was significantly associated with BES_weight (F(1, 122) = 50.11, p < .001), BES_appearance (F(1, 122) = 12.55, p < .001), BES_attribution (F(1, 122) = 5.63, p = 0.019) and BAS (F(1, 122) = 16.84, p < .001). Data showed significant multivariate effects for BI-SD, too (P = 0.407, F(4, 119) = 20.4, p < .001). Specifically, BI-SD was significantly associated with BES_weight (F(1, 122) = 70.89, p < .001), BES_appearance (F(1, 122) = 25.87, p < .001), and BAS (F(1, 122) = 43.46, p < .001). The BI-D model did not significantly predict any of the variables of interest (p = .066). We then performed multiple regressions to evaluate if and how the use of social media was linked to MySelf indices. Regarding BI-SA, IACS was a negative predictor of BI-SA (β = –9.55, *SE* = 3.19, CI [–15.86, -3.23], t = –2.99, p = .003), while IIAS_friends

positively predicted it (β = 10.27, *SE* = 5.15, CI [0.08, 20.47], t = 2.00, p = .048). The overall model explained 10.3% of the social media variables' variance. Concerning the BI-SD model, IACS negatively predicted BI-SD (β = –12.90, *SE* = 3.15, CI [–19.13, –6.67], t = –4.10, p <.001), while IIAS_friends was a positive predictor (β = 12.35, *SE* = 5.08, CI [2.29, 22.40], t = 2.43, p = .017). Overall, this model accounted for 15.5% of the variance. The BI-D model did not significantly predict any of the variables of interest.

4. Discussions

Our findings show that only self-discrepancies involving perceptions of how others see the self—namely, BI-SA and BI-SD—were significantly associated with both BI concerns and social media use, while the BI-D index, which reflects a purely intrapersonal gap between actual and ideal self, was not. This may suggest that externalized and interpersonal self-discrepancies, rooted in perceived social evaluation, are more psychologically salient than internal ideal-self evaluations. What appears to matter most in our sample is thus not how individuals wish to look, but how they believe others *see* them or *should* see them. This result underscores the growing social nature of bodily experience in contemporary society, where appearance plays a central role in determining one's perceived social value and functions as a proxy for personal worth [14]. As described in Thompson's Tripartite Influence Model [14], societal beauty ideals are deeply internalized through interpersonal experiences, leading individuals to evaluate themselves and their bodies against externally imposed standards. These mechanisms are amplified in online spaces, which foster constant visibility, comparison, and feedback. In this context, impression management becomes a central psychological process, as individuals curate their online identities under a homogenized and imagined gaze [15]. This aligns with Cooley's looking-glass self, the idea that we come to see ourselves through our assumptions about others' perceptions [16]. On social platforms this dynamic becomes quantifiable, as likes, comments, and follows serve as public indicators of approval. This may lead individuals to experience self-objectification and increasingly adopt a third-person perspective on their bodies, perceiving themselves as objects to be judged by others [17]. These interpersonal self-discrepancies appear to be influenced by exposure to friends' social media content, which is often perceived as attainable and therefore carries greater emotional impact [10, 17]. Appearance comparisons can play a role in this process. Differently from previous work [9], in our study comparisons negatively predicted BI-SA and BI-SD, revealing how they may surprisingly reduce perceived discrepancies. Those who engage in Instagram appearance comparisons may experience a kind of desensitization or normalization effect, whereby these comparisons become routine and feel less personally threatening. Moreover, high comparers might also be more invested in managing their online appearance, thus perceiving greater alignment between how they are seen and how they want to be seen.

Limitations and future directions. The present work presents some limitations. First, its cross-sectional nature does not allow to draw causal inferences. Second, replications with larger and diverse samples is needed to enhance findings generalizability. In this regard, studies might consider whether sociodemographic variables (e.g., age) influence the observed relationships. Moreover, we did not assess MySelf software convergent validity. Further work should verify both its internal and external validity.

5. Conclusions

Together, these findings point to a significant psychological shift in contemporary society: from striving toward a personal, internal ideal (intrapersonal self-discrepancy) to conforming to perceived social standards (interpersonal self-discrepancies). This emphasis on perceived external expectations has significant implications for interventions. Strategies that focus solely on the former may fall short if they do not also address also the social dynamics, prevalent in today's media environment. By capturing both internal aspirations and perceived external evaluations, *MySelf* offers a comprehensive means of assessing body-related self-perception. As such, it holds value not only for research, but also for clinical and preventive interventions.

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