

A Correlational Study of AI Image Filtering Behavior and Appearance Anxiety

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ABSTRACT

AI image filters use AI-driven technologies is integrated in beauty filters that are widespread on social media to alter people's appearance and facial features, wherein the filter overlays a facial template on the person's face that can modify, add, or emit anything from the person's appearance, from minor modifications such as changing eye or hair color, and skin correction, to physical alteration such as slimming of the waist, enlarging the eyes, and changing the face's shape. This study examined the relationship between AI image filtering behavior and appearance anxiety among adults living in Oman. A quantitative, cross-sectional research design was employed, and data were collected from 603 adults residing in Oman through an online survey. Two instruments were used: a Modified AI Image Filtering Behavior Scale and the Appearance Anxiety Inventory (AAI). Data were analyzed using Jamovi (version 2.6) with independent-samples t-tests, Welch's ANOVA, and Pearson correlation analysis. The findings revealed a significant positive relationship between AI image filtering behavior and appearance anxiety ($r = 0.419$, $p < .001$), indicating that individuals who engaged more frequently in AI image filtering experienced higher levels of appearance anxiety. Younger participants also reported significantly higher levels of both AI image filtering behavior and appearance anxiety ($p < .001$).

The findings suggest that increased engagement with AI image filtering may contribute to greater concerns about physical appearance among Omani adults. This study provides important evidence on the psychological implications of AI-enhanced self-presentation within a non-Western cultural context and highlights the need for greater awareness of the potential mental health consequences associated with AI-based image editing technologies.

Keywords: AI image filtering, appearance anxiety, artificial intelligence, social media, digital self-presentation, Oman.

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INTRODUCTION

The speed at which artificial intelligence (AI) is being incorporated into social media platforms has completely changed how people create and display their online personas. AI-powered image filtering tools are now available on platforms like Instagram, TikTok, and Snapchat. These tools automatically adjust facial symmetry, smooth skin texture, change body proportions, enlarge eyes, and remodel facial outlines. In contrast to conventional photo-editing software, AI filters work swiftly and fluidly, normalizing appearance augmentation in daily digital interactions.

AI picture filtering, which enables users to display idealized versions of themselves, can be viewed as a technologically mediated type of appearance management. Although social contact has traditionally revolved around how one presents oneself, social media enhances this process by fostering environments that are heavily visual

and comparison-driven (Vogel et al., 2014). Exposure to filtered and idealized images might exacerbate concerns about appearance and encourage unattainable beauty standards. Studies show that viewing altered and idealized photos on social media platforms is linked to greater self-objectification and body dissatisfaction (Fardouly & Vartanian, 2016; Tiggemann & Slater, 2014). Fewer studies, however, look at the psychological implications of deliberately applying AI filters to one's own photos, while the majority of current research concentrates on exposure to others' modified images. According to Hart et al. (2008), appearance anxiety is the term used to describe ongoing concern, dread, or anguish about one's physical appearance and how other people perceive it. It is strongly associated with low psychological well-being, social anxiety, and negative body image. The usage of AI filters may widen the gap between the "actual self" and the "digitally enhanced self" in digital environments where visual self-presentation is crucial, which could exacerbate

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appearance concern. Perceived differences between one's ideal and real selves can cause anxiety, humiliation, and emotional distress, claims the self-discrepancy theory (Higgins, 1987). By creating an easily achievable but fake picture of beauty that users find difficult to match offline, AI filters may exacerbate this disparity.

Appearance anxiety involves a continuous worry, or unpleasant feeling, about the physical beauty of the feature that one has because of the fear of an adverse judgment by others. It entails an increased self-awareness and perception of flaws in the body or the physical appearance which leads to avoidance behaviors or too much checking on appearance (Pan, 2023).

The present study investigates the effect of AI image filtering behavior, a modern form of Self-Presentation Theory where individuals strategically use AI image filters to bridge the gap between their "actual self" and "ideal self.", which also relates to the Self-Discrepancy Theory, that describes the negative emotional response that results from the attempt to minimize perceived physical flaws, that creates further gap between the actual and ideal self. This need for presenting oneself in an ideal way is further exasperated by their need to gain social validation—a core tenet of Sociometer Theory—they become increasingly dependent on external "likes" and comments to maintain their self-esteem.

The main objective of the study was to find out the relationship between AI image filtering behavior and appearance anxiety.

REVIEW OF LITERATURE

The social media beauty standards and perceived ideal body image have been shown to lead to high social appearance anxiety (Turan et al., 2019), likewise in an investigation on the impact of AI-powered beauty filters and recommendation systems on several social media applications, Hussain, Aslam, and Imran (2025) revealed that AI-curated beauty norms increase users' dependency and reliance on AI image filters and exacerbated body anxiety and pressure to adhere to Western beauty standards. These findings align with the findings of Dijkslag et al. (2024) which illustrated that beautifying AR face filters having a negative effect on body satisfaction, while uglifying or silly AR face filters had no significant effect on body satisfaction, providing evidence that enhancing the appearance through these filters is what causes low body satisfaction and not merely the alteration of one's appearance.

Moreover, high rates of self-monitoring and photo editing behaviors such as the use of social media filters to alter one's appearance in the digital space lead to high social appearance anxiety, bringing about fears of rejection and disapproval and leading to social withdrawal (Engin et al., 2023). Multiple studies confirm this relationship, Michael (2025) found that a high frequency in using such filters is strongly correlated with low body satisfaction, and higher self-criticism, indicating negative emotional responses, while Lau and Idang (2022) reported similar findings

when it came to the frequency of editing selfies before posting them on social media which was significantly associated with high levels of social appearance anxiety. They went further to explain that the nature of these digital appearance alterations lead to a larger discrepancy between the actual self and the real self as they are possible only in the virtual world, hence causing an increase in negative emotions.

Building on such findings, Isakowitsch (2022) went to investigate the impact of Augmented Reality beauty filters (ARB) when comparing it to retroactive photo editing, and found that the AI-driven filters might have an even greater impact on self-perception compared to photo editing, as the user can move and interact with their enhanced version generated by the ARB filter unlike with the static photo resulted from photo editing. This support the hypothesis that AI image Filtering behavior act similarly if not worse than photo editing and simple filter use and is strongly associated with psychological vulnerabilities such as appearance anxiety.

METHODOLOGY

This study is using a quantitative, descriptive, and cross-sectional research design to check the impact of the AI image filtering behavior on the appearance anxiety. This research used a convenient sampling method where the questionnaires were distributed among public. The selection of convenient sampling is based on the non-probability sampling methods which allows the researcher to collect a large number of samples easily and conveniently. A structured questionnaire with standardized and modified scales to measure appearance anxiety, and AI image filtering behavior were used to gather data for this study. Based on their proven psychometric qualities, such as validity and reliability, each instrument was chosen. The sample is picked based on the availability and ease of access of the participants and not randomly selected (Cash, et al., 2022).

The two measurement tools used in this study were the Appearance Anxiety Inventory (AAI) and a Modified AI Image Filtering Behavior Scale. The Appearance Anxiety Inventory (AAI), developed by Veale et al. (2014), measures the cognitive and behavioral aspects of appearance-related anxiety. The Modified AI Image Filtering Behavior Scale was developed for this study based on the existing literature on photo-editing behavior, AI-enhanced image manipulation, and social media use. The translation process followed Brislin's (1970) back-translation method, a widely accepted procedure for adapting psychological instruments across cultures. The final questionnaire was prepared in both Arabic and English using Google Forms, allowing participants to refer to either language if clarification was needed (Behling & Law, 2000). Following confirmation of the clarity and appropriateness of the translated instruments, the questionnaire was administered to 603 adult participants across Oman.

A pilot study was conducted before the main data collection using 50 participants to evaluate the clarity, comprehensibility, and usability of the survey instrument. The pilot also assessed the estimated completion time and identified any ambiguous or unclear items. Feedback from the participants indicated that the questionnaire was easy to understand, appropriately structured, and required a reasonable amount of time to complete. Minor revisions were made where necessary before administering the final survey to the main sample.

Data were analyzed using Jamovi (version 2.6.44), an open-source statistical software package built on the R programming language (The jamovi project, 2025). Independent-samples t-tests were used to examine gender differences, Welch's ANOVA was conducted to compare age groups, and Pearson correlation analysis was performed to investigate the relationship between AI image filtering behavior and appearance anxiety.

RESULTS

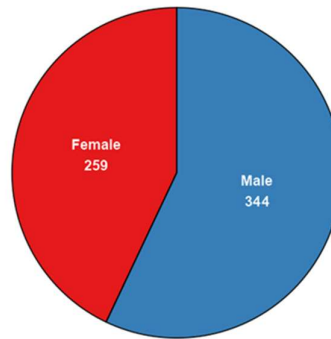


Figure 1 Pie Chart Representing demographic data of participants according to gender distribution.

Table 1 Independent Samples t-test for the gender difference on AI Image Filtering Behavior and Appearance Anxiety.

Variable	Statistic	df	p
AI Image Filtering Behavior	2.779	601	0.006
Appearance Anxiety	1.831	601	0.068

The hypothesis stated that there is no gender difference in the level of these two variables. The results showed a huge gender difference in AI image filtering behavior ($601 = 2.779$, $p = .006$). Since the p-value is below the .05 significance level, the null hypothesis was rejected. This explains that the male and female participants in Oman are having different values in their use of AI-based image

filters. In appearance anxiety, the t-test did not reach the statistical significance ($601 = 1.831$, $p = .068$). Because the p-value exceeds .05, and the null hypothesis was accepted. However, the value suggests that there is a trend around the gender differences that may become significant in a large sample or different conditions.

Table 2 Pearson's co-efficient correlation matrix between AI Image Filtering Behavior Appearance Anxiety, Self-esteem, and Social Comparison

Variables	AI Filtering	Appearance Anxiety
AI Filtering	1.000	.419*** ($t = 11.321$, $p < .001$)
Appearance Anxiety	.419***	1.000

The matrix shows the association between the variables AI image filtering behavior, and appearance anxiety. There are some significant associations between the image filtering behavior using AI and the appearance anxiety. The display of AI image filters has a moderate positive correlation with appearance anxiety ($r = 0.419$, $p < .001$), meaning that there is a statistically significant relationship between the higher is the use of AI filters and the higher is the appearance anxiety.

DISCUSSION

The finding that was the most gender significantly influences was AI image filtering behavior, this aligns with the literature that suggest that women use more

digital appearance modification than men. This result led to the rejection of the null hypothesis and conformed that male and female in Oman residents are different in their use of AI-based image filters. This gap can be linked to Leary et al.'s (1995) self-presentation theory, which proposes that individuals will manage the impressions they make on others. Women face more societal pressure to reach the beauty levels, which leads to levels where AI filters can be the suitable tool for impression management. Research by Hu (2022) found that female social media users are more likely to edit and enhance their pictures before posting it compared to males.

The appearance anxiety is more with women due to the social stress on females. The theory by Ruan et al. (2025), says that women will learn to view their pictures from external perspective, which will lead to high appearance anxiety. This framework would expect huge gender differences, but the study found only a small difference.

The results indicate that AI image filtering behavior is significantly related to the increased appearance anxiety directly. Appearance anxiety is revealed to be the strongest variable having a strong and significant correlation. Such results are quite similar to the prior research, which indicates that digital image enhancement tools contribute to appearance-related concerns and encourage social comparison behaviors. The concept of appearance anxiety is also justified by previous research as a major psychological process that connects exposure to the media with the attainment of self-perception. The positive correlation between appearance anxiety and self-esteem in this study though is an opposite of the previous studies that have reported an adverse relationship. This inconsistency is possibly because of the differences in culture, measurements or coding of the scale. The results of the correlation specify that the AI image filtering behavior has a positive correlation with appearance anxiety and social comparison, which can imply that the more often AI-based image enhancement tools are used, the higher is associated with worries about the physical appearance and the growth of the likelihood to compare oneself with other individuals (Jabłońska & Zajdel, 2020). The highest level of correlation was that of the appearance anxiety and the social comparison ($r = 0.489$), which means that those with anxiety about their appearance are more likely to engage in comparison with others.

CONCLUSION

The current research give valuable understanding of the effect that an AI filtering of images can have on the psychological consequences of the users. This study aimed to check the impact of artificial intelligence (AI) image filtering behaviour on psychological variable which is appearance anxiety. Appearance anxiety, not AI filter use itself, is the main psychological process between digital self-presentation and negative outcomes. Mental health professionals who works with clients who report concerns about social media and self-image should focus their interventions on appearance anxiety, by using cognitive-behavioral techniques, self-compassion exercises, and exposure methods.

Schools and universities must include digital and media lessons in their psychology, life skills, and health education. Students should learn how AI filters work, how filtered images are different from unedited photos, and how repeated exposure to these images can affect their self-perception over time. The earlier this education starts, the more protective it can be. Government bodies, health authorities, and NGOs must run public awareness campaigns on the responsible use of AI image filters and the psychological costs from comparing yourself with filtered content.

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