

Should the Appearance Anxiety Be Seen as an Adaptation or Byproduct? --An Analysis Using the Sexual-Strategy Theory and Social Comparison Theory from the Evolutionary Psychology Perspective

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Abstract. This study examined the phenomenon of appearance anxiety from the vantage point of neutral strategy theory and social comparison theory within the framework of evolutionary psychology. The study posits that the contemporary manifestation of appearance anxiety may be a byproduct of evolved mating strategies, exacerbated by social media. The study developed four hypotheses: that younger individuals, females, urban participants, and those with high social media use would experience higher levels of appearance anxiety. The study was survey-based, with samples selected from a variety of age groups, genders, and cultural backgrounds. The study employed a comprehensive questionnaire that included the Social Appearance Anxiety Scale (SAAS) and other relevant surveys. The results of the study, if they support the hypothesis, suggest that appearance anxiety is a byproduct of evolved mating strategies amplified by cultural factors. Conversely, should the hypothesis be invalidated, alternative explanations may be posited, including cultural and individual differences, the evolution of gender roles, and the homogenization of aesthetic standards. The study's limitations, including its reliance on self-reported data, its cross-sectional design, and the potential oversight of cultural variations, should be considered when interpreting the findings. Future studies should employ longitudinal or experimental designs, cross-sectional analyses, and incorporate neuroscience measures to more thoroughly understand appearance anxiety and identify adaptive solutions.

Keywords: Appearance anxiety, Sexual-strategy theory, Social comparison theory, Evolutionary psychology, Social media

1. Introduction

Attractive bodies litter social media pages in modern society: Men flex muscular abs and women show off their breasts and youthful smiles. This image, depicted on social media, leads others to

look

at themselves in the mirror and judge their own appearance based on the attractive individuals they see on the screen. This modern-day appearance anxiety is nothing new to society, but a result of an old evolutionary adaptation exacerbated by the rise in human interaction and modern technology.

Attractiveness has been a part of evolution for a long time. Even in other species, animals would find their mate based on who was suited best to produce healthy offspring that could survive. This idea is directly in David Buss's sexual strategies theory. David Buss further separates sexual strategy in long term and short-term strategies. The former discusses the investment of the parents and the effort they will give for the offspring, and the latter discusses the simple chance of fertility and youth in the mate for the offspring to have healthier traits. In humans, this explains the desires for each sex in a mate; men are attracted to youth and chance of fertility in women, traits that are considered more short term. Meanwhile, women are attracted to the long-term traits of wealth, status, and signs of success. These traits cause people to try to look more attractive for the opposite sex [1].

Throughout all human history, people have been comparing themselves to those around them. They compared their own attributes to the rest of their local community to be able to access strength and other important characteristics. These comparisons had only occurred at a local level, comparing themselves with people they knew. In the status quo, however, people have the chance to interact with more people through text and media. They compare themselves with more people based on who they interact with. This is a scene that Leon Festinger [2] makes in his Social Comparison Theory, that dictates that people evolved to compare themselves with each other for the benefit of improving themselves and society. Leon Festinger's theory explains that there are three different types of social comparisons an individual can make: upward spiral, lateral spiral, and downward spiral comparisons. The upward spiral comparison is one in which a person will compare themselves to someone whom they perceive to be better at a certain aspect than themselves. This comparison is meant to motivate others to push themselves at the same level as the person they are making the comparison with too; however, this can backfire, leaving the less well-suited person to feel ashamed, self-conscious, and anxious about their own trait. This is the comparison that will be touched on most in this paper. The downward spiral comparison is a comparison in which an individual looks at people whose traits and skills are lower than their own. This boosts pride and motivation to be better than others. The lateral spiral comparison is one in which people compare themselves to others in the same situation. This motivates one to strive forward.

The former sexual strategies that allowed people to want to have sex with the more attractive people gave way into modern-day comparisons about who is more attractive and how people can improve their looks. In more recent times, people have been given a larger range of people to compare themselves to via social media. These images of people can easily be photoshopped or chosen by the sender to get the best result; however, viewers still compare in an upward spiral to this unrealistic expectation of beauty standards, giving way to an increase in social anxiety. The prevalence of social anxiety caused by comparisons and jealousy based on looks is undeniable, but the effects that still need to be understood. There is a fundamental issue in the modern change from mate selection to appearance anxiety. The former is an adaptive benefit that allows attraction between two healthy and fertile individuals. The latter, however, is an emotional state triggered by perceived failure to meet beauty standards through inaccurate upward spiral comparisons.

We know evolved mating strategies and social comparison together contribute to appearance anxiety in modern society, which is amplified by the use of social media. We want to test the extent to which or how these contribute to the anxiety; therefore, our two research questions that we set out

to answer are: How do gender, age, and culture influence appearance anxiety, and how does social media exposure affect appearance-related self-perception?

Due to the research, we believe that younger individuals will report higher appearance anxiety than older individuals due to mate-seeking priorities; Women will experience more appearance

anxiety than men, aligning with evolutionary mating preferences; Urban participants will report higher anxiety than rural participants, due to globalized beauty standards and increased media exposure; and the higher frequency of social media use will be associated with higher levels of appearance anxiety through increased upward social comparison.

2. Research methodology: survey-based research

2.1. Sample selection

The present sample selection aims to test a new theoretical model that proposes, based on an evolutionary perspective, that individuals tend to select mates who are genetically endowed with superior genetic endowments and whose outward appearance outshines that of their competitors. This is because, from an evolutionary perspective, such selection facilitates the reproduction of healthy and survival-advantaged offspring, in line with the pursuit of high-quality genes in mates in sexual strategy theory. At the same time, the model suggests that beauty may be associated with other social skills, which would motivate individuals to develop a need to maintain a beautiful appearance, which in turn triggers appearance anxiety. In order to fully capture the diverse manifestations of appearance anxiety among participants, we will select a sample of people from different age groups, genders, and cultural backgrounds.

Age plays a key antecedent role in the formation of people's self-perception. The pursuit of beauty varies among different age groups. The younger group (18-25 years old) is in the critical period of mate selection, and according to the theory of sexual strategy, they pay more attention to attracting quality partners by enhancing their appearance for the purpose of reproducing offspring. Individuals at this stage are prone to higher levels of appearance anxiety as they make frequent social comparisons between themselves and the ideal image displayed on social media, as predicted by our proposed Hypothesis 1. As people's mate choice priorities change with age, older individuals (46 years and older) may be more inclined to maintain a decent appearance as a way of preserving socially recognized status rather than pursuing a partner with outstanding appearance, which is consistent with the changing role of appearance in terms of social status over time in the evolutionary view of mate choice.

According to Buss's [3] sexual strategy theory, men and women differ significantly in their experience of appearance anxiety. Males typically view appearance as a means of gaining social status and engaging in competition, and they expect to acquire more resources and higher social status through a favorable outward appearance. In contrast, women were more concerned about the role of appearance in mate selection and social evaluation. When searching for a male partner with good genetic endowment, women will pay more attention to whether their appearance meets the socially recognized beauty standards, and this sensitivity to appearance makes women more likely to fall into appearance anxiety, consistent with Hypothesis 2.

Cultural background is also an important factor influencing the perception of appearance and the level of anxiety. Different cultures have their own unique aesthetic standards and emphasis on beauty. Some cultures emphasize facial features, while others focus more on body shape or skin color. Our sample will cover people of different ethnic and national backgrounds from both urban and rural areas. Urban residents are influenced by globalization and exposed to many globally

prevalent beauty standards and are more susceptible to the impact of idealized images on social media during the process of mate selection and social comparisons, which in turn leads to higher levels of appearance anxiety, consistent with Hypothesis 3. Rural residents, on the other hand, are more influenced by local culture and community norms, and their appearance anxiety stems more from the need for group belonging, such as following local traditional requirements for appearance in order to integrate into the community. By including samples from different cultural backgrounds, we are able to delve

deeper into the causes of look anxiety, including aspects such as optimizing mate selection, competing for social status through appearance, and maintaining group membership.

2.2. Questionnaire design

The comprehensive questionnaire used in this study will cover the aspects of look anxiety, mate selection preference, social competition attitude, and social evaluation worry, with the aim of exploring the aforementioned evolutionary model in depth. The assessment of appearance anxiety will be facilitated by the Social Appearance Anxiety Scale (SAAS), a tool developed by Hart et al. [4], which has garnered substantial validation and demonstrated robust reliability. Concurrently, new inquiries will be incorporated to comprehensively assess appearance anxiety related to mate selection, social status competition, and group membership.

The section of the questionnaire on mate choice preferences will focus on how these preferences affect appearance anxiety, based primarily on existing findings in evolutionary psychology. Buss [3] has previously identified salient characteristics in mate selection, including physical attractiveness, ambition, and chastity. The present questionnaire will address these traits and will also cover other specific traits known to influence mate choice, such as facial symmetry and body size [5,6]. Participants will be asked to respond to inquiries regarding the impact of their mate choice preferences on their own appearance-related behaviors and anxiety levels. For instance, participants are requested to rate the importance of their potential partner's facial symmetry on a scale of 1-10 and to inquire how this preference influences their sentiments regarding their own facial characteristics, thereby facilitating the acquisition of knowledge concerning the correlation between mate choice preferences and appearance anxiety.

2.3. Procedures

Following the finalization of sample selection and questionnaire design, the subsequent procedures will be implemented.

First, a pre-test of the questionnaire will be conducted. A small group of individuals, selected from the target population but not included in the main study sample, will be asked to complete the questionnaire. Their feedback will be collected to identify any unclear or ambiguous questions and to ensure that the response options are comprehensive and appropriate. The refinement of the questionnaire will be informed by the feedback received, and the questionnaire will be modified accordingly if the feedback necessitates such changes.

After the pre-test, the online survey will be launched. The survey link will be distributed through multiple channels, including social media platforms (such as Facebook, Instagram, and Twitter), relevant online forums, and email lists. These channels are chosen to reach a diverse range of individuals, in line with the goal of recruiting a sample from different age groups, genders, and cultural backgrounds.

When participants click on the survey link, they will be directed to the online survey platform. Before starting the survey, they will be presented with an informed consent form, which clearly states the purpose of the study, the voluntary nature of participation, and the measures taken to ensure data anonymity. Only after participants indicate their consent by checking a box will they be able to access the survey questions.

The survey is designed to take approximately 15 - 20 minutes to complete, as mentioned earlier. During this process, participants will be guided through different sections of the questionnaire in a logical order. For example, they will first answer demographic questions, followed by questions related to appearance anxiety, mate preferences, social comparison, and media exposure.

Upon completion of the survey, participants will be thanked for their time and effort. They will also be informed that their responses are valuable for the research and will contribute to a better understanding of appearance anxiety. As previously stated, they will be asked if they are willing to provide their contact information for further follow-up, but this is entirely optional.

Data collection will continue until the desired sample size of 200 to 300 participants is reached. Once the data collection phase is completed, the data will be downloaded from the survey platform. The data will then be carefully checked for completeness and accuracy. Any incomplete or inconsistent responses will be identified. In cases where responses are missing critical information, attempts may be made to contact the participants (if they provided contact information) to request that they complete the survey. If this is not possible, the incomplete responses may be excluded from the analysis, depending on the extent of the missing data.

Following the process of data cleaning, the collected data will be entered into a statistical software package (e.g., SPSS or R) for analysis. A suite of appropriate statistical tests will be conducted to test the hypotheses. These include correlation analysis to explore the relationships between variables like age, gender, cultural background, social media exposure, and appearance anxiety, and regression analysis to determine the relative importance of different factors in predicting appearance anxiety.

3. Discussion

If the hypotheses are supported, the results would support the idea that appearance anxiety in modern society is a byproduct of evolved mating strategies shaped by natural selection, amplified by cultural mechanisms such as social media.

Higher levels of appearance anxiety among younger individuals would align with the evolutionary perspective, as the mate-seeking behavior peaks in their ages. Besides, the result that people with different genders have different anxiety levels, where women report more anxiety than men, would support the finding: women face stronger pressures to meet beauty standards tied to fertility cues, such as youth and physical attractiveness, while men may feel pressure in terms of strength or social dominance. The finding that urban participants experience greater appearance anxiety than rural participants would suggest the influence of media and cultural ideals. In cities, individuals are usually more exposed to global beauty standards. These environmental cues may exaggerate innate preferences. The evolved inclinations toward physical indicators of reproductive fitness are not only biological, but also have become magnified through constant social comparison. Culture acts as a context that evolves alongside biology, which directs how evolved preferences are expressed and perceived. This reflects the bi-directional relationship between evolution and culture: culture frames interactions, and interaction frames culture. Culture does not emerge outside of evolution, but is a product of it, further shaping the way evolved mechanisms play out in modern contexts.

The concept of 白瘦幼 (fair, thin, youthful), attractive traits for mate-seeking in mainly Asian culture, provides an example of this interaction. While some aspects of this ideal, such as youth, can be explained from an evolutionary standpoint as signals of reproductive health, others, such as extreme thinness or paleness, are more culturally specific. These traits may not directly signal reproductive fitness, but have been modified into evolved preferences through social signaling, class distinctions, and repeated exposure in media. Therefore, culturally dominant beauty ideals do not negate biological drives, but rather reshape them, leading to maladaptive outcomes like chronic appearance anxiety.

However, if the hypotheses are not supported, several alternative interpretations must be considered. A lack of expected correlations may reflect cultural or individual variation in how appearance anxiety manifests. For instance, collectivist cultures may emphasize group belonging over individual physical appearance, leading to reduced appearance anxiety even in the presence of mating

pressures. Another explanation may involve the homogenization of beauty standards across regions due to the global reach of media, which could level out differences that are region or gender contingent. In addition, evolving gender roles and shifting expectations in modern society may mean that men are increasingly concerned about appearance or the waves of feminism or women's independence movement have led to less emphasis on dependence on men's success, but rather their looks that satisfy women in the intimate relationship, narrowing the traditional gender gap.

4. Limitations and future expectations

While this study provides valuable insights into appearance anxiety through the lenses of evolutionary psychology and social comparison theory, it is not without limitations. First, the reliance on self-reported data and an online survey design may introduce biases, such as social desirability or sampling skews toward urban, tech-literate populations, limiting generalizability. Additionally, the cross-sectional nature of the study prevents causal conclusions about the relationship between social media exposure and appearance anxiety. The focus on specific beauty standards (e.g., "白瘦幼") also risks overlooking cultural variations in how attractiveness and anxiety manifest. Finally, while evolutionary theories like sexual strategies offer a foundational framework, modern sociocultural factors—such as influencer culture and advertising—are deeply intertwined with biological predispositions, complicating the isolation of evolutionary effects.

Future research should address these gaps by employing longitudinal or experimental designs to establish causality, as well as intersectional analyses to examine how gender, race, and class interact to shape appearance anxiety. Cross-cultural comparisons could reveal whether evolutionary pressures operate uniformly across societies or are mediated by local norms. Incorporating neuroscientific measures (e.g., cortisol levels, brain imaging) could also provide objective data to complement self-reports. Beyond identifying problems, future studies might explore adaptive solutions—such as how body-positive media or alternative social comparison strategies (e.g., lateral or downward comparisons) could mitigate anxiety. Finally, as gender roles evolve, research must track how shifting expectations (e.g., male grooming trends or feminist movements) redefine appearance pressures, challenging or refining traditional evolutionary assumptions. By addressing these gaps, future work can deepen our understanding of appearance anxiety while identifying pathways to healthier self-perception in a media-saturated world.

5. Conclusion

This study examined appearance anxiety through sexual strategy and social comparison theories, exploring the influences of age, gender, culture, and social media. Supported hypotheses would confirm it as a byproduct of evolved mating strategies amplified by modern culture, with younger individuals, women, urban residents, and heavy social media users showing higher anxiety—aligning with evolutionary priorities and globalized beauty standards. A key strength is integrating evolutionary and social theories while analyzing diverse samples, highlighting cultural variations like Asia’s “fair, thin, youthful” ideal. Unsupported hypotheses prompt reevaluating frameworks, considering factors like shifting gender roles. Limitations such as self-reported data call for longitudinal and neuroscientific studies, yet this work enhances understanding of the evolution-culture interplay, guiding interventions, with future research needing to explore intersectional factors to address this modern challenge.

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