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How beauty filters affect the internalization of beauty ideals

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Summary

It is known that exposure to beauty filters on social media has extensive negative consequences for women, like lower body image, social anxiety and depression. In this study, it was examined *what the relationship is between exposure to beauty filters and the internalization of beauty ideals and whether this relationship is controlled by the 'perceived importance of beauty ideals' and moderated by the 'participants' own beauty filter use'?* Women between 18 and 35 years old (N = 103, M_{age}= 22,77) filled out an online questionnaire and were exposed to AI-generated pictures of women either without or with a beauty filter. Contrary to the expectations, it was found that there were no differences in participants' internalization of beauty ideals when they were exposed to pictures without or with a beauty filter. Therefore, there was also no covariate or moderator found in this relationship. However, it was found that participants' own perceived importance of beauty ideals and participants' own beauty filter use were significant predictors for participants' internalization of beauty ideals. Therefore, it is recommended that women will receive psycho-education about how they can protect themselves against the negative consequences of exposure to beauty ideals, by being less worried about beauty ideals and/or using fewer beauty filters themselves. This study has risen attention to the fact that women are not just victims of their online environment filled with beauty filters, but they can themselves have an influence on how they let this online environment affect them.

Keywords: Beauty ideals, beauty filters, internalization, perceived importance of beauty ideals, Social Media

Introduction

Theoretical framework

In 2018 it was found that 55% of American plastic surgeons reported seeing patients who requested plastic surgery to look more like their 'filtered selfie' (Rajana, et al., 2018). This is also referred to as *'Snapchat dysmorphia',* which is defined as patients seeking cosmetic procedures to look like their selfie or filtered selfie (Cristel et al., 2021). A filtered selfie is a selfie that is edited by *a beauty filter,* an editing tool that allows users to remove any instances or imperfections in pictures before posting them on social media (Cruz, 2019).

Although the term 'Snapchat dysmorphia' refers to the social media platform Snapchat, beauty filters are used on several social media platforms. *Social media platforms* are: "internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others" (Carr & Hayes, 2015, pp. 49). In 2021, about 88% of the Dutch inhabitants used some sort of social media platform (Statica, 2021). Of this population, people between 12 and 25 years old used social media the most, closely followed by people between 25 and 45 years old (Centraal Bureau voor de Statistiek [CBS], 2020). On all of these social media platforms, it is possible to share pictures that are edited by a beauty filter. For example, in 2017 already 18% of all pictures on Instagram (a widely used social media platform where users can post image-based content accompanied by a textual caption, which other users can like, share or leave a comment to) were altered by a beauty filter. Besides, in 2019 Instagram already offered 20 different beauty filters to choose from (Faelens et al., 2021; Youn, 2019). This is a problematic trend since exposure to pictures with a beauty filter compared to original pictures can have several negative consequences.

To start with, exposure to pictures with a beauty filter can directly lead to a lower body image in young women (Kleemans et al., 2018). This effect stems from *the Social Comparison Theory* (Festinger, 1954, cited in Myers & Crowther, 2009) which explains that people want to determine their skills and progress by comparing themselves to certain standards. People can compare themselves to someone who is worse than themselves (*downward social comparison*) or to someone who is better than themselves (*upward social comparison*) (Festinger, 1954, cited in Myers & Crowther, 2009). Upward social comparison can have negative consequences like decreased self-esteem (Myers & Crowther, 2009), more feelings of envy and less well-being (Meier & Johnsson, 2022).

More recent studies show that women have a third option for social comparison: *appearance-focused social comparison.* This form of social comparison is different compared to the previously stated forms, because in appearance-focused social comparison women do not compare themselves to relevant peers but to unrealistic media images (Engeln-Maddox, 2005; Leahey et al., 2007; Strahan et al., 2006). A study in which women were assigned to an experimental condition in which a variable was manipulated so that these women made appearance-focused comparisons, found that these women reported more body-image disturbance than those in the control group (Tiggeman & McGill, 2004). This can be explained by the fact that when a woman is engaged in appearance-focused social comparison, there is automatically also a process of upward social comparison going on in which a woman finds herself lacking certain qualities that the ideal (unrealistic) woman has (Tiggeman & McGill, 2004).

Moreover, exposure to beauty filters is related to more social anxiety and depression in women (Lamp et al., 2019; Veale & Robberts, 2015). This effect is explained through the fact that exposure to beauty filters, exposes women increasingly to ‘ideal’ unrealistic pictures of other women, which can trigger their perception of what beauty actually is

(Rajana et al., 2018). Therefore, exposure to beauty filters can even trigger '*Body Dysmorphic Disorder (BDD)'* (Perkins et al., 2019; Rajana et al., 2018). BDD is characterized by a preoccupation with perceived appearance defects and repetitive behaviors intended to hide, fix or check them (Kuck et al., 2021). About 70% of the people suffering from BDD also suffer from social anxiety and depression (Mufaddel et al., 2013; Veale & Robberts, 2015). Besides, people suffering from BDD often experience high levels of psychological distress, hopelessness, embarrassment, shame or insecurities (Angelakis et al., 2016). Moreover, a systematic review with meta-analysis revealed that BDD is associated with increased suicide attempts and suicidal ideations (Angelakis et al., 2016).

These negative consequences of the exposure to ideal pictures, edited with beauty filters, might be due to the fact that people have a tendency to internalize the beauty ideals that they are exposed to (Trekels & Eggermont, 2017). The *internalization of beauty ideals* refers to the degree to which someone expresses a desire to attain the socially-prescribed appearance ideals and engages in behaviors aimed at meeting those ideals (Lamp et al., 2019; Thompson & Stice, 2001). The internalization of beauty ideals is problematic since it can make women want to live up to increasingly rigid standards of beauty, although these standards are often unrealistic (Leahey et al., 2007). For example, research shows that when women are exposed to thin ideals in the media, they internalize this thin beauty ideal (Jones et al., 2004; Clark & Tiggerman, 2008). Besides, according to Sun (2021), exposure to beauty filters can make women actually confuse reality with fantasy and have unrealistic expectations of how they should look. Consequently, exposure to edited pictures can make women focus more on physical characteristics, such as appearance instead of invisible characteristics, such as abilities (Sun, 2021). This can lead to higher body dissatisfaction (Leahey et al., 2007), lower body image, more eating disorders (Hoffman & Warschburger,

2019; Keery et al., 2004) and even the internalization of the idea that their appearance needs to change, for example by undergoing cosmetic surgery (Sun, 2021).

Although the internalization of beauty ideals has extensive negative effects on women, not all women are equally vulnerable to the negative effects of exposure to beauty filters (Dittmar, 2005, 2009). Personal characteristics could have an influence on the relationship between exposure to beauty filters and the internalization of beauty ideals. First, *women's own beauty filter use* might be important for the internalization of beauty ideals. On the one hand, it was found that women who internalize beauty ideals more, were also more likely to use a beauty filter on the pictures they posted and feel that their presentation on social media was deceptive (Lamp et al., 2019). This was in turn related to more feelings of depression (Lamp et al., 2019). On the other hand, it was found that selfie-editing was positively related to the internalization of beauty ideals, which in turn led to more consideration of cosmetic surgery (Beos et al, 2021; Sun, 2021; Varman et al., 2021). Moreover, research found that women's own beauty filter use can lead to an increase in negative mood and facial dissatisfaction (Tiggeman et al., 2020). Lastly, research showed that if women often shared edited pictures of themselves, they found their own shape and weight to be more important compared to women who did not often share edited pictures of themselves (McLean et al., 2015)

This last finding leads us to believe that *women's perceived importance of beauty ideals* could also be important for the internalization of beauty ideals. Women namely differ in how important they find certain attributes of their body (Bissel & Rask, 2010; Jefferson & Stake, 2009). Although research has found no racial differences in the importance women placed on specific body attributes, it was found that European American women experienced themselves as being further away from their beauty ideals and they found it more important to achieve their ideal weight and shape compared to

African American women (Jefferson & Stake, 2009). Besides, other research found that when women compared themselves more to other women, they also found their own body attributes to be more important (Bissel & Rask, 2010). Also, when health is declining in (older) women, they value their physical attractiveness as less important than their physical functioning (Hurd, 2000). Therefore, according to their own research and limitations in other research, Jefferson and Stake (2009) stated that future studies should focus more on the importance women place on their own body attributes since it logically follows that women who do not value beauty ideals as important are less likely to internalize beauty ideals.

Current study

Bearing in mind the negative consequences of exposure to beauty filters, it is worrisome that people nowadays are increasingly exposed to them. Social media use has risen more than 13% since the outbreak of Covid-19 and therefore the exposure to beauty filters has risen as well (Siddiqui, 2021; Youn, 2019). Moreover, previous research has mostly focused only on the negative effects of the 'exposure to ideal pictures', while recently ideal pictures are not just characterized by attractive people with ideal appearances (de Valle et al., 2021), but are often altered by a 'beauty filter' (Kleemans et al., 2018). Therefore 'ideal' pictures are nowadays actually based on 'fake features of people'. And although there is already some evidence for the relationship between people's own beauty filter use and their internalization of beauty ideals (Lamp et al., 2019; Sun, 2021), little research is yet done on the relationship between exposure to beauty filter use and the internalization of beauty ideals. Also, the role of women's own beauty filter use in this relationship is not yet clear. Moreover, much previous research does not consider how people vary on the importance they put on 'being beautiful' (Jefferson & Stake, 2009).

Therefore, in this study the following research question is answered:

What is the relationship between exposure to beauty filters and the internalization of beauty ideals? And is this relationship controlled by the 'perceived importance of beauty ideals' and moderated by the 'participants' own beauty filter use'?

H1. Participants who have been exposed to pictures with a beauty filter, internalize beauty ideals more, compared to participants who have been exposed to pictures without a beauty filter (Hoffman & Warschburger, 2019; Kleemans et al., 2018).

H2. The perceived importance of beauty ideals controls for the relationship between the exposure to beauty filters and the internalization of beauty ideals (Bissel & Rask, 2010; Hurd, 2000, Jefferson & Stake, 2009; McLean et al., 2015).

H3. The relationship between the exposure to beauty filters and the internalization of beauty ideals is stronger when participants themselves use beauty filters on social media more than average, compared to participants who use beauty filters less than average on social media (Beos et al, 2021; Lamp et al., 2019; Modica, 2020; Sun, 2021; Tiggeman et al., 2020; Varman et al., 2021)

Method

Respondents

In this study, 103 females between 18 and 33 years old participated (M= 22.77, SD= 3.03). Most of the participants accomplished as their highest educational level a University Bachelor's degree (34%). All of the participants indicated that they had at least once in their life used social media. The platforms participants mostly used, are in hierarchical order: Instagram, Snapchat, Facebook, LinkedIn, Tiktok and Twitter. 4 participants indicated that they also used Social Media platforms that were not named in the questionnaire. These platforms were: Whatsapp, Tumblr and Pinterest.

Procedure

Participants were invited (via the University test subject site, social media and word-of-mouth contact) to take part in an online study. A short cover story was used in which participants were told that they will be presented with social-media content and will be asked to indicate their preferences and attitudes towards social media and themselves. Participants were made aware of the inclusion criteria of being female and aged between 18-35 years old. After reading this information (see Appendix 1) all the participants digitally agreed to participate. Then, participants were asked to fill out some basic demographic information: gender identity, age, highest accomplished educational level, use of social media and use of specific social media platforms. After filling in the demographic data, participants filled out the questionnaires: 'Selfie-Manipulation scale' (SMC) (McLean et al., 2015; Modica, 2020) and the 'Fear of Negative Appearance Evaluation Scale' (FNAES) (Lundgren et al., 2004; Thomas et al., 1998).

After this, participants were randomly assigned to one of two conditions where they were exposed to a set of pictures: (1) pictures without a beauty filter or (2) pictures with a beauty filter. 50 participants were assigned to each condition and 3 participants ended their participation before being assigned to a condition. The picture sets (Appendix 2, 3) contained 12 Artificial Intelligence (AI) generated pictures of women, in a random order using: https://thispersondoesnotexist.com or https://generated.photos. The pictures with a beauty filter were edited using the application FaceApp, since it's one of the most frequently used beauty apps among young women (Lavrence & Cambre, 2020; Leskin, 2019). See Figure 1 for an example of an used picture without and with beauty filters.

Figure 1

Example of pictures used in the picture sets

Note. The left picture is a picture from the set from condition 1 (without beauty filter) and the right picture is a picture from the set from condition 2 (with beauty filter).

Pictures of ethnically diverse women representative of modern Western society were used as stimuli: Caucasian, Asian, Middle Eastern and Black/mixed. The pictures contained above-shoulder features. After being exposed to the pictures, the participants filled out the questionnaire the 'Sociocultural Attitudes Towards Appearance Questionnaire' (SATAQ-4) (Schaefer et al, 2015). Finally, participants were thanked for their participation and were debriefed. Participants who were recruited via the University test subject site, received a reward after participating (1 point for their curriculum required 12 points of participation in academic research). Participants who were recruited via social media and word-of-mouth contact, did not receive any form of compensation for participating. In total, participating in the study took participants about 10-15 minutes. The study was conducted in agreement with the Declaration of Helsinki (World Medical Association, 1964), The Code of Ethics for the Social and Behavioural Sciences (National

Ethics Council for Social and Behavioural Sciences, 2018) and was approved by the Faculty Ethics Review Board of Utrecht University.

Instruments

The 'Fear of Negative Appearance Evaluation Scale' (FNAES)

To assess the covariate 'perceived importance of beauty ideals' the 'Fear of Negative Appearance Evaluation Scale' (FNAES) was used (Thomas et al., 1998; Lundgren et al., 2004) (Appendix 4). Six questions were asked about the importance participants placed on the evaluation of other people, like: *I worry that people will find fault with the way I look.* According to research, what people believe other people think of them, is important for how they perceive themselves (Henderson-King et al., 2001). Therefore, the assumption is that when people find it important what other people think of them, they also perceive beauty ideals as more important. Participants answered on a 5-point Likert scale from 1 (never) to 5 (always), in which higher scores indicate higher perceived importance of beauty ideals. Research has found an internal consistency of α= .94 (Lundgren et al., 2004). This represents high reliability of the questionnaire (Taber, 2018)

The 'Selfie-Manipulation scale' (SMC)

To assess the moderator 'participants' own filter use', The 'Selfie-Manipulation scale' (SMC) was used (McLean et al., 2015; Modica, 2020) (Appendix 5). Ten questions were asked to measure the extent to which participants manipulated or edited photos of themselves before sharing them on social media. The general question '*how often do you edit photos of yourself prior to sharing them on Instagram/social media'* was stated, followed by examples of manipulation like '*get rid of red eye'*. Participants answered on a 5-point Likert scale from 1 (never) to 5 (always), in which higher scores indicate higher manipulation of photos. Research has found an internal consistency between α= .79 and α= .86 (Lonergan et al., 2019). This represents high reliability of the questionnaire (Taber, 2018).

The 'Sociocultural Attitudes Towards Appearance Questionnaire' (SATAQ-4)

To assess the dependent variable 'internalization of beauty ideals', the internalization scale of the 'Sociocultural Attitudes Towards Appearance Questionnaire' (SATAQ-4) (Schaefer et al, 2015) was used (Appendix 6). The SATAQ-4 is designed to assess societal and interpersonal aspects of appearance ideals. The complete scale consists of two scales: internalization and social pressure. For current research, only the scale 'Internalization' was used. This scale consists of two subscales that measure the internalization of the ideal of (1) thinness and (2) athleticism. An example of a question of the subscale thinness is *'I want my body to look very thin*'. An example of a question of the subscale athleticism is *'It is important for me to look athletic'.* Each subscale has 5 questions in which participants answer on a 5-point Likert scale from 1 (never) to 5 (always), in which higher scores indicate higher internalization of beauty ideals. Research showed that the internal consistency for the internalization scale of the SATAQ-4 was between α= .87 and α= .92 (Thompson et al., 2014). This represents high reliability of the questionnaire (Taber, 2018).

Analyses to be conducted

The aim of this study was to understand the impact that filtered pictures have on women's internalization of beauty ideals, controlling for the perceived importance put on beauty ideals. 23 participants were deleted from the dataset since they did not fill out any questionnaire. No participants were excluded on basis of their gender or age since they all met the inclusion criteria.

First, the internal consistency of the questionnaires for current research was determined. Second, exploratory analyses were conducted to see whether there are differences in participant features: social media use and social media platforms usage. Third, a one-way between-groups ANOVA analysis was conducted to see whether there

are any significant differences between participants in the two conditions (no beauty filter or beauty filter) for their internalization of beauty ideals. Then, a one-way analysis of covariance (ANCOVA) was used to determine a statistically significant difference in the internalization of beauty ideals between filtered pictures and unfiltered pictures, controlling for the perceived importance put on beauty ideals. This covariate is chosen, since many current studies do not consider how people vary on the importance they put on 'being beautiful' (Jefferson & Stake, 2009). Someone who highly values beauty ideals might be more likely to internalize beauty ideals. The variables could therefore covary and more clearly illustrate the difference in internalization of beauty ideals between the levels of the dependent variable. When the covariate 'perceived importance of beauty ideals' is not considered, a possible perceived difference could be due to other factors.

Additionally, a moderator analysis was conducted to test the hypothesis of whether the relationship between the exposure to beauty filters and the internalization of beauty ideals is stronger for people who often use beauty filters themselves when posting pictures on social media. This was tested through a moderator analysis using PROCESS v.3.3 by Andrew F Hayes (model 4).

Power analyses were conducted to determine the sample size of this study. The power analysis for ANCOVA with an effect size of 0.3, revealed that at least 90 people would have to participate to obtain a power of 0.8. This effect size was chosen because research recommends using a small effect size for power analysis in ANCOVA studies, since using a larger effect size can result in a sample size that is too small for the study design (Algina & Olejenik, 2003). Power analysis for a moderator analysis with an effect size of 0.3 revealed that at least 29 people will have to participate to obtain a power of 0.8. This effect size was chosen because research recommends using use a small effect size for power analysis in moderation studies, since small effect sizes represent a realistic

expectation and can still have a meaningful impact on science and practice within a specific context (Aguinis et al., 2005). Since 103 women participated in this study, the criteria of the power analyses were met.

Results

First, the internal consistency of the questionnaires for current research was determined. The internal consistency for the SMC was α= .798, for the FNAES α= .919 and for the SATAQ-4 α= .905. These internal consistencies represent high reliability of the questionnaires (Taber, 2018).

Second, a one-way between-groups ANOVA analysis was conducted to check whether there are any differences between participants in the two conditions (no beauty filter or beauty filter) for their internalization of beauty ideals, without yet controlling for a covariate. The assumptions of normality (p = -.448; p = -.533) and homogeneity (p = .010) for ANOVA were supported. The ANOVA was statistically non significant, F (1,96) = .037, p = .847.

Third, a one-way analysis of covariance (ANCOVA) was used to compare the condition participants were placed in (no beauty filter or beauty filter) to the internalization of beauty ideals. A covariate was included to partial out the effects of participants' own perceived importance of beauty ideals. Examination of the Shapiro-Wilk statistics for each condition (no beauty filter or beauty filter) indicated that the ANCOVA assumption of normality was supported (p = -.448; p = -.533). The assumption of homogeneity was also supported since the condition-perceived importance of beauty ideals interaction was non-significant (p = .852). Scatterplots indicated that the relationships between the covariate 'participants' own perceived importance of beauty ideals' and the dependent variable 'internalization of beauty ideals' were linear. The ANCOVA indicated that, after accounting for the effects of 'participants own perceived importance of beauty ideals',

there was no statistically significant effect of the condition participants were placed in (no beauty filter or beauty filter) on 'participants' internalization of beauty ideals', $F(1,95)= .004$, $p= .948$.

Fourth, a moderation analysis was conducted to test whether the relationship between the exposure to beauty filters and the internalization of beauty ideals was stronger for people who often use beauty filters themselves when posting pictures on social media. The moderator analyses indicated that the overall model was statistically significant, $F(3,94)= 3.62$, $p < .05$, $R^2= .103$. However, there was no statistically significant main effect of the exposure to beauty filters on the internalization of beauty ideals, $b = -.917$, $t = -.530$, $p = .597$. There was a significant main effect of participants' own beauty filter use on the internalization of beauty ideals, $b = .490$, $t = -.2.956$, $p < .05$. Contrary to the expectation, there was no statistically significant interaction effect between the internalization of beauty ideals and participants' own beauty filter use $b = 421$, $t = 1.269$, $p = .208$

The above analyses indicated that the presumed covariate ('participants' own perceived importance of beauty ideals) and moderator (participants' own beauty filter use on the internalization of beauty ideals) might be independent predictors of the internalization of beauty ideals, instead of a covariate and a moderator. Therefore additional analyses were conducted. First, a correlation analysis was conducted to look into the relationship between participants' own perceived importance of beauty ideals (FNAES), participants' own beauty filter use (SMC), and the internalization of beauty ideals (SATAQ-4). As it is shown in Table 1, a statistically significant correlation between participants' own perceived importance of beauty ideals and the internalization of beauty ideals was found. Also a statistically significant correlation between participants' own beauty filter use and the internalization of beauty ideals was found. No statistically

significant correlation was found between participants' own perceived importance of beauty ideals and participants' own beauty filter use, r= .180, p = .074.

Table 1

Correlation table of all the variables, N = 98

	SATAQ-4	FNAES	SMC
SATAQ-4	-		
FNAES	.496**	-	
SMC	.292*	.180	-

Note. SATAQ-4 represents the DV internalization of beauty ideals', FNAES represents the IV participants' own perceived importance of beauty ideals and the SMC represents the IV participants' own beauty filter use.

*p<.05

**p<.01

Moreover, a multiple regression analysis was conducted. The stem-and-leaf plots and boxplots indicated that each variable in the regression was mostly normally distributed, therefore the assumption of normality was supported. Also, Mahalanobis distance did not exceed the critical χ^2 for df=2 (when α <.001) of 13.82. This indicates that outliers were not of concern. The multiple regression analysis showed that 29% of the variance in the internalization of beauty ideals can be explained by participants' own perceived importance of beauty ideals and participants' own beauty filter use, R^2 = .290 adjusted R^2 =.275, F (2,95) = 19.38, p <.001. Unstandardised (B) and standardised (β) regression coefficients for each predictor are presented in Table 2.

Table 2

Unstandardised (B) and standardised (β) regression coefficients for each predictor in a regression model predicting the internalization of beauty ideals (SATAQ-4), N = 98

Variable	***B***	**[95% CI]**	***β***
FNAES	.737	0.457, 1.016**	.459
SMC	.357	0.064, 0.651*	.212

Note. The FNAES represents the IV participants' own perceived importance of beauty ideals and the SMC represents the IV participants' own beauty filter use.

*p<.05

**p<.01

Discussion

To gain a better understanding of the negative effects of exposure to beauty filters, the following research question was asked: *What is the relationship between exposure to beauty filters and the internalization of beauty ideals? And is this relationship controlled by participants' 'perceived importance of beauty ideals' and moderated by the 'participants' own beauty filter use'?*

Contrary to the expectations, there were no differences found in participants' internalization of beauty ideals when participants were exposed to pictures without a beauty filter or with a beauty filter. Also, it was unexpected that after accounting for the effects of participants' own perceived importance of beauty ideals, there were no differences found in participants' internalization of beauty ideals, regardless of whether they were exposed to pictures without or with a beauty filter. Moreover, it was against the expectation that participants' own beauty filter use did not moderate the relationship between the exposure to beauty filters and the internalization of beauty ideals. However, it

was found that participants' own perceived importance of beauty ideals and participants' own beauty filter use were significant predictors for participants' internalization of beauty ideals. When participants perceived beauty ideals as more important and/or used more beauty filters, they also internalized beauty ideals more.

An explanation for the fact that the presumed relationship between exposure to beauty filters and internalization of beauty ideals was not found, might be that there was no external control about whether the participants were exposed to beauty filters right before the experiment started. Since the target group falls under the group which uses social media the most (CBS, 2020) and research has found that most people open their social media platforms several times a day (around 3 to 5) (Auxier & Anderson 202; van der Eijnden), it can be expected that our target-group was exposed to pictures on social media platforms in the hours before taking part in the study. Therefore, the personal feed of a participant's social media platform (mostly pictures with or without beauty filters) might have had an effect on the results of this study.

Another explanation for the fact that the presumed relationship between exposure to beauty filters and internalization of beauty ideals was not found, can be that the participants' might have not used an appearance focused comparison when seeing pictures with a beauty filter (Engeln-Maddox, 2005; Leahey et al., 2007; Strahan et al., 2006). In an appearance-focused social comparison women do not compare themselves to relevant peers, but to unrealistic media images (Engeln-Maddox, 2005; Leahey et al., 2007; Strahan et al., 2006). Appearance-focused social comparison is mostly linked with body dissatisfaction rather than facial dissatisfaction (Leahey et al., 2007; Myers et al., 2012). Namely, in the relationship between appearance-focused social comparisons and body image disturbance, thin-ideal internalization is found to be a moderator (Myers et al., 2012) and thinness is more clearly seen in pictures of body's than in pictures of faces. In current

study participants were however exposed to pictures that contained above shoulder features, which means that most parts of the body were not visible. This may have led to a lesser presence of appearance-focused comparison. Therefore, this might have contributed to the absence of the presumed relationship between the exposure to beauty filters and internalization of beauty ideals. Additionally, the finding that participants' perceived importance of beauty ideals was not found to be a covariate and participants' own beauty filter use was not found to be a moderator, can simply be explained by the fact that there was no relationship present on which they could covariate or moderate (Field, 2018).

The second finding that was partly unexpected, was that there was no relationship between participants' own beauty filter use and participants' own perceived importance of beauty ideals. This finding does not completely matches the research of McLean and colleagues (2015) in which it was found that when participants manipulated their pictures more often, they would find certain beauty ideals, such as weight and shape, to be more important. However, the research of McLean and colleagues (2015) was conducted in adolescent girls. Research shows that beauty filters are mostly used by adolescent girls and the use of beauty filters declines in young adulthood and even more in adulthood (Dhir et al., 2016). Therefore, it could be that differences between the research of McLean and colleagues (2015) and current research are due to differences in participant characteristics such as age.

The third finding was that perceived importance of beauty ideals turned out not to be a covariate as was hypothesized, but it appeared to be a significant predictor of participants' internalization of beauty ideals. As was explained before, women differ in how important they find certain attributes of their bodies (Bissel & Rask, 2010; Jefferson & Stake, 2009). Besides, women also differ in the value they place on beauty ideals during their lifetime (Skov & Nadal, 2021). Namely, according to evolutionary theory people strive to be

perceived as attractive to find a mate since this increases their chances of reproduction and survival (Brown & Dittmar, 2005; Skov & Nadal, 2021). However, when circumstances change (for example when one finds a stable partner), the importance of being perceived as attractive can decline (Skov & Nadal, 2021). This could also explain why older women in general value their physical attractiveness as less important (Hurd, 2000). Above means that women do not only differ from each other in the valuation of beauty ideals, but they also differ from themselves during their lifespan. When a woman at some point in her life finds beauty ideals very important, she will automatically have more attention to everything that has to do with beauty, since people's own interests largely drive which aspects of life they focus on (Tiemeijer, 2010; Vanberg & Buchanan, 1989; Visser, 2014). This way, women who find beauty ideals to be more important, are more likely to be exposed to aspects of beauty ideals and therefore are more likely to internalize beauty ideals (Trekels & Eggermont, 2017).

The fourth finding was that participants' own beauty filter use turned out not to be a moderator as was hypothesized, but it appeared to be a significant predictor of participants' internalization of beauty. This can be explained by the theory of 'self-objectification' from Fredrickson and Robberts (1997). According to the self-objectification theory, women can take on an observer's perspective as a primary view of their physical selves, which can result in women treating themselves as an object to be looked at and evaluated on the basis of appearance (Fredrickson & Roberts, 1997; Sun, 2021). It is known that when women share pictures online, they mostly focus on their appearance (instead of their personality or characteristics) and they objectify themselves by focusing a lot on the number of likes and comments of others (Zheng et al., 2019). When women spend more time looking actively at their own pictures by thinking about how others perceive them (observer's perspective) and subsequently editing this pictures, this can increase self-objectification (Lamp et al.,

2010; Fox & Rooney, 2015). Research shows that self-objectification is related to thin-ideal internalization, which is a form of internalization of beauty ideals (Caso et al., 2020). Therefore, it could be that when participants use more beauty filters themselves, they objectify themselves more and this can result in more internalization of beauty ideals.

Current research has also some limitations. First, in current research there was no external control on the duration participants were exposed to the pictures. All of the pictures were displayed to the participants, but participants could decide for themselves when they wanted to see the next picture by clicking on continue. It is known that when participants are exposed to pictures for a short duration, their memory of the pictures declines (Hintzman, 1970; Reynolds & Pezdek, 1992). However, in current research participants did not necessarily needed to remember the pictures, they just needed to be exposed to them to such a degree that a difference in the internalization of beauty ideals could be detected. In other words, exposure to the pictures had to lead to some sort of engagement with the picture. Research showed that even very brief exposure to pictures can already lead to emotional engagement with them (Codispoti et al., 2009). Therefore, it is expected that the difference in exposure duration to the pictures did not have a big influence on the findings. However, to make sure of this it is important that future research will control for the exposure duration to the pictures.

Secondly, it is a limitation that the participants of this study were recruited and rewarded differently. The first group was invited via social media and word-of-mouth contact and participated completely voluntary without receiving any form of compensation. The second group was invited via the University test subject site on which after participating, these participants received a reward: 1 point for their curriculum required 12 points of participation in academic research. This could have led to a difference between these groups in filling out the questionnaire. A meta-analysis shows that in general there

are no differences in intrinsic motivation between participants who get a reward for participating and participants who did not get a reward (Cameron & Pierce, 1994). However, it was found that intrinsic motivation decreases when participants are given a reward simply for participating, regardless of how they participate (Cameron & Pierce, 1994). In this study, the second is true: participants already received a point simply by answering all the questions without there being any control on whether the participants answered the questions seriously. Therefore, the group who received the reward could have been less intrinsically motivated to participate seriously in the study than the participants who did not receive a reward. According to the over-justification effect, external rewards can namely decrease intrinsic motivation to perform well on a task (Lepper et al., 1963; Bowen et al., 2017). Therefore, it might be that there are differences in how seriously the participants with and without the reward have answered the questions and this might have influenced the outcomes of this research.

This study also has some strengths. First of all, it offers new insights into the underlying aspects that can contribute to the negative consequences of exposure to beauty filters. Especially the direct relationship between women's perceived importance of beauty ideals and the internalization of beauty ideals is a relatively new scientific finding and a theme that other researchers have recommended to investigate further (Fitzsimmons-Craft, 2016; Jefferson & Stake, 2009). This finding and the finding that women's own beauty filter use predict women's internalization of beauty ideals, makes it clear that personal characteristics and women's own behavior play an important role in the degree of which they internalize beauty ideals.

Second, in this study there has been a lot of attention to the ethical principles. For example all pictures that were used, were AI-generated pictures so that no privacy rights were violated. Also pictures of ethnically diverse women were used so that every

participant could ethnically identify with the women in the pictures. Not only is this important from an ethical perspective, but it is also important because according to research people who are exposed to visual stimuli that are ethnically congruent with their own ethnicity, are more self-aware (Forehand & Desphandé, 2001). This is important, because participants who were more self-aware when filling out the questionnaire, could answer the questions about themselves more truthfully, which gives a more reliable image of the measured variables.

For future research, it is important that there will be attention to how women perceive their own appearance. In this research it was not measured how women perceived their own appearance in standards of 'beauty'. In theory, it could therefore be that the participants perceived themselves as being more beautiful than the women in the pictures they were exposed to. When the participants perceive themselves as being more beautiful than the women in the pictures, there would be a process of downward social comparison (Festinger, 1954, cited in Myers & Crowther, 2009) going on instead of the expected process of appearance social comparison (Engeln-Maddox, 2005; Leahey et al., 2007; Strahan et al., 2006). Therefore, for future scientific research it is recommended that a questionnaire is added, in which women rate how they perceive their own appearance and the appearance of the women to whom they are exposed to. This way, there will be insight into what kind of comparison women use and whether the outcomes are related to this.

Further, as a result of this research it is recommended that women receive some form of psycho-education about the fact that they can protect themselves against the negative consequences of exposure to beauty ideals, by controlling their own beauty filter use. Not only is it important that women are made aware of the negative consequences of being exposed to beauty filters on social media, but it might be even more important that women themselves know that they can influence this process by using less beauty filters.

In this way, women are not just characterized as victims of their online environment filled with beauty filters, but they can themselves have an influence on how they let this online environment influences them. Therefore, the trend on Social Media using the hashtag no filter is very much encouraged. After all, change starts with you!

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Appendices

Appendix 1. Information letter for participants prior to signing informed consent.

Please read this information letter carefully

We would like to ask you to help us with our research for our master thesis for the master programme: Social Health and Organizational Psychology. The study is designed to learn more about women's habits on social media. It is being conducted by master students of Utrecht University, under guidance of Francesca di Cicco. You must identify as a woman and be between the ages of 18 and 35 years old to participate.

Below is a description of the research procedures and an explanation of your rights as a research participant. In accordance with the ethics code of the American Psychology Association (APA), you are asked to read this information carefully.

If you agree to participate in this study, you will be asked to fill in basic demographic information. Additionally you will be presented with social media content and asked to indicate your preferences and attitudes towards social media and yourself. The study contains about 25 questions and participation will take approximately 10-15 minutes. When you complete the study, a thorough written explanation of it will be provided.

Taking part in this study is voluntary. You have the right to skip or not answer any questions you prefer not to answer. Confidentiality of your research records will be strictly maintained by assigning unique, confidential identification codes to your responses. The data from the study will be kept until at least 5 years after publication, as recommended by the American Psychological Association, and then destroyed by

deletion of computer data. Anonymous participant data may be shared with other researchers for scientific purposes.

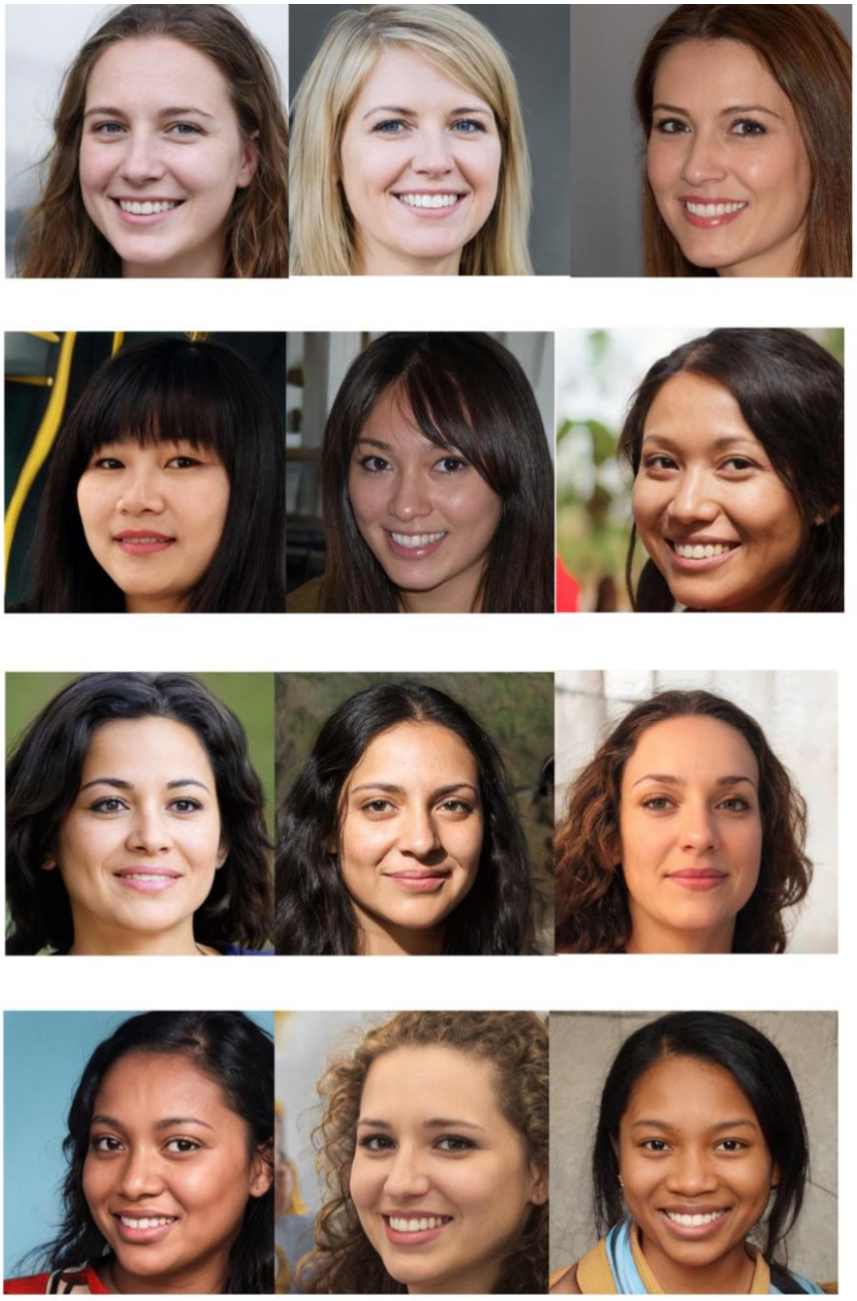
If there is anything about the study or taking part in it that is unclear or that you do not understand, or if you have questions or wish to report a research-related problem, you may contact the principal investigator, Francesca di Cicco at f.dicicco@uu.nl. For any complaints about this research, you can contact the commission of complaints: klachtenfunctionaris-fetcsocwet@uu.nl.

We thank you in advance for participating.

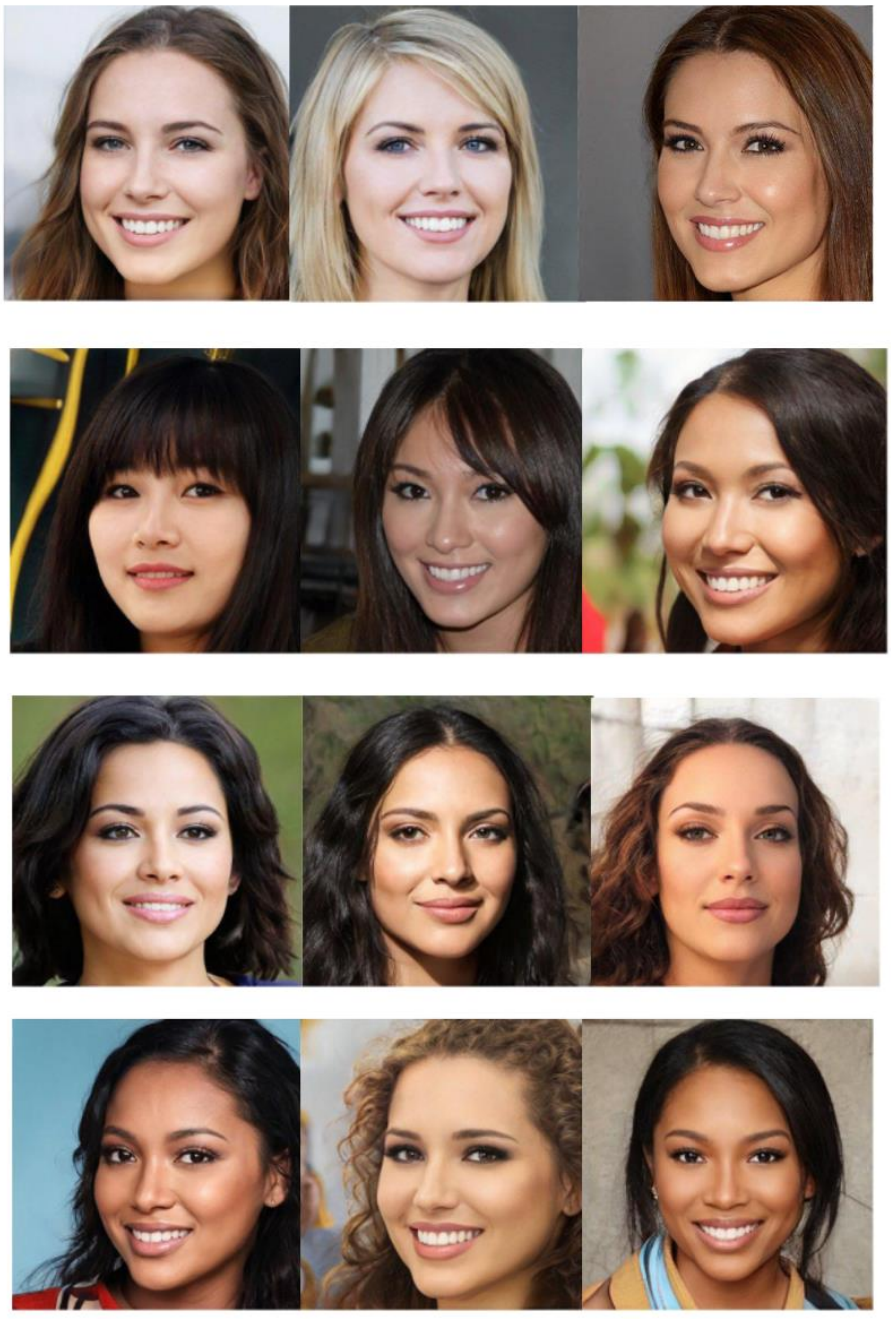
Kind regards,

Quinty Mulier and Marie Claire Bakker

Appendix 2. Picture set from condition 1 (pictures without a beauty filter) divided by ethnical group: Caucasian, Asian, Middle Eastern and Black/mixed



Appendix 3. Picture set condition 2 (pictures with a beauty filter) divided by ethnical group: Caucasian, Asian, Middle Eastern and Black/mixed



Appendix 4. The Fear of Negative Appearance Evaluation Scale (FNAES)

Using the following scale please select a number that comes closest to how you feel:

Not At All	Slightly	Moderately	Very	Extremely
1	2	3	4	5

1. I am concerned about what other people think of my appearance.	1	2	3	4	5
2. It bothers me if I know someone is judging my physical shape.	1	2	3	4	5
3. I worry that people will find fault with the way I look.	1	2	3	4	5
4. When I meet new people, I wonder what they think about my appearance.	1	2	3	4	5
5. I am afraid other people will notice my physical flaws.	1	2	3	4	5
6. I think that other people's opinions of my appearance are too important to me.	1	2	3	4	5

Appendix 5. Selfie Manipulation Scale

How often do you edit photos of yourself prior to sharing it on Instagram/social media.

1. Get rid of red eye

Never Always

1 2 3 4 5

2. Make yourself look larger

Never Always

1 2 3 4 5

3. Highlight facial features, for example, cheekbones or eye color/brightness

Never Always

1 2 3 4 5

4. Use a filter to change the overall look of the photo, for example, making it black and white, or blurring and smoothing images

Never Always

1 2 3 4 5

5. Make yourself look skinnier

Never Always

1 2 3 4 5

6. .Adjusting the light/darkness of the photo

Never Always

1 2 3 4 5

7. Edit to hide blemishes like pimples

Never Always

1 2 3 4 5

8.Whiten your teeth

Never Always

1 2 3 4 5

9.Make specific parts of your body look larger or look smaller

Never Always

1 2 3 4 5

10. Edit or use apps to smooth skin

Never Always

1 2 3 4 5

Appendix 6. Sociocultural Attitudes Towards Appearance Questionnaire -4

Sociocultural Attitudes Towards Appearance Questionnaire – 4

Directions: Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

Definitely Disagree = 1
Mostly Disagree = 2
Neither Agree Nor Disagree = 3
Mostly Agree = 4
Definitely Agree = 5

	Definitely Disagree				**Definitely Agree**
1. It is important for me to look athletic.	1	2	3	4	5
2. I think a lot about looking muscular.	1	2	3	4	5
3. I want my body to look very thin.	1	2	3	4	5
4. I want my body to look like it has little fat.	1	2	3	4	5
5. I think a lot about looking thin.	1	2	3	4	5
6. I spend a lot of time doing things to look more athletic.	1	2	3	4	5
7. I think a lot about looking athletic.	1	2	3	4	5
8. I want my body to look very lean.	1	2	3	4	5
9. I think a lot about having very little body fat.	1	2	3	4	5
10. I spend a lot of time doing things to look more muscular.	1	2	3	4	5