Strategic Use of Video Face Filter Types: Influence of Audience, Gender, and Culture

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Abstract

Video face filters play an increasingly important role in digitally mediated selfpresentation for people around the world. We interviewed young adult video filter users from China, India, South Korea, Spain, and the US, asking what video filters they use, who they use filters with, and how. Participants demonstrated sensitivity to public versus private spheres when determining what filter type was appropriate for particular audiences. Those audiences included the self only, in what we call the 'dressing room,' extending Goffman's (1959) dramaturgical metaphor for selfpresentation. We further identify a tendency for the women and East Asians we interviewed to be more attuned to different kinds of audiences, as well as East-West differences in acceptance of beauty filter enhancement. Implications for video filter research are discussed.

Key words: augmented reality, backstage, beauty enhancement, experimentation, frontstage, identity, interview, self-presentation, social distance, social media

Introduction

In July 2019, a beautiful young Chinese video blogger shocked the online world when a technical glitch caused her filter to fail, revealing her to be an average looking 58-year-old woman. What was shocking to many was not that the vlogger was using a beauty filter – many Chinese women use ones like it – but that she had deceived her followers, some of whom had given the 'cute goddess' monetary gifts. Nonetheless, some followers continued to support her even after the filter was revealed.¹ This event cast into sharp relief the potential of filters to completely transform a person's appearance.

The video face filters in question are augmented reality (AR) 3-D animations overlaid on the image of the user's face. Using computer vision and facial mapping technology, these filters track movements of the face and head in real time, modifying the user's appearance in ways that can appear highly realistic.² The filters are popular in video-mediated communication (VMC) worldwide on platforms and mobile apps such as Instagram, Snapchat, TikTok, and KakaoTalk, where they are easy to apply by clicking on one of many available preset options.

There are also customizable appearance enhancement apps for post-editing photos and videos, as well as apps that add filters directly to the camera of the user's phone³, expanding the scope of filters beyond social media. These latter types are especially popular in Asia (Varagur, 2016).

Filters are a new kind of resource for self-presentation in digitally mediated environments. Filters that enhance appearance appeal to users' desire for a more ideal online self-presentation and have been found to boost users' mood and self-confidence (Chua & Chang, 2016). While deceptive uses of face filters are of concern (e.g., Herring, Dedema, Rodriguez, & Yang, 2022), filters that dramatically alter users' appearance can also promote playful enjoyment and show the users possible alternative versions of themselves, facilitating identity exploration (Javornik et al., 2022). In this study, we explore the social uses of video filters. Considerable research has analyzed the uses and effects of photo filters (e.g., Chae, 2017; Dhir et al., 2016; Marwick, 2015), while video face filters have received less attention, despite their rapidly growing popularity in VMC (but cf. Filho et al., 2009; Javornik et al., 2022; Leong et al., 2023). Yet video incorporates movement and sound in addition to visuals; thus, it affords richer social interactions than still images (Daft & Lengel, 1984). We ask: What kinds of video face filters do people use, with whom, and for what ends? How, if at all, do these uses vary according to the cultural background and the gender of the user?

To explore these questions, we conducted one-on-one, in-depth interviews with young adult video filter users from China, India, South Korea, Spain, and the US, asking them about their video filter use. Among the most consistent findings are that the interviewees reported using different filter types with different audiences: public (social media), private (close friends and family), and self-only. We interpret these findings in the light of Goffman's (1959) front stage-backstage dramaturgical metaphor for self-presentation, to which we add a third, private 'stage,' the 'dressing room.' The interviews also reveal culture and gender differences in video filter use, especially as regards beauty enhancement filters.

Background

Video filters

Most face-modifying filters currently used on social media are produced using facial recognition technology and AR overlays.⁴ This technology was initially applied to photos and gained popularity for enhancing 'selfies' (Marwick, 2015). Dynamic video filters on social media trace their development to the Ukrainian site Looksery, which was purchased by Snapchat in 2015. Snapchat introduced the video filters to a wider Western audience as 'lenses,'⁵ and similar filters soon appeared on competitor platforms such as Instagram and TikTok. Since then, filters have become extremely popular. Deloitte Digital (2021) estimates that more than 4.5 billion AR photos and/or videos are taken daily by Snapchat users alone.

Even Zoom, despite its mostly professional uses (Gray et al., 2020), offers some AR filters, including 'studio effects' to enhance eyebrows, lip color, and facial hair, and a 'touch up my appearance' feature that smooths, lightens, and brightens skin.

As the previous sentence suggests, video filters can create varied effects. Table 1 lists some common social media face filter types, in order from minimal change to extreme change in appearance. At the extreme end, the filter user may become almost or entirely unrecognizable.

#	Туре	Description	Mentioned in	
1	Touch-up appearance	Changes lighting, color; smooths texture of skin	Filho et al. (2009)	
2	Beauty enhancement	Subtle enhancements such as virtual makeup	Javornik et al. (2022)	
3	Glamorous	More extreme beauty enhancement, including changes to bone structure	Spyscape (n.d.)	
4	Silly	Silly, playful overlays such as animal ears; includes games with cartoonish graphics	Javornik et al. (2022)	
5	Distorted	Grotesque distortion of facial features, such as huge nose	Filho et al. (2009)	
6	Gender/age	Changes user gender; makes user appear very young or very old	Leong et al. (2023)	
7	Face swap	Exchanges one user's face for another	Wray (2016)	

Table 1. Types of video face filters

The filter types in Table 1 can be further grouped into three broad categories: *beauty filters* (types 1-3); exaggerated, *silly filters* (types 4-5); and *identity-modifying filters* that change a user's gender, age, or replace the user's face with that of someone or something else (types 6-7). Each of these types affords different possibilities for online self-presentation.

Self-presentation

Self-presentation is the set of strategies, whether intentional or unintentional, that people use to manage the impressions they make on others in social settings (Leary, 2019). Sociologist

Erving Goffman proposed a dramaturgical model (1959) to explain how people manage their self-presentation strategies in face-to-face interaction. This model proposes that every person in society can be regarded as an actor who performs in social settings in front of an audience. In these social performances, actors can change their physical appearance (i.e., clothing), their interactional skills (i.e., register, pragmatic modes), and even their behavior to control the self-image they project to their audience.

Goffman distinguishes two primary types of social situations: frontstage, where the audience can see the actors, and backstage, where they are not observed by others and, therefore, do not need to perform their dramatized self to a larger audience. In this study, we introduce the concept of the *dressing room*, conceptualized as a private place backstage where social actors can try on different behaviors or appearances alone before deciding whether or not to share them with a larger audience. In contrast to Goffman's frontstage, where there is social pressure to behave in certain ways (e.g., look attractive), and backstage, where pressure is relaxed but one is still performing an identity, the dressing room allows for bolder experimentation without fear of social consequences. This can lead to identity exploration and self-discovery.

While Goffman's model of self-presentation management was originally intended to apply to face-to-face interactions, it has been fruitfully extended to explain how online users regulate how others perceive them (Persson, 2012). At the same time, the potential for editing the self in online environments affords new possibilities for users to experiment with aspects of their personality and appearance. Walther and Lew (2022) distinguish between discursive online self-presentation strategies in text-based communication such as chats and text messaging, and embodied self-presentation such as through graphical avatars in virtual reality environments. Video filters are another kind of virtual embodiment that focuses mainly on the user's face and head.

Social distance

Social distance is defined by Oxford Languages as 'the perceived or desired degree of remoteness between a member of one social group and the members of another, as evidenced in the level of intimacy tolerated between them.' Self-presentation varies according to the social distance between the self and the audience (Goffman, 1959). Bell (1984) proposed the concept of *audience design* to account for how speakers accommodate their speech style to different audiences. In his model, speakers represent their identity and position themselves in relation to in-group members and other interlocutors through stylistic variation in their speech, using more formal features in higher social distance settings.

The use of graphical enhancements in computer-mediated communication also affects and is affected by social distance. Sharing emoji, for example, has been found to play a positive

role in establishing, maintaining, and managing relationships at a close social distance, such as with family, friends, and romantic partners (Kelly & Watts, 2015). Animoji, a type of video filter available on iPhones that replaces the user's head with a cartoon-like mask, are used almost exclusively with intimate relationships (Herring et al., 2020).

AR filter research

Many studies of visual online self-presentation focus on photographs or selfies (e.g., Chae, 2017), some of which are highly edited (Marwick, 2015). In general, younger women, especially teenage girls, are more likely than men to take and post selfies and edit them with photographic beauty filters (Dhir et al., 2016). Much of the literature on AR photo filter use concerns its effects on self-perception, including its potential to boost users' mood and self-confidence, as well as the feelings of low self-esteem and insecurity that may result from comparing one's actual appearance with one's filter-enhanced appearances (e.g., Chua & Chang, 2016). In addition to perpetuating unrealistic beauty standards, AR beauty filters tend to promote a single standard of beauty, in that they make faces look more similar to one another (Riccio et al., 2022).

Video filters raise many of the same issues. Filho et al. (2009), for example, addressed selfimage concerns in videoconferencing and found that filters increased users' comfort, especially filtering techniques that subtly improved their image. In addition to modifying one's appearance for display, video filters can be used to perform, and potentially influence the outcomes of, social actions. Leong et al. (2023) surveyed 100 people about their willingness to apply different types of AR face filters privately to themselves and others with the goal of reducing nervousness about online public speaking. The respondents expressed comfort with filters that enhance their appearance through cosmetic effects, as well as nonhuman and other unrealistic filters. However, they rejected filters that change 'core attributes' such as gender, age, and race/ethnicity.

Javornik et al. (2022) studied the motivations and gratifications associated with use of a range of video AR face filter types – "silly, beautifying, with artistic effects, animal-like and others" (p. 7). According to the researchers, AR face filter use involves three kinds of self presentation – 'true self-presentation,' 'ideal self-presentation,' and 'transformed self-presentation' – the last of which can involve extreme appearance modification. 'Ideal self presentation' was found to be a significant predictor of frequency of video filter use for Instagram and Snapchat users in the UK, although 'true self presentation' was not. Nor was 'transformed self-presentation' associated with frequency of use, although it was associated with other gratifications: exploration, increased self acceptance, and increased positive affect. Additionally, and especially relevant to the present study, 'social interaction' emerged as a strong motivator for video filter use. However, to our knowledge, no research has yet

examined how self-presentation using video face filters affects everyday online social interaction, nor how this varies by filter type.

Culture and gender variation

As the example of the Chinese vlogger suggests, different culture and gender groups may use and evaluate AR filters differently. In a study in which we interviewed female and male participants from five cultures (Herring et al., 2022), female and East Asian interviewees were more likely to attribute potentially deceptive beauty filter use to a lack of selfconfidence or self-esteem and show compassion towards the potentially deceptive beauty filter user, while male interviewees from the US and Indian interviewees tended to express harsher judgment and distrust. Demographics might also help explain the *use* of beauty filters. Asian women place greater importance on appearance than U.S. women do (Jung & Lee, 2006), and women from Eastern countries have more positive attitudes toward appearance-enhancing tools, including makeup, filters and cosmetic surgery, compared to women from Western countries (Madan et al., 2018). The societal pressure for Asian women to be beautiful and the desire for a more ideal self-presentation is reflected in the popularity of beauty filters among Asian women (Chae, 2017; Varagur, 2016). In the UK, as well, 90% of young women surveyed reported using filters to enhance their appearance and said they experienced a strong sense of social pressure to do so (Gill, 2021).

As for men, although 'metrosexual' men in the West – those who live in big cities and attribute high importance to their aesthetic appearance – use more beauty products than men in the past (Souiden & Diagne, 2009), grooming is still often seen as a feminine behavior (McNeill & Douglas, 2011). In Korea, however, men do not shy away from grooming as much, as the societal association between male grooming and homosexuality is less prevalent there (Lim, 2008) compared to the United States (Kimmel, 1997). This suggests that Asian men might use beauty filters more than Western men.

Beauty filters themselves incorporate racial biases. Images of faces of different races and ethnicities are more likely to be classified by face detection algorithms as white when beauty filters are applied to them; this results in especially high rates of misclassification of Indian and Black faces (Riccio & Oliver, 2022). Another study found that digital modifications were harder to detect in photos of Indian faces than in Chinese faces (Bharati et al., 2017). However, studies of filter *use* in countries other than the US and East Asia are rare. Our search of the literature found no studies focused on filter use by Indians or Spaniards, two of the five culture groups interviewed in Herring et al. (2022) and the present study. This research contributes to filling that gap.

Research Questions

In this exploratory study, we address four broad questions:

- RQ1: What types of video filters do people use?
- RQ2: With whom do people use different types of video filters?
- RQ3: For what purposes do people use video filters?
- RQ4: Do the answers to these questions vary by culture and gender, and if so, how?

We employ primarily qualitative methods to answer these questions, although some descriptive statistics and charts are presented to highlight patterns and trends revealed through content analysis of the interviewees' responses. Because of the small number of participants in some gender and culture categories in this study, no claims are made regarding the generalizability of these patterns.

Methodology

Data collection

Data for this study were collected through an online screener survey and one-on-one Zoom interviews in early 2022. After receiving Institutional Review Board approval from the authors' university, a recruitment message containing a link to the screener survey was distributed via several listservs at a large university in the midwestern United States and posted on the authors' social media accounts. To qualify for the study, individuals had to use video filters, be 18 or older, and be from China, India, South Korea, Spain, or the US. We focused on these countries because they represent broad cultural differences between the East and the West, and filter differences along this axis can be expected (see section 2.5). Also, the members of our research team have first-hand knowledge of these cultures.

Table 2 gives the breakdown of the 48 participants who were interviewed. The Chinese, South Korean, Spanish, and American interviewees were interviewed by a member of the research team from the same culture. Most of the Indian interviewees were interviewed by the first author, who lived in India for two years. All but five of the interviewees resided in the US at the time of the interviews; three were in South Korea, and two were in Spain. Most interviews were conducted in English, although three Koreans chose to be interviewed in Korean; their interviews were subsequently transcribed and translated into English by one of the authors. The interviewees ranged in age from 19 to 38; 61% are female, 34% are male, one American identified as non-binary, and one Chinese interviewee declined to provide their gender. Most were students or recent graduates of US universities. All but one of the non-US interviewees had spent between 1 and 10 years in the US,⁶ and all can be considered bicultural to varying degrees.

Interviewees	China	India	South Korea	Spain	USA	Total
Female	8	5	5	4	7	29
Male	2	6	2	1	6	177
Other	1	0	0	0	1	2
Total	11	11	7	5	14	48

Table 2. Gender and culture of interviewees

The in-depth interviews lasted 45-60 minutes and included questions about what platforms the interviewee use video filters on, types of video filters used, filter use and social relationships, reasons for using filters in VMC, and the activities associated with video filter use. In the middle of the interview, the interviewee was asked to record and share three short video clips using filters of their choice (see examples in Figure 1).



Figure 1. Screenshots from the filtered videos illustrating (from left to right) beauty, silly, and gender filters

Data analysis

We analyzed the video-recorded interviews in three phases. The first phase was an *exploratory content analysis*. We built off the interview questions that were relevant to our research questions to start, while other themes emerged from participants' responses during the interviews, consistent with a grounded theory approach (Glaser & Strauss, 1967). The themes were defined and examined by all the authors together, and a codebook was created for the themes (Table 3). The unit of coding is *an instance mentioned by the participant about their use of a type of filter*. Initially, each author who interviewed a particular cultural

group assigned codes for that group by reviewing the interview videos, the interview transcripts, and the filtered videos provided by the interviewees. Subsequently, the authors together checked the coding across interviews for consistency of application of the codes, as well as discussing aspects of the interviews they felt were potentially interesting for this study.

Variables	Values	Examples
Filter type	Beauty, silly, gender, age	Make-up; chubby face; gender swap; baby face
Audience	Public, private, self	Family members; close friends; significant other; followers on social media
Reasons	(open coding)	Kill time; seek reaction from others; feel more confident
Activities	(open coding)	Send filtered videos back and forth; make filtered videos together; record children/older relatives using filters

Table 3. Codebook for exploratory content analysis

Because the reasons and activities provided were varied, they were open coded and analyzed qualitatively through examples and discussion. As for the first two variables, their frequency distributions were counted and compared. Throughout the interview, the interviewees often mentioned types of filters and their intended audience together. Therefore, a chi-squared test of independence was conducted to test the overall relationship between filter type and intended audience. Four overall patterns emerged from this analysis (Table 4).

Next, we conducted a *confirmatory content analysis* to examine the distribution of the four patterns across genders and cultures. Interviewees' responses were coded as yes/no for adherence to each pattern; the results are charted with descriptive statistics in Figures 2-3 and illustrated with quotes from the interviews. Reasons and social behaviors associated with each pattern are also discussed.

Finally, *follow-up content analyses* were conducted to investigate exceptions to the identified patterns. Emphasis was placed on filters that participants reported only trying out by themselves (i.e., in the dressing room).

Findings

Platforms

Instagram, Snapchat, and Tik Tok were the most frequently mentioned social media platforms where video filters were used. Many interviewees also mentioned the videoconferencing platform Zoom, especially for school-related and professional communication. A smaller number of people mentioned using video filters on FaceTime, Facebook Messenger, and Google Hangouts, and several Asian interviewees mentioned WeChat and KakaoTalk. Many Asians also indicated that they enhance and modify their videos using third-party editing apps such as Meitu and Snow prior to posting the videos on social media.

Of particular interest here, different platforms were sometimes associated with different audiences and reasons for use. As one US interviewee explained:

'Zoom – I usually use it for more professional stuff ... Snapchat is more like my intimate friends, they see the real me. And then Instagram is slightly more professional cuz it's like my family seeing it, or old co-workers, stuff like that. So there's like different levels of how – not authentic, but how much my guard is let down when I post.' (US-09 NB)⁸

These different audiences are often associated with the use of different kinds of filters, as described below.

Filter type and audiences

Table 4 shows the relationship between the types of filters used and the audiences the filters were reported to be used with, based on the initial exploratory content analysis. The raw numbers represent instances of mention.

From Table 4, four patterns are evident regarding the relationship between filter type and audience:

- 1. Beauty filters are used most with *public* audiences.
- 2. Silly filters are used most with intimate or *private* audiences.
- 3. Gender filters are used most with *oneself* and with *private* audiences (henceforth, *non-public* audiences)
- 4. Age filters are used most with oneself.

	Bea	nuty	Silly		Gender		Age		Total
Public	22	37%	4	7%	1	2%	0	0%	27
Private	14	23%	40	70%	16	32%	15	31%	85
Self	16	27%	7	12%	18	36%	21	44%	62
Didn't use	7	12%	4	7%	13	26%	5	10%	29
Didn't mention the audience	1	2%	2	4%	2	4%	7	15%	12
Total	60	100%	57	100%	50	100%	48	100%	215

Table 4. Filter type by audience

A Chi-squared test was conducted to validate if the four overarching patterns show statistical significance. Excluding the *Didn't use* and *Didn't mention* responses, a significant association was found between type of filter and audience, $\chi^2(6, N=174) = 64.765$, $p < .001.^9$ Proportion comparison revealed that beauty filters are used significantly less with private audiences (26.9%, z= -3.78, p = .002) but more with public audiences (42.3%, z = 6.37, p < .001). Silly filters are used more with private audiences (78.4%, z= 5.03, p < .001) and less by oneself (13.7%, z= -3.89, p = .001). Finally, age filters are used more with oneself (58.3%, z = 3.19, p = .017).

We next conducted confirmatory content analysis to assess the extent to which each pattern holds for different genders and culture groups. Figure 2 displays the normalized results for each pattern broken down by gender, excluding the 'other' and 'nonbinary' gender participants. The women adhered to the four patterns somewhat more than the men did, especially for beauty/public. Overall, the patterns appear to be most strongly supported for silly/private and gender/non-public, and they are more weakly supported for beauty/public and age/self.



Figure 2. Frequencies of female and male participants who adhere to the four patterns.

Next, content analysis was conducted to examine to what extent each culture group adheres to the patterns; these results are shown in Figure 3. More than 90% of the Spanish, US, and Chinese participants mentioned silly/public, and gender/non-public was mentioned by most of the Spanish, US, and Korean participants. Beauty/public showed the most variation across the culture groups, being mentioned most by the Koreans and the Chinese participants but less by the other three groups. The age/self pattern was also mentioned mostly by the Chinese, whereas the other four groups mentioned it least often.¹⁰



Figure 3. Frequencies of participants from each culture who adhere to the four patterns.

Each pattern is discussed and illustrated in the following sections, which are organized according to the three 'stages' adapted from Goffman (1959).

Frontstage: Beauty filters with public audiences

Our participants tend to use beauty filters most with wider audiences, such as everyone on their social media feed. The main reasons given for this usage were to be attractive and socially approved of or, in some cases, to avoid social disapproval. Two Asian participants explained:

- (1) 'I care about other people's judgments and comments. That's kind of the main reason I use [beauty] filters.' (C-04_F)
- (2) 'I use filters because I'm not super confident in my looks. ... I make myself more attractive so that others will like me more.' (SK-13_M)

Public use of beauty filters was reported more often by women than by men (Figure 2).¹¹ Korean and Chinese participants were also especially likely to report using beauty filters with public audiences. Asian men, especially the Korean and Indian men, mentioned this usage more often than the men from the other cultures.

For East Asians, it appears that beauty filter use is so widespread as to be almost a default, and beauty filters are regularly used to present a public face. However, the appearance of the filters differs among Asian countries. One Korean woman explained that Koreans prefer minimal and natural beauty filters, while the Chinese use 'very extreme filters that make your chin almost triangular and enlarging [sic] your eyes ridiculously big' (SK-06_F). This description fits the filter used by the 58-year-old Chinese vlogger mentioned at the beginning of this paper.

Some East Asian participants also compared Asian use of beauty filters with that of Americans, noting that Asians feel strong social pressure to use them:

(3) 'In the US, people ... don't really have to present themselves better in public because they already know that they are fine with their true self. But in Korea, China, and Japan, society forces people to look good, look better.' (SK-06_F)

Two Spanish women also mentioned feeling social pressure to use beauty filters. One admitted:

(4) 'I guess there's some kind of like societal pressure in a way where, you know, we want to look pretty for other people.' (Sp-03_F)

The Korean woman in (3) represents social norms as an external 'force' against which East Asians are powerless, while the Spanish participant's comment suggests that she has internalized society's norms and just 'want[s] to look pretty.'

Finally, in a reversal of the overall gender pattern, half of the Indian men said they use beauty filters publicly, while the Indian women tend to avoid doing so. Moreover, some Indians of both genders said they dislike beauty filters because they whiten the skin, and 'that's not real' (I-14_M). However, a few Chinese and Korean participants commented that they like the whitening effect, although it makes them look less Asian. As one Chinese woman said:

(5) 'It does probably make your skin look better, your eyes look better. But in general, you don't look like yourself, especially if you're Asian.' (C-05_F)

Backstage: Silly filters with private audiences

Videos with silly filters were reportedly shared most commonly with social intimates such as close friends and family, usually for entertainment. This can take a variety of forms, from exchanging filters back and forth to see who can look the silliest, to amusing younger relatives, to playing silly filters that are games together. This US male's comment was typical:

(6) 'So I think the [crazier] the filter is, I would send that more to my best friends and my family as opposed to if it's someone that I have a class with and that I know.' (US-30_M)

Silly filters are also used to bond with friends and family by recording filtered videos together. Some participants report recording their children and older relatives using silly filters to make them laugh. Other participants mentioned using particular filters on special occasions, for example, wearing filtered party hats at virtual birthday parties and using holiday-specific filters, such as a tiger hat to celebrate the Lunar Year of the Tiger. Two female participants, one Chinese and one American, also mentioned using silly filters to soften face-threatening social actions, such as admitting something embarrassing or criticizing a friend.

As Figure 2 shows, using silly filters with private audiences was mentioned frequently by both men and women.¹² This use was especially common among the Spanish, American, and Chinese participants and somewhat less common among the Koreans and Indians, as Figure 3 shows. Several East Asians said they think Americans use silly filters more than East Asians do in general. For example, a Korean man asserted that 'US users prefer CGI-

like filters whereas Koreans prefer natural beauty filters such as smoothing skin tone' (SK-13_M).

Cultural sensitivity may also lead people to avoid certain filters. For instance, a Korean woman expressed reluctance to use hip hop filters, because some people might find them racially offensive:

(7) 'I would say like Asian people trying to be a black people, and kind of imitating how they talk, or how they behave with the filters ... I would be a little, I would be offended if I were a black people, seeing that.' (SK-08_F)

Backstage: Gender filters with private audiences

Silly filters are not the only filters shared with social intimates. As reported in Table 2, 16 participants said they share gender filters privately with friends (often a romantic partner) or family. The main reasons given for sharing gender filters 'backstage' is because the effects seem amusing, to tease, or to flirt. As the Spanish man explained:

(8) 'Maybe you were flirting with someone, and you sent them this [gender] filter and said "oh, here's your new friend!" They were funny.' (Sp-10_M)

Men and women reported this usage in equal proportions. The American, Korean, and Spanish participants mentioned it proportionately more often than the other culture groups.

Dressing room: Gender and age filters with oneself

Gender filters were also often used only by and for oneself, and self-only use strongly predominates with age filters (Table 2). Some interviewees reported using these *identity-modifying* filters without sharing them because they tried them but did not like or otherwise felt uncomfortable with how the filter made them look.

- (9) 'I remember using [a gender filter], but that footage didn't go anywhere, like, I didn't record it. I just looked at it and was like, "okay, no one needs to see this".' (US-31_F)
- (10) '[I tried] the gender changing, with the beard, neck tattoo, and this thing. So I wanted to show how realistic it looks. ((laughs)) It's weird, and it's funny. And I would never use that, nor would I post it. I'm not that confident or secure.' (I-07_F)

(11) '[The age filter] feels kind of scary. I wonder if that's what I'll look like when I'm old.' (C-16_M)

For others, the motivation was simple curiosity or entertainment.

(12) 'The times that I do use Instagram for filters ... it's more like, oh, what age do I look like? and like how is your future going to be? like just to try it out for fun, but those are something you don't post you just do for fun, those type of filters.' (US-18_F)

The use of gender and age filters with only oneself was reported by both women and men.¹³ The non-binary gender participant also described using a (masculine) gender filter and how it had facilitated exploration of their gender identity:

(13) 'It definitely made me feel that I would use it before I even realized that I was non-binary, ... Or like the idea was just in the back of my mind, but using those filters started to spark my interest moreso, cuz I could see what I could potentially look like.' (US-09_NB)

Dressing room: Beauty and silly filters with oneself

In the last stage of the analysis, we conducted follow-up content analyses of filter type and audience mentions that are exceptions to the dominant patterns in Table 2. We focused particularly on self-only or 'dressing room' uses, a number of which occurred with both beauty and silly filters. The results for all self-only uses are summarized in Figure 4 by gender and in Figure 5 by culture. (The age results duplicate those in Figure 2.)



Figure 4. Frequencies of female and male participants who use each filter type with self only



Figure 5. Frequencies of participants from each culture who use each filter type with self only

Figure 4 shows that more females than males tried on gender and beauty filters in the 'dressing room.' Figure 5 shows that the Chinese participants, especially, mentioned using age filters only with themselves. The Indian participants appear most consistent in using all four filter types with themselves only.

As with self-only gender and age filter use, common motivations for self beauty filter use included curiosity and experimentation:

- (14) 'I probably just use it for myself. ... Maybe I use it for this kind of hair-related filters, I want to try what I would look like when I dye my hair in this color.' (C-03_F)
- (15) 'I used one [that] changed the color of my eyes and my lips. [...] it felt new, but I wouldn't use it all the time. It's just like a one-time thing, probably.' (I-04_F)

With self-only silly filters, motivations mentioned by participants include educating oneself about new filters and amusing oneself, for example, by trying outrageous filters for fun or playing games alone.

(16) 'I like to be updated with what's going on with technology. I do use [silly] filters for my entertainment purpose' (I-21_M)

There may also be a perceived stigma associated with using certain filters that makes some people reluctant to share them, for example, out of a concern to avoid stereotyping or offending others, as suggested in (7) as regards hiphop filter use. A similar concern about invoking stereotypes was mentioned by a female Spanish participant as a reason not to share gender filters.

Discussion

We asked young adult video face filter users what types of filters they use, with whom, and for what purposes. Our interviewees reported using beauty filters and silly filters most frequently - beauty filters with public audiences for 'frontstage' self-presentation and impression management (Javornik et al., 2022) and silly filters 'backstage' with private audiences for entertainment and relationship maintenance, similar to iPhone users sharing cartoon-like Animoji with intimates and close friends (Herring et al., 2020). Filters that change one's gender are also sometimes shared with intimates such as romantic partners. Further, gender- and age-changing filters – and sometimes the other two types – are tried on in the virtual 'dressing room' for self-exploration or entertainment but are not shared, often out of discomfort or a lack of self-confidence about sharing certain altered selfrepresentations, especially those created by identity-modifying filters (Table 1). Leong et al. (2023)'s survey respondents reported being less willing to use private AR filters that changed 'core attributes' such as their race, gender, and age compared to filters that enhanced their appearance or that were non-human or otherwise less realistic. Our study found that instead of avoiding identity-modifying filters altogether, our interviewees avoid using them publicly but still try them on privately.

Javornik et al. (2022)'s analysis of motivations for video face filter use suggests further explanations for our findings. Public use of beauty filters appears motivated by a desire for 'ideal self presentation,' and use of silly filters with intimates, especially, seems motivated by a desire for social interaction. Finally, Javornik et al. (2022)'s finding that 'transformed self-presentation' is associated with user exploration, increased self acceptance, and increased positive affect suggests compelling motivations for the self-only, 'dressing room' filter uses reported in this study. Conversely, although we did not ask a general question about why people use video face filters, our findings provide insights into users' motivations. Specifically, they demonstrate that motivations for filter use depend not only on users' self-presentational goals, but also crucially on the intended audience in social interaction.

Our fourth research question asked about variation based on user gender and culture. A common theme across genders and cultures was a concern to appear natural in beauty filter use, similar to the preference of participants in Filho et al.'s (2009) study for subtle filter enhancements over filters that strongly altered their appearance. However, the association of beauty filters with public audiences was strongest for women and East Asians, consistent with previous findings that women feel greater social pressure than men to appear attractive (Gill, 2021; Varagur, 2016) and that this pressure is especially strong for East Asians, who are more likely to behave in accordance with the norms of their ingroup (Morling et al., 2002). Moreover, Asians prefer to use beauty filters, according to several East Asian interviewees, whereas use of silly filters is associated more with Westerners. This is reflected in Koreans' and Indians' relatively lower use of silly filters with intimates, although the Chinese participants are an exception in this regard.

Overall, the women and East Asian interviewees more often use face filters in ways that support the four main patterns identified in this study. Moreover, more women than men reported sharing gender filters and experimenting alone with both gender and beauty filters. The women were notably more willing than the men to try out filters that changed their gender at all: Males in every culture group reported more non-use of gender filters than females did.

Finally, the Indian participants adhered least to the four main associations between filter types and audiences (Figure 3), and they more often reported trying out beauty and silly filters with themselves only (Figure 5). The Indians that we interviewed also appeared to have generally less favorable attitudes towards video face filters than the other groups. One reason for this may be that filters tend to whiten the skin (Riccio & Oliver, 2022). This is especially true for beauty filters, but other filters increasingly incorporate enhancements such as lightening and smoothing the skin. More than the other culture groups, Indian participants expressed discomfort with the whitening effect; we speculate that this could reflect stigma associated with the status hierarchy based on skin color in India that was inherited from the caste system (Mishra, 2015).

Conclusions

Contributions of the study

Video face filters are freely available, easy to use, and provide virtually limitless options for online self-presentation. The findings of this study cast new light on their use at the intersection of self-presentation and social interaction. They demonstrate that social relationships and activities shape participants' filter use, and that participants show awareness of social distance (i.e., public and private spheres) when deciding what video filter type is appropriate for particular audiences (cf. Bell, 1984; Herring et al., 2020).

Further, we extended Goffman's (1959) dramaturgical metaphor by introducing the *dressing room*, a private space for presenting oneself to oneself that allows for self-exploration and play with video filter types such as potentially sensitive gender and age swaps. We also identified a possible East-West difference as regards acceptance of beauty enhancement, as well as a tendency for women and East Asians to be more attuned to different kinds of audiences, as shown by their greater adherence to the patterns identified in this study.

Broader implications

This study has implications for filter use research that extend beyond the sample interviewed here. It argues strongly for the importance of differentiating among filter types, even as the line between beauty filters and other filter types is blurred. It also suggests that audiences and their social distance from filter users be considered in analyzing motivations for, and practices associated with, filter use. Self-only 'dressing room' uses should also be taken into account in order to construct a more complete picture of face filter use.

The implications of filter research extend into the future. Just as selfie filters expanded over the last decade into the realm of video, so too video filters are expanding into the realm of deepfake videos. The newest social media filters, such as the hyper realistic 'bold glamor' beauty filter on TikTok, are generated using AI and deep learning methods (Spyscape, n.d.). The findings of the present study thus provide a snapshot of user practices along an ongoing trajectory: from textual to graphical (Walther & Lew, 2022) to video to AI-mediated forms of online self-presentation.

Limitations and future research

The main limitation of this study is the small number of interviewees from some cultures (South Koreans and Spanish) and gender groups (males and nonbinary participants). The descriptive statistics for these groups are not intended to be generalizable, but rather to serve as a starting point to identify patterns and generate hypotheses. Further research is needed to determine whether the associations between filters and audience types that we observed are present in larger gender- and culture-balanced populations. Moreover, most of our non-American participants were residing in the US at the time of the interviews and are bicultural, which could have diluted cultural differences in their usage and perceptions of video filters. However, the fact that cultural differences were evident even among foreign interviewees residing in the US suggests that, if anything, stronger differences would likely be found by interviewing filter users in their native countries. To confirm this, studies of face filter use in different cultural contexts are needed. Further, the youngest of our participants was 18 years old; yet 80% of girls say they have downloaded a filter or used an app to change the way they look in photos by the time they are 13 years old.¹⁴ Studying

teenagers could generate valuable insights into video filter uses. Last, only beauty, silly, gender, and age video filters were analyzed in this study. Consideration of different filter types, including gaming filters, filters generated using deepfake techniques, and AR filters generated by the users themselves,¹⁵ could reveal different motivations, audiences, and activities associated with their uses.

Notes

- 1. <u>7news.com.au/news/livestream-glitch-reveals-chinese-vlogger-was-using-facial-filter-</u> <u>to-appear-younger-c-375026</u> (accessed 30 June 2023)
- 2. <u>onezero.medium.com/how-instagrams-viral-face-filters-work-5c98ba05122f</u> (accessed 17 May 2023).
- 3. <u>www.mamamia.com.au/iphone-camera-filter-beauty-filter/</u> (accessed 15 April 2023)
- 4. In early 2023, TikTok introduced video face filters generated using deep learning algorithms, similar to those used to produce deepfake videos (Spyscape, n.d.). At the time of this writing, however, we are not aware of any studies analyzing how this type of filter is being used.
- 5. <u>www.indestry.com/blog/the-brief-history-of-social-media-ar-filters</u>, accessed 28 March 2023
- 6. One Chinese female was born and raised in a large Chinese community in San Francisco, California.
- 7. Despite targeted outreach efforts, we had difficulty finding men willing to be interviewed about filter use in some cultures.
- 8. The notation after the quote identifies the participant as follows: (NATIONALITY-ID#_GENDER).
- The effect size was medium to large (V = .43). Alpha was adjusted using the Bonferroni technique to p <.004 (p =.05/12) to avoid making Type I error (Bender & Lange, 2001).
- 10. Given the small numbers of Spanish and Korean participants, their patterns should be interpreted with caution.
- 11. Relatedly, more male (18%) than female (10%) interviewees said that they do not use beauty filters at all.
- 12. However, more males than females said they do not ever use age (18% vs. 3%) or gender (41% vs. 17%) filters.
- 13. Slightly more females (10%) than males (6%) said they do not use silly filters at all.
- 14. <u>https://www.bgca.org/news-stories/2021/September/the-selfie-talk-a-must-have-conversation-with-kids-in-the-digital-age</u> (accessed 22 November 2023)
- 15. Although this was not mentioned often by our interviewees, user-created AR filters can be found, for example, on Snapchat and TikTok.

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