

The Zoom Effect: Exploring the Impact of Video Calling on Appearance Dissatisfaction and Interest in Aesthetic Treatment During the COVID-19 Pandemic

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Abstract

Background: The popularity of videoconferencing platforms has skyrocketed during the COVID-19 pandemic; however, concerns have been expressed regarding the potential for video calls to promote appearance dissatisfaction because individuals are exposed to an image of themselves on camera for extended periods.

Objectives: The aim of the current study was to characterize current video usage behaviors and their relation to appearance dissatisfaction and interest in aesthetic procedures in the general population.

Methods: An online survey was completed by 335 adults currently living in Australia. Multiple aspects of video usage were assessed, including engagement in video-manipulation techniques to enhance appearance and the focus of visual attention (ie, on self or others) while on video calls. The Dysmorphic Concern Questionnaire was administered to determine if video-use behaviors were associated with greater body image disturbance.

Results: Over one-third of participants had identified new appearance concerns while on video. Dysmorphic concern was associated with self-focused attention, greater engagement in video-manipulation behaviors, and increasing appearance concerns due to their time on video calls. Individuals who identified new video-based appearance concerns reported greater interest in obtaining future beauty treatments (eg, waxing) and aesthetic procedures (eg, nonsurgical procedures such as antiwrinkle injections).

Conclusions: This is one of first empirical studies to report the potential consequences of video-call usage for increasing appearance dissatisfaction and dysmorphic concern, and to demonstrate a link between the use of video calls and interest in cosmetic procedures.

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The coronavirus (COVID-19) pandemic has forced many workplaces to revolutionize the ways in which they communicate, and the public to consider new ways of staying connected with peers and loved ones, while maintaining social distance. As a result, videocalling and videoconferencing programs have seen enormous growth throughout the pandemic. Zoom (Zoom Video Communications, Inc., San Jose, CA), a platform for hosting video- and audioconferencing, reported a 20-fold growth in daily users from 10 million in December 2019 to 200 million in April 2020.¹ Other platforms, such as Microsoft Teams

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(Microsoft, Redmond, WA) and Facebook Messenger (Facebook, Inc., Menlo Park, CA) have reported similar exponential increases in business and/or personal users.²

Although the benefits of video calling during the COVID-19 pandemic are clear,³ limited empirical research has explored the potential risks of these services. Video communication differs from in-person interaction because the user is not only subject to visual scrutiny by others but can also see themselves from an “observer perspective” for the duration of the call. This could be likened to staring in a mirror for several hours a day, which may represent a significant increase compared with the time spent examining one’s appearance prior to the COVID-19 pandemic, with 20 to 30 minutes per day the average in the general population.⁴ Furthermore, the visual image portrayed on video calls may be inaccurate and create a warped self-perception in video-call users because the close proximity to the camera can distort the appearance of facial features.⁵

Previous research has suggested that even after briefly looking in the mirror, healthy men and women have reported increased distress and body image dissatisfaction.⁶ This effect is exacerbated further in those with dysmorphic concern (a preoccupation with a perceived flaw in physical appearance), such as individuals with body dysmorphic disorder (BDD) and eating disorders (EDs), who often have complex and problematic relationships with mirrors, which can fluctuate between excessive mirror checking and/or avoidance.⁷⁻⁹ For these individuals, mirror checking often leads to selective attention and magnification of disliked aspects of appearance, increasing self-consciousness and negative self-image.¹⁰

Although both healthy individuals and those with body image disorders can become distressed by mirror gazing, their behaviors and attentional foci often differ when looking in the mirror. Research has revealed that individuals with BDD and EDs tend to spend most of their time looking at body parts they perceive as least attractive.¹¹⁻¹³ In contrast, healthy individuals evenly split their attention between most attractive and least attractive body parts,¹³ which may serve a protective function in terms of their overall appraisal of their body. As such, similar patterns in attentional focus may exist on video calls.

In addition to mirror checking, video calls also bare similarity to the taking and posting of “selfies” on social media, which creates the opportunity for visual scrutiny by the poster *and* their viewers. Posting selfies on photography-based platforms (eg, Instagram and Facebook) has been linked to increased body dissatisfaction and self-objectification, reduced self-esteem, engagement in appearance comparisons, and the development of disordered eating behaviors in healthy individuals.¹⁴⁻¹⁶ Taken together, past research suggests that viewing oneself in a

mirror or in photographs for extended periods can have negative implications for both healthy individuals and those experiencing body image disturbance. Thus, video-call usage may have similar negative effects on appearance satisfaction.

A handful of studies have recently emerged exploring the relation between video calling and appearance dissatisfaction during the COVID-19 pandemic.¹⁷⁻¹⁹ These studies have not found a direct link between time spent on video calls and appearance dissatisfaction but have identified moderating factors. For example, individuals who compared their appearance to that of other callers were more likely to engage in video-manipulation behaviors (eg, editing their appearance with a filter).¹⁷ Participants with high trait neuroticism were also more likely to engage in appearance comparisons on video, increasing their susceptibility to poorer body image due to their video-call usage.¹⁷ Other studies¹⁹⁻²² and media reports^{23,24} have investigated the increased uptake of surgical and nonsurgical cosmetic procedures during the COVID-19 pandemic, with many clients reporting video calls to be a trigger for their appearance concerns and desire for aesthetic treatments. However, the existing video-call studies have not included measures of body image disturbance, which is important given the negative effects of video calls may be exacerbated in individuals with high dysmorphic concern (ie, those with BDD or EDs) who may already experience distorted self-image.

Hence, the overarching objectives of the current study were: (1) to understand the impact of video calling on dysmorphic concern and appearance dissatisfaction in the general population; and (2) to determine whether video-call usage may stimulate increased interest in aesthetic treatments during the COVID-19 pandemic. Therefore, the first aim was to determine whether people identified new appearance concerns due to their time on camera. It was predicted that individuals who were predominantly fixating on themselves during a video call would display higher dysmorphic concern than those fixating on other faces or flexibly shifting between both. Further, it was expected that individuals fixating on themselves during a video call would be more likely to identify new aspects of their appearance that they disliked. The second aim was to examine whether participants engaged in “video manipulation” (that is, altering some aspect of the self or environment) to feel more comfortable with their appearance on video calls. The third aim explored whether identifying new appearance concerns on video calls predicted any change in desire to obtain future aesthetic treatments. It was expected that participants who noticed new appearance concerns on video would report greater interest in facial aesthetic treatments (skin treatments, hairdresser services, eyelash extensions, etc).²² Finally, the fourth aim was to examine the behavioral

predictors of dysmorphic concern (ie, time spent on video calls, self-focused attention, video manipulation). It was expected that individuals with high dysmorphic concern would be more likely to fixate on themselves during video calls and engage in video-manipulation techniques.

METHODS

Design and Measures

The present study was part of a larger project exploring body image changes in the Australian public during the COVID-19 pandemic. The study received ethical approval from the Swinburne University Human Research Ethics Committee and complied with the Declaration of Helsinki. Participants were eligible to participate if they were aged 18 years or over and currently residing in Australia. The online survey was accessed by 531 participants (443 women, 69 men, 9 gender diverse) aged between 18 to 74 years (mean [standard deviation], 31.3 [11.7] years). Respondents were recruited from social media advertisements and by nondiscriminative snowball sampling. Participants were provided with a detailed information sheet as the very first page of the online survey and completion of the survey was considered to be informed consent.²⁵ Cross-sectional data were collected from participants via an online survey conducted at 2 time points (May 20 to 27, 2020 and July 20 to 27, 2020; a blank copy of the survey is provided as an [Appendix](#), available online at www.aestheticsurgeryjournal.com). For participants who completed the survey at both time points, their responses from the second round of data collection were used. Validity checks were conducted to ensure that groups completing the survey at each time point did not differ on variables of interest (detailed below). The online survey took approximately 25 minutes to complete. Participants were asked demographic questions and completed the following measures.

Video-Call Usage and Behaviors

Participants were asked how much time they spent on video calls over the last week and indicated whether video calls were for social, work-related, and/or other purposes, or if they were actively avoiding video calls and why. Participants who reported using video calls over the previous week were asked what they paid most visual attention to during the call (mostly your own face/body, mostly the face/body of the person you are speaking to, a combination of both, other activities on the mobile device/computer, or not watching the screen at all). Participants were also asked to indicate whether

they had engaged in any of the following behaviors to manipulate their appearance on video; adjusting the lighting in the room, grooming behaviors (eg, applying make-up or doing hair) specifically for the call, using a filter on their video to enhance their appearance, positioning their face/body, or angling the camera to hide appearance flaws, or any other behaviors to make themselves feel more comfortable on camera. As measures of video manipulation do not exist, this list was developed by the researchers based on literature regarding photographic manipulation and appearance-focused behaviors.^{10,26} Free-text responses to “other” video purposes or video-manipulation behaviors were analyzed and coded by 2 of the authors. Finally, participants were asked whether they had noticed any new aspects of their appearance that they either liked or disliked specifically due to their video usage, and to specify what these new concerns were via free-text response.

Dysmorphic Concern

To identify the degree of concern relating to perceived defects in physical appearance, participants completed the Dysmorphic Concern Questionnaire (DCQ).²⁷ The DCQ includes 7 items measuring the extent of concern with physical appearance and belief that one is misshapen in some way (rated from 0 to 3, 3 being “most concerned”). Scores are summed to produce a total DCQ score, with higher scores indicating greater dysmorphic concern. High scores on the DCQ are likely to indicate clinically significant body image concern and have previously been associated with the presence of BDD or EDs.²⁸⁻³⁰

Psychological Distress

Psychological distress was assessed with the Depression, Anxiety, and Stress Scale (DASS-21),³¹ which includes 21 items measuring anxiety, depression, and stress over the previous week. Items are rated from 0 (“never”) to 3 (“almost always”), and scores are summed to produce a total score ranging from 0 to 63.

Desire to Obtain Future Aesthetic Services

Participants rated their change in desire to obtain the following aesthetic services since the COVID-19 pandemic began on a scale of -5 (decreased desire to obtain aesthetic services) to +5 (increased desire to obtain aesthetic services): hairdressers, nail salons, hair removal services, nonsurgical cosmetic procedures (eg, laser skin treatments, Botox injections, fillers, chemical peels), cosmetic surgeries (ie, that involve cutting beneath the skin under anesthetic), tanning salons and eyelash/eyebrow services (eyelash extensions, eyebrow shaping, tinting, etc).

Data Analysis

At the time of the second data collection in July, participants living in Victoria, Australia remained under tighter COVID-19 “lockdown” restrictions, whereas other Australian states had begun easing regulations on socializing, work, and aesthetic/cosmetic services. To account for this confound and ensure that statistical analysis could be completed for the entire sample, Victorian participants were compared to participants living in other states on dysmorphic concern and video behaviors to identify whether there were any group differences (by *t* tests and chi-squared analyses; [Supplemental Table 1](#), available online at www.aestheticsurgeryjournal.com). Group comparisons were also calculated between individuals completing the survey during the first phase (May 2020) and second phase (July 2020) of data collection ([Supplemental Table 2](#), available online at www.aestheticsurgeryjournal.com). After determining that there was no influence of these potential confounds, descriptive statistics were calculated for the overall sample on demographic variables, time spent on video calls, dysmorphic concern, and psychological distress. Participants’ reasons for video use and nonuse were categorized, and we examined whether participants who reported avoiding videoconferencing had higher dysmorphic concern.

In line with the first aim, the proportion of individuals reporting each attentional focus and identifying new aspects of appearance on camera was calculated. To examine whether the level of dysmorphic concern differed between individuals reporting various attentional foci, a Welch’s analysis of variance (to account for sample size differences and heterogeneity of variance) was conducted to explore differences in DCQ score between attentional focus groups (own face vs other face vs both faces). Games-Howell post-hoc tests were computed to further examine significant differences between groups. Pearson’s correlations were used to assess whether identifying a new appearance concern was associated with attentional focus (own face vs other face vs both faces).

The second aim was examined by calculating the frequency and proportion of participants engaging in video-manipulation behaviors. To explore the third aim and determine whether new appearance concerns emerging from video usage predicted increased desire for future aesthetic treatments, a series of linear regression analyses were conducted. The presence of new appearance concerns (yes/no) was entered as a dichotomous predictor, with desire for each of the 7 aesthetic treatments (described in Design and Measures) as outcome variables.

To determine whether there were any covariates which needed to be controlled for in subsequent analyses, Pearson’s correlations were computed between potential covariates (age, gender, and DASS-21 score) and video-use

Table 1. Demographic and Psychological Characteristics of the Overall Sample (N = 335)

Characteristic	Statistic
Age, mean [SD]	31.96 [12.21]
Gender, n (%)	
Female	285 (85.1%)
Male	46 (13.7%)
Gender diverse	4 (1.2%)
Primary occupation, n (%)	
Employed	176 (52.5%)
Student	95 (28.4%)
Unemployed	48 (14.3%)
Homemaker/retired	16 (4.8%)
DCQ total score, ^a mean [SD]	6.25 [5.21]
DASS-21 total score, mean [SD]	12.62 [12.20]

DCQ, Dysmorphic Concern Questionnaire,²⁷ score range 0 to 21; DASS-21, Depression, Anxiety, and Stress Scale—21-item version,³¹ score range 0 to 63; SD, standard deviation. ^aDCQ data was missing for 3 participants.

behaviors. Due to the small proportion of gender-diverse individuals in the current sample, gender-based analyses were conducted on men and women only. To address the final aim regarding the relations between video-use behaviors and dysmorphic concern, correlations were conducted as preliminary analyses to identify significant associations (Bonferroni corrected $\alpha = 0.001$). Significant video-use correlates were subsequently entered as predictors into a multiple regression model with DCQ score as the outcome, controlling for covariates (age, gender, and psychological distress).

RESULTS

Participants

The online survey was accessed by 531 participants and completed by 335 individuals with less than 10% missing data³² who were included in subsequent analyses (171 participants from the first data collection in May, 164 participants from the July data collection). Sample characteristics are presented in [Table 1](#).

Most participants were currently living in Victoria ($n = 248$), with the rest from other Australian states ($n = 85$). There were no significant differences between participants living in Victoria or elsewhere in DCQ scores, video-use behaviors, or interest in aesthetic treatments

(Supplemental Table 1), nor were there differences between participants who completed the survey during May or July (Supplemental Table 2). As such, subsequent analyses were conducted on the overall sample.

Time Spent on Video

Data regarding average time spent on video over the last week were only available for participants completing the second round of data collection. Of these participants ($n = 138$), 6 (4.3%) reported spending no time on video, 37 (26.8%) reported spending less than 30 minutes, 40 (29.0%) reported spending 30 to 60 minutes, 33 (23.2%) reported spending 1 to 2 hours, and 23 (16.7%) reported spending more than 2 hours a day on video calls. The amount of time spent on video was not significantly correlated with any of the variables of interest (ie, DCQ scores or desire for cosmetic treatment).

Purpose of Video Calls

From the total sample (completing the survey at both time points), 277 (85.5%) participants had used video calling in the previous week. Participants were predominantly using video for social ($n = 229$, 68.4%) or work/education purposes ($n = 190$, 57.5.4%), with a smaller proportion for telehealth ($n = 9$, 2.7%). Roughly 8% of the sample reported active avoidance of video calls (3% for appearance-related and 5% for other reasons), and 7% reported that they had little need to use video calling in the past week. Examination of free-text responses regarding video-call avoidance revealed social avoidance or low motivation as additional reasons for not wanting to use video, beyond appearance-related reasons. Participants who reported active avoidance of video calls also reported higher scores on the DCQ, $r(327) = 0.16$, $P = 0.004$.

Aim 1: Attentional Focus and New Appearance Concerns on Video Calls

Attentional Focus

More than half of the sample reported attending to a combination of their own face, and the faces of others on the video call ($n = 148$, 53%). This was followed by attending to one's own face only ($n = 77$, 27.2%), and then by focusing only on the faces of other people ($n = 46$, 16.53). Eight participants (2.8%) reported that they were generally not watching the video-call window at all, and 4 (1.4%) were unsure of their visual focus.

Welch's analysis of variance indicated a significant difference in DCQ scores between individuals focusing on their own face, another face, or both faces, $F(2, 117.29) = 18.86$, $P < 0.001$, $\omega^2 = 0.11$. Games-Howell post-hoc tests revealed that individuals fixating on their own face reported the highest DCQ scores (mean, 8.30 [5.75]), followed by

Table 2. New Areas of Appearance Concern Identified on Video Calls ($n = 120$)

New appearance concern	n (%)
Weight/shape (eg, noticed in chin, cheeks, and/or body)	39 (32.5%)
Skin (eg, wrinkles, pimples, complexion, and/or colour)	36 (30.0%)
Nose (ie, shape and/or size)	17 (14.2%)
Hair (eg, colour changes and/or thinning)	15 (12.5%)
Eyes (eg, shape of eyes, eyelashes, eyebrows, and/or bags beneath eyes)	13 (10.8%)
Mouth (eg, lips and/or teeth)	8 (6.7%)
Other (eg, generalized appearance concern such as looking tired or aging, noticing "embarrassing" on-screen behavior)	17 (14.2%)

Participants who reported that they had identified new appearance concerns on video calls were asked to specify what these concerns were by free-text responses. The responses were then coded and categorized by the area of concern, as displayed above. Percentages are reported out of 120 participants who reported new appearance concerns on camera.

individuals fixating on both faces (mean, 5.63 [4.56]), and finally by individuals fixating on other faces only (mean, 3.04 [3.70]).

New Appearance Concerns

Of those who had used video over the past week, 120 participants (42.4%) reported noticing a new aspect of their appearance that they disliked due to their use of video calls. Thirteen participants (4.6%) identified a new area of their appearance that they liked on video and 146 (51.6%) did not notice anything new about themselves. Four participants did not answer the question. The most common areas of new appearance concerns reported are shown in Table 2.

Individuals who had identified new appearance concerns were also more likely to focus predominantly on their own face during video calls, $r(279) = 0.18$, $P = 0.003$, and less likely to be focusing on another face, $r(277) = -0.16$, $P = 0.01$. New appearance concerns were unrelated to flexibly shifting between both faces during a video call.

Aim 2: Video-Manipulation Behaviors

The proportion of individuals engaging in appearance manipulation behaviors on video is displayed in Figure 1. Roughly half of the participants reported positioning their camera or themselves to display their best angles on video. The next most common behaviors included adjusting the lighting in the room and grooming prior to the call (eg, applying make-up or doing hair). A smaller percentage (12%) reported applying a filter to their video to touch up or enhance their appearance. Around 7% reported other

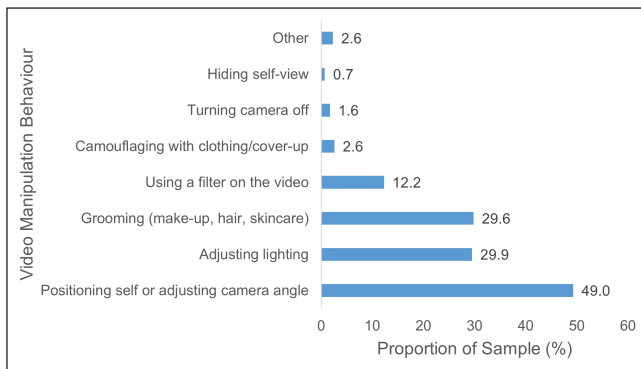


Figure 1. Proportion of sample engaging in video-manipulation behaviors. Graph displays engagement in video-manipulation behaviors to improve appearance or feel more comfortable on video calls ($n = 324$).

methods of video manipulation, which were examined and grouped by the researchers according to themes. These themes included camouflaging behaviors (ie, the use of clothing or other cover-up approaches) to hide disliked aspects of appearance, turning the camera off completely, hiding self-view so that the video was visible to others but not themselves, or other methods. The proportion of the sample reporting each of these additional behaviors is also presented in [Figure 1](#).

Aim 3: New Appearance Concerns and Desire for Aesthetic Treatment

[Table 3](#) shows the series of linear regression analyses computed with new video-based appearance concerns (yes/no) as the predictor variable, and desire to obtain each aesthetic treatment as outcome variables. New appearance concerns predicted greater interest in obtaining nonsurgical cosmetic procedures, and in hairdresser, hair removal, and eyelash/brow services, compared to before the COVID-19 pandemic. New appearance concerns did not predict change in desire for cosmetic surgery, nail salons, or tanning services.

Aim 4: Video-Use Behaviors and Dysmorphic Concern

Identifying Covariates

Correlations with potential covariates revealed that DCQ score was significantly associated with DASS-21 scores ($r(322) = 0.42$, $P < 0.001$), age ($r(330) = -0.23$, $P < 0.001$), and gender ($r(330) = 0.12$, $P < 0.001$), with higher dysmorphic concern observed in females.

Video-Use Behaviors Predicting Dysmorphic Concern

A standard multiple-regression analysis was used to investigate how well significant correlates of DCQ

score (attending to own face, attending to other face, new appearance concerns, video-manipulation behaviors) predicted dysmorphic concern, after controlling for age, gender, and general psychological distress. Age, gender, attentional focus on another face, and adjusting positioning on camera did not contribute significant variance and were removed from the final regression model. The linear combination of remaining predictors was significantly related to dysmorphic concern, $F(6,270) = 17.93$, $P < 0.001$. Together, these predictors accounted for 33.9% of the variance in DCQ score. Fixation on one's own face, new appearance concerns, and video-manipulation behaviors (adjusting lighting, grooming, and filter usage) contributed 16.4% of the variance in DCQ, with DASS-21 scores accounting for the rest. The results of the regression analysis are presented in [Table 4](#).

DISCUSSION

The current study explored the impact of video calling on appearance dissatisfaction, dysmorphic concern, and interest in obtaining aesthetic treatments caused by the exponential increase in video-call usage during the COVID-19 pandemic.¹ Over a third of the sample (36%) reported that they had identified new aspects of their appearance that they disliked while on video. Individuals with higher dysmorphic concern were particularly likely to fixate on themselves during video calls, and to identify new appearance concerns on camera. Emerging concerns were mostly associated with facial appearance, such as noticing changes in the weight or shape of the face (eg, “chubby cheeks” or a “double chin”), skin blemishes (ie, wrinkles, pimples, sagging, or complexion), or specific facial features (ie, nose, eyes, lips/teeth). In turn, participants who had identified new appearance concerns on camera reported greater interest in obtaining certain aesthetic procedures compared to before the pandemic, specifically nonsurgical cosmetic treatments (antiwrinkle injections, dermal fillers, etc), hairdresser services, waxing/hair removal, and eyelash/eyebrow services. However, video-based appearance concerns did not predict greater interest in more invasive cosmetic surgeries, tanning, or nail salon services.

Consistent with previous findings,²⁰⁻²² the current study identified that increased video-call usage may be associated with higher demand for aesthetic treatment during the COVID-19 pandemic, particularly minimally invasive procedures targeting facial areas that are visible on camera. The increased uptake of aesthetic procedures during the pandemic has recently been documented in the Aesthetic Plastic Surgery Databank which noted a significant increase in the number of aesthetic injectable procedures delivered in 2020 (3.97 million procedures) compared with 2.52 million in 2019.^{20-22,33,34} However,

Table 3. Series of Linear Regression Analyses of Video-based Appearance Concerns Predicting Interest in Aesthetic Treatment (n = 275)

Outcome variable	Model	B	SE _B	β	P
Nonsurgical cosmetic treatment	$r^2 = 0.03, F(1,275) = 7.33$	0.58	0.21	0.16	0.007
Cosmetic surgery	$r^2 = 0.01, F(1,275) = 2.55$	0.36	0.23	0.10	0.11
Hairdressers	$r^2 = 0.03, F(1,275) = 7.11$	0.62	0.23	0.16	0.008
Waxing/hair removal	$r^2 = 0.02, F(1,275) = 5.56$	0.56	0.24	0.14	0.02
Nail salons	$r^2 = 0.01, F(1,275) = 2.05$	0.34	0.24	0.09	0.15
Eyelash/eyebrow services	$r^2 = 0.02, F(1,275) = 5.14$	0.46	0.20	0.13	0.02
Tanning	$r^2 = 0.00, F(1,275) = 0.05$	0.07	0.20	0.02	0.74

Each line represents a separate linear regression analysis, with new appearance concerns due to video usage as a dichotomous predictor (0 = no new concerns; 1 = new concerns identified). Desire to obtain each aesthetic treatment was rated on a scale of -5 (decreased desire) to +5 (increased desire) compared to before the COVID-19 pandemic. Participants with missing data were excluded from regression analyses. Significant regression models at $P < 0.05$ are shown in bold. *B*, unstandardized beta; *SE_B*, standard error of unstandardized beta; β , standardized beta.

Table 4. Multiple Regression Analysis of Factors Predicting Dismorphic Concern (n = 271)

Predictor	B	SE _B	β	t	P
Model	$r^2 = 0.34$	$F(6,270) = 17.93, P < 0.001$			
DASS-21	0.13	0.02	0.29	50.44	<0.001
New appearance concerns	2.09	0.55	0.20	30.81	<0.001
Filter	2.40	0.80	0.16	30.02	0.003
Focus on own face	1.61	0.61	0.14	20.66	0.008
Lighting	1.34	0.58	0.12	20.30	0.02
Grooming	1.34	0.58	0.12	20.33	0.02

Outcome variable for the regression model was the Dismorphic Concern Questionnaire total score. Participants with missing data were excluded from regression analyses. DASS-21, Depression, Anxiety and Stress Scale—21-item version. *B*, unstandardized beta; *SE_B*, standard error of unstandardized beta; β , standardized beta.

video-call usage was only observed to account for a small amount of variance in interest in nonsurgical aesthetic treatments during the COVID-19 pandemic, suggesting other factors are likely at play. These factors could include an increased desire to obtain aesthetic procedures as a coping mechanism to deal with pandemic-related stress,³⁵ more disposable income due to restrictions on travel and leisure, or the potential to recover from a cosmetic procedure at home without needing to take time off work.^{21,22}

A further aim of the current study was to characterize the attentional patterns and video-manipulation behaviors of video-call users, and their relation with dysmorphic concern. While on video, it was most common for participants to focus their attention on a combination of their face and

the faces of other callers. However, over a quarter of participants reported that they were primarily fixating on their own face for the duration of the video call, which was associated with a greater likelihood of identifying new appearance concerns and experiencing higher levels of dysmorphic concern. This is consistent with the literature on facial processing in BDD, where when presented with an image of their own face and another face, subjects with BDD disproportionately focused on themselves and their perceived unattractive features.^{36,37} This selective attention to disliked aspects of appearance is thought to contribute to the development of distorted body image.³⁸ As such, the current cross-sectional findings that dysmorphic concern was associated with greater self-focused attention and new appearance concerns on video may reflect either the initiation or exacerbation of body image dissatisfaction due to video calls. To clarify the causal direction of this relation, future longitudinal or experimental research is needed.

Half of the sample reported engaging in at least one video-manipulation behavior (eg, angling the camera, grooming, adjusting lighting, or applying a filter) to improve their appearance or to feel more comfortable on camera. In line with predictions, engagement in video-manipulation behaviors was more likely in individuals with higher levels of dysmorphic concern. This concurs with previous findings that individuals who are dissatisfied with their appearance are more likely to manipulate or edit photographs they post of themselves online.^{14,26,39} Further, our findings are consistent with those of Pfund et al, who identified that engagement in self-objectification and appearance comparisons on video predicted appearance dissatisfaction, rather than the overall time spent on video.¹⁸ Similarly, in the present study, dysmorphic concern was predicted by engagement in video-manipulation behaviors and self-focused

attention, but not duration of video use. This also parallels the literature on selfie posting which suggests that body dissatisfaction is not increased by the number of selfies an individual posts, but rather investment in the selfie through editing and manipulation.¹⁴ Taken together, these findings suggest that it is the quality rather than quantity of video usage which could have negative impacts on body image.

A small proportion (8%) of participants were actively avoiding video calls due to self-consciousness about their appearance or low social motivation. Avoidance of video calls was also associated with dysmorphic concern, suggesting that the emphasis on video-based communication during the COVID-19 could isolate people with body image disorders. Individuals with high dysmorphic concern, such as those with BDD or EDs, often report difficulties in social interactions due to the potential for visual scrutiny from others.⁴⁰ This is further compounded on video calls, where they are also exposed to their own appearance. Individuals with body image concerns may therefore face greater interference in social and occupational functioning if they are unable to interact via video calling, beyond the already negative impacts in these domains from the COVID-19 pandemic.⁴¹

The current study is the first to explore the relation between video calls, appearance dissatisfaction, and dysmorphic concern, an area of key relevance due to the rapidly increasing popularity of videoconferencing, and growing interest in aesthetic treatments during the COVID-19 pandemic. Although our findings provide preliminary evidence that self-focused attention and video-manipulation behaviors are associated with dysmorphic concern in a nonclinical sample, several limitations are worth noting. The cross-sectional nature of the study limited testing of causal hypotheses. Thus, these constructs need to be explored in experimental and longitudinal research. Further, when participants rated their interest in obtaining beauty or aesthetic treatments, all types of cosmetic surgery were grouped together. Providing a more detailed list of specific cosmetic surgeries may have revealed greater interest in particular surgical procedures (eg, facial rather than body surgeries) due to video-call usage.²² The current sample may also be subject to bias because the participants were mainly younger adults living in Australia, emphasizing the need for replication in wider age groups and geographical regions. These findings should also be verified in clinical samples of individuals with body image disorders, such as BDD or EDs, to determine if the negative impacts of video calls are exacerbated in these groups. Existing research suggests that clients with high dysmorphic concern may already hold unrealistic expectations for aesthetic procedures, and therefore achieve less favorable outcomes.⁴²⁻⁴⁵ Future research could examine whether video-call behaviors affect and shape

client's expectations for aesthetic procedures, and if this impacts the treatment outcome.

The increased popularity of videoconferencing during the COVID-19 pandemic has several benefits for maintaining social connection, healthcare, and workplace functioning. However, the current research suggests that risks for the well-being and body image of video-call users should be recognized. Importantly, over one-third of participants had identified a new appearance concern while on camera. Although new appearance concerns were more likely to emerge in participants with high dysmorphic concern, these findings in the current nonclinical sample suggest that this issue extends to the general population. Fixating on one's own face and engaging in video-manipulation behaviors to enhance appearance during video calls could trigger or exacerbate body image concerns in the long term. As such, although individuals may not be able to control the amount of time spent on video in the current climate, they should take care to adopt healthy video practices to maintain their well-being and self-confidence. This could include dedicating an equal amount of time to looking at the face(s) of other callers (rather than fixating on their own face) or hiding self-view on the camera to try to mimic in-person social interaction. However, the effectiveness of these strategies in preventing the development of appearance concerns on video calls should be examined in future research.

Further, the current findings revealed that individuals may consider undertaking aesthetic procedures to alter their appearance specifically due to their use of video calls. Given that this increased interest in cosmetic treatment could be driven by pandemic-related distress or dysmorphic concern, cosmetic practitioners should take additional care to screen for BDD and high psychological distress because previous research has identified that these vulnerable groups may experience unfavorable treatment outcomes.^{43,44,46} Additional assessment may be needed for clients before they undertake aesthetic treatment to determine the possible impact of video-call behaviors (eg, self-focused attention and video manipulation) on their self-perception and treatment expectations.

CONCLUSIONS

The current findings suggest that video calls can promote appearance dissatisfaction in healthy individuals and those with pre-existing body image concerns and may partially underlie the boom in nonsurgical aesthetic treatments during the pandemic. Further experimental and longitudinal research is needed to clarify the benefits and risks of video-based communication, as it

continues to increase in popularity during the COVID-19 pandemic.

Supplemental Material

This article contains supplemental material located online at www.aestheticsurgeryjournal.com.

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