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Stewart, Marni; Stapleton, Peta Berenice

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The Impact of Videoconferencing on Appearance-Related Anxiety and Body Dissatisfaction: An Australian Investigation

Abstract

The pandemic resulted in increased use of videoconferencing. This study investigated whether Appearance-Related Anxiety, Videoconferencing Appearance-Focused Behaviours, and Weekly Videoconferencing Time contributed to state body dissatisfaction in 191 community Australians. Results indicated moderate to strong positive correlations between the three constructs, a weak negative correlation for weekly video time, although no correlation for total week video time. The three constructs predicted state body dissatisfaction when controlling for age and gender and Appearance Related Anxiety mediated Videoconferencing Appearance-Focused Behaviours and body dissatisfaction. The impact of videoconference communication on body dissatisfaction is discussed.

Keywords: video conference; anxiety; appearance; body dissatisfaction

The Impact of Videoconferencing on Appearance-Related Anxiety and Body Dissatisfaction: An Australian Investigation

The multifaceted construct of body dissatisfaction (BD) is a prominent contributor to the high prevalence, development, and maintenance of eating and body dysmorphic disorders (Cash & Szymanski, 1995; Levinson & Rodebaugh, 2015). BD describes is an individual's persistent negative perceptual, affective, cognitive, and behavioural response to their body size, shape, weight, and muscularity (Mills et al., 2014; Stapleton, 2014). Higher BD is often a subjective, emotional, cognitive, time-consuming, and distressing preoccupation composed of state and trait constituents (Mills et al., 2014; Perez-Lopez, 2004). State BD varies across time and contexts (Mills et al., 2014) and may be exacerbated during social situations, whereas trait BD is persistent, regardless of situational variations (Mills et al., 2014).

BD prevails through discrepancies between individuals' perception of their body and dissimilarity between perceived ideal social appearance (Stapleton, 2014; Vannucci & Ohannessian, 2018). For example, Australian social body image ideals tend to be 'strong, slim, and toned', signifying the thin-ideal for women and 'tall, broad, and muscular' for males (Griffiths et al., 2018; Perez-Lopez, 2004; Stapleton, 2014). Generally, research into BD has typically focused on adolescents and young adults, due to the rapid and extensive changes occurring throughout puberty (Vannucci & Ohannessian, 2018). BD has found to worsen for females between 10 and 15 years, then peak and stabilise at 16 years (Bully & Elosua, 2011). However, age-related anxiety has also been found to predict BD in Australian women aged 45 to 65 (Carrard et al., 2019). These aspirations to attain an often-unrealistic body image, idealised in the objective social environment, can result in adverse consequences including excessive body checking (e.g., mirror-gazing) and body avoidance (Pikoos et al., 2020; Summers & Cogle, 2018). Adverse responses ultimately contribute to the

development of BD and psychological disorders (e.g., anxiety, eating, and body dysmorphic disorders; Vannucci & Ohannessian, 2018; Walker et al., 2018).

In Australia, BD and subsequent disorders are increasingly problematic due to the high lifetime prevalence (9%; Butterfly Foundation, 2020). For individuals diagnosed, 63% are female, and 37% are male (Hay et al., 2015). Given the social-psychological aspects of BD, the current increased reliance on videoconferencing during the COVID-19 pandemic, potentially perpetuated the development and preservation of these psychological disorders (Mabe et al., 2014; Zimmer-Gembeck et al., 2020). Photo-based media and videoconferencing communication have affected BD, with camera use doubling during COVID-19 lockdown periods (Pikoos et al., 2020; Seekis et al., 2020). A recent Australian study of current video usage behaviors and their relation to appearance dissatisfaction and interest in aesthetic procedures in the general population (Pikoos et al., 2021) found a third (36%) of the sample reported appearance dissatisfaction during the pandemic, and those with higher BD concerns fixated on these concerns mostly associated with facial appearance. However, video call use was only associated with a small amount of variance in nonsurgical aesthetic treatments, indicating perhaps other factors were responsible for appearance dissatisfaction.

Videoconferencing Appearance-Focused Behaviours (VAFB) have been proposed as fostering greater BD and are frequent appearance enhancements (e.g., grooming), fixation (e.g., mirror-gazing), and avoidant behaviours (e.g., disabling the camera; Pikoos et al., 2020; Summers & Cogle, 2018). Photo-based media has been previously associated with increased body-image disturbance, objectification, and appearance anxiety among healthy adults (Mabe et al., 2014; Seekis et al., 2020). Videoconferencing on the other hand permits un-affected live reflection of self-image, allowing for excessive VAFB and self-appearance scrutiny

(Pikoos et al., 2021; Pfund et al., 2020; Seekis et al., 2020) as the camera function may resemble a mirror (Pikoos et al., 2021).

Appearance-Related Anxiety (ARA) then is an individual's fear of their physical appearance encountering unfavourable scrutiny by others (Levinson et al., 2013; Perez-Lopez, 2004). It is a core mechanism of social anxiety disorder; a chronic mental health condition characterised by a person's profound fear of being scrutinised in social situations (Levinson, 2013; Zimmer-GemBeck et al., 2020). Susceptibility to ARA experienced appears to worsen state BD (Levinson & Rodebaugh, 2015), and positively mediates the association between BD and photo-based media use (Seekis et al., 2020). It was expected in the current study that it may also mediate the relationship between BD and video appearance focused behaviours.

The Present Study

There is a plethora of research and well-established relationships concerning BD, anxiety, photo-based media, and appearance-focused behaviours (Mills et al., 2014; Seekis et al., 2020; Summers & Cogle, 2018). However, no research has examined the inter-relationships between ARA, VAFB and Weekly Videoconferencing Time (WVT) on body dissatisfaction in videoconferencing environments. Moreover, given the recent exponential rise in videoconferencing communication and the differential effects of latter risk factors, there is a paucity of research surrounding constructs that may influence BD in a post-COVID-19 pandemic (Levinson & Rodebaugh, 2015; Pfund et al., 2020).

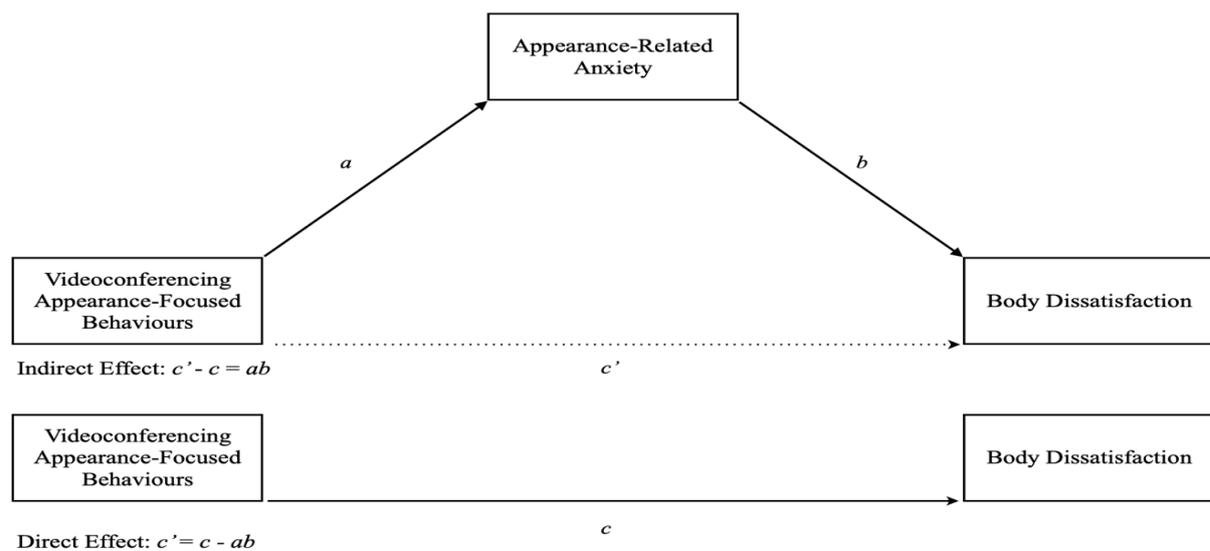
1. It was hypothesised that higher Body Dissatisfaction would be positively associated with higher Appearance-Related Anxiety, Videoconferencing Appearance-Focused Behaviour and greater Weekly Videoconferencing Time. It was also expected this relationship would be stronger in younger adults.

2. It was also hypothesised that higher Videoconferencing Appearance-Focused Behaviour, higher Appearance Related Anxiety, and more video weekly time would predict higher body dissatisfaction.
3. It was then hypothesised that Appearance Related Anxiety would mediate the relationship between Videoconferencing Appearance-Focused Behaviour and body dissatisfaction (see Figure 1).

Insert Figure 1

Figure 1

Proposed Meditational Hypothesis (H₂)



Note. This figure demonstrates the proposed influence of Appearance-Related Anxiety on Videoconferencing Appearance-Focused Behaviour and Body Dissatisfactions Relationship.

Method

Participants

Convenience sampling recruited 322 volunteer non-clinical community members through email, social media (e.g., Facebook, Instagram and Reddit), online student survey exchange communities (e.g., Facebook and Reddit), and the University's Participant Pool.

Participants recruited through the latter two channels were offered course credit or survey response as an incentive for participation.

An a-priori power analysis was conducted using G*Power (Faul et al., 2007) indicating a minimum sample size of 85 participants was required, based on: fixed model, R² increase; medium effect size (.15); alpha of .05; power of .80; four tested predictors; and five predictor variables in total.

Persons recruited who did not meet inclusion criteria of being over 18 years ($n = 1$; 0.003%) and residing in Australia ($n = 28$; 0.08%) were automatically removed. Additionally, recruits who met exclusion criteria were omitted. As such, persons who did not: provide consent to participate ($n = 1$; 0.003%); use videoconferencing communication ($n = 19$; 0.05%); enable the camera function ($n = 21$; 0.06%); or missed more than 3% of the survey responses ($n = 61$; 0.18%) to reduce risk of bias (Jakobsen et al., 2017). The final sample ($N = 191$) consisted of 154 females (80.6%) and 36 males (18.8%) aged 18 to 70 ($M = 37.11$, $SD = 14.51$).

Over 50% of the sample always used the camera function during videoconferences, with Zoom identified as the most prevalent platform over Microsoft Teams, Blackboard Collaborate, FaceTime, Google Meet, WEBEX and Skype. Participants also reported background information including, cosmetic surgery and treatment engagements and pre-determined diagnoses, including anorexia and bulimia nervosa, body dysmorphia, anxiety, and depression (see Table 1).

A small to moderate number of participants did not report their age (6.28%) and gender (0.5%). To maintain sample representation and reduce bias, the item values remained as missing data for statistical analyses (Tabachnick & Fidell, 2013).

Insert Table 1

Table 1*Descriptive Statistics for Categorical Demographic Data*

Categorical Variables	Frequency (<i>n</i>)	Percentage (%)
Age Categorical		
18 to 34 years	88	46.10
35 to 70 years	91	47.60
Platforms		
Zoom	79	41.40
Microsoft Teams	59	30.90
BlackBoard/Collaborate	22	11.50
FaceTime	7	3.70
Google Meet	6	3.10
WEBEX	4	2.10
Skype	2	1.00
Other	3	1.60
Camera Requirement		
Yes	107	56.00
Sometimes	73	38.20
Cosmetic Surgery/Treatment		
Yes	23	12.00
No	65	86.40
Diagnoses		
Anorexia	1	0.50
Anorexia, Anxiety and Depression	1	0.50
Bulimia, Anxiety and Depression	2	1.00
Bulimia, Body Dysmorphia, Anxiety and Depression	1	0.50
Body Dysmorphia, Anxiety and Depression	1	0.50
Anxiety	19	9.90
Anxiety and Depression	17	8.90
Depression	9	4.70
None	137	71.70

Notes. The variable ‘Age Categorical’ was only used in the multivariate analysis of variance.

Materials

Demographics

Participants responded to ten questions concerning demographics and background information: age, gender, Australian residency, type of videoconferencing platform used, videoconferencing function (Work, Study or Social), camera use, employment and study status, occupation (e.g., Hospitality and Student), cosmetic surgery engagement, and where relevant, clinical diagnoses related to BD. In addition, participants who had consented to participate, but were excluded from the study due to not enabling their camera during videoconferencing, provided a reason for disabling the camera via free text response.

Weekly Videoconferencing Time

Weekly Videoconferencing Time (WVT) was assessed via three numeric free-text responses to questions about the participants' estimated average time spent using videoconferencing communication in work, study and social contexts per week. The sum of the three items provided a composite score for Total WVT. Higher scores indicated more time spent videoconferencing.

Videoconferencing Appearance-Focused Behaviour

Videoconferencing Appearance-Focused Behaviours (VAFB) were measured via seven self-reported items developed for this study, examining constructs of appearance-focused behaviour before and during videoconferencing engagement (due to the lack of an established scale measuring appearance-focused behaviours using this communication channel; Pikoos et al., 2021). Item and reliability analyses determined a five-item measure more accurately assessed VAFB within the sample when excluding avoidance and appearance comparison constructs. The five-item VAFB scale used a 5-point Likert scale (0 = "Not at All" to 4 = "All the Time"), with no reverse-scored items. Items are summed to produce a total score with a range from 0 to 20. Higher scores indicate more frequent

engagement and preoccupation with physical appearance during videoconferencing. The items included:

1. Do you have a preference to observe yourself during online conferences?
2. Do you have a preference to observe others during online conferences?
3. Do you have a preference to avoid looking at the screen?
4. How often do you find yourself becoming fixated with your appearance over of content of the online conference?
5. Do you engage in preparatory appearance enhancement activities (eg, fixing hair, doing make up, dressing up)?
6. Do you use filters when video conferencing?
7. Do you feel the need to arrange you computer camera at certain angle?

The VAFB scale demonstrated acceptable internal reliability in this study (Cronbach's alpha = .71) and had face validity; determined via peer review and supervision feedback.

The Situational Inventory of Body-Image Dysphoria-Short Scale

The Situational Inventory of Body-Image Dysphoria-Short scale (SIBID-S; Cash, 2002) is a unidimensional 20-item self-report measure, based on the 48-item SIBID scale (Cash, 1994b). The SIBID-S evaluates adults' (≥ 18 years) adverse affective response to and investment in appearance across contexts (Cash, 2002). The SIBID-S items are measured on a 5-point Likert scale (0 = "Never" to 4 = "Almost Always"), with no items reverse-scored. Items are summed and averaged to produce a mean total score ranging from 0 to 4. Higher scores indicate more severe levels of, and frequent body-image dysphoria across day-to-day situations. Cash (2002) does not provide cut-off scores for levels of concern. However, scores ranging from 2.56 to 3.19 have correlated with subclinical and clinical eating disorder concerns (Perpiñá et al., 2006).

The SIBID has satisfactory test-retest and excellent internal reliability (Cronbach's alpha = .81 to .96), as well as construct and convergent validity with established standardised measures (e.g., Body Dissatisfaction; Cash, 2002). The current sample yielded excellent internal reliability across gender ($\alpha = .97$), consistent with previous research.

The Appearance Anxiety Inventory

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The Appearance Anxiety Inventory (AAI; Veale et al., 2013) is a multidimensional 10-item self-report measure about regularity of cognitive and behavioural responses to body-image anxiety in children, adolescents, and adults (i.e., \geq seven years; Roberts et al., 2018). It assesses apprehension towards physical appearance among general and clinical populations (e.g., Body Dysmorphia), aiding the diagnostic procedure and symptom monitoring during treatment. The AAI consists of two sub-scales measuring behaviours of Avoidance and Threat Monitoring. Items use a 5-point Likert scale (0 = “*Not at All*” to 4 = “*All the Time*”), with no items reverse scored. Items are summed to provide sub-scale (Avoidance = 0 to 24 and Threat Monitoring = 0 to 16) and total scale scores (0 to 40). Higher scores indicate greater distress in response to characteristics of a perceived distorted body image.

The AAI has been normed on a clinical sample diagnosed with Body Dysmorphia ($n = 139$) and a non-clinical sample ($n = 108$). For example, a clinical percentile of 50 indicates average symptoms pre-treatment (Veale et al., 2013). Furthermore, Mastro et al. (2016) suggest a total raw score cut-off of 20 to demonstrate high-risk clinical concern for appearance-related anxiety.

The AAI has demonstrated unsatisfactory to sound internal reliability (Cronbach’s alphas = .86 [Whole scale]; .29 [Threat Monitoring sub-scale]; .59 [Avoidance sub-scale]), and convergent validity with related scales (e.g., Multidimensional Body–Self Relations Questionnaire; Veale et al., 2013). The current sample yielded satisfactory to excellent internal reliability on the total scale ($\alpha = .92$) and sub scales ($\alpha = .88$ [Avoidance]; .80 [Threat Monitoring]).

Design

The current research was designed as a cross-sectional, non-experimental, quantitative and correlational study. Predictor variables were operationalised as Age in years, Gender (dichotomous), hours spent videoconference for work, study and social purposes, total scores

on the: Appearance Anxiety Inventory (AAI); Videoconferencing Appearance-Focused Behaviour scale (VAFB); and the composite score for Weekly Videoconferencing Time (WVT). The criterion variable was total scores on the Situational Inventory of Body-Image Dysphoria-Short scale (SIBID-S).

A mediation using PROCESS Macro, model 7 v2.16 (Hayes, 2013) investigated any significant indirect relationships between VAFB and BD through ARA. Additionally, Multivariate Analysis of Variance (MANOVA) was used to assess Young Adults [18 to 34] compared to Older Adults [35 to 70]), and Females compared to Males. Statistical analysis used SPSS Statistics v27, and alpha was set at $\alpha = .05$ unless otherwise stated.

Procedure

Ethical approval was obtained prior to survey distribution and statistical analysis. The survey was constructed and hosted on the online software 'Qualtrics' (Version 2020; <https://www.qualtrics.com>). An anonymous hyperlink to the survey was distributed online through convenience sampling. Participants voluntarily participated by clicking on the survey link. The survey required access to a computer, tablet or smartphone device, and an internet connection.

The first page of the survey provided participants with an explanatory statement, highlighting the study's aims, variables of interest and ethical considerations regarding participants' voluntary right to participate and withdraw, anonymity, confidentiality, and foreseeable risks and benefits associated with participation. Additionally, the explanatory statement contained the contact details of the primary investigator's supervisor, support services (e.g., Beyond Blue and Lifeline) and the ethical committee for participants who may have felt distressed by participating. Participants were informed that the survey would take approximately 20 to 25 minutes to complete. After reading the explanatory statement, participants indicated informed consent via clicking 'Agree'.

Consenting participants first responded to demographic, background, inclusion, and exclusion criteria questions. The survey automatically terminated for participants who did not meet the inclusion or exclusion criteria. Continuing participants responded to the WVT questions and then completed the VAFB scale, next the SIBID-S scale followed by the AAI. Titles for each of the scales were omitted to reduce response bias. The final page of the survey thanked the respondent for their contribution and reminded them of available support services.

The survey was available for a total of 16 weeks before deactivation. Responses were exported from Qualtrics data onto a password protected computer via .zip format comprising of .sav before statistical analysis.

Results

Videoconferencing Appearance-Focused Behaviours Scale Item Analysis

The initial seven-items of the Videoconferencing Appearance-Focused Behaviour (VAFB) scale underwent item analysis using visual inspections of histograms and skewness and kurtosis z -scores to assess normal distribution. Inter-item and item-total correlations were conducted to identify any items displaying negative correlations, strong positive correlations, weak positive correlations, and low item-total correlations. Cronbach's alpha was used to assess the scale's internal reliability. Items 2, 3 and 6 had significant positively skewed response distributions, demonstrated through visual inspection of histograms and skewness and kurtosis z -scores (i.e., skew ≥ -2.00 and ≤ 2.00). Upon further inspection, items 2 and 3 demonstrated weak positive and negative inter-item correlations with remaining items and low item-total correlations. Similarly, item 6 had weak positive and negative inter-item correlations with items 1, 2, 3, 4, and 7.

Internal reliability for the seven-item VAFB scale was unsatisfactory ($\alpha = .63$). Items 2 and 3 deflated Cronbach's alpha and were omitted due to ineffectuality. Following their

removal, item 6 had low item-total correlations, deflating Cronbach's alpha. However, to maintain construct coverage and an adequate number of items (Tabachnick & Fidell, 2013), item 6 was retained. Reliability for the remaining five-items of the VAFB scale demonstrated satisfactory internal consistency ($\alpha = .71$), exceeding Nunnally's (1978) recommended reliability coefficient ($\alpha \geq .70$).

Correlational Analysis

A bivariate Pearson's correlation was conducted to assess the size and direction of the linear relationships identified in the first hypothesis. The relationship between SIBID-S and VAFB scores demonstrated a significant positive and moderate correlation, $r(189) = .49, p < .001$. The coefficient of determination showed VAFB scores accounted for 24.01% of the variance in SIBID-S scores (Cohen, 1988). A significant positive and strong correlation was found between SIBID-S and Total AAI scale scores, $r(189) = .88, p < .001$. Scores on the Total AAI scale were determined to account for 76.74% of the variability in SIBID-S scores. Additionally, a significant weak and positive correlation was identified between SIBID-S scores and WVT for Study, $r(189) = .21, p = .042$. Hours for WVT (Study) were found to account for 4.45% of variability in SIBID-S scores. Moreover, the relationship between SIBID-S scores and WVT (Work) demonstrated a significant weak and negative correlation, $r(189) = -.18, p = .035$. With WVT (Work) accounting for only 3.28% of variability in SIBID-S scores. However, the SIBID-S and Total WVT scores relationship demonstrated a non-significant negative and weak correlation, $r(189) = -.12, p = .102$. With Total WVT accounting for 1.42% of variability in SIBID-S scores. Furthermore, a non-significant weak positive correlation was identified between SIBID-S scores and WVT (Social), $r(189) = .02, p = .873$. Hours for WVT (Social) only accounted for 0.03% of the variability in SIBID-S scores. Table 2 presents the descriptive statistics and intercorrelations between scale and total scores.

Insert Table 2

Table 2

Descriptive Statistics and Intercorrelations Among Variables (N = 191)

	SIBID-S	AAI	VAFB	Total WVT	WVT (Work)	WVT (Study)	WVT (Social)	M	SD
SIBID-S	-							1.20	.41.
AAI	.88**	-						2.91	1.33
VAFB	.49**	.55**	-					2.43	.84.
Total WVT	-.12	-.06	.06	-				1.78	1.00
WVT (Work)	-.18*	-.15	-.02	.82***	-			1.45	1.14
WVT (Study)	.21*	.21*	.18	.60***	.14	-		1.17	.71
WVT (Social)	.02	.01	-.01	.37***	-.02	.22	-	.68	.82

Notes. SIBID-S = Body Dissatisfaction; AAI = Appearance-Related Anxiety; VAFB = Videoconferencing Appearance-Focused Behaviours; WVT = Weekly Videoconferencing Time.

^a * $p < .05$. ** $p < .01$. *** $p < .001$

A four-step Hierarchical Multiple Linear Regression analysis (HMLR) assessed the predictive value of VAFB, Total AAI, and Total WVT scores on SIBID-S responses, after controlling for the influences of Age and Gender. Gender was dummy coded for use in the regression analysis (e.g., female = 0, male = 1). In block one, Age and Gender significantly accounted for 15.40% of the variance in SIBID-S scores, $R^2 = .15$, $F(2,175) = 15.98$, $p < .001$. With block two, the addition of VAFB scores accounted for an additional significant 15.40% of the variance, $\Delta R^2 = .15$, $\Delta F(1,174) = 38.68$, $p < .001$. For block three, the addition of Total AAI scores contributed a further significant 46.80% of the variance, $\Delta R^2 = .47$, $\Delta F(1,173) = 360.69$, $p < .001$. Additionally, block 4 added Total WVT scores, which did not

contribute a significant amount of variance to the equation at 0.40%, $\Delta R^2 = .00$, $\Delta F(1,172) = 3.04$, $p = .083$. Combined, the five predictors explained a significant 78.00% of variance in SIBID-S scores, $R^2 = .78$, adjusted $R^2 = .77$, $F(5,172) = 4.67$, $p < .001$, $f^2 = 3.55$, a large effect (Cohen's, 1988). Overall, Gender and Total AAI scores were the only significant predictors of BD in the final regression model ($sr^2 = .01$ and $.45$).

The unstandardised (B) and standardised (β) coefficients, confidence intervals (CI) and squared semi-partials (sr^2) for each predictor in each model of the HMLR are reported in Table 3.

Insert Table 3

Table 3

Unstandardised (B) and Standardised (β) Regression Coefficients, and Squared Semi-Partial Correlations (sr^2) for Each Predictor Variable on Each Block of a Hierarchical

Multiple Linear Regression Predicting SIBID-S scores (i.e., Body Dissatisfaction; $N = 191$)

Variable	Unstandardised Coefficient		Standardised	t	p	[95% CI]	sr^2
	B	Standard Error	β				
Block 1							
Age	-0.01	0.00	-0.32	-4.52	<.001	[-0.01, -0.01]	.10
Gender	-0.21	0.07	-0.20	-2.84	.005	[-0.35, -0.06]	.04
Block 2							
Age	-0.01	0.00	-0.20	-3.06	.003	[-0.01, -0.00]	.04
Gender	-0.17	0.07	-0.16	-2.53	.012	[-0.30, 0.04]	.03
VAFB	0.20	0.03	0.41	6.22	<.001	[0.14, 0.27]	.15
Block 3							
Age	-0.00	0.00	-0.04	-0.90	.369	[-0.00, 0.00]	.00
Gender	-0.09	0.04	-0.09	-2.35	.020	[-0.17, -0.01]	.01
VAFB	0.00	0.02	-0.00	-0.01	.989	[-0.04, 0.04]	.00
AAI	0.26	0.01	0.85	18.99	<.001	[0.24, 0.29]	.47
Block 4							
Age	-0.00	0.00	-0.04	-0.91	.367	[-0.00, 0.00]	.00
Gender	-0.09	0.04	-0.09	-2.33	.021	[-0.16, -0.01]	.01
VAFB	0.00	0.02	0.01	0.19	.847	[-0.04, 0.05]	.00
AAI	0.26	0.01	0.84	18.78	<.001	[0.23, 0.29]	.45
WVT	-0.03	0.02	-0.06	-1.74	.083	[-0.06, 0.00]	.00

Note. SIBID-S = Body Dissatisfaction; AAI = Appearance-Related Anxiety; VAFB =

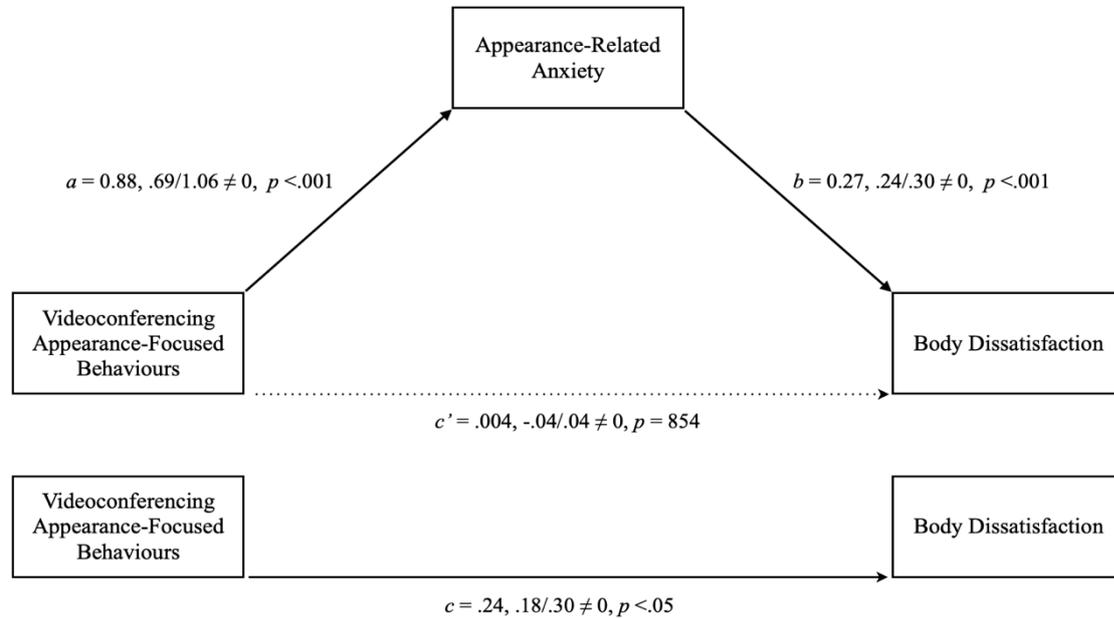
Videoconferencing Appearance-Focused Behaviours; WVT = Weekly Videoconferencing Time.

Mediation Analysis

The mediation model accounted for a significant 31.00% of unique variance in SIBID-S scores, $R^2 = 0.31$, $F(1,189) = 83.19$, $p < .001$, $f^2 = .45$, a large effect according to Cohen's (1988) conventions. The hypothesis that the direct effect of VAFB scores predicted unique variance in SIBID-S scores was not supported by the model. However, the hypothesis predicting that the indirect effect (ab) of VAFB scores via Total AAI scores would account for significant unique variance was supported. The total effect of VAFB on SIBID-S scores,

indirectly via Total AAI scores, was 98.42%. Once Total AAI scores were accounted for, VAFB scores only accounted for 1.58% of the outcome on SIBID-S scores.

It was found that VAFB scores become non-significant with the introduction of Total



AAI scores, and there was evidence for a full mediation. To confirm the significance of the reduction in predictive value, a Sobel z-test (Preacher & Hayes, 2004; Sobel, 1982) was calculated using unstandardised coefficients and standard errors, which was significant ($z = 8.37, p < .001$), supporting a full mediation (Figure 2).

Unstandardised (*B*) regression coefficients, 95% confidence intervals, and R^2 values for the mediation model are presented in Table 4.

Insert Figure 2

Insert Table 4

Figure 2

Full mediation Model of the Association Between VAFB and SIBID-S Scores via Total AAI Scores.

Notes. Unmediated and mediated models of the association between Videoconferencing Appearance-Focused Behaviour and Body dissatisfaction: support for full mediation by Appearance-Related Anxiety. Standardised beta coefficients are shown for all paths.

Table 4
Mediation Model Coefficients for VAFB, AAI and SIBID-S ($N = 191$)

Variable	B [LLCI/ULCI]	SE
DV = AAI ($R^2 = .31^{***}$)		
Constant	.78[.30/1.27]	0.25
VAFB	.88[.69/1.06]	0.10
DV = SIBID-S ($R^2 = .77^{***}$)		
Constant	.40[.31/.49]	0.05
VAFB	.004[-.04/.05]	0.02
AAI	.27[.24/.30]	0.01

Notes. SIBID-S = Body Dissatisfaction; AAI = Appearance-Related Anxiety; VAFB = Videoconferencing Appearance-Focused Behaviours

^a * $p < .05$. ** $p < .01$. *** $p < .001$

Multivariate Analysis of Variance

Given research has found that BD can peak in teenage years and remain stable, and age-related anxiety has predicted BD in Australian women aged 45 to 65, multivariate analysis of variance (MANOVA) was used to examine the effect of Age on SIBID-S, Total AAI, and VAFB scores and Total WVT. Findings showed that there was a significant effect of Age on the combined dependent variables, $F(4, 174) = 6.69, p < .001$, partial $\eta^2 = .13$.

Analysis of the dependent variables (Bonferroni adjusted alpha level = .013) individually showed no effects for WVT scores $F(1,177) = .00, p = .966$, partial $\eta^2 = .00$. However, Total AAI scores were significantly different between younger and older adults, $F(1,177) = 20.28, p < .001$, partial $\eta^2 = .10$. Additionally, there was a significant difference between Age groups on VAFB scores $F(1,177) = 19.49, p < .001$, partial $\eta^2 = .10$.

Furthermore, SIBID-S scores were significantly different across Age groups $F(1,177) = 17.740, p < .001, \text{partial } \eta^2 = .09$.

Younger adults reported significantly higher Total AAI ($M = 3.31, SD = 1.20$), VAFB scores ($M = 2.70, SD = .75$) and SIBID-S scores ($M = 1.32, SD = .37$), compared to older adults' Total AAI ($M = 2.46, SD = 1.32$), VAFB ($M = 2.17, SD = .85$), and SIBID-S scores ($M = 1.07, SD = .41$).

Discussion

The current study aimed to explore state BD and the contributions of Appearance-Related Anxiety, Videoconferencing Appearance-Focused Behaviours, and Weekly Videoconferencing Time. Higher state BD was associated with higher appearance-related anxiety and more engagement in videoconferencing appearance-focused behaviours. The findings corroborate existing BD literature, that individuals with heightened appearance anxiety commonly exhibit higher BD in contexts that provide immediate appearance feedback (Levinson & Rodebaugh, 2015; Seekis et al., 2020). Most recently Pikoos et al. (2021), reported high levels of videoconferencing appearance manipulation were also associated with higher levels of BD in an Australian general population. In this study, younger adults did report significantly higher appearance anxiety, more engagement in videoconferencing appearance-focused behaviours and higher BD levels than older adults.

Counter to expectations, total *time* spent videoconferencing was unrelated to state BD, contrasting with literature where more time spent using photo-based media was associated with higher BD (Seekis et al., 2020). It may be that the videoconferencing environment lends itself to less motivation for objectification towards social ideals (Pfund et al., 2020; Seekis et al., 2020). It may be that high state BD is not a function of time spent videoconferencing, rather being influenced by specific behaviours, contexts, and activities in that setting or outside.

Interestingly, time spent videoconferencing for study purposes had the strongest correlation with BD, whereas time spent videoconferencing for socialisation was unrelated. Those using videoconferencing for study purposes were aged 18 to 25 (49.5%) and as reported, young adults may be more susceptible to BD (Pfund et al., 2020). Finally, a negative association was found between BD and videoconferencing time for work. The present finding is novel, as other research has found that the employed were more prone to use cosmetic procedures to enhance their perception of self (Pikoos et al., 2020).

The four-stage model predicted higher state BD, however being female was the only significant predictor, whilst videoconferencing appearance-focused behaviours and time spent videoconferencing were not. Collectively, more engagement in videoconferencing appearance-focused behaviours, higher appearance-related anxiety, and greater time spent videoconferencing predicted higher state BD when controlling for age and gender. This is comparable to findings of Seekis et al. (2020) and Zimmer-GemBeck et al. (2020), where appearance anxiety, appearance behaviours and time spent engaging with photo-based media predicted BD; and also to findings concerning videoconferencing environments (Pfund et al., 2020; Pikoos et al., 2021). However, age and gender were not held constant across these studies. Consistent with literature, age did not uniquely contribute to prediction of BD (Bully & Elosua, 2011; Carrard et al., 2019).

Appearance-related anxiety did mediate the relationship between videoconferencing appearance-focused behaviours and BD, although the indirect effect was weak. Previous research notes that participation in appearance-focused behaviours and anxiety mediated the relationship between photo-based media use and BD (Seekis et al., 2020). Therefore, it may be that, similar to photo-based social media, videoconferencing appearance-focused behaviours occur when appearance anxiety exists, increasing perceptions of BD.

Furthermore, the weak relationship may be due to specific appearance-focused behaviours

(e.g., observing the self, online) acting as safety mechanisms to protect, prevent, or minimise unfavourable appearance feedback, by temporarily relieving appearance anxiety symptoms and reducing BD, thus, enhancing sense of attractiveness (Pikoos et al., 2021; Summers & Cogle, 2018).

Limitations

The present study had several limitations. Firstly, female participants were over-represented in the sample compared to males, affecting the generalisability to the general Australian population. Secondly, online surveys increase risk for response bias, such as social desirability bias (Krumpal, 2011). Also, the VAFB items were not validated and the automatic exclusion of individuals who did not use the camera during videoconferencing may have eliminated those in the target population who also experience appearance anxiety and BD. Subsequently, sample representativeness may have been affected.

However, the current findings do suggest the possibility of videoconferencing appearance-focused behaviours being a risk factor for the onset and maintenance of BD is pertinent post-COVID-19. Given the rapidly increasing prominence of videoconferencing for interpersonal, work and study communications and relationships (Zimmer-Gembeck et al., 2020), user risks of developing appearance anxiety and psychological disorders such as BD may be increased. Future research would benefit from examining appearance behaviours in clinical populations of those suffering BD and in more gender diverse samples.

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