



Social Networking Site Use, Self-Compassion, and Attitudes Towards Cosmetic Surgery in Young Australian Women

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Abstract

This study aimed to explore the relationship of total social networking site (SNS) use and attitudes towards cosmetic surgery in young Australian women through the moderating role of self-compassion. Recent research has identified the potentially protective factor of self-compassion in body image concerns; however, few researchers have further explored the components of self-compassion in relation to SNS use. As such, the positive (self-kindness, common humanity, and mindfulness) and negative (self-judgement, isolation, and over-identification) components of self-compassion were further investigated. The present study utilised a cross-sectional correlational design with self-reported data to determine if self-compassion moderated the relationship between SNS use and attitudes towards cosmetic surgery. A sample of 238 young Australian women, aged 18 to 29 ($M = 22.1$, $SD = 2.9$), were recruited. Participants completed an online questionnaire measuring total daily SNS use, self-compassion, and attitudes towards cosmetic surgery. SNS use was significantly negatively correlated with self-compassion and positively correlated with cosmetic surgery. Self-compassion was significantly negatively correlated with attitudes towards cosmetic surgery; however, contrary to expected, self-compassion was not a significant moderator of SNS use and attitudes towards cosmetic surgery. The components of self-compassion were further explored to better understand this relationship, with over-identification significantly predicting more positive attitudes towards cosmetic surgery. The present study highlights the relationship between SNS use and attitudes towards cosmetic surgery. As over-identification relates to ruminating in feelings of discomfort, the results may suggest that SNS users who are more likely to fixate on their appearance dissatisfaction are more likely to have positive attitudes towards cosmetic surgery. Given the popularity of SNS use, this media may pose as an opportune platform to disseminate appearance modification interventions for young adult women. Future research that is causal in nature may be able to confirm these suggested implications.

Keywords Social networking sites · Cosmetic surgery attitudes · Self-compassion · Over-identification

The concerning prevalence of body dissatisfaction amongst young women has long been a pervasive issue, to the extent that it has been termed a “normative discontent” (Cash & Henry, 1995). As such, a plethora of research has evaluated the negative impact of traditional media (e.g. television, movies, and magazines) on body dissatisfaction, with one of the most accepted frameworks of this phenomenon being the Tripartite Influence Model (Thompson et al., 1999). The Tripartite Influence Model stresses the influence of media in the onset, development, and internalisation of beauty ideals (Thompson et al., 1999; Di Gesto et al., 2022). More

recent research has found that newer media types including social networking sites (SNS) have had serious implications on body image (e.g. Fioravanti et al., 2022; Mingoia et al., 2017). SNS are popular social media applications that enable users to create online profiles and connect with others (Mingoia et al., 2017).

The use of SNS has become an unprecedented influence on everyday life, such that there are over 21 million active users in Australia alone (Kemp, 2023). Throughout Australia, young adults (aged 18–29) are amongst the largest consumers of SNS, as 84% stated that they are almost always using SNS (Sensis, 2020). This use may be problematic, as 49% of young adults claimed that they feel they spend too much time on SNS (Auxier & Anderson, 2021; Sensis, 2020). Some of the most used SNS globally include Facebook, YouTube, WhatsApp, and Instagram,

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with TikTok projected to be one of the most popular in 2023 (Bernhardt, 2022).

Sociocultural theories of body image, such as the Tripartite Influence Model, posit that media messaging has profound effects on individuals' standards of beauty (Thompson et al., 1999; Tiggemann, 2011). That is to say, the appearance-focused nature of SNS is constantly providing and enhancing today's latest beauty ideals (Fioravanti et al., 2022). Many SNS users create and post content that is edited to show their best appearance, rather than a more representative selection of their everyday appearance (Veldhuis et al., 2020). Concerningly, due to the availability of SNS, users are subject to appearance pressures at all hours (Veldhuis et al., 2020). Several years of research have associated SNS use with poorer body image outcomes (see Fioravanti et al. (2022) for a comprehensive review).

Therefore, it is unsurprising that the rising popularity of SNS use is occurring in conjunction with an increasing number of young adults having cosmetic surgery (American Society for Aesthetic Plastic Surgery, 2020; Walker et al., 2021). Cosmetic surgery is known as an invasive procedure where the intention is to alter an individual's appearance to appear more desirable or aesthetic (Dean et al., 2018). This differs from reconstructive surgery whereby the latter intends to restore the intentional function and usual appearance of the body (Walker et al., 2021). Cosmetic surgery may represent a real-life attempt to achieve the idealised exposure presented online by SNS (Walker et al., 2021).

Evidently, cosmetic surgery has become an increasingly popular means of changing one's appearance, as from 2010 to 2018, cosmetic procedures and surgeries in Australia almost doubled from approximately 117,000 to more than 225,000 (Australasian Foundation for Plastic Surgery, 2018). The American Academy of Facial Plastic and Reconstructive Surgery (2017) has previously reported an increase of cosmetic surgery specifically to improve individuals' appearance in selfies. Similarly, Sun (2020) found that selfie editing was significantly positively correlated with consideration of cosmetic surgery. More recently, Di Gesto et al. (2022) found that image-based Instagram activities that were related to celebrities and the self were significantly related to acceptance of cosmetic surgery. Although there is some research regarding cosmetic surgery tendencies in Australian women (e.g. Sharp et al., 2014; Slevic & Tiggemann, 2010), these have scarcely been in the SNS context; however, collective global findings may suggest that being exposed to SNS may be associated with more positive attitudes towards cosmetic surgery (e.g. Di Gesto et al., 2022; Sun, 2020; Walker et al., 2021).

Although SNS use may lead some to have more positive attitudes of cosmetic surgery, not all users experience the same desire to surgically change their appearance (Arab et al., 2019). One explanation for this may be due to the

user-generated nature of SNS and the nuances of behaviour that differ amongst individuals (Di Gesto et al., 2022). Several studies have explored the effects of different SNS behaviour on body image outcomes (see Fioravanti et al., 2022 for comprehensive review). Additionally, some SNS users may be less likely to have positive attitudes towards cosmetic surgery due to individual characteristics, such as self-compassion, that may moderate the relationship between SNS use and body modification behaviours (Nerini et al., 2019). Current research suggests that self-compassion could be an important factor in understanding body image concerns (Wang et al., 2019). Self-compassion encourages individuals to acknowledge their flaws with neutrality and can be conceptualised as an intention of alleviating interpersonal distress (Allen & Leary, 2010). As such, Neff (2003) has defined self-compassion as being open to one's own suffering and generating desire to alleviate this and to heal oneself with kindness.

Although there are few studies that have specifically explored the relationships of SNS use, self-compassion, and cosmetic surgery, comparatively Nerini et al. (2019) examined the components of self-compassion, body dissatisfaction, and cosmetic surgery acceptance. Neff (2003) describes self-compassion as several negative and positive pairs that interact with each other to establish the whole. The six components of the Self-Compassion Scale, also used in the present study, include the positive (self-kindness, common humanity, mindfulness) and negative (self-judgement, isolation, and over-identification) aspects of self-compassion (see Neff, 2003 for further information). Findings from Nerini et al. (2019) found that in a sample of young Italian women, higher mindfulness was directly linked to lower cosmetic surgery acceptance, and over-identification was associated with body dissatisfaction and acceptance of cosmetic surgery. According to Neff (2003), mindfulness and over-identification refer to a balanced approach to negative emotions so that feelings are not suppressed or exaggerated.

The Present Study

The International Society of Aesthetic Plastic Surgery (2020) conducted a global survey and found that females aged 19–34 years of age received the most cosmetic procedures across most categories. Additionally, Australian SNS reports suggest that young adults, aged 18–29, may be amongst the largest consumers of SNS (Sensis, 2020). This is a potentially problematic set of conditions that makes this group vulnerable to SNS appearance pressures and more positive attitudes to cosmetic surgery. Overall, previous research has demonstrated that SNS use is associated with more positive attitudes towards cosmetic surgery (e.g. Di Gesto et al., 2022; Sun, 2020; Walker et al., 2021). Additionally, self-compassion

allows individuals to accept their flaws and provide neutrality to the feeling of imperfection and, as such, may be a protective factor in the prevention of cosmetic surgery acceptance (e.g. Nerini et al., 2019). Therefore, the present study aimed to investigate self-compassion in the relationship of SNS use and attitudes towards cosmetic surgery within young adult women living in Australia. The findings of this study may inform self-compassion interventions to address cosmetic surgery through SNS for young Australian women. The following hypothesis and research question were proposed to investigate this:

H: Self-compassion would moderate the relationship of SNS use and acceptance of cosmetic surgery, such that young adult women with higher self-compassion scores would have more negative attitudes towards cosmetic surgery.

R: What self-compassion components, if any, have a significant role in attitudes towards cosmetic surgery?

Method

Participants

Opportunity sampling techniques were used to recruit participants via advertisements displayed on SNS (i.e. Facebook, Instagram, and LinkedIn) and University of South Australia campuses. The University of South Australia is a public research university. Advertisements for the present study were displayed at the four metropolitan campuses to give equal opportunity for students of all disciplines to join and ensure that psychology students were not over-represented in the present sample. Female participants were the target population as they are amongst the largest consumers of SNS and exhibit the highest cosmetic surgery behaviours (Halliwell & Diedrichs, 2012; Sensis, 2020). The age range of 18 to 29 was chosen as 99% of young Australian adults regularly use SNS (Sensis, 2020). Participants were excluded if they did not use SNS due to the focus of SNS use in the present study. Therefore, participants met the inclusion criteria if they were biologically female and between 18 and 29 years of age, as this sample may represent a gender that is at-risk of having high cosmetic surgery acceptance and an age range that use SNS at a high frequency. Cisgender men and transgender people were excluded due to potentially different motivations for wanting or needing cosmetic surgery (Ashley & Ells, 2018; Truaseheim & Bonell, 2023).

A power analysis was conducted as per the guidelines by Tabachnick and Fidell (2013) for a moderation regression model with three predictors and medium effect size which

resulted in a required sample of 107 participants for the present study.

Design

This study utilised a cross-sectional correlational design with self-reported data. Correlations were explored between the variables of SNS use, attitudes towards cosmetic surgery, and self-compassion. Self-compassion was explored as a moderator of the relationship between SNS use and attitudes towards cosmetic surgery. Self-compassion components were explored in a hierarchical regression as predictors of attitudes towards cosmetic surgery over and above SNS use and age.

Measures

Participants were asked to complete an online questionnaire via Qualtrics, which presented the following measures:

Demographic Information Participants were asked to report their age in years, their sex, if they had previously received cosmetic surgery, and if so, what surgery.

Daily SNS Usage SNS usage was measured using three separate items adapted from Bergman et al. (2011). The original article suggests the following items: if participants are registered with any SNS, the number of SNS to which they belong, and the approximate number of minutes per day spent on SNS (Bergman et al., 2011). These were adapted, as currently individuals can watch media from SNS without being registered, for example, on TikTok, known as “browsing as a guest” (TikTok, 2023). Therefore, participants were asked what SNS they regularly access, followed by what SNS they believe they spend the most time using, and an estimation of time spent on SNS daily. Participants were able to select multiple SNS from the option list presented on Qualtrics. The option list for “What SNS do you regularly engage with? Please select all that apply” and “What SNS do you believe you spend the most time using, please select one” included Facebook, Facebook Messenger, Instagram, Snapchat, Discord, LinkedIn, TikTok, YouTube, Twitter, Tumblr, and Other (please specify) text option. Participants were then asked to state how much time they believe they spend on SNS during an average day. Although several recent studies have evaluated the nuances of SNS behaviour on body image concerns (e.g. Di Gesto et al., 2022), total SNS use was used as an exploratory variable to focus on this media as a whole, rather than intricate online behaviours and activities given the proliferation of platforms with novel features.

Self-Compassion Scale The 26-item Self-Compassion Scale (SCS) created by Neff (2003) measured self-compassion through positive components (i.e. self-kindness, common humanity, and mindfulness) and negative components (i.e. self-judgement, isolation, and over-identification) and a total score. Participants responded on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). An example question is “I try to be loving towards myself when I’m feeling emotional pain”. Empirical evidence supports the use of a total or component score rather than a collective positive and negative score (Neff, 2018, 2020). Neff et al. (2017) reported that the use of a total or component score shows predictive, convergent, and discriminant validity. As the measure has been utilised in a large body of empirical studies, many with similar samples to the present study (e.g. Hollis-Walker & Colosimo, 2011; Neff & Pommier, 2013; Nerini et al., 2019), it was deemed an appropriate measure of self-compassion for the present study. In the original publication (Neff, 2003), total SCS scores reflected good internal reliability ($\alpha = .92$), as did the positive and negative components listed above ($\alpha = .75-.81$). In a more recent study, Neff et al. (2017) suggest that the SCS is still appropriate to use as a total score, with good internal consistency ($\alpha = .91-.95$) across a student ($N = 222$), community ($N = 1394$), meditator ($N = 215$), and a clinical population with depression ($N = 390$). In the present study, good internal consistency was reported for the total score ($\alpha = .92$) and scores on the components ($\alpha = .76-.82$).

Acceptance of Cosmetic Surgery Scale The 15-item Acceptance of Cosmetic Surgery Scale (ACSS; Henderson-King & Henderson-King, 2005) is one of the most widely used scales for the measurement of attitudes towards cosmetic surgery. The scale can be used with a total score or through three components with five items for each measure, including intrapersonal (“Cosmetic surgery can be a big benefit to people’s self-image”), social (“I would seriously consider having cosmetic surgery if my partner thought it was a good idea”), and consider (“If I knew there would be no negative side effects or pain, I would like to try cosmetic surgery”). Items in the ACSS were responded to on a 7-point Likert scale, with 1 being strongly disagree and 7 being strongly agree. A mean score for all items on the scale was calculated with higher scores indicating more positive attitudes towards cosmetic surgery. Previous research suggests appropriate convergent and discriminant validity (Henderson-King & Henderson-King, 2005). The scale has previously demonstrated good internal consistency in samples of Australian women, ranging from $\alpha = .89-.94$ (Sharp et al., 2014; Slevic & Tiggeemann, 2010). In the present study, good internal consistency was reported ($\alpha = .89$). A total score was used due to the exploratory focus on overall attitudes to cosmetic surgery rather than motivations for cosmetic surgery.

Procedure

Participant recruitment commenced following approval from the University of South Australia Ethics Committee. Advertisements on SNS and hard copies posted at the University of South Australia campuses directed participants to a URL which presented an information sheet regarding the participant’s right to confidentiality, right to withdraw, and established informed consent. Participants were directed to an online survey that would take approximately 20 min to complete and could be done at a time and location of the participant’s choosing. Upon completion of the survey, participants were offered the chance to win one of four \$50 Coles Group and Myer gift cards as an honorarium. Survey responses were stored separately from contact details to maintain confidentiality.

Data Analysis

Data were entered into IBM SPSS v26 and screened for normality. Univariate assumptions were met, with no extreme scores or normality violations identified. Scores for SNS use, cosmetic surgery, and self-compassion were mean centred prior to data entry to simplify the interpretation of the coefficients and to reduce the likelihood of multicollinearity, as recommended by Hayes (2017). Data were screened for the assumptions of multivariate outliers, normality of residuals, linearity of residuals, homoskedasticity of residuals, independence of errors, and multicollinearity prior to analyses with all assumptions being met. Survey responses with missing data were omitted in attempt to ensure internal validity and reliability. Negative self-compassion components including over-identification, self-judgement, and isolation items were reverse coded prior to data analysis, as recommended by Neff (2003). Item 10 of the ACSS was also reverse coded prior to analysis, as recommended by Henderson-King and Henderson-King (2005).

Bivariate correlation analyses between variables of SNS use, attitudes towards cosmetic surgery, and self-compassion were run to establish the nature of the variable relationships. A moderation regression was conducted through PROCESS SPSS plug-in as recommended by Hayes (2017) to test the moderation hypothesis. The moderation analysis sought to determine whether the effect of SNS use on attitudes towards cosmetic surgery varied due to self-compassion. PROCESS Model 1 (Hayes, 2017) was used, in which self-compassion was entered as the moderating variable for the relationship between SNS use and attitudes towards cosmetic surgery.

A hierarchical multiple regression analysis was conducted to predict the effect of self-compassion components on attitudes towards cosmetic surgery. Residuals were screened for normality, and the assumptions of independence of errors and non-collinearity were met as per

recommendations by Field (2018). Daily SNS use and participant age were entered as predictors in the first step, and self-compassion components were entered at the second step. Bivariate correlations found that negative self-compassion components were significantly negatively associated with attitudes towards cosmetic surgery, whereas positive components were not significant and therefore excluded in the hierarchical regression. The hierarchical multiple regression sought to determine what variables of interest explain a significant amount of variance in the attitudes towards cosmetic surgery, after accounting for step 1 variables.

Results

The most reported frequency of SNS use in the sample was 3 to 4 hours each day (36.3%). Facebook was the most accessed SNS amongst the sample at 91.18%, closely followed by Instagram (90.76%) and Facebook Messenger (85.29%). When exploring preferences, over 34% stated that the SNS they spent the most time using was Instagram (34.03%), followed by TikTok (28.15%). A total of 1.2% of responses reported regularly using SNS that were not listed (i.e. BeReal, Pinterest, and Reddit).

Over 16% of the sample stated having previously received cosmetic surgery, with the most common being dermal fillers. When presented with the statement “In the future, I could end up having some kind of cosmetic surgery”, 53.7% strongly to somewhat agreed, showing a slight preference towards cosmetic surgery, whilst 15% neither agreed nor disagreed, and 31.2% strongly to somewhat disagreed.

Relationships Between Variables

The Pearson’s correlations between daily time spent on SNS, self-compassion, and attitudes towards cosmetic surgery were found to be significant, with small effect sizes (see Table 1). Daily SNS use and attitudes towards cosmetic surgery were positively correlated, whilst relationships between self-compassion and daily SNS use and self-compassion and cosmetic surgery acceptance were negatively correlated.

Table 1 Means, standard deviations, and Pearson’s correlations between daily SNS use, attitudes towards cosmetic surgery, and self-compassion

Measure	<i>M</i>	<i>SD</i>	1	2	3
1. Daily SNS Use	3.9	.9	-		
2. ACSS	4.3	1.1	.20**	-	
3. SCS	2.8	.6	-.15*	-.24**	-

SNS social networking site, ACSS attitudes towards cosmetic surgery scales, SCS self-compassion scale

* $p < .05$; ** $p < .01$, two-tailed

Additionally, the present study found that attitudes towards cosmetic surgery were significantly negatively correlated with self-compassion.

Moderation Analysis

It was predicted that self-compassion would moderate the relationship between the use of SNS and attitudes towards cosmetic surgery. The moderation regression found that the use of SNS and self-compassion significantly predicted attitudes towards cosmetic surgery independently; however, there was not a significant interaction effect between these variables (see Table 2). Thus, the moderation hypothesis was not supported.

Hierarchical Multiple Regression

Bivariate correlations were conducted to determine which, if any, components of self-compassion significantly correlated with attitudes towards cosmetic surgery (see Table 3). Attitudes towards cosmetic surgery were significantly negatively correlated with negative self-compassion components. No correlations were found between cosmetic surgery acceptance and positive self-compassion components.

The hierarchical multiple regression was conducted to determine which specific components of self-compassion predict attitudes towards cosmetic surgery over and above other significant correlates. Daily SNS use and age were entered as predictors in the first step; significant self-compassion components (self-judgement, isolation, and over-identification) were then entered at the second step. Hierarchical multiple regression results revealed that participant age and daily SNS frequency (step 1: daily SNS use and age) accounted for 4% of the variance. When negative SCS components (i.e. self-judgement, isolation, and over-identification) were added to the model (step 2), over-identification significantly predicted attitudes towards cosmetic surgery, over and above the variance explained by other factors (Table 4).

Table 2 Moderator analysis of the relationship between daily SNS use and self-compassion

Effect	<i>b</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
Constant	4.24 [4.10, 4.36]	.07	60.97	$p < .001$
SCS (centred)	-.44 [-.70, -.21]	.13	-3.62	$p < .001$
Daily SNS Use (centred)	.23 [.07, .39]	.07	2.78	$p = .006$
SCS × Daily SNS Use	-.21 [-.51, .08]	.14	-1.46	$p = .143$

$R^2 = .09$. 95% BCa confidence intervals presented in brackets

SCS self-compassion scale

Table 3 Means, standard deviations, and Pearson's correlations between acceptance of cosmetic surgery and self-compassion components

Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. ACSS	4.3	1.1	-						
2. Self-kindness	3.1	.7	-.12	-					
3. Self-judgement	2.3	.8	-.26**	.52**	-				
4. Common humanity	3.1	.8	-.04	.59**	.19**	-			
5. Isolation	2.5	.8	-.27**	.37**	.74**	.18**	-		
6. Mindfulness	2.1	.7	-.05	.74**	.33**	.71**	.27**	-	
7. Over-identification	2.3	.8	-.29**	.38**	.75**	.21**	.68**	.31**	-

ACSS acceptance of cosmetic surgery scale

** $p < .01$, two-tailed**Table 4** Hierarchical regression analysis for acceptance of cosmetic surgery and negative self-compassion components

	Step 1			Step 2		
	β	SE β	Standardised β	β	SE β	Standardised β
Daily SNS Use	.260	.083	.201**	.212	.082	.164*
Age	.013	.024	.035	.028	.024	.074
Self-judgement				-.06	.155	-.041
Isolation				-.092	.131	-.068
Over-identification				-.302	.141	-.211*
R^2 change	.04			.085		
F of change in R^2	4.877			7.430		
Sig. F change	.008			.000		

Dependent variable: acceptance of cosmetic surgery

* $p < .05$; ** $p < .01$

Discussion

The present study sought to explore the relationships amongst SNS use, self-compassion, and attitudes towards cosmetic surgery using self-reported data from 238 young Australian women. Overall, SNS use significantly positively correlated with attitudes towards cosmetic surgery. This finding supports previous research that has demonstrated similar results in the SNS use and cosmetic surgery relationship (e.g. Di Gesto et al., 2022; Sun, 2020; Walker et al., 2021). Additionally, the present study found negative correlations between SNS use and total self-compassion, as well as total self-compassion and attitudes towards cosmetic surgery. Contrary to the prediction, self-compassion did not significantly moderate the relationship of SNS use and attitudes towards cosmetic surgery; however, both self-compassion and SNS use independently significantly predicted attitudes towards cosmetic surgery. This result was investigated further, with the over-identification component of self-compassion significantly predicting attitudes towards cosmetic surgery over and above SNS use and age.

Women in the present study reported using SNS at rates higher than the global average of 2 hours and 30 minutes per day (Dixon, 2022). SNS are experiencing year-on-year

increases in user enrolments and time spent on their platforms (Dixon, 2023). The trend of continued increases in the time spent on SNS may be due to the continual release and rising popularity of new platforms (e.g. TikTok) and the continual introduction of new features on platforms which enable their use for broader purposes (e.g. Instagram Reels and YouTube Shorts) (Dixon, 2023). Increased time on SNS provides further opportunities for exposure to harmful appearance-related messages, and as such, the present study found that time spent using SNS was correlated with Australian women's attitudes towards cosmetic surgery, a finding that is consistent with research from other countries (e.g. American Academy of Facial Plastic & Reconstructive Surgery, 2017; Wang et al., 2022). This supports the notion of the Tripartite Influence Model that exposure to sociocultural messages about appearance may lead to dissatisfaction and a desire to modify appearance (Thompson et al., 1999; Tiggemann, 2011). Whilst exposure to SNS was not experimentally manipulated in the present study, experimental literature has confirmed that even brief exposure to SNS can lead to immediate appearance dissatisfaction (Pink et al., 2022).

Cosmetic surgery was well accepted amongst young women in the present study, with positive attitudes towards cosmetic surgery and prior engagement in cosmetic

procedures having been reported. Interestingly, the highest reported surgery in our sample was dermal fillers which was contrary to expected as previous research suggests that botulinum toxin type A (Botox), nose reshaping, eyelid surgery, facelifts, liposuction, and breast augmentation are the highest sought-after cosmetic surgeries (International Society of Aesthetic Plastic Surgery, 2020). This may be due to increased public interest following celebrity accounts of surgery (Ward et al., 2018). For example, when Kylie Jenner, who at the time had over 96 million followers on Instagram, announced that she had received Juvéderm lip injections, there was a significant Google search increase in interest of the procedure both immediately following the announcement, as well as continued elevated public interest for years following the announcement (Ward et al., 2018). The rising popularity of dermal fillers amongst young women is particularly concerning given that there are several do-it-yourself fillers promoted on SNS which pose considerable safety concerns (Mathieu & Lee, 2022). Mathieu and Lee (2022) found that videos of do-it-yourself fillers promoted and self-injected by non-medical professionals had over two million views between 2019 and 2021.

Self-compassion encompasses the ability to be kind to oneself when appraising perceived inadequacies (Neff, 2003). Amongst our sample, both SNS use and attitudes towards cosmetic surgery were correlated with self-compassion. These findings were consistent with, and add to the literature, connecting self-compassion and appearance modification (Menzel et al., 2011; Wang et al., 2022). However, the proposed moderated relationship between these variables was not supported in the present study which challenges previous research exploring the moderating role of self-compassion in SNS use and body image outcomes (Seekis et al., 2021; Wang et al., 2019). Given the other confirmed and significant relationships in this study, this may suggest that self-compassion operates upon the relationship between SNS use and attitudes towards cosmetic surgery in a different way. For example, the Tripartite Influence Model (Thompson et al., 1999; Tiggemann, 2011) proposes that SNS use can lead to internalisation of an ideal appearance, with studies finding that internalisation can lead to cosmetic surgery (e.g. Menzel et al., 2011). Therefore, it may be that self-compassion operates upon the pathway between SNS use and internalisation, or internalisation and attitudes towards cosmetic surgery rather than the direct pathway from sociocultural pressure to the desire to change appearance. For example, Tylka et al. (2015) found that self-compassion moderated the relationship between media pressure and thin-ideal internalisation which indicates that the mechanisms of these relationships may need further investigation.

An alternative proposition is that individual components of self-compassion, rather than self-compassion as a singular construct, may play a role in understanding the relationships between SNS and attitudes towards cosmetic surgery. The

positive and negative components of self-compassion were explored as predictors of attitudes towards cosmetic surgery, with the over-identification component found to significantly predict attitudes towards cosmetic surgery over and above other variables. Individuals with higher over-identification are described as understanding that they are suffering in some way, but that they ruminate in their situation to a point where nothing else is important (Dreisoerner et al., 2021). Given that the present finding echoes that of Nerini et al. (2019), this finding may warrant future research into the role of over-identification in cosmetic surgery and may reflect how overall body image is connected to identity construction (Daniels & Gillen, 2015; Hofmeier et al., 2017).

Previous research, such as Gobin et al. (2022), has explored the effectiveness of self-compassion through a brief writing intervention. This could be adapted to focus on the components of self-compassion and their relation to cosmetic surgery, rather than focusing on self-compassion as a whole concept. This self-compassion intervention could also be adapted to present in SNS settings. Due to the popularity and large frequency of SNS use within the sample of young adult women, this may suggest that SNS are an opportune platform to disseminate messages that counter potentially harmful body-related ones.

The results of this study should be interpreted with consideration of the following limitations. Limitations of the present study include the cross-sectional nature of the data collected which prevent inferences of causality or temporality. Furthermore, although the Acceptance of Cosmetic Surgery Scale (Henderson-King & Henderson-King, 2005) assesses both general cosmetic surgery attitudes and the likelihood of undergoing a cosmetic surgery procedure (Slevec & Tiggemann, 2010), it is important to note that attitudes towards cosmetic surgery were measured as a primary variable, and participants were only asked if they had previously received cosmetic surgery as a demographic question. Furthermore, throughout the present study, participants were asked about their attitudes towards cosmetic surgery; however, the definition provided was broad rather than specifically targeting appearance-motivated procedures, which resulted in some responses towards cosmetic surgeries that were not strictly appearance based. Given that few researchers have studied the differing attitudes of invasive and non-invasive cosmetic procedures (Ramirez et al., 2022), future research could more distinctly operationalise invasive and non-invasive cosmetic surgeries, in samples that have previously received cosmetic surgery, to analyse differing constructs influencing these attitudes.

Participants often over-estimate time spent on SNS, and therefore, self-reported data of SNS usage may not be the most accurate assessment for this measure (Boyle et al., 2022; Ernala et al., 2022). It is possible that participants over-estimated this in the present study, as the most commonly

reported frequency of SNS use was 3 to 4 hours per day, which is above the suggested global average of 2 hours and 30 minutes (Dixon, 2022). An additional objective measure of SNS use, such as a smartphone application that tracks time spent on each SNS application, may be more accurate (Rideout, 2016). Evidently, the use of self-reported measures may not appropriately capture behaviours or attitudes and may introduce the potential for bias (Van de Mortel, 2008). It is also important to note that due to the specific geographical requirements of the present study, these findings may not be generalisable to other populations; however, future studies could aim to include multiculturally inclusive standards of body image and encapsulate the different attitudes some cultures have towards cosmetic surgery. This may contribute to the exploration of minority groups and body image within Australian society. The present study had several participants who disclosed having received blepharoplasty (eyelid surgery). This procedure is completed to change the appearance of the eyelid, often by creating an extra fold to appear Caucasian (Wang et al., 2021). This surgery is the most popular cosmetic procedure for young Asian women and could show multicultural attitudes towards cosmetic surgery within the present sample (Wang et al., 2021).

Despite these limitations, the present study echoes findings regarding the influential role of over-identification and attitudes towards cosmetic surgery (Nerini et al., 2019). Of importance to clinicians are the implications of these findings for screening practices. Widespread concern has been raised within the cosmetic surgery industry, as there does not appear to be standardised, compulsory screening protocols for the psychological safety of cosmetic surgery patients (Wildgoose et al., 2013). Due to previous research suggesting that less than 40% of patients are satisfied with their post-surgery body (Asimakopoulou et al., 2020) and that many patients go on to get additional procedures (American Society of Plastic Surgeons, 2020), this may be evidence of cosmetic surgery being an ineffective body image intervention. This is to say, if young adult women continue to access cosmetic surgery without addressing an underlying over-identification concern, they may never feel content in their own body image. This research adds to the literature advocating for standardised psychological screening of cosmetic surgery patients and suggests that self-compassion, and more specifically over-identification, would be an appropriate addition to this.

The present study highlights and contributes to the understanding of how SNS use may threaten the appearance-related psycho-social wellbeing of young adult women and its association to potentially harmful appearance modification strategies including cosmetic surgery. This study is one of the few that adds to the preliminary evidence for the

inclusion of over-identification as a factor in the development of positive attitudes towards cosmetic surgery (Nerini et al., 2019). The present study has further drawn attention to the extent of cosmetic surgery acceptance in young adult women, with 16% of the present sample having previously received cosmetic surgery despite being considerably young. The present study calls for further research regarding over-identification and body-related concepts, as well as research regarding effective and accessible interventions that may moderate the relationship of SNS use and cosmetic surgery acceptance. The frequency and popularity of SNS use and cosmetic surgery in young adult women presents a clear area of concern, and as such, an improved understanding of the relationship of SNS use and cosmetic surgery acceptance will enable future researchers to develop and provide interventions that are effective in addressing the threats that SNS pose to the psycho-social wellbeing of young adult women.

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Data Availability The data that support the findings of this study are available upon reasonable request from the corresponding author, L.C.

Declarations

Ethics Approval This study was approved by the University of South Australia's Ethics Committee (Protocol Number: 204756) in July of 2022.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Consent for Publication The present manuscript does not include any individual person's data in any form including individual details, images, or videos.

Competing Interests The authors declare no competing interests.

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