



Picture perfect: Exploring the relationship between problematic TikTok use, physical appearance perfectionism, and upward physical appearance comparison on body appreciation

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ABSTRACT

Physical appearance perfectionism and upward physical appearance comparisons have a potential role in explaining how the use of popular social networking sites can negatively impact a person's body image. Although there is considerable research on the relationship between body image and problematic Instagram usage, there is little reported on TikTok use. Therefore, the aim of this study was to explore the mediating relationship of physical appearance perfectionism and upward physical appearance comparison between problematic TikTok use and body appreciation. The sample included 185 TikTok users. Serial mediation analysis revealed a significant indirect negative relationship between problematic TikTok use and body appreciation through physical appearance perfectionism, but not upward physical appearance comparison, or physical appearance perfectionism and upward physical appearance comparison in serial. Thus, with the rapid growth of TikTok, this study highlights the importance of identifying the individuals who may be more vulnerable to the effects of the app. We suggest possible practice implications such as the implementation of screening strategies to identify those high in physical appearance perfectionism, and the development of workshops aimed at promoting positive body image in the face of SNS use.

1. Introduction

Social networking sites (SNSs) are increasingly popular, with at least 3.5 billion users worldwide (Ortiz-Ospina, 2019). They have been defined as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (Boyd, 2008, p. 211). In other words, SNSs provide a virtual forum for users to form and maintain social interactions, share personal information, observe others, and receive feedback (Boyd, 2008). Popular SNSs include Instagram and Facebook, and the recent video-sharing app TikTok, which currently boasts 1.2 billion active monthly users (Statista, 2022), placing it as the 5th most popular platform (Aslam, 2022).

To date, both beneficial and problematic implications of SNSs have been identified on various psychological and psychosocial outcomes. These platforms have been associated with several positive outcomes, for example increased creativity through video creation (Bresnick,

2019), and social connectedness and wellbeing via the formation of friendships and reduction of loneliness (Ryan, Allen, Gray, and McInerney, 2017). Conversely, extensive research has highlighted the negative aspects of SNS usage, such as problematic social media use (PSMU; Kircaburun, Alhabash, Tosuntaş, and Griffiths, 2020; Shensa et al., 2017). PSMU refers to a lack of self-control, dependence on social media use, and/or high engagement on social media, regardless of negative impacts (Andreassen and Pallesen, 2014). Compared to other terms such as social media addiction, “problematic use” has gained widespread usage because as an umbrella term it depicts behavior that is dependent on a variety of stressors, including interpersonal and societal demands, as opposed to constituting a pathological condition (Panova and Carbonell, 2018). Based on this definition of PSMU, this study defines problematic TikTok use as maladaptive patterns of TikTok use, including excessive and impulsive use of TikTok, with high psychological and/or behavioural dependence on TikTok (Kircaburun et al., 2020).

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1.1. Body image

To date, extensive research has highlighted the detrimental effects associated with PSMU on mental health outcomes, including increased depression, anxiety, decreased well-being, and lower self-esteem (e.g., Cunningham, Hudson, and Harkness, 2021; Shannon, Bush, Villeneuve, Helleman, and Guimond, 2022). Furthermore, PSMU have been identified as particularly problematic for body image (BI) (e.g., Fioravanti, Bocci Benucci, Vinciarelli, and Casale, 2024; Gioia, Griffiths, and Boursier, 2020). BI is an umbrella term used to describe perceptions, cognitions, affect behaviours, and subjective evaluations of one's body (Frederick et al., 2022). As BI is a multi-dimensional construct, it encompasses many individual subcomponents, such as body dissatisfaction, body shame, and body esteem (Thompson, Heinberg, Altabe, and Tantleff-Dunn, 1999). These components can range from positive to negative, which are distinctly conceptually defined, rather than representing mere opposites (Tylka and Wood-Barcalow, 2015b). Traditional BI research has primarily focused on describing and predicting negative BI (Cash, Fleming, Alindogan, Steadman, and Whitehead, 2002); however, in recent years, positive BI has gained considerable attention, with body appreciation as a central variable in this research (e.g., Linardon, McClure, Tylka, and Fuller-Tyszkiewicz, 2022; Marta-Simões, Ferreira, and Mendes, 2017; Tylka, 2013). Body appreciation can be defined as "accepting, holding favourable opinions toward, and respecting the body, while also rejecting media-promoted appearance ideals as the only form of human beauty" (Tylka and Wood-Barcalow, 2015b, p. 53). For the purpose of this study, we have included body appreciation as our construct of interest, as growing evidence indicates that body appreciation is associated with fewer BI concerns and mental health problems, and better psychological wellbeing and self-esteem, and thus, may be a viable intervention target (Linardon et al., 2022).

1.2. Social networking sites and body image

Research has long-considered mass media as one of the most important sociocultural influences on BI (Cash and Smolak, 2011). There is a recent emphasis on the effects of appearance-based SNSs, as like traditional media, they are associated with the circulation of idealised body standards (Brown and Tiggemann, 2016). In the West, the predominant ideal body for women is anchored around extreme thinness, whilst for men, the ideal physique is characterized by high levels of muscularity (e.g., Grogan, 2021). In addition to the circulation of these standards, much of the content posted on SNSs are often enhanced by filters or digital editing tools, and as a result, the images shared are often presenting unattainable and unrealistic goals, thus inducing negative BI outcomes (Cohen, Newton-John, and Slater, 2017). Indeed, a recent systematic review found significant associations between photo-editing and internalization of the thin ideal in Western women (McGovern, Collins, and Dunne, 2022).

1.3. Upward physical appearance comparison

The ubiquity of these images across SNSs provide opportunities for users to engage in social comparison to peers, models, and celebrities (Verduyn, Gugushvili, Massar, Täht, and Kross, 2020). According to the social comparison theory, such images cause individuals to engage in upward comparisons, as they compare themselves to someone they deem superior or better off than themselves (Festinger, 1954). Thus, SNS users may be subject to engaging in upward physical appearance comparisons to these more attractive individuals online (Engeln-Maddox, 2005). This form of social comparison has been associated with disordered eating outcomes (Arigo, Schumacher, and Martin, 2014) and body dissatisfaction (Fardouly, Pinkus, and Vartanian, 2017), as it elicits a perceived negative contrast between oneself and the idealised appearance (Fardouly et al., 2017).

Importantly, an identified characteristic of body appreciation is

"protective filtering" (Wood-Barcalow, Tylka, and Augustus-Horvath, 2010, p. 109), which may serve as a potential buffer against thin-ideal media exposure and social comparison (e.g., Halliwell, 2013; Yao, Niu, and Sun, 2021). Individuals with high body appreciation may recognize the unrealistic nature of images in the media and are, therefore, less inclined to compare their bodies with others (Andrew, Tiggemann, and Clark, 2015). Indeed, several experimental studies have found that young women with high body appreciation were protected from negative media effects, as they reported lower state appearance dissatisfaction after viewing images of thin-ideal media, in comparison to women with low body appreciation (Andrew et al., 2015; Halliwell, 2013). Therefore, the results from these studies indicate that body appreciation may be effective in reducing the impact of the thin-ideal; however, empirical research on the risk-buffer role of body appreciation is limited (Tylka, 2011).

An additional putative theory used to explain the influence of SNSs on BI is the self-discrepancy theory, which is anchored on cognitive approach. Self-discrepancies are defined as representations in the self-concept of ways in which one falls short of some important standard (Higgins, 1987, 1989). Individuals may possess a BI self-discrepancy if they associate their failure to achieve their body ideals with their self-concept (Bessenoff, 2004). The exposure to idealised images in the media elicits social comparison and in turn, emphasizes the magnitude of an individual's perceptions between the actual-self and the ideal-self (Bessenoff, 2006). For example, a study by Ahadzadeh, Pahlevan Sharif, and Ong (2017) found that self-discrepancy was an underlying mechanism used to explain the impact of Instagram usage on body dissatisfaction. These results are in line with extensive previous research which have associated high levels of self-discrepancy with various BI concerns (e.g., Lantz, Gaspar, DiTore, Piers, and Schaumberg, 2018).

1.4. Physical appearance perfectionism

Research has also suggested that physical appearance perfectionism may have a potential role in explaining how the use of popular SNSs can negatively impact a person's BI (Yang and Stoeber, 2012). Physical appearance perfectionism is composed of two factors: worry about imperfection and hope for perfection. The worry about imperfection component encompasses concerns that one's appearance will never be good enough and a deep dissatisfaction with one's appearance. The hope for perfectionism component captures one's desire to obtain a perfect appearance and the hope that others admire one's appearance. Physical appearance perfectionism has been associated with various negative BI outcomes such as low body esteem (Simon et al., 2022), body shape dissatisfaction, and variance in disordered eating symptoms (Stoeber and Yang, 2015).

Moreover, although studies have not explicitly examined the relationship between physical appearance perfectionism and body appreciation; research has suggested that rigid and self-critical perfectionism are also likely to be sources of diminished body appreciation (Etherson, Curran, Smith, Sherry, and Hill, 2022). There are often discrepancies between idealised and actual appearances among individuals high in perfectionism, which likely renders those higher in perfectionism susceptible to decreased body appreciation. Currently, very few studies have explored the relationship between perfectionism and body appreciation; however, initial evidence has indicated a negative relationship (e.g., Scully, Fitzgerald, and Dooley, 2021).

1.5. Physical appearance perfectionism and upward physical appearance comparison

To date, researchers have not directly explored the relationship between physical appearance perfectionism and upward physical appearance comparison; thus, this relationship is not completely understood. However, emerging research has suggested that those who demonstrated higher physical appearance perfectionism may be more

adversely impacted by social comparison to thin-ideal Instagram images, and experience greater appearance dissatisfaction and lower confidence, than those who demonstrate low levels of physical appearance perfectionism (McComb and Mills, 2021). Given these findings, it could be expected that physical appearance perfectionism and upward physical appearance comparison are positively correlated to one another, as individuals high in physical appearance perfectionism would be particularly vulnerable to comparisons to BI ideals online, due to engagement in processes such as rumination and catastrophizing.

1.6. Instagram use and body image

In recent years, extensive research has explored the relationship between BI and problematic Instagram usage due to the exposure of idealised body standards in Instagram feeds (e.g., Fioravanti et al., 2023, 2024; Sherlock and Wagstaff, 2019; Simon et al., 2022). Although there are limited studies on the relationship between components of positive BI and Instagram use; extensive research have found a positive association between problematic Instagram use and BI concerns, such as body dissatisfaction and disordered eating concerns (e.g., Fioravanti et al., 2023). Furthermore, researchers have explored the factors underlying this relationship. For example, Simon et al. (2022) reported that physical appearance perfectionism significantly mediated the relationship between Instagram addition and body esteem. This may be explained by how society's standards of appearance-related ideals as depicted on SNSs, can lead an individual to worry about having the perfect body, which in turn negatively affects their body esteem (Simon et al., 2022). Similarly, Pedalino and Camerini (2022) found that upward physical appearance comparison to social media 'influencers' significantly mediated the relationship between frequent Instagram use and body appreciation, as social media 'influencers' serve as increasingly important socializing agent, which may contribute to feelings of inadequacy when engaging in upward comparisons. Interestingly, this study found no direct relationship between frequent Instagram use and lack of body appreciation in the absence of upward physical appearance comparisons. Although further research is needed to gain a complete understanding of this relationship, there is a plethora of literature highlighting the detrimental effects of Instagram use on BI (e.g., Fioravanti et al., 2023, 2024; Sherlock and Wagstaff, 2019; Simon et al., 2022).

1.7. TikTok use and body image

Despite considerable research on the relationship between BI and problematic Instagram usage (e.g., Fioravanti et al., 2023, 2024; Sherlock and Wagstaff, 2019), there is little reported on TikTok since its emergence. Therefore, understanding the impact of these ongoing changes in the patterns of SNS use on BI across the different platforms, is critical. Although thin-ideal content is now increasingly circulated on SNSs, the content available on TikTok differs due to its video-sharing nature. It may be perceived to be easier to control how someone appears in a static image, by using appearance-enhancing filters, poses, and applications, compared to a moving video (Lisitz, 2021). Therefore, the thin-ideal images available on SNSs such as Instagram, may be perceived to be less attainable than thin-ideal videos on TikTok. Indeed, emerging research has reported that if women perceived the idealised-video content they viewed to be unedited or unenhanced, they reported lower appearance satisfaction, when compared to viewing idealised-image content. Thus, for some individuals, viewing video content may be more harmful than viewing image content (Guartala and Fardouly, 2023).

Additionally, TikTok content typically revolves around singing and dancing and "the platform's structure and culture encourage users to mimic one another and participate in trends" (Kaufman, 2020, p.1). These dance trends can often be highly provocative in nature, including suggestive music, sexualized dance moves, and clothing that enhances certain body parts (Bissonette Mink and Szymanski, 2022). Moreover,

these trends often originate from young, attractive 'influencers', along with videos that are enhanced by filters or digital editing tools. Thus, TikTok users can receive a constant visual stream of highly sexualised, appearance-focused content.

Studies are already reporting the relationship between TikTok Use and body dissatisfaction (e.g., Vall-Roqué, Andrés, and Saldaña, 2021). Furthermore, recent research has found that upward physical appearance comparison mediates this relationship between TikTok use and body dissatisfaction in young women (Bissonette Mink and Szymanski, 2022). This may be explained as follows: the more a woman uses TikTok, the more she engages in upward appearance comparisons and body surveillance, which in turn increases the likelihood of body dissatisfaction (Bissonette Mink and Szymanski, 2022). Thus, this finding suggests that the consistent and regular use of TikTok, increases the likelihood of engaging in upward physical appearance comparisons, and thus, increases the chances of experiencing diminished body appreciation.

1.8. The current study

Therefore, the aim of this study is to fill the current gap in the literature by exploring the relationship between problematic TikTok use, physical appearance perfectionism, upward physical appearance comparison and body appreciation. Based on prior research which found the mediating effect of physical appearance perfectionism between Instagram addiction and BI (Simon et al., 2022), and the mediating effect of upward physical appearance comparison between TikTok use and BI (Bissonette Mink and Szymanski, 2022), we have a particular interest in exploring the mediating effect of physical appearance perfectionism and upward physical appearance comparison between problematic TikTok use and body appreciation. We hypothesize that 1) Physical appearance perfectionism will significantly mediate the relationship between problematic TikTok use and body appreciation, 2) Upward physical appearance comparison will significantly mediate the relationship between problematic TikTok use and body appreciation, and 3) Physical appearance perfectionism and upward physical appearance comparison will significantly mediate the relationship between problematic TikTok use and body appreciation through a serial mediation analysis. With the rapid growth of TikTok, it is necessary to identify individuals who may be more vulnerable to the effects of the app to create ways to help promote body appreciation in the face of SNS use.

2. Method

2.1. Materials

The Body Appreciation Scale-2 (BAS-2; Tylka and Wood-Barcalow, 2015a) was used to measure BI. This scale is often referred to as a positive BI measure, as it assesses individuals' acceptance of, favourable opinions toward, and respect for their bodies. The BAS-2 is an improved and revised version of the original Body Appreciation Scale (Avalos, Tylka, and Wood-Barcalow, 2005), which contains sex-specific items and biases towards negative BI. The BAS-2 is composed of 10-items, which are rated on a five-point Likert scale from one (never) to five (always). It has demonstrated strong internal consistency, test-retest reliability, and construct and convergent validity, like the parent measure (Tylka and Wood-Barcalow, 2015a).

Physical appearance perfectionism was measured using the Physical Appearance Perfectionism Scale (PAPS) (Yang and Stoeber, 2012). This measure is composed of 12-items with two factors: worry about imperfection (WAI) and hope for perfection (HFP). The WAI component consists of seven-items regarding concern that one's appearance will never be good enough and deep dissatisfaction with one's appearance (e.g., I wish I could completely change my appearance). The HFP component consists of five-items regarding obtaining perfect appearance and hoping that others admire one's appearance (e.g., I hope others find me attractive). Items are answered on a five-point Likert scale from one

(strongly disagree) to five (strongly agree), with higher scores indicating greater levels of perfectionism. The PAP has established good internal consistency and high test-retest correlations (Yang and Stoeber, 2012).

Upward physical appearance comparison was measured using the Upward Physical Appearance Comparison Scale (UPACS) (O'Brien et al., 2009). This measure is composed of 10-items in total, which accesses the tendency to compare oneself with targets considered (more) physically attractive (e.g., I find myself thinking about whether my own appearance compares well with models and movie stars). The items are answered on a five-point Likert scale from one (strongly disagree) to five (strongly agree), with higher scores indicating a greater tendency to engage in upward physical appearance comparison. The UPACS has established good psychometric properties, including good internal consistency and good construct validity (O'Brien et al., 2009).

Problematic TikTok use was measured using the Social Media Use Questionnaire (SMUQ) (Xanidis and Brignell, 2016), by assessing problematic use and dependence on SNSs. The measure is composed of nine-items in total, with two factors: withdrawal and compulsion. The withdrawal component consists of five-items (e.g., I use social network sites when I am in the company of friends). The compulsion component consists of four-items (e.g., I lose track of time when I use social networking sites). All items are answered on a five-point Likert scale from zero (never) to four (always). For the purpose of this study, the SMUQ was used by replacing the term "social networking site" with "TikTok", in order to access and accommodate the functions and usage of the app. Previous studies have similarly adjusted this measure, for example to examine problematic Instagram use (e.g., Balta, Emirtekin, Kircaburun, and Griffiths, 2020). We present means, standard deviations, inter-correlations, and reliability information in Table 1.

2.2. Participant profile and recruitment strategy

Based on the guidelines set out by Schoemann, Boulton, and Short (2017) using the Monte Carlo Power Analysis Simulation, it was recommended that a sample size of 144 was required as a minimum to achieve adequate power of 0.8 in this study. Initially 265 participants started the study, of which 210 (182 = female, 28 = male) consented to take part in the current study. The sample was majority female (83.87 %) with a mean age of 22.45 (SD = 4.58). Using pairwise complete data, sufficient data for estimation was available for 185 participants. Participants were recruited via online platforms and snowball sampling and were prompted to fill out an anonymous online survey hosted on Qualtrics. The eligibility criteria for participants in this study were broad, such that they must be over the age of 18 and that they must have been an active TikTok user. This study was approved by the institutional research body (Number redacted for anonymous review).

2.3. Data analysis

To test our hypotheses, we fitted a latent serial mediation model with a WLSMV estimator in lavaan to account for the ordinal nature of all variables in the model. As ordinal estimation with WLSMV estimation

does not allow for full maximum likelihood treatment of the data, we used pairwise complete data resulting in 199 useable responses. In our serial mediation model body appreciation was regressed onto problematic TikTok use, physical appearance perfectionism, and upward physical appearance comparison; upward physical appearance comparison was regressed onto problematic TikTok use and physical appearance perfectionism; last physical appearance perfectionism was regressed onto problematic TikTok use. As previous literature has indicated gender differences in both SNS use and BI (e.g., Guadagno, Okdie, and Eno, 2008; Hargittai, 2007; Ormsby, Owen, and Bhogal, 2019), we repeated the analysis with all variables regressed onto a binarized gender variable. We present the results in the supplementary material.

3. Results

Overall, our latent mediation model showed good fit according to common cut-off criteria (CFI = 0.951, TLI = 0.948, RMSEA = 0.072 [.064, 0.079], $p_{HO;RMSEA \geq .80} = 0.029$, SRMR = 0.087) (Hu and Bentler, 1999). Focusing on individual regression relationships, we found a substantial, significant positive relationship between problematic TikTok use and physical appearance perfectionism ($\beta = 0.505, p < .001$), but found no significant relationship of problematic TikTok use with either upward physical appearance comparison ($\beta = 0.019, p = .785$), or body appreciation ($\beta = 0.148, p = .052$). Physical appearance perfectionism was significantly positively related to upward physical appearance comparison ($\beta = 0.639, p < .001$) and significantly negatively related to body appreciation ($\beta = -0.859, p < .001$). Finally, we found no significant relationship between body appreciation and upward physical appearance comparison ($\beta = 0.009, p = .901$). Based on this our tested indirect serial mediation effect was non-significant ($\beta = 0.003, p = .902$). Focusing on the simple mediations we found a significant mediating effect of physical appearance perfectionism between problematic TikTok use and body appreciation ($\beta = -0.434, p < .001$). In contrast, upward physical appearance comparison did not significantly mediate the relationship between problematic TikTok use and body appreciation ($\beta = 0.000, p = .940$). These results remained robust to the inclusion of gender as covariate (which showed no significant relationship with any variable $p_{min} = 0.055$) except for the relationship between problematic TikTok use and body appreciation which was positive and significant in the gender adjusted model ($\beta = 0.146, p = .046$). We present the results in Fig. 1.

4. Discussion

To our knowledge, this is the first study to explore the relationship between problematic TikTok use, physical appearance perfectionism, upward physical appearance comparison, and body appreciation. A plethora of literature has highlighted the negative relationship between problematic Instagram use and BI, however, there is little reported on the relationship between TikTok use and BI. Furthermore, prior research has reported of the mediating effect of physical appearance

Table 1
Pearson Correlations, Descriptives and Reliability for Key Study Variables (N = 185).

Variable	1	2	3	Mean	SD	Cronbach's Alpha	ω_{Ordinal}
1. Physical Appearance Perfectionism	–	–	–	3.48	.59	.85	.88[.85, 0.90]
2. Upward Physical Appearance Comparison	.60***	–	–	3.77	.75	.92	.95[.93, 0.96]
3. Body Appreciation	–0.69***	–0.45***	–	3.30	.82	.83	.96[.95, 0.97]
4. Problematic TikTok Use	.41***	.28***	–0.23**	2.60	.62	.95	.84[.80, 0.87]

Note.
*** $p < .001$.
** $p < .01$ (2-tailed). The ω for Problematic TikTok use is estimated based on a continuous distribution as the calculation of a polychoric correlation matrix is not possible due to range restrictions in the scale items 1 to 3 due to participants responses. Re-estimation of ω based on the covariance matrix resulting from ordinal estimation indicates a similarly acceptable result $\omega_{\text{Ordinal}} = 0.827$.

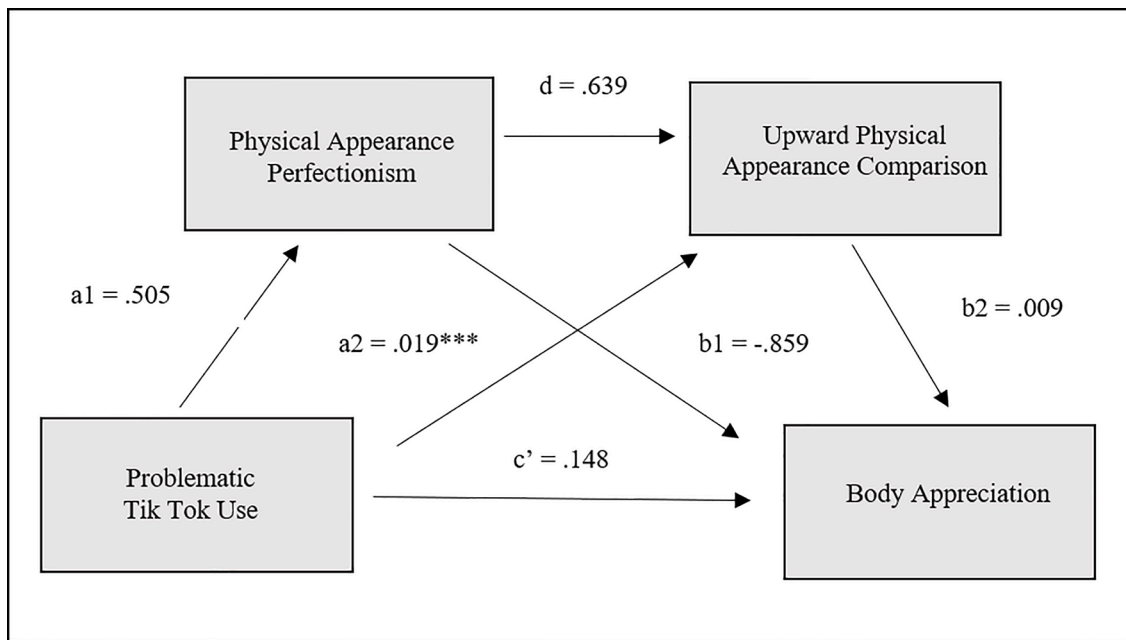


Fig. 1. Direct and indirect effect path model of Problematic TikTok Use, Physical Appearance Perfectionism, Upward Physical Appearance Comparison and Body Appreciation.

Note. *** $p < .001$ (2-tailed).

perfectionism (Simon et al., 2022) and upward physical appearance comparison (e.g., McComb and Mills, 2021) between frequent Instagram Use and BI, thus, we had a particular interest in investigating the mediating effect of physical appearance perfectionism and upward physical appearance comparison between problematic TikTok use and body appreciation.

In line with our first hypothesis, a serial mediation analysis revealed that physical appearance perfectionism strongly mediated the relationship between problematic TikTok use and body appreciation. Although these are preliminary results with regards to TikTok use, these findings are in accordance with comparable previous studies. For example, a recent study by Simon et al. (2022) reported that physical appearance perfectionism significantly mediated the relationship between Instagram addiction and body esteem. As we found no direct path between problematic TikTok use and body appreciation, the results of our current study suggest that although TikTok use may not necessarily lead to negative BI in the general population, physical appearance perfectionism may play a vital underlying role in negatively influencing this relationship. This is supported by the comprehensive literature which has suggested that physical appearance perfectionism has a potential role to play in how the use of social networking sites can negatively impact BI (Yang and Stoeber, 2012). Thus, these findings indicate that the consistent and regular use of TikTok among individuals high in physical appearance perfectionism, may lead to negative BI. Given this, future research should explore the specific aspects of TikTok that may increase negative BI in individuals high in physical appearance perfectionism, such as the types of accounts they follow.

As mentioned previously, our mediation analysis found no direct path between TikTok use and body appreciation, however, problematic TikTok use, and body appreciation were negatively related through bivariate analysis. These findings suggest that although there is an association between problematic TikTok use and body appreciation; the direct relationship does not hold once indirect paths are introduced. As physical appearance perfectionism had a strong effect in our serial mediation analysis, we suggest that it is the consistent and regular use of TikTok among individuals high in physical appearance perfectionism that may lead to low levels of body appreciation, rather than TikTok use itself. Thus, we cannot conclude that problematic TikTok use directly

leads to negative BI. These results are in line with a recent study by Bissonette Mink and Szymanski (2022), which found that at the bivariate level, frequent TikTok use was positively associated with body dissatisfaction, however at the multivariate level, these variables were not directly related. As the findings on TikTok use and BI differ to those found on other appearance-based SNSs such as Instagram (e.g., Brown and Tiggemann, 2016), we suggest that there may be more differences among these apps than we initially predicted. Furthermore, in line with similar studies (e.g., Bissonette Mink and Szymanski, 2022), this study measured problematic TikTok use, and did not consider the various aspects of TikTok that may play an important role in eliciting BI concerns, we suggest that future research explore how, and if, certain aspects of the app are related to negative BI, to implement methods to prevent any potential damaging effects of the app.

Our second hypothesis was based on the social comparison theory, which suggests that the circulation of idealised body standards online provides opportunities for users to engage in upward physical appearance comparisons to people they deem more attractive than themselves (Engeln-Maddox, 2005). In turn, this elicits a perceived negative contrast between oneself and the idealised appearance (Fardouly et al., 2017), resulting in various BI concerns, such as body dissatisfaction (Fardouly et al., 2017). Previous studies found that upward physical appearance comparison fully mediated the relationship between browsing on Instagram and lower levels of body appreciation (Pedalino and Camerini, 2022), thus similar results were expected in this study with regard to TikTok use.

However, contrary to our second hypothesis, we found that upward physical appearance comparison did not significantly mediate the relationship between problematic TikTok use and body appreciation. However, upward physical appearance comparison and body appreciation were positively related through bivariate analysis. Similar to the relationship between TikTok use and body appreciation, these findings suggest that although upward physical appearance comparison and body appreciation are associated; the direct relationship does not hold once indirect paths are introduced. One possible reason for the non-significant effect of upward physical appearance comparison in our serial mediation analysis may be due to the strong mediating effect of physical appearance perfectionism. Furthermore, due to the video-

nature of TikTok it may be more difficult to readily edit videos of oneself. Indeed, a recent article by an 'influencer' marketing software company reported that TikTok users differ to those on Instagram, as they often produce content that is more natural and homemade (GRIN, 2023). Therefore, TikTok users may be subjected to more realistic content, which has been found to reduce the negative consequence of appearance comparison (e.g., Tiggemann and Anderberg, 2020). Thus, it is possible that the detrimental effects of engaging in upward physical appearance comparisons may be less predominant among TikTok users due to a limited exposure to edited content in comparison to other appearance based SNSs, such as Instagram.

It is important to note that our findings are inconsistent with the only previous study on TikTok use and upward physical appearance comparison, which found that upward physical appearance comparison mediated the relationship between frequent TikTok use and body dissatisfaction (Bissonette Mink and Szymanski, 2022). However, their study, like much of the previous research on upward physical appearance comparison and BI, was restricted to female participants (e.g., Pedalino and Camerini, 2022). As women are more likely to engage in social comparisons to peers, models, and celebrities (Verduyn et al., 2020), this may explain why the findings in our current study are inconsistent to those previously found by Bissonette Mink and Szymanski (2022). To address these inconsistencies, future research may utilize moderated mediation analysis with gender as the moderator, to further explore the impact of gender in these relationships, as this was not possible in the present study due to male sample size restrictions. Furthermore, our conflicting results may be due to the strong effect of physical appearance perfectionism in our serial mediation analysis, which suggests a potential overlapping of variance between physical appearance perfectionism and upward physical appearance comparison, thus indicating that physical appearance perfectionism may play a more important role in mediating the relationship between problematic TikTok use and body appreciation, than upward physical appearance comparison. Thus, as the literature in this area is extremely limited, it is difficult to determine if the social comparison theory can be applied to TikTok. It may be beneficial for future studies to explore the role of other processes such as self-discrepancy (Higgins, 1987) or self-objection (Fredrickson and Roberts, 1997). Given that upward physical appearance comparison has been associated with BI concerns such as disordered eating outcomes (Arigo et al., 2014) and body dissatisfaction (Fardouly et al., 2017), future research is needed to determine how and if certain aspects of TikTok are related to upward physical appearance comparison to identify how individuals may be more susceptible to the negative consequences of the app.

Finally, contrary to our final hypothesis, we found that the relationship between problematic TikTok use, and body appreciation was not mediated by physical appearance perfectionism and upward physical appearance comparison acting in serial. As discussed previously, studies have found that perfectionism may interact with physical appearance comparison to predict greater levels of body dissatisfaction (e.g., Ko, Wei, Park, and Wang, 2019; McComb and Mills, 2021). Therefore, given these findings, it was expected that physical appearance perfectionism and upward physical appearance comparison would mediate the relationship between TikTok use and body appreciation. However, the direct relationship between physical appearance perfectionism and upward physical appearance comparison has not yet been established in previous research, therefore this may explain why these two factors were not significant in serial in our mediation analysis. Furthermore, the strong mediating effect of physical appearance perfectionism in this model may have played an important role due to the potential swallowing of variance, thus explaining these non-significant results. We recommend that future studies further explore the role of additional potential mediating effects in the relationship between TikTok use and BI, such as body surveillance.

4.1. Practice implications

As discussed, the effects of social media do not impact all people equally, and thus it is evident that individual differences play an important role in mediating the effect between different SNSs, such as TikTok, and BI. This highlights the need for clinicians to implement screening strategies to identify these vulnerable individuals, such as those high in the domain of physical appearance perfectionism. This may include clients initially completing short-self report scales such as the PAPS (Yang and Stoeber, 2012). Furthermore, given the findings of our study, intervention developers may establish and implement interventions that are aimed at improving body appreciation in these individuals most susceptible to the negative effects of TikTok. An example of this are workshops aimed at improving positive BI, reducing self-comparison to others online, awareness of the unrealistic nature of idealised Western body standards, and the reduction of time spent on SNSs. The main goal of these interventions would be to offer protective potential against BI concerns. Researchers have found similar workshops successful at reducing negative BI such as the Healthy Body intervention (HBI; Sundberg and Michael, 2001) and the Dove Confident Me intervention (Diedrichs, Atkinson, Garbett, and Leckie, 2021).

4.2. Limitations and future directions

This study is subject to several limitations. Firstly, participants in this study were predominantly female in the 18–25 age category, and therefore these findings have limited generalisability to more diverse populations. Thus, we recommend that this study be replicated using male samples, and gender minority groups for more representativeness. Furthermore, it is also important to consider samples representing the entire lifespan, including adolescents and older adults, to explore if these findings extend to other age groups. Secondly, this study used a cross-sectional design, which does not allow for us to make conclusions on the causal relationships between the investigated variables. To overcome this limitation, experimental and longitudinal methods should be used to clarify the nature of these relationships overtime. Thirdly, the participants in our study scored relatively high in physical appearance perfectionism. Although these high scores have been found across previous research studies (e.g., McComb and Mills, 2021; Simon et al., 2022), there are some inconsistencies (e.g., Yang et al., 2017). Thus, physical appearance perfectionism may have been particularly high among our sample, and therefore the generalisability of these findings is uncertain. Fourthly, this study used body appreciation as its measure of construct for BI. As body appreciation is a measure of positive BI rather than negative BI, we suggest that future research explore these relationships using constructs of negative BI, such as body dissatisfaction. Fifthly, in line with previous literature in this area of research, the current study did not control if participants primarily used TikTok instead of other SNSs (e.g., Fioravanti et al., 2023; Simon et al., 2022; Yurdagül, Kircaburun, Emirtekin, Wang, and Griffiths, 2021). To overcome this limitation, future research should control if participants only or primarily used TikTok instead of other SNSs, in order to highlight the impact of this specific SNS. Lastly, in line with similar previous studies (e.g., Bissonette Mink and Szymanski, 2022), this study measured problematic TikTok use, and did not consider the various aspects of TikTok that may play an important role in eliciting BI concerns. Should this study be replicated, we recommend researchers consider the types of accounts participants follow, how often they post on the app, and the type of content that is typically displayed on their 'for you page'.

4.3. Strengths

Despite its limitations this study had many strengths. Firstly, the data sample was collected largely from participants aged 18–25. Although this limits the generalizability of our findings to other age groups; the largest population of TikTok users are 18–24 (43 %) and 25–32 (32 %)

(Aslam, 2022), and thus, our sample reflects the cohorts who are most active on the app. Secondly, to our knowledge, this is the first study exploring the mediating role of physical appearance perfectionism between problematic TikTok use and body appreciation. These findings suggest that individuals high in physical appearance perfectionism may be more vulnerable to the negative effects of Westernized body standards, through the regular and consistent use of TikTok. Thus, this current study adds to the limited research on the relationship BI and TikTok use, and furthermore, offers new opportunities for further research and interventions.

4.4. Conclusion

Overall, the results of our study imply that the popular video-sharing app TikTok may have negative consequences on body appreciation; however, this direct relationship disappears when physical appearance perfectionism is introduced. Thus, these findings suggest that individual's high in physical appearance perfectionism may be more vulnerable to the negative consequences of the app than the general population. As appearance based SNSs are associated with the circulation of idealised Western body standards, TikTok may provide an avenue for users high in physical appearance perfectionism to engage in comparisons to these images online. To our knowledge, this is the first study to explore the mediating effects of physical appearance perfectionism and upward physical appearance comparison between problematic TikTok use and body appreciation, and thus, these findings offer various opportunities for future research and interventions. Possible practice implications include initial screening interventions to identify those high in physical appearance perfectionism, and the development and implementation of interventions that are aimed at improving positive BI and reducing self-comparison to others online. Thus, with the rapid growth of TikTok, this study highlights the importance of identifying the individuals who may be more vulnerable to the effects of the app, to create ways to help promote positive BI in the face of SNS use.

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CRediT authorship contribution statement

Katie O'Connor: Conceptualization, Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. **Johannes Karl:** Formal analysis, Data curation, Writing – review & editing. **Simon Dunne:** Conceptualization, Data curation, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The raw data and our analytic codes are available on the Open Science Framework at https://osf.io/9mtwj/?view_only=ebdd4015dc514ff08ae8520e03317585.

Supplementary materials

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