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Self-objectification and the agency for risk information seeking in women's cosmetic surgery decision-making

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While previous studies have examined how people's daily conversations about appearance influence women's cosmetic surgery intentions through the mediation of self-objectification, the role of women's agency for risk control has been neglected. By integrating tripartite influence and risk information seeking models, this study investigates both the long- and short-term motivations underlying young Chinese women's cosmetic surgery decision-making. This shows that social-mediated exposure to beauty ideals and enhancement issues (BIEIs) contributes to self-objectification more greatly than parent-daughter and peer discussions about appearance. Parent-daughter discussions about appearance not only enhances self-objectification but also compromises the perceived norms against cosmetic surgery, which is associated with less frequency of online risk information seeking. While talking about appearance with peers promotes self-objectification, it is also positively associated with affective risk responses, which in turn motivate young women to seek risk information online. Ironically, risk information seeking may further strengthen cosmetic surgery intentions. This implies that the information individuals seek is not necessarily what they obtain. On the Internet, substantial risk information may be marginalized and distorted, making information seeking a ritual process for young women to merely strengthen their cosmetic surgery intentions, thus necessitating urgent governance.

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Introduction

The global cosmetic surgery industry has been expanding in recent years. The gross market value of the industry is expected to exceed $37.6 billion by 2030 (Inkwood Research, 2021), and women account for up to 86% of all consumers (International Society of Aesthetic Plastic Surgery, 2021). In China, young women are major consumers of cosmetic surgery who prefer to access related information online (iiMedia Research, 2021), leaving numerous reads and comments under posts about blepharoplasty and rhinoplasty on social media. With the rise of this thriving beauty economy, women have been feeling increasing anxiety about their appearances and body shapes (Jackson et al., 2020). Cosmetic surgery also poses health risks, such as wound infections, postoperative complications, sequelae, and psychological disorders (Wang et al., 2021), which means cosmetic modification should be a cautious decision based on risk-benefit assessment.

Advocacy for deliberate decision-making necessitates a thorough understanding of the motivations behind young women's appearance modification decisions. As one of influential research approaches, the tripartite influence model (TIM) has been used to examine the effects of women's interactions with peers, parents, and the media on their cosmetic surgery intentions through the mediation of self-objectification (e.g., Menzel et al., 2011; Sharp et al., 2014); the term self-objectification indicates that women evaluate and monitor their own bodies as sexual objects (McKinley and Hyde, 1996). However, this research approach may neglect the fact that daily conversations about beauty ideals and enhancement issues (BIEIs) as well as related media exposure may also convey information about surgical risks and anti-surgery norms when promoting self-objectification. If health communication campaigns aim to change dominant social ideologies about women's gender roles and appearance ideals that nurture women's self-objectification, the efforts would be fruitless because gender ideologies are subject to sluggish transformation. Moreover, this research approach implies that women are merely passive recipients under the influence of the media and significant others, thus neglecting their agency for risk control based on risk information seeking.

The risk information seeking and processing (RISP) model (Griffin et al., 1999) proposes a bottom-up approach to risk communication, which assumes that 'the individual is a reasonable soul' (p. S231) predisposed to seek and process risk information intellectually. Defining information seeking as a deliberate action, this model was later developed into the planned risk information seeking model (PRISM) (Kahlor, 2010). Various constructs, including affective risk response and subjective norms, have been validated in predicting information seeking within multiple health contexts (e.g., Choi and Noh, 2021; Xiao and Borah, 2021), which provides references for taking protective actions (Baumeister et al., 2007).

While self-objectification may motivate women to undergo cosmetic procedures, the frequent occurrence of large-scale cosmetic surgery accidents (Jenkinson et al., 2024) may have heightened women's consciousness of risk avoidance. Therefore, this study aims to investigate whether risk information seeking, as an important precursor of risk-avoiding behaviors, can alleviate cosmetic surgery intentions. This will be made by integrating the TIM and the RISP/PRISM to create a dual-path framework to examine the roles of self-objectification, risk information seeking, and their antecedents in predicting women's cosmetic surgery intentions. In this integrated model, the pathway of self-objectification represents a long-term influence because self-objectification is a slow process of women's internalization of social standards of beauty ideals over a long period of socialization. It is a relatively stable psychosocial motivation underlying women's cosmetic surgery intentions. In contrast, the pathway of affective risk response, perceived anti-surgery norms, and risk information seeking represents women's sequential reactions to risk cues from their daily exposure to appearance enhancement issues, which is a relatively short-term emotional-cognitive process compared with the successive influence of self-objectification. Informed by this framework, health communicators may be able to understand both long-lasting and short-term psychosocial motivations underlying cosmetic treatment decisions, thus equipping them with the needed knowledge to adopt proper communication strategies to facilitate rational and prudent health decisions by young women.

Literature review

Tripartite influence, self-objectification, and cosmetic surgery intention. TIM was first proposed by Thompson et al. (1999) to examine the effects of primary sociocultural influences from parents, peers, and the media on women's eating disturbance through the mediation of internalization of appearance ideals and body comparison. Thereafter, the model has been validated across age, race, and country (Schaefer et al., 2021). In 2011, the model was first employed to predict American college students' attitudes toward cosmetic surgery (Menzel et al., 2011). It was discovered that perceived influences from peers, parents, and the media could predict their favorable attitudes toward cosmetic surgery through the internalization of appearance ideals and body dissatisfaction. By substituting perceived influences with antecedents such as media exposure and peer conversations, similar predictive effects were affirmed (Sharp et al., 2014). The model was also generally validated for the prediction of Chinese women's cosmetic surgery intentions (Jackson and Chen, 2015).

Previous TIM research has shown the association of peer conversations about BIEIs with stronger cosmetic surgery intentions (Jones et al., 2004; Sharp et al., 2014). This can be explained that frequent conversations about BIEIs among young women may strengthen their internalization of beauty standards and physical dissatisfaction, which further promotes cosmetic surgery intentions (Sharp et al., 2014; Zhou et al., 2024). In recent years, family influence on cosmetic surgery has received increasing attention. Parents may directly (e.g., criticize and ridicule) and indirectly (e.g., adopt diet and weight management strategies) communicate with their daughters about body image issues (Arroyo et al., 2020; Siegel et al., 2021). Mothers' emphasis on the significance of appearance for successful job application may heighten daughters' body dissatisfaction and cosmetic enhancement intentions (Lindridge and Wang, 2008). Fathers' comments on appearance either directly (Henderson-King and Brooks, 2009) or indirectly promote daughters' cosmetic enhancement intentions through the mediation of appearance comparison (Lunde and Gyberg, 2016).

However, the construct of media exposure in the prototypical TIM has focused only on traditional media, such as magazines, television, and advertisements (e.g., Menzel et al., 2011; Sharp et al., 2014). To date, social media such as YouTube, Instagram, and Facebook have been widely used to display cosmetic procedures visually (Sorice et al., 2017). While a few empirical studies have demonstrated the effects of beauty social media engagement (Seekis and Barker, 2022) and social media influencer viewing (Pan et al., 2022) on women's cosmetic surgery consideration, social media exposure to BIEIs has not yet been integrated into the TIM to investigate its implications for women's cosmetic surgery decision-making.

Women's internalization of appearance ideals is associated with the psychosocial concepts of sexual objectification and self-

objectification. The former refers to the idea that women's bodies are gazed at and evaluated as sexual objects (Calogero et al., 2010). A long-term consequence of sexual objectification, in turn, is self-objectification, which is defined as monitoring one's own body in an attempt to ensure that it conforms to the idealized sociocultural standards (McKinley and Hyde, 1996; Thompson et al., 1999). Research has shown that self-objectification is a major predictor of women's cosmetic surgery intentions (Wang et al., 2021). Viewing oneself as an object for the pleasure of others and feeling body shame when not meeting ideal appearance standards would expand the psychic distance between the self and ideal bodies that motivates cosmetic surgery as a coping strategy (Calogero et al., 2010).

In existing studies, self-objectification was measured in nuanced ways, which imbued it with different predictive powers (Daniels et al., 2020). Operationalizing self-objectification as a two-dimensional construct (i.e., internationalization of beauty ideals and self-surveillance), this study primarily tests the effects of women's daily exposure to BIEIs on their cosmetic surgery intentions through the mediation of self-objectification. Highlighting the tripartite influence of peers, parents, and social media, the following hypotheses are proposed:

H1: For young women, (a) peer conversations about BIEIs, (b) parent-daughter conversations about BIEIs, and (c) social-mediated exposure to BIEIs are positively associated with their cosmetic surgery intentions through the mediation of self-objectification.

Affective risk response, information seeking, and cosmetic surgery intention. Since self-objectification is a long-lasting internalization of sociocultural standards of beauty based on persistent self-surveillance (Kozee et al., 2007; Ruckel and Hill, 2017), the process in which daily exposure to BIEIs affects cosmetic surgery intentions through the mediation of self-objectification is bound to be a chronic influence. However, when young women discuss appearance enhancements, they also exchange their perceptions about and emotional reactions to the risks of related medical procedures, which may trigger risk information seeking, defined as people's active and purposeful attempts to gather relevant risk information for decision-making (Griffin et al., 1999). This means the mechanisms underlying cosmetic surgery intentions could be examined by bridging two paths: the psychosocial process of self-objectification and the epistemological process of risk management.

Laypeople may be incidentally and superficially exposed to risk information through routine media use and interpersonal channels (Griffin et al., 2013), which stimulates them to judge the characteristics of hazardous activities intuitively, defined as risk perception (Slovic, 1987). The RISP model (Griffin et al., 1999) and the PRISM (Kahlor, 2010) go a step further to separate affective risk responses (e.g., fear and worry), defined as emotional reactions to risks, from risk perception indicating cognitive assessment of a variety of hazardous characteristics such as serious of outcome and immediacy of onset. A serious and personally relevant perceived risk gives rise to fear (Witte, 1994), a typical form of affective risk response. In the context of emergent public health crises, the (re)circulation of health information across various interpersonal networks was positively associated with risk perceptions and affective risk responses, which can be explained by the increase of perceived vulnerability and uncertainty (Ju et al., 2023).

Because the high relevance between cognitive risk perception and affective risk response may cause multicollinearity, and because the role of various affections in information seeking is a relatively understudied area (e.g., Griffin et al., 1999; Wang et al., 2021), this study only investigates the impact of affective risk response in order to secure the stability and parsimony of our research model. During the Zika crisis, Yang et al. (2018) found that frequent exposure to both interpersonal and media messages about this disease positively predicted the fear response. They explained that this was because "media and interpersonal message sources may be innately predisposed to amplify, rather than, attenuate risk" (p. 2535) in this case. Fear arises as risk poses threat on well-being. Unlike the above case, however, women may access both the information stressing the benefits of successful cosmetic surgery and risk warnings from failed cases of appearance enhancement through interpersonal networks and social media. It is also unclear whether these message sources are inclined to amplify or attenuate the risk of cosmetic surgery. These uncertainties make it difficult to infer the relationship between women's daily exposure to BIEIs and affective risk responses, which raises the following research question:

RQ1: For young women, are (a) peer conversations about BIEIs, (b) parent-daughter conversations about BIEIs, and (c) social-mediated exposure to BIEIs all positively associated with affective risk responses?

An affective risk response may trigger protection behavior when a threat is perceived to be imminent and the coping behavior is perceived clear and effective (Yang et al., 2018). For example, affective risk responses such as worry, anxiety, and fear about breast cancer positively predict women's mammographic screening intentions (Bowen et al., 2003). Similar affective risk responses were also correlated with mask wearing and social distancing as coping behaviors against COVID-19 (Ju et al., 2023).

However, whether or not conducting a cosmetic surgery is usually not a decision that needs to be made immediately. Under less pressing circumstances, affective risk responses will primarily trigger risk information seeking as a coping strategy (Yang et al., 2018) for the purpose of anxiety-reduction (Turner et al., 2006) and uncertainty-reduction (ter Huurne and Gutteling, 2008). The RISP model (Griffin et al., 1999) and the PRISM (Kahlor, 2010) both theorize that affective risk responses, such as worry and anger, can motivate RISP more than the cognitive property of risk perception. Ter Huurne and Gutteling (2008) demonstrated that when people experience more threats and anxieties, they desire further information to reduce uncertainty. Negative affective response has also proved to be a strong predictor of obesity-related information seeking (Choi and Noh, 2021).

In the case of risk information seeking about cosmetic surgery, uncertainty reduction may either increase or decrease surgery intentions. However, as long as information seekers could be sufficiently informed of possible negative results of cosmetic surgery, it is likely that their surgery intentions would be alleviated rather than aggravated (Sood et al., 2017; Tootoonchi and Öztürk, 2022). This is generally supported by the health communication literature: Risk information seeking may offer people guidelines for future preventive behavior based on reflection and learning (Baumeister et al., 2007). While a few studies have shown that information seeking does not necessarily motivate health behaviors (e.g., Christensen et al., 2015), others have demonstrated a correlation between the two variables in the contexts of cancer screening (Hornik et al., 2013) and vaccination against the Middle East Respiratory Syndrome (Kim and Jung, 2017). Because cosmetic surgeries entail various levels of risk-taking and are usually not made in emergent situations, the following hypotheses are proposed:

H2: Affective risk responses have no direct negative correlation with cosmetic surgery intentions.

H3: Affective risk responses are indirectly associated with cosmetic surgery intentions through the mediation of risk

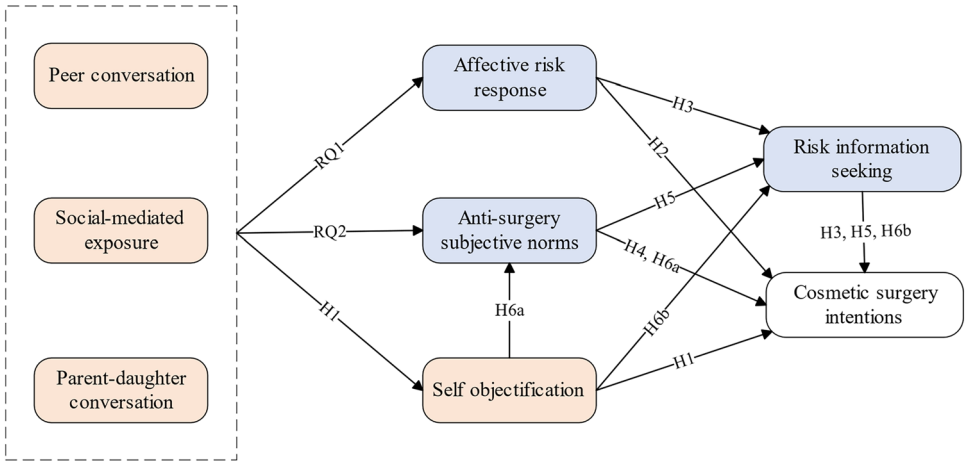

Fig. 1 Conceptual model and hypothesized pathways. *Note*. Variables highlighted in orange are derived from the Tripartite Influence Model (TIM), and variables in blue are derived from the Planned Risk Information Seeking Model (PRISM).

information seeking. Specifically, affective risk responses are positively associated with risk information seeking, which in turn is negatively associated with cosmetic surgery intentions.

Subjective norms, information seeking, and cosmetic surgery intention. Face-to-face and social-mediated interactions about BIEIs may not only cultivate self-objectification and trigger affective risk responses, but also impose subjective norms about doing or not doing cosmetic surgery upon young women (e.g., Hermans et al., 2022; Richetin et al., 2020). Subjective norms are defined as an individual's perception that significant others believe (s)he should or should not perform a particular behavior (Griffin et al., 1999) in the form of pressure (Pamela et al., 2009). Parents and peers are found to be major sources of subjective norms for cannabis use (Foster et al., 2016) and alcohol use (Lynch et al., 2015). Significant others could also be beauty bloggers and tutors that can exert personal influences through social media (Seekis and Barker, 2022). Regarding appearance enhancement-related concerns, however, there may exist conflicting subjective norms, such as norms of thinness (Strahan et al., 2006) and norms against cosmetic surgery (i.e., anti-surgery subjective norms). Therefore, the following research questions are proposed:

RQ2: For young women, are (a) peer conversations about BIEIs, (b) parent-daughter conversations about BIEIs, and (c) social-mediated exposures to BIEIs positively associated with anti-surgery subjective norms?

Subjective norms were proven to be valid in predicting a wide range of health behaviors, such as mammographic screening (Pamela et al., 2009) and smoking cessation (Bledsoe, 2006). Anti-surgery subjective norms can serve as an important mechanism of social constraint, which is positively correlated with an individual's attitude toward not doing cosmetic procedures (Richetin et al., 2020). In the RISP model, a vital precursor of risk information seeking is informational subjective norms, defined as perceived social norms that motivate the desire to obtain sufficient information (Griffin et al., 1999). However, anti-surgery subjective norms may not be equivalent to informational subjective norms that drive risk information seeking. This is because, on the one hand, research has shown that only supportive attitudes of significant others increase the willingness to seek health information, which in turn increases the intention to engage in health behaviors (Xiao and Borah, 2021). On the other hand, since oppositions from significant others have provided individuals strong behavioral guidelines, individuals may no longer need to search risk information for autonomous decision-making due to the perceived cost of information seeking (e.g., time and cognitive resources) (Link, 2024). Therefore, anti-surgery subjective norms may not only directly suppress the intentions of cosmetic surgery, but also reduce women's willingness to search risk information, which could otherwise weaken their cosmetic surgery intentions. In sum, the following hypotheses were proposed:

H4: Anti-surgery subjective norms have a direct negative correlation with cosmetic surgery intentions.

H5: Anti-surgery subjective norms are indirectly associated with cosmetic surgery intentions through the mediation of risk information seeking. Specifically, anti-surgery subjective norms are negatively associated with risk information seeking, which in turn is negatively associated with cosmetic surgery intentions.

Furthermore, individuals with higher degrees of self-objectification are more likely to embrace the norms of thinness often posed by models and celebrities (Strahan et al., 2006). They tend to value mainstream appearance ideals and disregard anti-surgery social norms, which ultimately strengthen their cosmetic surgery intentions (Calogero et al., 2017). Moreover, studies on risk information avoidance have found that individuals actively avoid risk warning information if they anticipate that the information obtained may collide with their original behavioral intentions (e.g., Ajekigbe, 1991; Sweeny et al., 2010). Women who experience higher levels of self-objectification are more likely to perceive risk information about cosmetic surgery as unpleasant. They may actively avoid searching for risk information that may impede them from undergoing cosmetic surgery. Hence, the following hypothesis is posited:

H6: Self-objectification is indirectly associated with cosmetic surgery intentions through the parallel mediations of anti-surgery subjective norms and risk information seeking. Specifically, self-objectification is negatively correlated with both anti-surgery subjective norms and risk information seeking, which in turn are negatively associated with cosmetic surgery intentions.

All the above hypothesized paths are presented in Fig. 1.

Methods and measures

We conducted a cross-sectional survey by commissioning *wenjuan.com*, an online survey platform, to collect data. Its sample pool contains around 2.8 million members, covering all 34 of China's provincial regions. Before the survey, we conducted semi-structured interviews with 15 informants to understand the motivations behind their cosmetic surgery intention. We found

Table 1 Sample demographics.

Demographics	Category	Frequency (%)
Education	High school or below	95 (12.91)
	College or equivalent	614 (83.42)
	Master or above	27 (3.67)
Occupation	Company employee	476 (64.67)
	Administrative institution employee	72 (9.78)
	Liberal profession	70 (9.51)
	College student	63 (8.56)
	Individual business	42 (5.71)
	Others	13 (1.77)
Marital status	Married	488 (66.30)
	Single	132 (17.93)
	Just in love	116 (15.76)
Total		736 (100)

that, except interpersonal interaction and social media exposure, risk concern and significant others' endorsement were two frequently-mentioned themes, which inspired us to integrate relevant viables of the TIM and the PRISM into the questionnaire. Subsequently, a pre-survey was made by forwarding an online questionnaire on WeChat to test the reliability and validity of measurements. Finally, an optimized online questionnaire was randomly distributed through the online survey platform to female registrants who aged 18–35 years from across China and had never undergone any form of cosmetic surgery. While ethics approval for non-interventional studies is not required, interviewees and respondents were all informed of the purpose of this study and the anonymity of their personal information. We set a minimum answer time, which was 2 min, for each page of the questionnaire. We also asked respondents to select a particular response option to ensure they were actively engaged throughout the survey. Submission was not allowed if they did not pass the attention check. Finally, 736 valid samples were collected. The respondents' average age was 29.29 ± 4.27 years, and their median monthly income was RMB 6001–8000 (USD 860–1150). Moreover, 614 (83.42%) respondents had finished or were receiving a college education. The relatively higher incomes of the respondents are in line with the characteristics of young women who can afford cosmetic surgery (See Table 1). The main variables were measured as follows:

Peer conversation about BIEIs. Based on Jones et al.'s (2004) scale, four items (e.g., "My friends and I talk about what we expect our bodies to look like" and "I discuss with my friends about how to enhance beauty.") were adopted to measure the extent to which respondents discussed appearance topics with their peers (*1 = Never, 5 = Always*), with higher average scores indicating more frequent discussions ($M = 3.45$, $SD = 0.73$, Cronbach's $\alpha = 0.82$).

Parent-daughter conversation about BIEIs. Four more statements (e.g., "My father/mother and I talk about how important it is to always look attractive" and "I discuss with my father/mother about how to enhance beauty.") based on Jones et al.'s (2004) scale were used to measure the extent to which respondents discussed appearance topics with their parents (*1 = Never, 5 = Always*), with higher average scores reflecting more frequent discussions ($M = 2.42$, $SD = 0.67$, Cronbach's $\alpha = 0.90$).

Social-mediated exposure to BIEIs. Adapting Keery et al.'s (2004) scale, we employed six items (e.g., "I was exposed to social media posts that emphasize the importance of appearance"; "I was exposed to social media posts that encourage cosmetic surgery"; and "I was exposed to social media posts that share beauty enhancement experiences.") to measure the extent to which respondents were exposed to appearance topics on social media (*1 = Never, 5 = Always*), with higher average scores representing higher levels of exposure ($M = 3.40$, $SD = 0.72$, Cronbach's $\alpha = 0.83$). Because Keery et al.'s (2004) scale was used to measure exposure to magazines and television shows, we revised the wording to measure women's exposure to China's mainstream social media platforms. In addition, while Keery et al.'s (2004) scale focused on media content such as thinness and appearance importance, we expanded the content to include social media elements such as cosmetic surgery promotion, beauty enhancement advice, and photos/videos of attractive individuals.

Self-objectification. In extant studies, the Self-Objectification Questionnaire (SOQ) (Noll and Fredrickson, 1998) and Objectified Body Consciousness Scale-Body Surveillance Subscale (OBCS-BSS) (McKinley and Hyde, 1996) have been widely adopted to measure self-objectification. However, both methods have exhibited certain limitations. Because SOQ measures self-objectification by ranking the importance of various physical traits, its internal consistency reliability cannot be calculated. Moreover, previous studies have repeatedly reported the problem of missing data that is difficult to solve (e.g., Lindner et al., 2012; Myers and Crowther, 2007). While OBCS-BSS was adopted across studies conducted in different social backgrounds, Kozee et al. (2007) measured self-objectification with two dimensions of self-surveillance and internalization of appearance ideals, which achieved satisfactory reliability and validity. Moradi (2010) concluded that "given the accumulating empirical support for the roles of internalization and body surveillance", "self-objectification may not be a single construct to be measured directly and separately" (p. 146). Therefore, this study adopts the measurement approach of Kozee et al. (2007), operationalizing self-objectification as a higher-order construct comprised of two dimensions (i.e., internalization of appearance ideals and self-surveillance).

Referring to Heinberg et al.'s (1995) Sociocultural Attitudes Towards Appearance Questionnaire-Internalization Subscale, five items (e.g., "I believe clothes look better on thin models.") were used to measure the extent to which respondents internalized appearance ideals (*1 = Completely disagree, 5 = Completely agree*; $M = 3.65$, $SD = 0.74$, Cronbach's $\alpha = 0.84$). Adapting McKinley and Hyde's (1996) Objectified Body Consciousness Scale-Body Surveillance Subscale (OBCS-BSS), we used five statements (e.g., "I think more about how my body looks than how it feels.") to measure the extent to which respondents monitor their own bodies (*1 = Completely disagree, 5 = Completely agree*; $M = 3.20$, $SD = 0.77$, Cronbach's $\alpha = 0.87$). A few items that were overlapped or inconsistent with the experiences of our elicitation research informants were removed from these scales. Based on factor analysis conducted after the pre-survey, items with low factor loading were also deleted from the formal questionnaire.

Anti-surgery subjective norms. We focused on the injunctive norms, which refer to the perception that significant others want someone to engage in a particular health behavior (Park and Smith, 2007). Four questions (e.g., "According to your perception, can cosmetic surgery be accepted by your female/male friends?") were used to measure the extent to which cosmetic surgery is perceived to be encouraged by parents, friends, classmates/colleagues, and social media influencers (*1 = all major operations are acceptable; 7 = Even the smallest operations are unacceptable*),

with higher average scores indicating higher anti-surgery subjective norms ($M = 3.38$, SD = 1.14, Cronbach's $\alpha = 0.91$).

Affective risk response. We adopted the conceptual approach proposed by Petrova et al. (2023) Berlin Emotional Responses to Risk Instrument, which emphasizes discrete emotional responses, such as worry and fear, toward specific risk scenarios. Respondents were asked to rate how worried they were about five common risks of cosmetic surgery suggested by Richetin et al. (2020) (e.g., "Do you worry about surgical wound infection?" *1 = I'm not worried at all, 6 = I'm extremely worried*), with higher average scores reflecting higher affective risk responses ($M = 4.49$, SD = 0.97, Cronbach's $\alpha = 0.90$).

Risk information seeking. Three questions (e.g., "When it comes to the topic of cosmetic surgery, do you search for online information about postoperative sequelae?") were adapted from Graffigna et al.'s (2017) scale of Online Health Information-Seeking Behavior to measure the extent to which respondents searched for online risk information (*1 = Never, 5 = Always*), with higher average scores representing higher engagement in risk information seeking ($M = 3.04$, SD = 0.89, *Cronbach's* $\alpha = 0.87$).

Cosmetic surgery intention. We adopted a broader concept of cosmetic surgery encapsulating surgical procedures and minimally invasive techniques (Wen et al., 2015). From Henderson-King et al.'s (2005) scale about cosmetic surgery attitudes, four behavioral intention-related statements (e.g., "I could end up having some kind of cosmetic surgery in the future.") were singled out to measure respondents' surgery intentions (*1 = Strongly disagree, 7 = Strongly agree*), with higher average scores indicating stronger intentions ($M = 4.69$, SD = 1.39, Cronbach's $\alpha = 0.93$).

Control variables. Demographic variables, including age, education, income, and marital status, were controlled.

Results

Measurement model, common method bias, and model fit. We employed SPSS AMOS 25 to conduct measurement testing and structural equation modeling. First, we tested the measurement model's construct reliability, convergent validity, and discriminant validity. Table 2 shows that all Cronbach's α and composite reliability (CR) values surpassed the threshold of 0.70. The average variance extracted (AVE) values for all latent variables exceeded .50. The square root of the AVE for each latent variable outperformed its correlation with other variables. Overall, statistical results exhibited adequate construct reliability and convergent and discriminant validities.

Second, to assess potential common method bias, we performed Harman's one-factor test on all measurement items used in the study (Podsakoff and Organ, 1986). The results showed that multiple factors were extracted, and the first factor accounted for 25.97% of the total variance, which was below the 50% benchmark used to determine the presence of common method variance. We further tested common method bias based on the unmeasured latent method construct technique (Liang et al., 2007). The results showed that the average variance was 0.684 for the indicators, whereas the method-based average variance was 0.005. The ratio of the substantive variance to the method variance was around 137:1. Overall, common method bias was unlikely to be a significant concern in this study.

Third, to test the model fit, we performed a confirmatory factor analysis. Referring to Hair et al. (2010), the hypothesized model fits the data well: $\chi^2 = 1933.7$, $\chi^2/df = 2.70$, the comparative fit index (CFI) = 0.927, the Tucker-Lewis index (TLI) = 0.923, and the root mean square error of approximation (RMSEA) = 0.048. These variables can explain 32.5% of the variance in cosmetic surgery intentions.

Hypothesis test. H1a, H1b, and H1c address whether self-objectification mediates the relationships between tripartite influences and cosmetic surgery intentions. Figure 2 shows that peer conversation ($\beta = 0.20$, $p < 0.001$), parent-daughter conversation ($\beta = 0.19$, $p < 0.001$), and social-media exposure ($\beta = 0.33$, $p < 0.001$) are all positively correlated with self-objectification, which in turn positively predicts cosmetic surgery intentions ($\beta = 0.28$, $p < 0.001$). Table 3 shows that the indirect effects of peer conversation, parent-daughter conversation, and social-mediated exposure on cosmetic surgery intentions are all significant ($\beta = 0.05$; $\beta = 0.05$; $\beta = 0.09$, respectively), with a 95% confidence interval excluding 0 (95% CI [0.03, 0.09]; 95% CI [0.03, 0.08]; 95% CI [0.06, 0.13], respectively), and the direct effects are all insignificant ($p = 0.07$; $p = 0.08$; $p = 0.42$, respectively). Therefore, self-objectification fully mediates the effects of peer conversation, parent-daughter conversation, and social-mediated exposure on cosmetic surgery intentions, supporting H1a, H1b, and H1c.

RQ1a, RQ1b, and RQ1c concern the associations of peer conversation, parent-daughter conversation, and social-mediated exposure with affective risk response. Figure 2 shows that only peer conversation is positively associated with affective risk response ($\beta = 0.15$, $p < 0.01$).

H2 and H3 test whether affective risk response is associated with cosmetic surgery intention directly or indirectly through the mediation of risk information seeking. Figure 2 shows that affective risk response has no direct correlation with surgery intention. However, it is positively associated with risk information seeking ($\beta = 0.24$, $p < 0.001$), which in turn is positively rather than negatively associated with cosmetic surgery intention ($\beta = 0.10$, $p < 0.01$). The bootstrap analysis in Table 3 further demonstrates an indirect effect of affective risk response on cosmetic surgery intention ($\beta = 0.02$), with a 95% confidence interval excluding 0 (95% CI [0.01, 0.05]), and the direct effect is insignificant ($\beta = 0.01$, $p = 0.80$). While risk information seeking has a mediation effect, it is associated with surgery intention positively rather than negatively. Therefore, H2 is supported, and H3 is partially supported.

RQ2a, RQ2b, and RQ2c concern the associations of peer conversation, parent-daughter conversation, and social-mediated exposure with anti-surgery subjective norms. Figure 2 shows that a negative correlation exists only between parent-daughter conversations and subjective norms ($\beta = -0.21$, $p < 0.001$).

H4 and H5, respectively, address whether anti-surgery subjective norms are associated with cosmetic surgery intention directly or indirectly though the mediation of risk information seeking. Figure 2 shows that subjective norms are negatively associated with cosmetic surgery intention ($\beta = -0.28$, $p < 0.001$). Moreover, subjective norms are negatively correlated with risk information seeking ($\beta = -0.23$, $p < 0.001$), which in turn is positively rather than negatively associated with cosmetic surgery intention ($\beta = 0.10$, $p < 0.01$). The bootstrap analysis in Table 3 shows that the indirect effect between subjective norms and cosmetic surgery intention is significant ($\beta = -0.02$), with a 95% confidence interval excluding 0 (95% CI [−0.05, −0.01]), and the direct effect is also significant ($\beta = -0.28$, $p < 0.001$). This means that, while risk information seeking partially mediates the effect of subjective norms on cosmetic surgery intention, its relationship with cosmetic surgery intention is positive. In sum, H4 is supported, and H5 is partially supported.

Table 2 Correlations, average variances extracted, and reliability indicators.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Education	——											
2. Income	0.259**	——										
3. Marital status	0.023	0.344**	——									
4. Peer conversation	0.202**	0.207**	0.057	**0.806**								
5. Social-mediated exposure	0.113**	0.129**	0.019	0.635**	**0.730**							
6. Parent-daughter conversation	0.191**	0.162**	0.175**	0.425**	0.319**	**0.872**						
7. Affective risk response	0.118**	−0.096**	−0.115**	0.087*	0.017	−0.14	**0.845**					
8. Anti-surgery subjective norm	0.067	−0.163**	−0.171**	−0.271**	−0.283**	−0.353**	0.308**	**0.891**				
9. Self-surveillance	0.149**	0.178**	0.002	0.549**	0.537**	0.238**	0.027	−0.297**	**0.770**			
10. Internalization of appearance ideals	0.085*	0.072	0.001	0.327**	0.354**	0.223**	0.037	−0.177**	0.406**	**0.783**		
11. Risk information seeking	0.132**	0.191**	0.092*	0.420**	0.393**	0.389**	0.152**	−0.281**	0.351**	0.204**	**0.888**	
12. Cosmetic surgery intention	0.063	0.097*	0.110**	0.335**	0.328**	0.217**	−0.078*	−0.419**	0.406**	0.323**	0.316**	**0.913**
Cronbach's α	——	——	——	0.821	0.826	0.895	0.900	0.913	0.828	0.843	0.866	0.933
CR	——	——	——	0.881	0.872	0.927	0.926	0.939	0.879	0.888	0.918	0.952
AVE	——	——	——	0.650	0.532	0.760	0.714	0.794	0.592	0.613	0.788	0.833

The diagonal in bold font is the square root of the AVE (average variance extracted).
*$p < 0.05$, **$p < 0.01$.

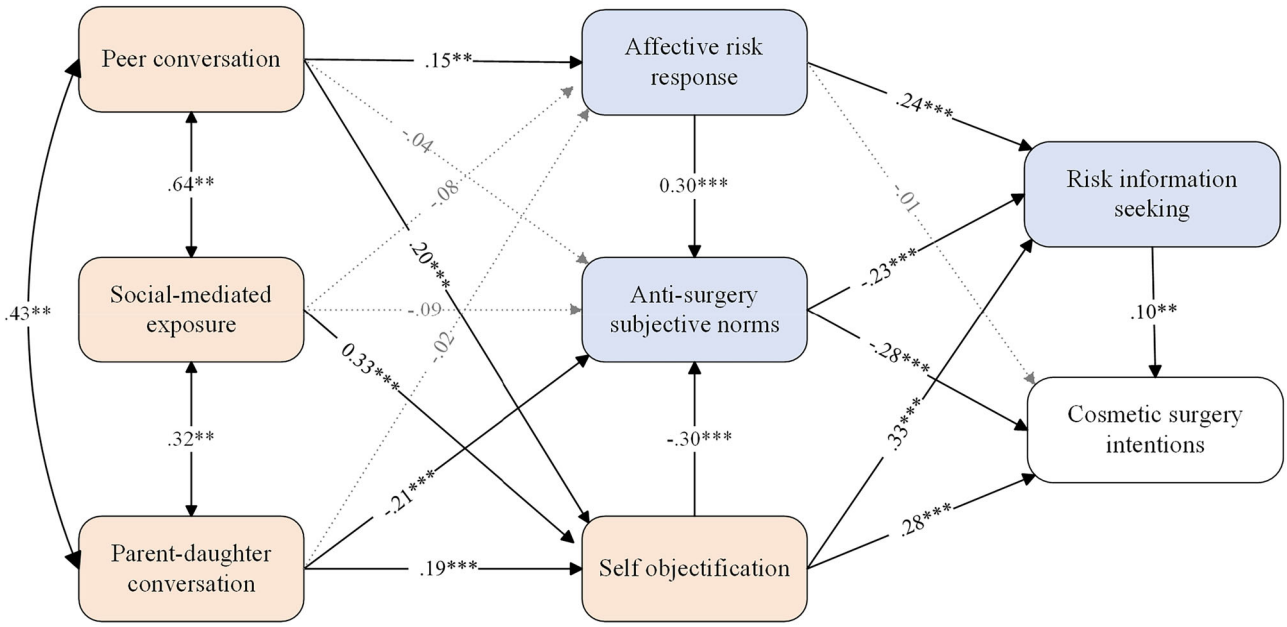

Fig. 2 Path model ($N = 736$). *Note.* *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Solid lines indicate statistically significant paths, and dashed lines indicate nonsignificant paths.

H6 tests the parallel mediation effects of subjective norms and risk information seeking on the relationship between self-objectification and cosmetic surgery intention. Figure 2 shows that self-objectification is negatively associated with anti-surgery subjective norms ($\beta = -0.30$, $p < 0.001$) but positively correlated with risk information seeking ($\beta = 0.33$, $p < 0.001$). The bootstrap analysis in Table 3 further demonstrates that the indirect effects of self-objectification on cosmetic surgery intention are significant ($\beta = 0.12$), with a 95% confidence interval excluding 0 (95% CI [0.08, 0.17]), and the direct effect is also significant ($\beta = 0.28$, $p < 0.001$). Overall, the parallel mediation effects are partially significant, and H6 is partially supported. Among the two mediators, anti-surgery subjective norms ($\beta = 0.09$, 95% CI [0.06, 0.12]) and risk information seeking ($\beta = 0.03$, 95% CI [0.01, 0.06]) contribute to the parallel mediation effects with various degrees of significance.

Discussion and conclusion

While the TIM is a well-established theory for detecting the health implication of communication, the model has a notable limitation due to merely stressing the effect of tripartite influences on promoting negative body concepts. This study combines the TIM and the PRISM as an integrative framework for a nuanced understanding of the mechanisms underlying young Chinese women's cosmetic surgery decision-making. The rationale for the model integration lies on the fact that appearance conversations with peers and parents and through social media may not only nurture self-objectification but also motivate risk information seeking. Statistical results have demonstrated the overall validity of both approaches to cosmetic surgery intentions. Moreover, in numerous TIM studies, young women were identified as passive recipients of media and interpersonal influences, predisposed to be easily deluded by the benefits of cosmetic surgery (Sun, 2021). By defining young women as both receivers of sociocultural influences and social agents who are conscious of risk control, this study not only complements a visual angle of risk management, but also goes beyond those perspectives that only emphasize a single dimension of humanity.

Statistical results show that peer, parent, and media influences all positively predict cosmetic surgery intentions by reinforcing self-objectification. This finding is consistent with previous studies that highlighted the influence of traditional media and interpersonal interactions (e.g., Sharp et al., 2014). However, this study goes a step further to showcase an alternative way in which self-objectification promotes cosmetic surgery. Young women involved in deeper levels of self-objectification may reject anti-surgery subjective norms, which otherwise can be a vital force curbing the impulse for cosmetic enhancement. This may be because the internalization of appearance ideals implies 'a general endorsement of societal values regarding appearance' (Menzel et al., 2011, p. 470), which contradicts social norms that resist artificial body intervention for physical esthetics. Besides the promotion of cosmetic enhancement, excessive self-objectification may undermine young women's self-identity, life attitude, and social confidence (Daniels et al., 2020). It is also associated with negative emotions, eating disorders, and other health risks (Riemer et al., 2021). Because self-objectification is cultivated in specific sociocultural contexts, its alleviation depends on a substantial ideological change encapsulating the diversity of female bodies through gender education emphasizing self-acceptance (Walker, 2021) or featuring body-positivity advocacy (Vandenbosch et al., 2022).

Among the three sociocultural origins of self-objectification, social media accounts for the greatest indirect and accumulative influence on the desire for cosmetic surgery through their consecutive contribution to self-objectification. In films, television products, and social media contents, female characters continue to be depicted to satisfy the male gaze (Hu and Gu, 2023). Beyond videos featuring cosmetic procedures and before-and-after photographs (Sorice et al., 2017), social media create batches of micro-celebrities who associate so-called female consciousness with make-up, weight control, and appearance modification by advocating self-pleasing through consumption (Li and Xiao, 2023). User-generated contents sharing cosmetic surgery experiences proliferate on social media platforms, such as *Red*, without disclosing its promotional nature, which should be regulated by the Advertising Law to ensure the transparency of sponsorship disclosure.

Table 3 Bootstrap analysis of mediation effects.

Hypothesis	Path	β	LLCI	ULCI
H1	Peer conversation→SO → CSI	0.05	0.03	0.09
	Social media exposure→SO → CSI	0.09	0.06	0.13
	Parent-daughter conversation→SO → CSI	0.05	0.03	0.08
H3	Affective risk response→RIS → CSI	0.02	0.01	0.05
H5	Subjective norms→RIS → CSI	-0.02	-0.05	-0.01
H6	SO→Subjective norms→CSI	0.09	0.06	0.12
	SO → RIS → CSI	0.03	0.01	0.07

SO self-objectification, *CSI* cosmetic surgery intention, *RIS* risk information seeking.

This study found that while daily peer conversations are a vital source of self-objectification, they also give rise to affective risk responses, specifically worries about surgical risks, which further motivate risk information seeking to reduce anxiety and uncertainty. This means peer conversations may lead to greater exchange of critical views on cosmetic treatment in comparison to parent-daughter conversations and social media exposure. However, statistical results show that heightened affective risk responses may not directly deter cosmetic surgery decision-making. This is aligned with previous research findings that affective risk responses may directly motivate protective behavior when the threat is imminent and the proposed coping behavior is perceived as appropriate (Yang et al., 2018). Under less urgent situations, affective risk responses may primarily trigger risk information seeking as a way of risk coping (Baumeister et al., 2007) instead of immediately deterring cosmetic surgery. Apart from affective risk response, self-objectification is also positively correlated with online risk information seeking, implying that even young women undergoing severe self-objectification have the agency for risk control.

Ironically, however, frequent risk information seeking may promote rather than suppress cosmetic surgery intentions, which challenges previous research findings that claim the positive health consequences of risk information seeking (e.g., Hornik et al., 2013; Kim and Jung, 2017). This demonstrates that not only the frequency of information seeking but also the valence of the content searched should be given great importance. Owing to the commercial nature of search engines, what information netizens access is not necessarily what they demand. For example, searching for cosmetic surgery risks on China's biggest search engine service, most of the top results contain the word "risk" in the titles while recommending "reputable" clinics and surgeons in the texts, which possibly attenuate risks and enhance self-efficacy for cosmetic procedures. A similar situation was identified in related videos on YouTube, which downplayed risks and boasted the benefits of cosmetic surgery as persuasive tactics (Wen et al., 2015).

In terms of body concepts, Confucian culture advocates that people should never intentionally hurt their bodies, which is a manifestation of filial piety since they are gifts from parents. However, statistical results show that more frequent parent-daughter interactions are associated with deeper self-objectification and less perceived anti-surgery norms. This may be because, on the one hand, the frequency of parent-daughter conversations about BIEIs is likely to make daughters sense the "importance" of beauty, which in turn increases their internalization of beauty ideals (Sharp et al., 2014). On the other hand, when people discuss health issues, the prevailing social norms of the discussion environment are crucial in determining the valence of communication effects (Morgon, 2009). In a social environment where women possessing beauty ideals are often given priorities in the domains of marriage and employment, even if parents don't explicitly express their support for or opposition to beauty enhancement, their frequent discussion of BIEIs may be easily interpreted by their daughters as pressures to meet beauty ideals (Thompson et al., 1999). The above two explanations are consistent with Arroyo et al.'s (2017) finding that mother-daughter conversations about appearance-related issues are an important mechanism underlying daughters' eating disorders, regardless of the way and content of conversation.

Moreover, social norms related to appearance modification in a specific society have multiple origins (Pasick et al., 2009), which are sometimes conflicting. In patriarchal societies, women's discussing cosmetic surgery with family often involves seeking approval, particularly from male family members, for appearance modification. While Confucian culture requires people to adhere to an unmodified body, young women are expected to upgrade their social class through appearance enhancement in some families (Wen et al., 2015). Under these circumstances, cosmetic surgery is driven by the intersection of various social discriminations related to gender, class, and employment (Jiang and Gong, 2016). Deeper self-objectification and less perceived anti-surgery norms well document that patriarchal gender norms play a more critical role in women's cosmetic surgery decision-making than Confucian ethics disapproving of body modification, indicating the significance of pursuing gender equality in contemporary China.

This study has some practical implications. First, because the dominant social culture continues to reinforce a single standard of beauty, public communication campaigns may advocate the diversity of ideal human bodies, targeting the alleviation of sexual objectification among not only young women but also their significant others. Second, this study advocates that young women should be offered sufficient risk information so that informed decision-making based on an adequate risk-benefit assessment is possible (Griffiths and Mullock, 2018). Thus, this study strongly suggests an urgent governance of search engine services and social media contents by restraining infomercials that exaggerate the positive results of cosmetic procedures without necessary risk warnings, by China's Advertising Law and Regulations on the Management of Internet Information Search Services. Third, when the contribution of information seeking to rational decision-making is tarnished due to the marginalization of authentic risk information, the role of anti-surgery norms becomes increasingly significant. This study suggests that parental influence still plays a critical role in shaping young women's cosmetic surgery decisions. Future interventions may consider how to enhance risk-aware communication within the family context to facilitate informed decision-making processes.

This study has a few limitations. First, we only incorporated two core constructs of the PRISM (i.e., affective risk response and subjective norms) with all the constructs of the TIM to form the path model. Future studies could include other PRISM constructs, such as self-efficacy and knowledge threshold, to explore more mediators between exposure to BIEIs and cosmetic surgery intentions. Second, we only measured the frequency of risk information seeking and tested its association with cosmetic surgery intentions. Future research should include both frequency and valence of risk information seeking to explicate their complex implications for cosmetic surgery decision-making. Third, while we tested how social-mediated exposure to BIEIs predicts cosmetic surgery intentions, access to other social media contents, such as feminist critiques of sexual objectification, could be an antecedent variable of future research. Finally, the sample of this study is skewed toward young women with higher incomes and educational backgrounds. Therefore, the motivations underlying

cosmetic surgery intentions of lower-class women can be examined in future studies.

Data availability

The datasets generated during the current study are available in the OSF repositor, https://osf.io/hwe2c/files/osfstorage.

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Author contributions

YG, writing—original draft, conceptualization; LZ, formal analysis; HQ, writing—review and editing, funding acquisition, supervision. All authors approved the final version of the article.

Competing interests

The authors declare no competing interests.

Ethical approval

This research received ethical approval from the ethical review committee of the School of Journalism and Communication, Xiamen University on November 25, 2021 (No.

20211101). All procedures performed in this study complied with the ethical standards of the institution as well as with the Declaration of Helsinki and its later amendments.

Informed consent

Data collection commenced in November 2021, with all participants giving implied informed consent through an online process prior to their involvement. The research team conducted the sessions throughout November–December 2021, ensuring that ethical standards were strictly followed and informed consent was obtained at the outset of each session. They were presented with detailed information about key aspects of the research, including: (1) confidentiality, which ensured that personal information would remain private and would not be disclosed or published, and (2) data usage, specifying that all collected data would solely serve academic research purposes without any commercial applications. To participate in the study, participants were required to indicate their understanding and agreement by clicking the "agree and continue" button, which granted them access to the questionnaires.

Additional information

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