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Understanding the attitudes toward sunless tanning product use: implication of tanning product consumption

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Abstract

The goal of this study is to test the antecedents of overall attitudes toward sunless tanning product use. The data collected from 302 US female college students with an average age of 20.11 were included in the analysis. A structural equation modeling was performed to test the hypothesized relationships. The results revealed that body surveillance and social ostracism influenced the individuals' cutaneous body image dissatisfaction, which also influenced perceived attractiveness and fitness of tanned appearance. Perceived tanning attractiveness and perceived tanning physical fitness positively influences attitudes toward tanning product use. It is evident that seeing one's own body through the lens of others is at the root of positive attitudes toward sunless tanning products. Positive attitudinal changes toward sunless tanning products can be successfully established emphasizing sunless tanning products as fashion consumption. The findings in this study have important relevance, in that tanning products can be marketed as cosmetic appearance-enhancement products for people to look attractive, toned, and fit.

Keywords: Body-tanning, Body image, Body satisfaction, Tanning product, Appearance

Introduction

A tanned appearance can be achieved through three different methods: sunbathing, tanning beds, and sunless tanning product use. As a result of increased public awareness of skin cancer, the sunless tanning product market has grown considerably (Stryker et al. 2007). Sunless tanning products are defined as Non-UV induced tanning methods which refers to over-the-counter lotions or spray tans applied in the home or at salons (Paul et al. 2011). The Center for Disease and Control Prevention promoted the use of sunless tanning products as a safer alternative to UV-induced tanning; therefore, sunless tanning products have emerged as a practical and healthy alternative to UV-induced tanning.

The tanning product market has grown considerably (Stryker et al. 2007); in part, tanning lotions provide the public with an alternative means of obtaining a tan (Girgis et al. 2003). However, little research has examined the underlying body image issues that may lead people to develop positive attitudes toward sunless tanning products. These products are promoted as a substitute for indoor and outdoor tanning, and as an

enhancement for a tanned body (Fu et al. 2004). Therefore, developing a comprehensive model of tanning product use can serve as a valuable tool to build skin cancer prevention strategies and effective marketing for sunless tanning products. Building on the current literature, the purpose of this study is to test the antecedents of overall attitudes toward sunless tanning product use.

Literature review and hypothesis development

Young adults view themselves as managers of their own bodies, who trust their ability to control and change their appearance. One popular appearance-enhancing method is UV-induced body-tanning, which has become a growing public health threat (i.e., skin cancer) (Blashill 2013). Unfortunately, the motivation to maintain an ideal tan and body has been identified as a perception that overrides skin cancer risk (Hillhouse et al. 2012). Consequently, these findings further suggest focusing on the individual reasons for using non-UV-induced tanning.

Although surveys show that tanning product use is not as prevalent, an investigation of consumers' tanning product use is warranted because the market size has increased (Sahn et al. 2012). Recent studies have identified the motivations for using tanning products, such as safety from UVA rays, the desire to avoid wrinkles, convenience, having a family member with melanoma, disliking sunspots, and feeling uncomfortable in sunlight (Sahn et al. 2012).

Body Surveillance and Social Ostracism

The internalization of appearance based on the third-person perspective is referred to as self-objectification (Frederickson and Roberts 1997), which is characterized as body surveillance. When heightened, it manifests itself as body surveillance, or the habitual monitoring of how one's body appears to others. According to objectification theory, body surveillance is posited as leading to the perceived failure to meet ideal body standards. Existing research supports the role of body surveillance in the development of increased body image concerns for women (Forbes et al. 2006; Frederickson et al. 1998; McKinley and Hyde 1996; Noll and Fredrickson 1998). Women use body surveillance as a strategy to determine how other people will view and treat them (Slater and Tiggemann 2011; Tiggemann and Lynch 2001; Tiggemann and Slater 2001). Therefore, body surveillance is one of the proposed mechanisms in developing body image dissatisfaction.

Peer interactions include direct comments about appearance (Yoo and Johnson 2008). Being a victim of bullying may further heighten risky appearance-related behaviors (Menzel et al. 2010). Adolescent boys who have been bullied also show stronger intentions to engage in indoor tanning (Blashill and Traeger 2013). Social ostracism is defined as being ignored or excluded by others (Williams 2007). Understanding the role of social ostracism may provide insight into other presumed factors that contribute to appearance concern. For example, higher levels of perceived unattractiveness are related to social exclusion, and social ignoring (Gilman et al. 2012). In addition, the salience of social motives to tan and use sunless tanning products may be influenced by peers and by the importance of maintaining healthy social networks among appearance-conscious young adults. Therefore, the following hypotheses are established:

H1: Body surveillance positively influences cutaneous body image dissatisfaction

H2: Social ostracism positively influences cutaneous body image dissatisfaction

Cutaneous body image dissatisfaction

Cutaneous body image (CBI) refers to an individual's subjective evaluation of integumentary aspects of appearance, which include the skin, hair, and nails (Gupta et al. 2004). The assessment of CBI has important implications because it significantly affects one's quality of life (Gupta and Gupta 2013). Skin is an important aspect of appearance, as it communicates information about individuals throughout their lifespan. Researchers have identified that CBI dissatisfaction can contribute to significant morbidity in dermatologic disorders, and it is often the primary consideration in deciding whether or not to proceed with certain cosmetic procedures. Relatedly, CBI dissatisfaction has been associated with intentional self-injury (Grant et al. 2006). The overall appearance of the skin, even when minimally flawed, can have a profound effect on one's body image (Gupta and Gupta 2013). Therefore, it is important to assess underlying CBI concerns in individuals' perceived tanning attractiveness and physical fitness. Therefore, the following hypotheses are established:

H3: CBI dissatisfaction positively influences the perceived attractiveness of tanned skin

H4: CBI dissatisfaction positively influences perceived tanning physical fitness

Perceived tanning attractiveness and tanning physical fitness

The social and cultural influences of attractiveness are particularly salient in body-tanning behavior engagement, given that a tanned appearance was found to elicit a more positive impression than a pale complexion (Stapleton et al. 2008). For example, sunless tanning products users may also be increasing their exposure to harmful ultraviolet radiation (UVR), either through sun exposure or indoor tanning devices. It is found that sunless tanning product users may also be increasing their exposure to harmful ultraviolet radiation (UVR), either through sun exposure or indoor tanning devices (Dajani et al. 2005). This perceived attractiveness, as a result of having tanned skin, is more complex than merely changing one's skin color among frequent body-tanners. For example, it has been acknowledged that individuals believe they look thinner when they are tanned (O'Riordan et al. 2006). Body-tanning is associated with weight management behaviors to achieve physical attractiveness. It was found that frequent tanning-bed users are highly concerned about their weight and other weight-related behaviors, such as dieting to lose weight, using laxatives, and vomiting to control weight, in addition to having friends who place high importance on being thin and trying to look like prominent figures in the media (Blashill and Traeger 2013). In addition, users of sunless tanning products may be less inclined to practice safe sun behaviors. Many tanning salons now offer both sunless tanning and UVR tanning beds at the same locations (Fu et al. 2004), providing the ease of using both methods. However, little is known about the relationship between perceived attractiveness and the physical fitness of a tanned appearance to attitudes toward sunless tanning products. Therefore, the following hypotheses are established.

- H5: The perceived attractiveness of tanning significantly influences positive attitudes toward sunless tanning products
- H6: Perceived tanning physical fitness significantly influences positive attitudes toward sunless tanning products

Sunless tanning product use

Sunless tanning products have become more readily available since the first sunless tanning lotion was introduced in the 1960s (Owens 2007). Some argue that use of a sunless tanning product has a negative correlation with the use of UV-induced tanning. A recent pilot survey with 121 individuals who used a spray sunless tanning treatment revealed that most respondents reported that they would not change their time spent in the sun or sunscreen use as a result of using sunless tanning. However, 73% of those who had reported using tanning beds stated that they had or would decrease tanning bed use (Sheehan and Leshner 2005). Building on the current literature, the results of the study will serve in the following ways: first, understanding the attitudes toward sunless tanning products will establish alternative tanning methods that healthcare providers can suggest to individuals who actively engage in UV-induced tanning; second, understanding positive attitudes toward sunless tanning products can aid in the development of new marketing strategies.

Methods

Data collection

After gaining Institutional Review Board Approval, a total of 383 female college students enrolled at a large private southern university participated in the study. The participants were contacted via a weblink to an online survey and were asked for their permission to join the study. The instructors of courses in the Family and Consumer Sciences department were contacted to distribute the online survey using their course websites. The survey was voluntary, without any incentives or extra credit. A consent form was given on the webpage, providing information about the survey and the nature of the study. Consent was given by the participants via clicking on an “agree” or “disagree” button to participate in the survey after reading the consent form.

Sample characteristics

Of the total, 302 Caucasian female responses were included in the analyses. A female college student group is an appropriate sample to examine the relationships among body image, body dissatisfaction, and attitudes toward sunless tanning product use. In response to the high preference of tanning among young female adults (Gillen and Markey 2012), a female college student sample has been often selected in several studies on tanning behavior. In addition, the Caucasian ethnic group has been selected because they are the primary users of artificial tanning facilities (Demko et al. 2003; Gillen and Markey 2012; Guy et al. 2011). Ages ranged from 18 to 31 years, with an average age of 20.11 years old. The youngest age at which participants used a tanning bed or booth with tanning lamps was 12 years old, and the oldest age was 28 years old. Over half of the participants have used sunless tanning creams or lotions that they applied themselves

(56.8%), and over half of them have never used a tanning bed or booth with tanning lamps (72.4%), nor have they ever used a spray-on or mist tan at a tanning salon or other business (69.4%).

Instrument development

Body surveillance

The surveillance scale (SATAQ) comprises eight items that are measured on a 5-point rating scale (1 = strongly disagree, 5 = strongly agree; McKinley and Hyde 1996). Participants were asked to rate their level of agreement related to their body surveillance such as, "I think about how I look" and "I worry about how I look to other people." The reported internal consistency was $\alpha = .81$, with a higher score denoting increased body surveillance.

Social ostracism

Social ostracism was measured using the social ostracism scale (Gilman et al. 2012), which is an instrument that includes five statements related to one's social experiences, rated on a 5-point scale (1 = strongly disagree, 5 = strongly agree). Social ostracism includes items such as, "Others have ignored my greetings when we are walking by one another" and "Others treat me as if I am invisible." The internal consistency was $\alpha = .92$, with a higher score denoting higher experience of social ostracism.

Cutaneous body image dissatisfaction

Seven items of body satisfaction were measured on a 5-point rating scale (1 = strongly disagree, 5 = strongly agree) developed by Gupta and Gupta (2013). The items include: "I like the overall appearance of my skin" and "I like the complexion or the overall color of the skin of my face". To measure the degree of body dissatisfaction, the items were reverse coded for further data analysis. The reported internal consistency was $\alpha = .93$, with a higher score denoting higher body dissatisfaction.

Perceived tanning attractiveness

Five items of perceived tanning attractiveness were measured on a 5-point rating scale (1 = strongly disagree, 5 = strongly agree) developed by Cafri et al. (2006). Example items include: "I tan because it makes me more attractive"; "Having a tan gives me more sex appeal"; and "I tan because it makes me look better." The internal consistency of perceived tanning attractiveness was $\alpha = .85$, with a higher score denoting higher perceived tanning attractiveness.

Perceived tanning physical fitness

Five items of perceived physical fitness as a result of tanning were measured on a 5-point rating scale (1 = strongly disagree, 5 = strongly agree) developed by Cafri et al. (2006). Example items include: "The tanner I am, the more physically fit I look" and "I tan because it helps me look in shape". The internal consistency of tanning attractiveness was $\alpha = .86$, with a higher score denoting higher tanning physical fitness perceived.

Positive attitudes toward sunless tanning product use

Six items of positive attitudes toward sunless tanning product use were measured on a 5-point rating scale (1 = strongly disagree, 5 = strongly agree) developed by the researchers. Example items include: “It is important to me that I use tanning products that achieve a tan of the desired color” and “It is important to me that I use tanning products that last long”. The internal consistency of tanning attractiveness was $\alpha = .94$, with a higher score denoting greater importance placed on positive attitudes toward sunless tanning products.

Results

Preliminary data analyses

Factor analysis and reliability check

Exploratory factor analysis was conducted on six measures. Principle component analysis was utilized with orthogonal varimax rotation. Kaiser normalization and the requirement of eigenvalues greater than 1.0 were standards adopted for factor identification. Factor loadings exceeding .50 were considered as evidence for construct validity. After removing 8 items with low factor loadings (4 items for body surveillance, 1 item for social ostracism, and 3 items for cutaneous body image dissatisfaction), one factor was identified for all six variables, indicating unidimensionality for each variable. The internal consistencies for all six factors were over .70.

Measurement model

Table 1 presents the results of the confirmatory factor analysis. We followed the preliminary analysis with the two-step procedure recommended by Anderson and Gerbing (1988) to establish both the measurement and structural model. Confirmatory factor analysis (CFA) was performed via LISREL 9.2 on 36 indicators and six latent variables using maximum likelihood estimation in the analysis. The insignificant paths (the 2 items for perceived tanning attractiveness, the 1 item for perceived tanning physical fitness, and the 2 items from positive attitudes toward sunless tanning products) were removed after the initial CFA. From the CFA with significant loadings of estimates, the model provided an acceptable fit to the data, $\chi^2(194) = 871.6$; CFI = 0.978; GFI = 0.972; RMSEA = 0.030.

The composite reliability (CR) is a measure involving the overall reliability of a collection of items. The average variance extracted (AVE) measures the amount of variance in the indicators explained by a common factor (Anderson and Gerbing 1988). In general, a CR larger than 0.7 (Nunnally and Bernstein 1994) and an AVE larger than 0.5 are considerable (Fornell and Larcker 1981). The composite reliabilities for all constructs ranged from 0.89 to 0.94; moreover, the average variance extracted (AVE) for all constructs accounted for more than 0.5 of the total variance, and all item-factor loadings were greater than 0.5. Thus, evidence for convergent validity was found for all constructs. The AVEs of all latent constructs were greater than the estimates of the squared correlation between them, which also confirmed the discriminant validity of the constructs.

Table 1 Confirmatory factor analysis results (n = 302)

Construct/indicator	Standardized estimate	t-value	α	CR	AVE
ξ_1 Body surveillance			0.82	0.92	0.74
I rarely think about how I look	0.81 ^a	–			
I rarely compare how I look with how other people look	0.87	16.89***			
I rarely worry about how I look to other people	0.77	14.92***			
I am more concerned with what my body can do than how it looks	0.73	14.70***			
ξ_2 Social ostracism			0.92	0.88	0.66
In general, others treat me as if I am invisible	0.81 ^a	–			
In general, others look through me as if I do not exist	0.90	21.50***			
In general, others have ignored my greetings when we are walking by one another	0.83	22.24***			
In general, others ignore me.	0.90	20.91***			
η_1 Cutaneous body image dissatisfaction			0.93	0.94	0.84
I like the overall appearance of my skin ^a	0.90 ^a	–			
I like my complexion or overall color of my skin ^a	0.94	28.41***			
I like the appearance of the skin of my face ^a	0.90	27.97***			
η_2 Perceived tanning attractiveness			0.83	0.89	0.73
I tan because it makes me more attractive	0.88 ^a	–			
I tan because it makes me look better	0.75	15.41***			
I tan because it makes me more confident in my appearance	0.87	23.75***			
η_3 Perceived tanning physical fitness			0.88	0.89	0.67
A tan gives my body the appearance of having more muscle tone	0.82 ^a	–			
A tan helps me look like I'm in good physical shape	0.65	11.35***			
I tan because it helps me look in shape	0.92	27.29***			
I look like I have less fat on my body when I am tan	0.88	24.93***			
η_4 Positive attitudes toward sunless tanning products			0.91	0.95	0.83
It is important to me that I use the tanning products that achieve a tan of desired color	0.90 ^a	–			
It is important to me that I use the tanning products of which the texture is desirable	0.92	32.15***			
It is important to me that I use the tanning products that last long	0.91	31.62***			
It is important to me that I use the tanning products of which the quality is high	0.85	24.96***			

CR composite reliability, AVE average variance extracted

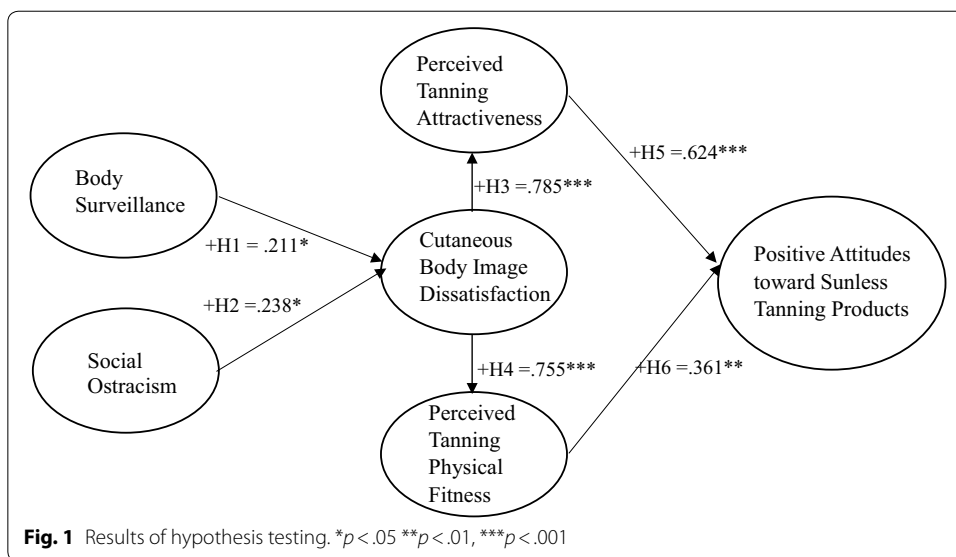
First λ path was set to 1, therefore, no t-values are given; * $p < .05$; ** $p < .01$; and *** $p < .001$

^a Indicates reverse-coded item

Structural model and hypotheses testing

After the measurement model was confirmed, structural equation modeling was performed to test the hypothesized relationships. The model fit statistics revealed a $\chi^2(202) = 923.628$; CFI = 0.93; GFI = 0.98; RMSEA = 0.08, suggesting that the hypothesized structural relationships fit the data well. Each hypothesized relationship was examined based on path significance.

Figure 1 shows the results of the hypotheses testing. All paths related to the hypotheses were statistically significant. Hypotheses 1 and 2 proposed that cutaneous body image dissatisfaction would be positively influenced by body surveillance and social ostracism, respectively. Results revealed that cutaneous body image dissatisfaction was significantly influenced by body surveillance ($\gamma = 0.211$, $p < .05$) and social ostracism



($\gamma = 0.238, p < .05$); thus, H1 and H2 were supported. That is, young adults were likely to be dissatisfied with their body image when they often think about how they look and care about how they look to other people. Moreover, young adults' social ostracism is likely to increase the level of their dissatisfaction with their body image.

Hypotheses 3 and 4 proposed that young adults' cutaneous body image dissatisfaction would positively influence the perceived tanning attractiveness and perceived tanning physical fitness, respectively. Results revealed that perceived tanning attractiveness was significantly influenced by cutaneous body image dissatisfaction, $\beta = 0.785, p < .001$. Thus, H3 was supported. Likewise, we also found that perceived tanning physical fitness was significantly influenced by cutaneous body image dissatisfaction, $\beta = 0.755, p < .001$, thus supporting H4. These findings suggest that young adults perceived attractiveness toward tanning and were likely to believe that a tan helps them look physically fit when they showed a tendency to be dissatisfied with their body image.

Hypotheses 5 and 6 proposed that positive attitudes toward sunless tanning products would be positively influenced by perceived tanning attractiveness and perceived tanning physical fitness, respectively. There were positive and significant effects of perceived tanning attractiveness ($\beta = 0.624, p < .001$) and perceived tanning physical fitness ($\beta = 0.361, p < .01$) on tanning product use. Therefore, Hypotheses 5 and 6 were supported. Young female adults who perceived that a tan made them look better and in good physical shape were likely to use sunless tanning products. The results of H1 through H6 testing are summarized in Table 2.

Discussion

The overall goal of this study is to understand the antecedents of attitudes toward sunless tanning product use. It is evident that constant body surveillance, seeing one's own body through the lens of others, positively influences an individual's cutaneous body image dissatisfaction; therefore, one's body surveillance is likely at the root of perceived tan attractiveness, leading to positive attitudes toward sunless tanning product use. An

Table 2 Results of the structural equation model

Hypothesis	Structural paths	Results
H1	Body surveillance → cutaneous body image dissatisfaction	Supported
H2	Social ostracism → cutaneous body image dissatisfaction	Supported
H3	Cutaneous body image dissatisfaction → perceived tanning attractiveness	Supported
H4	Cutaneous body image dissatisfaction → perceived tanning physical fitness	Supported
H5	Perceived tanning attractiveness → positive attitudes toward sunless tanning products	Supported
H6	Perceived tanning physical fitness → positive attitudes toward sunless tanning products	Supported

individual's relationship to his or her body as an object to be evaluated has negative body consequences, as such an individual is more likely to engage in tanning. However, these image-conscious individuals can switch their tanning methods to adopt sunless tanning products to reduce the perceived discrepancy between their own bodies and idealized body standards and reduce harmful UV exposure. This finding reveals important discussion points positioning tanning products in the marketplace. The functional quality of tanning products should be emphasized to provide positive results, achieving the desired skin color for consumers. Since female college students are identified as the most frequent users (Sahn et al. 2012), enhancing their appearance can be an important factor in making the decision to adopt these products. As a skin cancer prevention strategy, a range of damaging effects that UV rays can have on one's body can be emphasized, such as premature skin aging, wrinkles, and dead spots.

Individuals who felt they had been ignored or excluded by others showed lower cutaneous body satisfaction, therefore, maintaining a healthy social network is also an important influence for cutaneous body image dissatisfaction. This suggests that positive interactions concerning one's appearance among his or her peer group with regards to appearance are important variables in tanning attitudes. In line with our findings, Stapleton et al. (2008) have identified that peer crowd identification was significantly associated with indoor artificial UV-tanning tendencies and tanned skin was used to temper social relationships with others (Stapleton et al. 2008). Accordingly, the social networks of individuals could explain why tanned individuals tend to exhibit body-tanning as a norm that influences their attitude toward sunless tanning products. One possible approach to developing skin cancer prevention is to stress the importance of maintaining healthy social networks among appearance-conscious young adults.

An individual's dissatisfaction with the appearance of his or her skin color in particular is related to his or her perceived attractiveness and physical fitness. People's assessment of their cutaneous body image reveals that skin satisfaction is an important aspect of their perceived attractiveness of tanned skin and physical fitness. One's satisfaction with his or her skin is a highly subjective construct, but the overall appearance of one's skin can have a profound effect on one's body image. Therefore, our results confirm previous findings that one of the best correlates of UV exposure behaviors and intentions is positive attitudes related to a tanned appearance (Hillhouse et al. 2012; Jackson and Aiken 2000). The findings in this study have important relevance in that tanning products can be marketed as cosmetic appearance-enhancement products for people to look fit,

toned, and slim. Physical fitness can be achieved beyond a change in skin color; therefore, the results of the study uniquely contribute to tanning behavior, which represents an active lifestyle. The significant correlations between physical fitness motives and tanning product consumption can be effectively utilized to market tanning products.

Understanding attitudes toward sunless tanning product use provides important implications for the design of skin cancer interventions and marketing; consequently, this study confirms that targeting appearance-conscious consumers will be successful if the quality of the tan meets the needs of those consumers. A range of appearance-related issues in terms of tanning product utilization should be considered. It is important for a diverse range of disciplines to develop programs to educate the public about health and well-being with regard to UV-induced tanning behaviors. Healthy tanning should be to avoid harmful UV rays. Instead of tanning their skin, young adults should develop a positive body image, as well as pursue physical fitness. Additionally, as compensatory alternatives of UV-induced tanning, tanning products can be considered to boost body image. Marketing efforts can be aimed at increasing the familiarity of a product, as well as emphasizing the product's benefits because consumers would increase their use if they are convinced that using the product will boost their self-image and positive social relationships.

Conclusion

Sunless tanning products should be marketed as a lifestyle choice. Positive attitude changes toward sunless tanning products can be successfully made by marketing those products as a form of fashion. It is also important to understand that consumers not only consider tanning products as appearance enhancing, but also with social and leisure activities. The role of tanning products with respect to a sense of belonging and their impact on social relationships warrant further investigation. Especially for marketers, it is critical to emphasize that tanning products do not cause premature aging or wrinkles, which are caused by UV exposure. Given that tanning emerged as a fashion trend, tanning product use has a potential to evolve as fashion changes for wider acceptance. Additional research concerned with motivation, which may go beyond the parameters of a perceived attractive appearance, is required in order to deepen an overall understanding of tanning product consumption. Such future research should provide a more detailed assessment of the social influences (i.e., family, friends, and romantic partners) on tanning behaviors.

Authors' contributions

JY conceptualized the study, developed the instruments, and collected the data. HC analyzed the data and interpreted the findings of the study. Both authors read and approved the final manuscript.

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Competing interests

The authors declare that they have no competing interests.

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