

Perceived Risk of Sunless Tanning Product Use and Its Relationship to Body Satisfaction

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Abstract

The goal of this study is to explore consumer risk-perceptions and body satisfaction in relation to sunless tanning product consumption. Sunless tanning products provide the public with an alternative means of obtaining a tan. However, few studies have explored issues related to fake tanning lotions from the consumer perspective. Previous studies have not yet provided any clear answers about the risk-perceptions of using sunless tanning products, nor have they examined the impact on their body satisfaction. As sunless tanning has gained in popularity, this phenomenon warrants further inquiry. The data were collected from 267 (59 male; 208 female) college students with an average age of 19.92. 77.60% were Caucasian, followed by Hispanic/Latino (6.80), Asian-American (4.60%), and others (4.20%). A self-administered online survey was developed and a structural analysis was conducted. Based on the six risk-perceptions tested as predictors of sunless tanning product consumption, functional, social and financial risk significantly influenced product consumption, whereas psychological, physical and time risk were not significant. In general, sunless tanning product consumption directly influenced body satisfaction. The findings suggest that the quality of a tan perceived by an individual, others' evaluations of a tanned appearance, and the cost of producing a tan are important variables for marketers—as well as health professionals—to consider.

Keywords: sunless tanning products, body satisfaction, perceived risk

1. Introduction

A tanned appearance can be achieved through three different methods: sunbathing, tanning beds, and tanning cosmetic products. Tanned skin color has become a sign of higher status, as it is associated with not having to work and having plenty of leisure time to relax or participate in sports (Keesling and Friedman, 1987). Research concerned with body-tanning behavior indicates that young adults in the United States are well aware of the possible risks involved with UV ray exposure (Mackay *et al.*, 2007). Therefore, sunless tanning products have become increasingly popular, and 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).

Sunless tanning products result in tanned skin without UV exposure. Thus, these products are promoted as a substitute for indoor and outdoor tanning, or as an enhancement to a tanned body (Fu *et al.*, 2004). Consumers in the U.S. spend approximately \$86 million in the pursuit of a sunless tan, accounting for 50% of global self-tanning sales. The most effective products contain a chemical called dihydroxyacetone (DHA). DHA can create an unpleasant odor and can cause the skin to turn a shade of orange. Although various tanning agents have been available for years, only those containing DHA have been approved by the Food and Drug Administration (Fu *et al.*, 2004).

The first sunless tanning lotion to be sold to consumers was introduced in the 1960's (Owens, 2007). Therefore, increased use of fake tanning lotions instead of sun exposure to obtain a tan has the potential to reduce skin cancer incidence, leading to the debate as to whether they serve as a harm-reduction strategy, and whether cancer control agencies have a place in promoting and marketing them (Chapman, 1999). However, few studies have

explored issues related to fake tanning lotions from the consumer perspective. Previous studies have not yet provided any clear answers about the risk-perceptions of using sunless tanning products among young women, nor have they examined the impact on their body satisfaction.

For the past several decades, researchers across disciplines have sought to understand the mechanisms underlying sun exposure and sun-protection behaviors (Mahler et al., 2005). However, little is known about tanning product consumption in the United States. Stryker et al. (2007) found that sunless tanners tend to be older and more educated. A study conducted with an Australian sample revealed that approximately 10% of participants used an artificial tanning products during the summer prior to the investigation (Purchase and Borland, 1994; Dixson et al., 1997). As sunless tanning has gained in popularity, this phenomenon warrants further inquiry (Draelos, 2002). Therefore, the aim of this study is to explore consumer risk-perceptions and body satisfaction in relation to sunless tanning product consumption.

2. Conceptual Framework and Hypothesis Development

In the context of sunless tanning products, this study extends perceived risk theory (Mitchell and Harris, 2005; Yeung and Yee, 2002; Spence et al., 1970) by incorporating recent advancements in body tanning behavior research (e.g., Boldeman et al., 2001; Monfrecola et al., 2000; Matthew-Knigh et al., 2002). Consistent with prior research on perceived risk (Burgess, 2003; Mieres et al., 2006), we conceptualized risks consumers associated with sunless tanning products into six broad categories (i.e., financial, functional, physical, psychological, time and social risks). As illustrated in Figure 1, the proposed model specifically postulates that: (a) a higher level of perceived risk leads to a lower level of tanning product use; and (b) a higher level of tanning product use leads to a higher level of body satisfaction (See Figure 1).

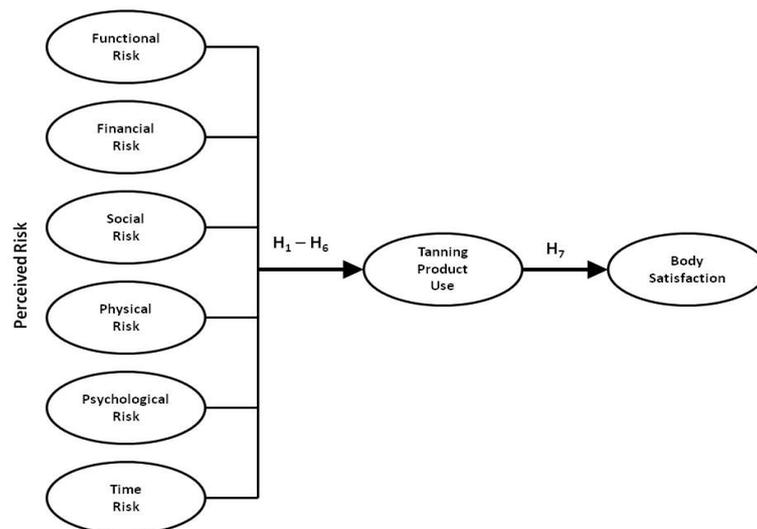


Figure 1. Hypothesized Model

2.1 Perceived Risk and Sunless Tanning Product Use

Consumers encounter the situation of having to make a decision to adopt a product, but often worry that the product is not able to meet their buying goals. This situation experienced by consumers is often defined as “perceived risk” (Mitchell and Harris, 2005; Yeung and Yee, 2002; Spence et al., 1970). The amount of risk consumers perceive is based on the evaluation and interpretation of the uncertainty and consequences faced when purchasing a product (McCarthy and Henson, 2005). Perceived risk plays an important role in the consumer decision-making process (Mitchell, 1999). Consumers often experience six common types of risk, such as financial, functional, physical, psychological, time and social risk when purchasing a product (Burgess, 2003; Mieres et al., 2006).

Functional risk involves the notion that either the product will or will not function properly, as promised. Several individuals have remarked that tans achieved through sunless tanning products do not look natural (Mahler et al., 2005). Oftentimes these products turn the skin orange, leaving a “streaked” appearance. In addition, the color can fade off as the skin goes through its natural sloughing process, or it may wash off, depending on the manner

in which it was applied on the skin's surface (Martin-Cusimano, 1992). The correct technique to apply tanning products is promoted as a means of providing a perfect tan and healthy skin (Fu et al., 2004).

Financial risk implies the idea that a consumer may lose money on a product. Full-body sunless tanning has been increasingly accessible and affordable for the mass consumer audience (Fu et al., 2004). The median price for sunless tanning booth sessions is \$26; a typical air brushing session costs \$70, and an average lotion application session costs \$87.50 (Fu et al., 2004). Airbrush tans are generally more expensive, as a professional technician applies the product to clients, as opposed to self-spray tans. However, the airbrush tanning process provides better results (Brundage, 2010).

Social risk suggests that the product may negatively affect the way others think of the consumers. According to Harity and Carven (1958), the lack of a tan might be taken as a sign of emotional problems or a lack of social skills. In one study, 80% of women who used sunbeds claimed that doing so gave them a feeling of being socially accepted (Bickers et al., 1985; Diffey, 1986). Young adults are particularly motivated to tan their bodies due to the perceived appearance-enhancing benefits of tanned skin. Within this population, improving physical appearance can be an important factor in making the decision to obtain a tan. Certain studies suggest that interpersonal motives have an equal or greater influence on tanning (Jackson and Aiken, 2000; Leary and Jones, 1993; Wichstrom, 1994).

In terms of psychological risk, the product may or may not be consonant with the consumer's image of her/himself. As an individual's self-image may be at the root of body-tanning behavior, tanning product consumption has an overarching effect on psychological risk in that it is related to individuals' attractiveness. Body-tanning is frequently identified as a way of improving attractiveness, along with following clothes trends, exercising and dieting (Hillhouse et al., 2000). The influence of the mass media and societal attitudes toward tanned skin may also play a role in precipitating tanning product consumption.

Physical risk entails the possibility that a product may cause physical harm to consumers. Although sunbathing and tanning booth use are found to increase the risk of skin cancers, cosmetic tanning products (e.g., using liquids, gels and powders to change the color of one's skin) are considered to be safer (Reilly and Rudd, 2008). However, many experts agree that there are precautions to be taken, especially for spray tanning in booths (Brundage, 2010). DHA is not approved for inhalation or ingestion. In addition, tanning lotions or creams can create irritation or skin dryness.

Time risk implies the idea that time is wasted in dealing with the consequences of a purchase. Improved self-tanning formulas have made it possible to obtain a healthy skin color without venturing outdoors (Martin-Cusimano, 1992). Consumers can step into a sunless tanning booth and emerge with a full-body application of sunless tanning solution in less than a minute; however, it takes nearly 4 hours to develop a tanned color on their skin (Brundage, 2010). Moreover, many self-tanning products recommend reapplying the product every few days to maintain the tan (Helmenstine, 2009). Although it takes a short amount of time to achieve a fake tan, the time it takes to develop, reapplication of the tanning product, and the duration of the tan can all be perceived as time risks by consumers.

2.2 Sunless Tanning Products and Body Satisfaction

Given the correlation between body satisfaction and other unhealthy appearance-related behaviors (Leon et al., 1993; Leung et al., 1996; Thompson et al., 1999; McVey et al., 2002), body-tanning behaviors may predict individuals' body satisfaction. Vail-Smith and Felts (1993) investigated the attitudes and knowledge of college students. They found that the attractive look achieved by getting tanned was the main motive for sunbathing. In subsequent studies, individuals have reported that a tanned body is much better than an untanned one (Boldeman et al., 2001; Monfrecola et al., 2000; Quilina et al., 2004; Matthew-Knigh et al., 2002). Therefore, body-tanning behavior may increase body satisfaction. Therefore, the following hypotheses are established.

H1: The functional risk of tanning products will have a negative effect on tanning product use.

H2: The financial risk of tanning products will have a negative effect on tanning product use.

H3: The social risk of tanning products will have a negative effect on tanning product use.

H4: The psychological risk of tanning products will have a negative effect on tanning product use.

H5: The physical risk of tanning products will have a negative effect on tanning product use.

H6: The time risk of tanning products will have a negative effect on tanning product use.

H7: Tanning product use will have a positive effect on body satisfaction.

3. Methods

3.1 Data Collection and Participant Characteristics

To collect the data for this study, 59 male and 208 female college students were surveyed using a self-administered online Qualtrics-created survey tool. They were contacted by the weblink to the survey online and were asked for their permission. A preliminary analysis revealed that the average age of the respondents was 19.92 ($S.D = 2.45$) years old. With respect to ethnicity, 77.60% were Caucasian, followed by Hispanic/Latio (6.80%), Asian-American (4.60%), and others (4.20%).

3.2 Measurement Model Evaluation

The measurement items used in the study were selected based on a review of the literature. Measurement items for perceived risk were adapted from Mieres, Martin, and Gutierrez (2006). Measures for the body satisfaction construct originated from Cash (2000). Measurement items for sunless tanning products were developed by the investigators (see Table 1 for all items).

Table 1. Summary of Measures^a

Construct	Items	
Perceived Risk of Tanning Products	Functional Risk	<ul style="list-style-type: none"> • I am suspicious of tanning-product quality. • I am afraid that tanning products may not leave my skin in good condition.
	Financial Risk	<ul style="list-style-type: none"> • I am suspicious of the ingredients used in their manufacturing. • I think that buying tanning products is a waste of money. • I am worried that tanning products are not worth the money spent. • I think it is not a wise way to spend my money.
	Social Risk	<ul style="list-style-type: none"> • I am worried that, if I buy tanning products, the esteem my family or friends have for me may drop. • I am afraid that if I buy tanning products, it may negatively affect what others think of me. • I think that, if I buy tanning products, other will not see me the way I want them to.
	Physical Risk	<ul style="list-style-type: none"> • I'm afraid that if I buy tanning products, others may look down on me. • I am afraid that tanning products may not be safe for me. • I am afraid that tanning products may damage my health. • I think that tanning products may cause me some physical harm.
Tanning Product Use ^a	Psychological Risk	<ul style="list-style-type: none"> • Buying tanning products will make me feel uncomfortable with myself. • Buying tanning products will make me feel unhappy and frustrated.
		<ul style="list-style-type: none"> • Tanning products do not fit in well with the concept I have of myself. • I use a tanning spray. • I use a tanning cream. • I use a tanning gel. • I use a tanning lotion. • I use towelettes/moisturizers that contain a small amount of fake tanner.
Body Satisfaction ^b		<ul style="list-style-type: none"> • I use bronzer: powder and moisturizers. • I am satisfied with my current weight. • I am satisfied with my body shape (i.e., waist, hips, thighs, stomach). • I am satisfied with my body size. • I am satisfied with my your overall appearance. • I am satisfied with my skin color.

^a Anchored with 5-point Likert-type scale descriptors, from 1 = "Strongly disagree" to 5 = "Strongly agree."

Table 2 provides an overview of the construct means, standard deviations, and correlations for the measurement model. The results of confirmatory factor analysis indicate that the measurement model had acceptable construct validity and reliability. The χ^2 of the measurement model was 779.44 with 348 *df*. The overall fit statistics ($\chi^2/df = 2.24$, CFI = .94, NNFI = .93, RMSEA = .068, and SRMR = .064) suggest that the measurement model had a good fit. All factor loadings to their respected constructs were higher than 0.60.

Convergent validity is the extent to which multiple measures of the same theoretical constructs are in agreement, whereas discriminant validity refers to the extent that one theoretical construct differs from another (Byrne, 1998). Convergent validity was supported by the following: (1) all loadings were significant ($p < .001$); (2) the composite reliability for each construct exceeded the recommended level of .70; and (3) the average variance extracted (AVE) for each construct fulfilled the recommended benchmark of .50 (Hair, Anderson, Tatham, & Black, 1988). As evidence of discriminant validity of the scales, none of the confidence intervals of the phi estimates included 1.00 in any of the samples. Further evidence supporting discriminant validity was indicated by the fact that the variance extracted estimates exceeded the square of the phi estimates for all constructs in each sample (see Fornell and Larcker, 1981).

Table 2. Results: measurement model

Correlation	1	2	3	4	5	6	7	
1. Functional Risk	1.00							
2. Financial Risk	.66	1.00						
3. Social Risk	.34	.32	1.00					
4. Physical Risk	.69	.57	.46	1.00				
5. Psychological Risk	.45	.42	.72	.65	1.00			
6. Time Risk	.63	.74	.51	.74	.71	1.00		
7. Tanning Product Use	-.16	-.35	-.01	-2.5	-.16	-.28	1.00	
8. Body Satisfaction	.10	.17	-.03	.07	-.00	.03	.13	1.00
Mean	3.28	3.35	2.16	2.77	2.30	2.99	2.52	2.96
SD	1.10	1.22	.98	1.14	1.05	1.23	1.48	1.25
Composite Reliability ^a	.86	.91	.97	.94	.90	.89	.91	.92
Variance Extracted ^b	.68	.78	.88	.85	.75	.73	.61	.73

^aComposite Reliability = $(\sum \text{standardized loading})^2 / (\sum \text{standardized loading})^2 + \sum \text{measurement error}$

^bVariance Extracted = $\sum (\text{standardized loading})^2 / \sum (\text{standardized loading})^2 + \sum \text{measurement error}$

4. Results

A structural analysis was conducted using the maximum likelihood estimation method. The results from the structural model are presented in Table 3. The structural model exhibited a good fit with the data ($\chi^2 = 789.57$ with 354 *df*, $\chi^2/df = 2.23$, CFI = .94, NNFI = .93, RMSEA = .067, and SRMR = .067). Regarding H1-H6, financial risk ($\beta = -.41$, $t = -3.44$) was significant ($p < .001$), followed by social risk ($\beta = -.27$, $t = -3.01$, $p < .01$) and functional risk ($\beta = -.22$, $t = -2.10$, $p < .05$). However, physical risk (H4), psychological risk (H5), and time risk (H6) were not significant. For H7, tanning product use was found to be a significant predictor of body satisfaction ($\beta = .17$, $t = 1.96$, $p < .05$) (See Table 3).

Table 3. Results: structural model

Endogenous Constructs		SE ^a	t-value ^b
Tanning Product Use ($R^2 = .19$)			
H ₁	Functional Risk	-.22	-2.10*
H ₂	Financial Risk	-.41	-3.44***
H ₃	Social Risk	-.27	-3.01**
H ₄	Physical Risk	-.17	-1.52
H ₅	Psychological Risk	-.17	-1.40
H ₆	Time Risk	-.01	-.03
Body Satisfaction ($R^2 = .02$)			
H ₇	Monetary Savings	.13	1.96*
Fit Statistics			
N		272	
χ^2 (df)		787.57 (354)	
χ^2/df		2.23	
CFI		.94	
NNFI		.93	
RMSEA		.067	
SRMR		.067	

^a SE, Standardized estimate

^b * $p < .05$, ** $p < .01$, *** $p < .001$

5. Discussion

The availability of the sunless tanning products provide an inexpensive, time- efficient, and cosmetically pleasing modality of sunless tanning. Based on the six variables tested as predictors of sunless tanning product consumption, the results of this study revealed several discussion points with respect to positioning products in the marketplace. Consumers must be concerned with the quality of a tan, especially the color, achieved through sunless lotions or creams. In addition, tanned color is a visible quality for individuals, which directly concerns social risk in terms of how their skin looks to others. If tanning products are to be promoted, then media representation of the quality of a tan achieved through tanning products should be emphasized in order to alleviate functional, as well as social risk. In addition, the role of friends', families' or romantic partners' comments on people's tanned body color can be important for consumers. Therefore, it may be important to understand the impact of social interactions and relationships on tanning product consumption. These results are consistent with previous research, which has found that the effects of interpersonal factors are important for body-tanning behavior in general (Mosher and Danoff-Burg, 2005). In addition, consumers would like to have the best results with a low cost. Therefore, consumers' knowledge not only about how much it costs to purchase the products, but also how much it costs to maintain a long-term tan will increase their acceptance of using sunless tanning products.

However, psychological, physical and time risk were not predictors of sunless tanning product consumption. Such a finding may refer to those consumers already engaging in body- tanning; therefore, they may believe that using tanning products are congruent with their current self-image. As a result, using tanning products did not change their self-concept. In addition, although a certain level of risk was known, risk associated with using products was not important for them, or they were not aware of the risk. As previously found, tanning product users are more likely than nonusers to believe that sunless tanning lotions are safer than being exposed to the sun (Brooks et al., 2006). Consumers may already know that their consumption is safe. Even if risk is perceived, the benefit perceived is greater for consumers who want to maintain a tanned appearance, similar to outdoor suntanning. Not only are self-tanning formulas perceived as safer than UV tanning, but they could also be seen as valuable for people who cannot achieve a tan due to weather conditions and time. However, the perceived time spent on getting a tan did not influence tanning product consumption.

Individuals who adopt various tanning products are more likely to be satisfied with their bodies. This finding can be explained by the fact that such individuals perceive their bodies as more attractive when they are tanned. Another explanation is that individuals who are generally invested in their appearance might adopt various means of body-tanning. The drive to be attractive can fuel people's interest in these products, which can then lead to body satisfaction. Therefore, unlike outdoor tanning, tanning products will be particularly important for some appearance-conscious individuals.

6. Conclusion

This study provides an important baseline indicator of sunless tanning product consumption. The results revealed consumers' risk-perceptions toward sunless tanning products and whether consumption relates to body satisfaction. Sunbathing is identified as risky behavior; therefore, sunless tanning products can be an attractive alternative for consumers who perceive sunbathing as dangerous, but who would nevertheless still like to achieve a tan. For marketers, tanning products will appeal to consumers if the quality of the tan is consistent so that consumers will believe that others like their tan. As a result, they will feel that the money spent was not wasted on using these products. It is important to provide consumers with tanning product information with respect to their quality and benefits. For health professionals, if tanning products are promoted as healthy alternatives, an emphasis on the quality and popularity of sunless tanning products can be emphasized, as opposed to the reduced amount of risk associated with tanning product consumption.

Although this study did not examine whether consumers use sunless tanning products as a substitute for UV body-tanning, it is plausible to draw the assumption that if tanning is used for appearance purposes, consumers will increasingly adopt sunless tanning products in boosting their body satisfaction. Other methods (exercising and dieting) along with body-tanning should be identified in which the public can substitute. Additional research concerned with motivation, which may be beyond the parameters of a perceived attractive appearance, is required so as to deepen an overall understanding of body-tanning behavior. Body-tanning as a leisure activity and for developing social relationships can play an important role. In addition, there most likely are people addicted to tanning behaviors. Future research should provide a more detailed assessment of the social influences (i.e., family, friends, and romantic partners) on tanning behaviors. More research is also recommended to deepen our understanding of whether sunless tanning products are used as an alternative choice or as a way of expanding people's tanning experiences in addition to their sunbathing.

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