
TRENDS AND APPLICATIONS

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I Know, but I Would Rather Be Beautiful: The Impact of Self-Esteem, Narcissism, and Knowledge on Addictive Tanning Behavior in Millennials

This research examines consumers' current level of sun protection knowledge and prevention, tanning motivation, and behavior. This baseline information provides a clearer understanding of actual consumer behavior and can be used to determine what knowledge deficits exist so that future research, educational materials, and communication efforts can be tailored to address those more directly. Additionally, the relationships between knowledge, self-esteem, and narcissism are explored. Results show that knowledge has no impact on addictive tanning behavior, self-esteem is negatively correlated, and narcissism is fully mediated by appearance motivation. Implications, potential regulatory, and communication efforts are discussed.

Skin cancer accounts for almost half of the cancers in the United States and is the most common type of cancer worldwide (American Cancer Society 2016), with more than 3.5 million cases diagnosed annually. Further, there has been an 800 percent increase of melanoma cancer among women ages 18–39 in the United States from 1970 to 2009 (Reed et al. 2012). Economically, the tanning industry has a considerable vested interest in continued demand despite public health efforts to curb tanning enthusiasm. In the United State's most populous cities, there is an average of 42 tanning salons, resulting in more than 30 million individuals contributing to the industry's \$5 billion in annual revenue (Suntan 2016). The World Health Organization, National Cancer Institute, and Centers for Disease Control have all released numerous reports in an attempt to communicate the harmful effects of ultraviolet radiation and encourage consumers to limit their ultraviolet (UV) exposure (CDC 2015; NCI 2012;

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WHO 2003). However, the threat of cancer does not seem to deter the tanning-obsessed (Reed et al. 2012). In 2010, only 31% of adults reported using recommended sunscreen protection measures and approximately one-third of non-Hispanic white women ages 18–25 reported they use indoor tanning equipment (NCI 2010).

Studies have also found that even if individuals do wear sunscreen, they often do not wear the recommended amount or reapply sunscreen at appropriate intervals (Holmes 2012). Most of these studies also report a great amount of confusion about the best sun protection measures and behaviors as well as frustration with sunscreen labels. Therefore, the Food and Drug Administration (FDA) established new labeling regulations for sunscreen manufacturers that require sunscreen products to carry a Drug Facts Panel (CDER 2012). This panel must contain very specific information regarding the amount of protection given by the sunscreen in each product. This includes using the phrase “broad-spectrum SPF” if the sunscreen protects against both UVA and UVB rays as well as instructions on how often a person must reapply in order to remain protected for long periods in the sun. Efforts are being made to halt the increasing number of skin cancers via a reduction in UV exposure by educating consumers about the dangers of unprotected skin.

Given the recent regulatory and educational efforts, the purpose of this study is twofold. First, this research examines consumers’ current level of sun protection knowledge and behavior, tanning motivation and behavior, and their beliefs about the effectiveness of sunscreen use and potential UV exposure damage in order to establish a baseline. This baseline information provides a clearer understanding of actual consumer actions and can be used to determine what knowledge deficits exist so that future research, educational materials, and communication efforts can be tailored to address those more directly. In order to provide as much useful data as possible to those working in this field of research and industry practice, comprehensive data can be found for each of the aforementioned categories in Appendix 1 (Tables A1–A5). Additionally, the possible moderating effect that knowledge may have on tanning behavior is tested. Next, because the increase in skin cancer does not exist in isolation from other sociocultural and psychological drivers, this study examines it in relation to other widely discussed phenomena facing young American adolescents and adults, namely self-esteem, narcissism, and the desire for perceived attractiveness. In their examination of skin cancer risk and individual difference responses to message appeals, McMath and Prentice-Dunn (2005, 622) state that “personality factors not only account for some portion of defensive strategies used by individuals responding to health

messages, but in the actual motivation to elaborate on message content.” As such, it is imperative to understand how personality constructs such as narcissism and self-esteem may interact with educational efforts aimed at increasing consumer knowledge. This study explores the relationships between these variables in order to better understand contributing factors to the attitudes and beliefs that guide the behavior of young adults regarding UV exposure and prevention. Results of this study provide insight for public policy and consumer education initiatives as academics, marketers, and public health officials work together to reverse the alarming trend in skin cancer diagnoses.

BACKGROUND

Bagdasarov et al. (2008) reported that people with low self-esteem are more likely to engage in risky behaviors, such as tanning, to improve self-image, and higher levels of self-esteem may act as a protective mechanism leading to the avoidance of risky tanning behavior (Heckman et al. 2008). Furthermore, both self-esteem and narcissism have a positive correlation with enhancement-oriented strategies (Mehdizadeh 2010; Raskin, Novacek, and Hogan 1991). Many studies have shown no correlation between knowledge of prevention strategies and the detrimental effects of UV radiation and adoption of those prevention strategies (Hillhouse, Stair III, and Adler 1996; Johnson and Lookingbill 1984; Robinson, Rigel, and Amonette 1997; Rossi et al. 1995). The lack of behavioral modification despite cognitively compelling information is addressed by research using an evolutionary psychology approach. Rather than examining the knowledge/behavior relationship from a cognitive perspective, this approach utilizes Darwinian principles and explores the underlying biological and reproductive motives regarding risky behaviors. Saad and Peng (2006) report findings from multiple studies that demonstrate that a suntan has become associated with an image of beauty and health. They go on to state that “the projection of a healthy appearance was the crucial issue, despite the fact that most people who sunbathe are fully cognizant of its detrimental effects on the skin” and that one’s *health appearance* was perceived as more important than one’s *actual health status* (Saad and Peng 2006). These studies have examined the personality and motivational factors singularly, in isolation from each other. This study serves to explore how these variables interact with each other in order to influence tanning behavior, in addition to demonstrating the effect of evolutionary psychology over cognitive reasoning. The following research questions served as

guides during analytical processes: Do individuals with lower self-esteem engage in higher levels of addictive tanning? Is there a relationship between narcissism and addictive tanning? Does the desire to be perceived as attractive serve as sufficient motivation to override knowledge about the dangers of tanning?

STUDY

Participants and Procedure

Study participants were 256 sophomore, junior, and senior students (47% male/53% female) enrolled at a major university in the southwestern United States, who received extra credit for their involvement in the experiment. The online survey was distributed via email with a link that directed students to the Qualtrics-administered survey instrument. Written instructions and a statement explaining the nature of their voluntary participation were provided. Once an informed consent waiver was signed, participants were instructed to begin the survey. Institutional IRB approval was obtained prior to the study.

Measures

The scope of the survey instrument was broad and covered a variety of tanning-related topics in addition to personality construct scales. Tanning motivations, actual tanning and sun protection behavior, and beliefs about sunscreen effectiveness and UV exposure damage are captured in the data set. In the interest of forward progress and the importance of this topic to public health, this information is fully presented in Appendix 1 in Tables A3–A5. For the examination of the impact of personality traits on tanning behavior, the independent variables of self-esteem, narcissism, and appearance motivation were measured using 7-point Likert-type scales with the anchors strongly disagree/strongly agree (appearance motivation items also had the option of “I never tan”). Self-esteem was assessed using a 10-item scale established by Rosenberg (1965). Sample items include: “I feel that I am a person of worth, at least on an equal plane with others,” “On the whole, I am satisfied with myself,” and “I certainly feel useless at times” (reverse coded). Reliability for the self-esteem scale was acceptable ($\alpha = .81$) (Nunnally 1978). Narcissism was assessed using a 10-item scale established by Hendin and Cheek (1997). Sample items include: “I can become entirely absorbed in thinking about my personal affairs, my health, my cares, or my relations to others,” “When I enter a room I often

become self-conscious and feel that the eyes of others are upon me,” and “I dislike sharing the credit of an achievement with others.” Reliability for the narcissism scale was acceptable ($\alpha = .83$) (Nunnally 1978). Appearance motivation was measured using a 4-item scale that included statements such as, “I like to tan because I think a tan gives me more sex appeal.” Reliability for the appearance motivation items was acceptable ($\alpha = .91$) (Nunnally 1978).

Knowledge was measured by asking a series of nine true/false questions and two multiple choice questions assessing the accuracy of subjects’ sun safety awareness and beliefs as it relates to sun safety and industry regulations. Sample questions include: “When applied correctly SPF 100 is twice as effective as SPF 50,” “Spending time in the sun increases my risk of skin cancer and early skin aging,” and “Under the new FDA regulations, sunscreen products that protect against all types of sun-induced skin damage will be labeled ‘broad spectrum.’” These questions were developed from both the Web site and an informational brochure of the American Academy of Dermatology.

To evaluate the dependent measure concerning tanning addiction, a multi-item 7-point Likert-type scale was used with anchors of strongly agree/strongly disagree and the option “I never tan.” Sample items from the 10-item scale include: “I continue to tan despite knowing that it is bad for my skin,” “I have missed obligations because I went to sunbathe at the beach or pool or went to a tanning salon instead of my obligation,” and “I have tried to stop tanning, but still continue.” These items were adapted from the modified CAGE (Cut Down, Annoyed, Guilt, Eye-opener) questions developed by Kourosh, Harrington, and Adinoff (2010). Reliability was acceptable for the addiction scale ($\alpha = .89$) (Nunnally 1978). All scale items and their descriptive statistics are presented in Table A1 of Appendix 1. Additionally, full results of the knowledge test are presented in Table A2 so that this information may be used in future policy and research efforts as outlined in the Discussion section.

Method

In order to address the research questions previously presented, regression analyses as prescribed by Fitzsimons (2008) were performed with Self-Esteem, Narcissism, Knowledge, and Appearance Motivation as independent variables, and addictive tanning behavior as the dependent variable. The independent variables were mean centered in order to reduce collinearity.

Results

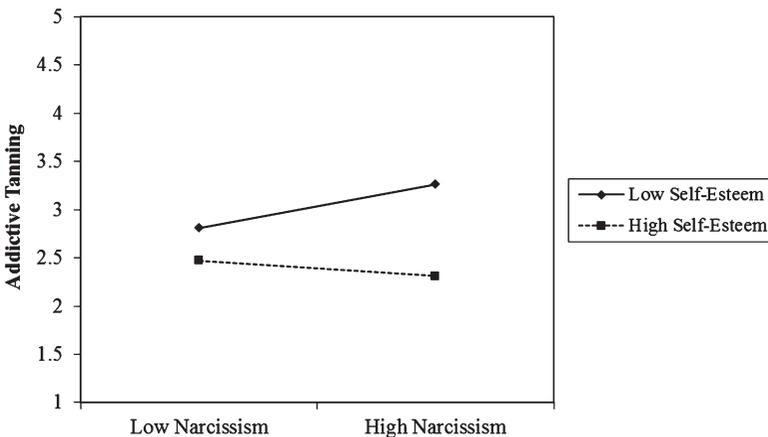
Self-Esteem

Self-Esteem was found to have a significant negative main effect on addictive tanning behavior ($\beta = -.263, p = .000$), meaning that individuals with higher levels of self-esteem exhibit lower levels of tanning behavior. There was also a significant interaction found between narcissism and self-esteem ($\beta = -.135, p = .024$). This interaction can be interpreted based on the plot of the slope lines to mean that individuals with lower self-esteem and higher narcissism exhibit greater levels of addictive tanning behavior than those individuals with high self-esteem and higher narcissism (Figure 1).

Knowledge vs. Appearance Motivation

There was no significant relationship found to support the idea that increased knowledge leads to lower levels of addictive tanning ($\beta = -.091, p = .140$). However, adopting an evolutionary psychology perspective, as opposed to a reasoned action approach, would specify that an individual's behavior is driven more by primordial motivations, such as desire to attract a mate, than cognitive processing of information. This study successfully demonstrates that the motivation for perceived appearance enhancement is a significant predictor of addictive tanning behavior ($\beta = .530, p = .000$) as opposed to the information processing associated with sun safety knowledge. The importance of this finding is detailed in the discussion that follows.

FIGURE 1
Narcissism and Self-Esteem Interaction



Narcissism

The relationship between narcissism and addictive tanning was found to be mediated by appearance motivation. Step 1: the relationship between narcissism and addictive tanning was significant ($\beta = .313, p = .000$). Step 2: the relationship between narcissism and the mediating variable of appearance motivation was significant ($\beta = .376, p = .000$). Step 3: the relationship between appearance motivation and addictive tanning, while controlling for narcissism, was significant ($\beta = .510, p = .000$). Step 4: the relationship between narcissism and addictive tanning was no longer significant with the inclusion of the mediating variable in the regression equation ($\beta = .111, p = .093$) (Baron and Kenny 1986; Kenny, Kashy, and Bolger 1998). The Sobel test demonstrates the mediating effect of appearance motivation is significant ($z = 4.59, p = .000$).

DISCUSSION

The findings illustrate the uphill battle facing public policy initiatives aimed to educate consumers about the hazards of sun exposure and best practices of sun safety. The authors hope that in addition to contributing to the broader conversation, this study spurs additional research by other scholars about how the characteristics of the Millennial generation are impacting their health, specifically as it relates to the alarming increase in skin cancer. While null results are not generally interesting to report, given the importance of the issue and the amount of resources being put toward these efforts, they offer important managerial, policy, and future research implications. First, the fact that the mean score on the knowledge scale was only 5.94 (on an 11-point scale) can be interpreted that the average score on the Sun Protection Knowledge test was 54%, a failing grade. Out of the 11 questions, six were answered incorrectly by 50% or more of survey participants. The questions missed by the majority of the sample were those having to do with the technical aspects of sun protection products and usage. It is clear there is a high level of consumer confusion surrounding the types of UV radiation and, at a more basic level, what SPF means and communicates about the product's protection ability. While the FDA regulation was a first step in the right direction, this study reveals a more fundamental issue with consumer knowledge that may or may not be fully addressed by the newly mandated Drug Facts Panel. Policymakers and practitioners interested in educating consumers on how to purchase and use products to effectively reduce skin cancer risk can use these results as a basis for designing communication messages. The second takeaway regarding consumer knowledge is more positive and

indicates success for recent communication campaigns. It is apparent that educational efforts regarding the dangers of indoor tanning and the benefits of using sunscreen have been effective. Study participants demonstrated in large proportions the belief that indoor tanning is harmful. By and large, they also demonstrated belief in the preventive capacity of sunscreen usage. It would also appear that this knowledge is beginning to influence behavior. While roughly 70% of participants reported outdoor sunbathing activity, 37.5% indicated using indoor tanning methods, with only 5.5% listing it as their preferred method. These findings indicate that the majority of young adults have internalized the precautionary messages regarding sun lamps and do not see indoor tanning as a healthier alternative to outdoor sun exposure. However, there is still much progress that needs to be made regarding outdoor sun safety knowledge and tanning behaviors in general.

With a reported 33% of the study sample stating that having a tan is important to them, and 70% purposefully exposing their body to the sun in order to achieve a tan, it is important to understand their actual tanning behavior and underlying motivations driving this behavior. These findings indicate that among those who tan, they tan frequently. About 50% of indoor tanning consumers reported using tanning lamps 21 or more times in their life, with the largest percentage (29.6%) reporting over 50 times. According to the Surgeon General's *Call to Action to Prevent Skin Cancer*, age-restrictive regulations have been effective in reducing indoor tanning among high-school females. In all, 44 states have some measure of age restriction with 10 states enacting a complete ban for consumers under the age of 18. Since this has been effective at decreasing consumption rates among the most vulnerable consumption group, it might serve as a template for using regulatory power to also reduce the frequency of tanning among indoor tanners. Namely, current pricing strategies include deep price-per-tan discounts for more expensive monthly packages which encourage consumers to tan frequently. Once consumers have paid for the monthly package, each visit increases the value by sharply decreasing the price-per-tan and warranting the higher up-front, out-of-pocket price paid for the monthly package. This can create a use-it-or-lose-it mindset in which consumers might tan more frequently than they would have under a fixed price-per-tan pricing model. The frequency numbers are even higher among outdoor tanners, with 64% reporting sunbathing more than 21 times. Again, the 50 times or more category has the highest percentage with 39.3% of consumers estimating they have purposefully exposed their body to the sun in order to achieve a tan more than 50 times during the course of their, relatively short, life (87% of respondents were between the ages of 18–23). This underscores the importance of *outdoor* sun safety

education. It is also important for future research to examine the possibility there has been an unintended consequence of sun protection awareness and sunscreen usage such that consumers now have a false sense of protection. Especially given the lack of demonstrated knowledge regarding how to properly use sunscreen for optimal protection, this possibility warrants further investigation.

In order to understand why such a large percentage of consumers continue to engage in tanning behavior despite their knowledge of its dangers, it is necessary to examine the perceived benefits they receive from tanned skin. The Appearance Motivation mediating variable explained a highly significant 31% of the variance in addictive tanning. This finding indicates that more of our efforts should focus on issues of appearance. The anticipated attainment of these perceived benefits serves as motivation to discount knowledge of possible future consequences for the more immediate gratification the behavior provides in the present. The motivations with the highest stated levels of agreement were less oriented to pleasing or gaining the direct approval of others and more focused on self-evaluation and beauty standard alignment. However, while participants did not directly correlate their individual preference for tanned skin to the suggestive power of media or social others, notions of sex appeal and beauty are sociocultural artifacts that are given meaning in the context of interaction with others. While the absence of direct social pressure can certainly be interpreted as a positive finding, the results of previous studies on the influence of media images and social interaction with others should not be discounted. Rather, the motivations reported in this study should be used to help frame persuasive messaging intended to prevent UV exposure. Since this study highlights consumers' awareness of the dangers, public service announcements and other communication efforts need to be emotion and appearance based rather than factual. The motivations of sex appeal, feeling better, and being more confident are intangible benefits based on the tangible characteristic of tanned skin. As such, it may be possible to help consumers achieve those same intangible benefits by means of different behaviors or tangible characteristics. Offering consumers alternative behaviors for achieving the same end goal may decrease harmful tanning behaviors more quickly than attempting to change the positive associations currently linked to tanned skin. That is not to say that efforts to change those associations should not be made, but changing the cultural meaning and consumer perceptions of tanned skin does not happen quickly. In order to influence consumer behavior more quickly, providing consumers with tangible substitutes while simultaneously working to modify the associations of health, beauty, and youth with tanned skin will likely have the greatest success.

Future research should explore these tangible substitutes in order to determine: (1) if they would be perceived as substitutes by consumers; (2) if they are able to invoke the same intangible feelings produced by tanned skin; (3) the best method(s) for communicating the alternatives; and (4) the likelihood of consumer adoption.

It is significant that the impact of increased knowledge does not appear powerful enough to override their desire to attain cultural ideals of attractiveness associated with tanned skin. In an attempt to more closely align their appearance with cultural ideals, many consumers are still willing to engage in the known risky behavior of tanning. The perceived social benefits outweigh the known health detriments for young adults, particularly among those struggling with low self-esteem. However, even though the main effect of knowledge was not found to be significant, the results of this study serve to better our understanding of the motivations for tanning among millennials. This information can and should be used by health care organizations, policymakers, and academic researchers working together to develop ways to use the relationships identified in this study to help decrease tanning behaviors.

APPENDIX

TABLE A1
Scale Items

Scale	Items	Mean	Standard Deviation
Self-Esteem Scale	I feel that I am a person of worth, at least on an equal plane with others.	5.72	1.45
	I feel that I have a number of good qualities.	5.87	1.32
	All in all, I am inclined to feel that I am a failure.	2.00	1.00
	I am able to do things as well as most other people.	5.64	1.41
	I feel I do not have much to be proud of.	5.69	1.54
	I take a positive attitude toward myself.	5.71	1.34
	On the whole, I am satisfied with myself.	5.57	1.39
	I wish I could have more respect for myself.	4.78	1.79
	I certainly feel useless at times.	4.92	1.75
	At times I think I am no good at all.	5.33	1.70
	Cronbach's alpha	0.81	
Narcissism Scale	I can become entirely absorbed in thinking about my personal affairs, my health, my cares, or my relations to others.	3.23	1.08
	My feelings are easily hurt by ridicule or the slighting remarks of others.	2.69	1.19
	When I enter a room I often become self-conscious and feel that the eyes of others are upon me.	2.80	1.13

TABLE A1
Continued

Scale	Items	Mean	Standard Deviation
	I dislike sharing the credit of an achievement with others.	2.39	1.05
	I feel that I have enough on my hands without worrying about other people's troubles.	2.74	1.06
	I feel that I am temperamentally different from most people.	3.05	1.06
	I often interpret the remarks of others in a personal way.	2.88	1.07
	I easily become wrapped up in my own interests and forget the existence of others.	2.41	1.02
	I dislike being with a group unless I know that I am appreciated by at least one of those present.	2.69	1.13
	I am secretly "put out" or annoyed when other people come to me with their troubles, asking me for my time and sympathy.	1.96	1.00
	Cronbach's alpha	0.83	
Appearance Motivation	I like a tan because it makes me look thinner.	3.40	2.01
	I like a tan because it gives my body the appearance of more muscle tone.	4.12	2.02
	I like a tan because it makes me more confident in my appearance.	4.32	1.97
	I like a tan because I think a tan gives me more sex appeal.	4.29	1.93
	Cronbach's alpha	0.91	
Addiction Scale	I have tried to stop tanning, but still continue.	2.72	1.57
	I get annoyed when people tell me not to tan.	3.11	1.67
	I feel guilty that I tan too much.	2.75	1.72
	When I wake up in the morning, I want to tan.	2.12	1.46
	I feel that I need to spend more time in the sun or tanning bed in order to maintain my tan.	3.36	1.89
	I feel unattractive or anxious to tan if I do not maintain my tan.	3.01	1.78
	I think I should stop tanning or decrease the time I spend tanning.	3.11	1.62
	I have missed obligations because I went to sunbathe at the beach or pool or went to a tanning salon instead of my obligation.	2.03	1.45
	I have gotten into trouble at work, with family, or with friends due to tanning.	1.89	1.35
	I continue to tan despite knowing that it is bad for my skin.	3.33	1.97
	Cronbach's alpha	0.89	

TABLE A2
Sun Safety Knowledge Test Results

Knowledge about Sun Protection			
Questions	Correct Answer	Correct	Incorrect
What do you think SPF stands for?	Sun protection factor	47.7% (122)	52.3 (134)
Which portion of UV radiation do you think is more responsible for causing sunburns?	UVB	14.8% (38)	85.2% (218)
The sun's rays are the strongest between 10 a.m. and 2 p.m. so I should limit the amount of time I spend in the sun during those hours.	True	66.4% (170)	33.6% (86)
Under the new FDA regulations, sunscreen products that protect against all types of sun-induced skin damage will be labeled "broad spectrum."	True	34.8% (89)	65.2% (167)
The term "sunblock" means that the product totally blocks harmful rays	False	73.8% (189)	26.2% (67)
"Waterproof" sunscreens or sunblocks enable people to swim and towel off multiple times throughout the day without ever having to reapply because they are completely water resistant for hours on end.	False	78.1% (200)	21.9% (56)
"Sweatproof" sunscreens or sunblocks enable people to engage in extensive physical activity throughout the day without ever having to reapply because they are completely sweat resistant for hours on end.	False	71.9% (184)	28.1% (72)
When applied correctly SPF 100 is twice as effective as SPF 50.	False	48.4% (124)	51.6% (132)
Spending time in the sun increases my risk of skin cancer and early skin aging.	True	84% (215)	16% (41)
A product's SPF indicates only its ability to defend against ultraviolet-B rays and not against ultraviolet-A rays.	True	23.0% (59)	77.0% (197)
On a daily basis, I should wear 1 ounce of sunscreen on exposed skin.	True	50.8% (130)	49.2% (126)

TABLE A3
Tanning Motivations

Question	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	I Never Tan	Mean	Disagree Range	Agree Range
Having a tan is important to me.	20.3% (52)	18.4% (47)	28.1% (72)	28.1% (72)	5.1% (13)		2.79	38.70%	33.20%
I tan because I feel better with a tan.	12.9% (33)	11.7% (30)	11.7% (30)	16.4% (42)	11.7% (30)	19.9% (51)	4.01	29.30%	37.50%
I tan because my friends or family think I look better with a tan.	18.8% (48)	15.2% (39)	17.6% (45)	11.7% (30)	7.8% (20)	19.5% (50)	3.39	37.10%	24.20%
I tan because my significant other thinks I look more attractive with a tan.	19.1% (49)	14.1% (36)	17.2% (44)	9.8% (25)	8.2% (21)	19.5% (50)	3.31	39.80%	21.90%
I tan because I feel mentally refreshed or happier afterward.	16.4% (42)	14.8% (38)	16.0% (41)	9.4% (24)	11.7% (30)	19.5% (50)	3.58	35.50%	27.00%
I tan because the media suggests it's attractive.	18.4% (47)	17.6% (45)	15.6% (40)	9.4% (24)	6.3% (16)	19.9% (51)	3.30	41.10%	22.00%
I tan because it makes me look thinner.	18.0% (46)	19.1% (49)	13.7% (35)	9.4% (24)	9.8% (25)	20.7% (53)	3.40	40.20%	25.50%
I tan because a tan gives my body the appearance of more muscle tone.	11.3% (29)	14.5% (37)	10.9% (28)	16.4% (42)	14.8% (38)	20.3% (52)	4.12	27.80%	40.60%
I tan because it makes me more confident in my appearance.	10.5% (27)	9.0% (23)	13.3% (34)	14.8% (38)	16.0% (41)	20.7% (53)	4.29	24.20%	41.70%
I tan because I think a tan gives me more sex appeal.	9.8% (25)	10.2% (26)	14.1% (36)	18.0% (46)	12.1% (31)	21.1% (54)	4.29	23.50%	41.40%
I tan because it helps reduce the amount of acne and appearance of acne-related scars on my face and body.	14.5% (37)	15.6% (40)	14.5% (37)	10.9% (28)	12.5% (32)	21.1% (54)	3.63	36.00%	28.50%

TABLE A4
Tanning and Sun Protection Behavior

Question	Yes	No			
Have you ever used a sunlamp, tanning lamp, or sunbed in order to get a tan?	37.5% (96)	61.3% (157)			
Have you ever received a spray tan, airbrush tan, or used a self-tanning cream/lotion?	28.5% (73)	70.7% (181)			
Have you ever sunbathed (purposely exposed your body to the sun to receive a tan, e.g., laying out)?	69.1% (177)	29.7% (76)			
Question	1-5 times	6-10 times	11-20 times	21-50 times	>50 times
Approximately how many times have you used a sunlamp, tanning lamp or sunbed in your life?	19.4% (19)	16.3% (16)	13.3% (13)	21.4% (21)	29.6% (29)
Approximately how many times have you received a spray tan, airbrush tan, or used a self-tanning cream/lotion?	51.4% (38)	16.2% (12)	13.5% (10)	6.8% (5)	12.2% (9)
Approximately how many times have you sunbathed in your life?	12.9% (23)	10.1% (18)	12.9% (23)	24.7% (44)	39.3% (70)

TABLE A4
(Continued)

Question	Within 5 minutes of arriving outside	5–30 minutes before going out	More than 30 minutes before going out	It often varies. It does not matter when I put it on as long as I use it.	I do not use sunscreen.			
Before going out in the sun to engage in outdoor activities I apply sunscreen. . . .	25.0% (64)	36.3% (93)	8.6% (22)	10.5% (27)	19.5% (50)			
	Every hour or less	Every 1.1–3 hours	more than 3 hours	I apply my sunscreen once and do not reapply regardless of how long I am in the sun.	As needed/whenever I feel like it	After sweating, swimming, or towel drying	I follow the instruction on the product.	I do not use sun-screen.
How often do you reapply sunscreen when outside?	3.5% (9)	19.1% (49)	9.4% (24)	9.4% (24)	34.0% (87)	6.3% (16)	2.7% (7)	15.6% (40)
	<1 oz (6 teaspoons)	1 - 2 oz (612 tea-spoons)	> 2 oz (12 teaspoons)	I apply what I think is enough but I do not know the amount.	I have no idea the amount or whether it is enough.	I do not use sunscreen.		
How much sunscreen do you use to cover your entire body?	4.7% (12)	16.4% (42)	4.7% (12)	44.5% (114)	13.3% (34)	16.4% (42)		

TABLE A5
Sunscreen Effectiveness and UV Exposure Damage

Beliefs about Sunscreen Effectiveness and UV Exposure Danger									
Choose the option that best describes sunscreen's level of ineffectiveness or effectiveness with regard to the following...		Ineffective	Somewhat Ineffective	Neither Ineffective or Effective	Somewhat Effective	Effective	Strongly Agree	Mean	
							Agree		
Preventing sunburns		2.0% (5)	1.6% (4)	5.9% (15)	48% (123)	42.6% (109)			
Enhancing a tan		13.3% (34)	18.4% (47)	36.3% (93)	27.3% (70)	4.7% (12)			
Preventing skin cancer		2.7% (7)	3.5% (9)	12.5% (32)	50.4% (129)	30.9% (79)			
Preventing signs of aging		3.9% (10)	5.9% (15)	18.8% (48)	46.1% (118)	25.4% (65)			
Reversing signs of aging		32.4% (83)	18.8% (48)	27.7% (71)	14.8% (38)	6.3% (16)			
	Strongly Disagree		Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree		
Sunlamps are safer than the sun.	29.3% (75)	35.9% (92)	10.5% (27)	18.8% (48)	2.7% (7)	2.3% (6)	.4% (1)	2.38	
Sunburning to get a tan is not harmful.	43.4% (111)	33.6% (86)	8.6% (22)	9.4% (24)	2.7% (7)	1.2% (3)	1.2% (3)	2.03	
Using a tanning bed is no more risky than many other things people do.	23.4% (60)	22.3% (57)	13.3% (34)	17.2% (44)	14.5% (37)	6.6% (17)	2.7% (7)	3.08	
Sunless tanning lotions, sprays, or creams are safer than the sun.	3.5% (9)	12.5% (32)	7.8% (20)	17.2% (44)	21.1% (54)	23.8% (61)	14.1% (36)	4.68	
Sunlamps can be dangerous.	3.9% (10)	2.0% (5)	.8% (2)	12.9% (33)	12.1% (31)	40.2% (103)	28.1% (72)	5.61	
Ultraviolet lamps can cause some skin damage.	3.5% (9)	1.2% (3)	1.2% (3)	11.7% (30)	11.3% (29)	39.5% (101)	31.6% (81)	5.71	

REFERENCES

- American Cancer Society. 2016. *Cancer Facts & Figures 2016*. Atlanta, GA: American Cancer Society.
- Bagdasarov, Zhanna, Smita Banerjee, Kathryn Greene, and Shelly Campo. 2008. Indoor Tanning and Problem Behavior. *Journal of American College Health*, 56 (5): 555–562.
- Baron, R.M. and D.A. Kenny. 1986. The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51 (6): 1173–1182.
- Centers for Disease Control and Prevention (CDC). 2015. *Protect Your Family and Yourself from Skin Cancer: Skin Cancer Prevention Fact Sheets*. Atlanta, GA: Centers for Disease Control and Prevention.
- Center for Drug Evaluation and Research. 2012. *Labeling and Effectiveness Testing: Sunscreen Drug Products for Over-the-Counter Human Use—Small Entity Compliance Guide*. Silver Spring, MD: Center for Drug Evaluation and Research, Food and Drug Administration.
- Fitzsimons, Gavan J. 2008. Death to Dichotomizing. *Journal of Consumer Research*, 35 (1), 35 (June): 5–8.
- Heckman, Carolyn J., Brian L. Egleston, Diane B. Wilson, and Karen S. Ingersoll. 2008. A Preliminary Investigation of the Predictors of Tanning Dependence. *American Journal of Health Behavior*, 32 (5): 451–464.
- Hendin, Holly and Jonathan Cheek. 1997. Assessing Hypersensitive Narcissism: A Reexamination of Murray's Narcissism Scale. *Journal of Research in Personality*, 31 (4): 588–599.
- Hillhouse, Joel J., Arthur W. Stair III, and Christine M. Adler. 1996. Predictors of Sunbathing and Sunscreen Use in College Undergraduates. *Journal of Behavioral Medicine*, 19 (6): 543–561.
- Holmes, Elizabeth. 2012. The Push for Daily Sunscreen. *The Wall Street Journal*, April 9, posted to www.wsj.com.
- Johnson, Esther Y. and Donald P. Lookingbill. 1984. Sunscreen Use and Sun Exposure. Trends in a White Population. *Archives of Dermatology*, 120 (6): 727–731.
- Kenny, D.A., D. Kashy, and N. Bolger. 1998. Data Analysis in Social Psychology. In *Handbook of Social Psychology*, edited by D. Gilbert, S. Fiske, and G. Lindzey. 4th edition (233–265). New York: McGraw-Hill.
- Kourosch, Arianne S., Cynthia R. Harrington, and Bryon Adinoff. 2010. Tanning as a Behavioral Addiction. *American Journal of Drug & Alcohol Abuse*, 36 (5): 284–290.
- McMath, Ben F. and Steven Prentice-Dunn. 2005. Protection Motivation Theory and Skin Cancer Risk: The Role of Individual Differences in Responses to Persuasive Appeals. *Journal of Applied Social Psychology*, 35 (3): 621–643.
- Mehdizadeh, Soraya. 2010. Self-Presentation 2.0: Narcissism and Self-Esteem on Facebook. *Cyberpsychology, Behavior & Social Networking*, 13 (4): 357–364.
- National Cancer Institute (NCI). 2010. *Cancer Trends Progress Report: UV Exposure and Sun Protective Practices*. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services.
- National Cancer Institute (NCI). 2012. *Anyone Can Get Skin Cancer: Learn How to Protect the Skin You're in!* Lifelines. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services.
- Nunnally, Jum C. 1978. *Psychometric Theory*. 2nd edition. New York: McGraw-Hill.
- Raskin, Robert, Jill Novacek, and Robert Hogan. 1991. Narcissism, Self-Esteem, and Defensive Self-Enhancement. *Journal of Personality*, 59 (1): 19–38.
- Reed, Kurtis B., Jerry D. Brewer, Christine M. Lohse, Kariline E. Bringe, Crystal N. Pruitt, and Lawrence E. Gibson. 2012. Increasing Incidence of Melanoma among Young Adults: An Epidemiological Study in Olmsted County, Minnesota. *Mayo Clinic Proceedings*, 87 (4): 328–334.
- Robinson, June K., Darrell S. Rigel, and Rex A. Amonette. 1997. Trends in Sun Exposure Knowledge, Attitudes, and Behaviors: 1986 to 1996. *Journal of the American Academy of Dermatology*, 37 (2): 179–186.

- Rosenberg, Morris. 1965. *Society and the Adolescent Self-Image*. Princeton, NJ: Princeton University Press.
- Rossi, Joseph S., Linelle M. Blais, Colleen A. Redding, and Martin A. Weinstock. 1995. Preventing Skin Cancer through Behavior Change. Implications for Interventions. *Dermatologic Clinics*, 13L 613–622.
- Saad, Gad and Albert Peng. 2006. Applying Darwinian Principles in Designing Effective Intervention Strategies: The Case of Sun Tanning. *Psychology & Marketing*, 23 (7): 617–638.
- Suntan, CA. 2016. Industry Statistics, Opening and Running a Tanning Salon. <http://www.suntan.com>
- World Health Organization (WHO). 2003. *Sun Protection in Schools: An Educational Package to Protect Children from Ultraviolet Radiation*. Geneva, Switzerland: World Health Organization.