

Fact or Wishful Thinking? Biased Expectations in "I Think I Look Better When I'm Tanned"

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Objective: To examine the impact of tanned female images on respondents' perceptions of attractiveness, healthiness, and height and weight estimations. **Method:** A 3 (light, medium, or dark tan) by 2 (male or female respondent) experimental design. **Results:** Only male respondents perceived the dark-tanned woman as more physically attractive and thinner than both light- and medium-tanned women. Men also perceived the dark-tanned woman

as more interpersonally attractive and healthier than the medium-tanned woman. **Conclusions:** Campaigns targeted at males need to reduce the perceptions that tanned females are healthier, thinner, and more attractive. Educational efforts targeting females need to reduce attraction-based motivations.

Key words: Indoor tanning, perceptions of tanning, skin cancer, tanning bed use

Am J Health Behav. 2008;32(3):243-252

Skin cancer is the fastest-growing and the most common type of cancer in the United States,¹ and the incidence of melanoma has increased by 1000% in the last 50 years.² More than one million cases of nonmelanoma skin cancer diagnosed annually in the United States are sun related.³ According to Ward et al, one in 80 Americans will develop a melanoma at some time during their

lives. The American Cancer Society estimates that melanoma, the most serious type of skin cancer, will account for more than 62,000 cases of skin cancer in 2006 and most of the nearly 11,000 deaths due to skin cancer annually.³

According to the Skin Cancer Foundation, about 28 million Americans indulge in outdoor and indoor tanning behaviors annually.⁴ The American Academy of Dermatology confirms that on an average day, more than one million people visit tanning salons.⁵ The World Health Organization reports that the popularity of tanning bed use continues to grow, especially among women.⁶ Approximately 40% of girls aged 17-18 years use indoor tanning lamps.⁷ Tanning bed users often fail to recognize that indoor tanning bed use is just as harmful as outdoor sun exposure tanning and can lead to lethal consequences such as skin or eye burns, alterations to immune system function, photoaging, photo-drug reactions, and skin cancer.^{8,9}

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Cokkinides et al report that the higher prevalence of tanning bed use among women is related to a strong desire to get a tan despite being aware of the health hazards associated with it.⁷ Positive perceptions about tanning are positively associated with tanning behavior.^{10,11} It is, therefore, crucial to understand the perceptions that people have about tanning in order to develop more effective interventions. The aim of this study was to explore differences in perceptions of men and women towards women with different tanning levels.

Perceptions About Tanning

Positive attitudes associated with tanning, such as preference for tanned skin and desirable ideal for beauty, are associated with sporadic sunscreen use, more frequent sunburns, and increased use of tanning beds.^{7,8,10} Branstrom et al report a positive relationship between attitudes towards being tanned and intentional tanning and tanning bed use.¹⁰ Previous research on perceptions of attractiveness, health, and height/weight will be reviewed in the next section.

Perceived Attractiveness

Perceived attractiveness is one of the strongest predictors of behaviors associated with getting a tan, such as spending more time sunbathing and using tanning beds.¹¹⁻³ Brandberg et al found that people with low levels of body satisfaction sunbathed more than those participants with higher levels.¹⁴ Leary and Jones reported that appearance-related concerns and the belief that one is more attractive with a tan best predicted skin cancer-risky behaviors.¹⁵ Additionally, Hillhouse et al documented that the motivation to maintain an attractive appearance was stronger than health orientation as a predictor of tanning intentions.¹⁶ Broadstock et al varied level of tan (no tan, light, medium, and dark tan), attire (swimwear and casual), sex of model, and sex of respondents on perceptions of attractiveness and healthiness. Results revealed that a medium tan was perceived as more attractive than light tan, with dark tan and no tan being less preferred. Overall, the results showed a clear preference for tans over no tans. This preference for a tan over no tan was also confirmed in prior studies conducted in the 1980s and 1990s.^{18,19}

Beasley and Kittel also suggested that the perception that tanned skin is more attractive than pale skin is a primary motivating factor for people to get a tan.²⁰ Thus, it is evident that perceptions of attractiveness provide a strong motivation for people to engage in tanning behavior, whether through sun exposure or tanning bed use. What is not known is whether or not this perception reflects reality. Additionally, research has indicated that besides looking attractive, another key motivation for tanning is the attention it attracts.^{13,21}

Tanning behavior is more prevalent among females than males.^{7,22,23} In fact, women are 3 times more likely than men to use a tanning bed.²⁵ Women's greater tanning behavior is related to a strong desire to get a tan despite being aware of the health and other hazards associated with getting a tanned look.^{23,26} Therefore, appearing more attractive to men may be a strong motivating factor for women to indulge in tanning behavior.²⁷ Also, the role of images perceived to be associated with sun tanning, such as beautiful, attractive, and sexually pleasing, are associated with tanning behavior, particularly for females.^{19,28} In the present study, we explored if women's perceptions about attractiveness are accurate. Prior research has primarily examined perceptions of physical attractiveness.^{17,28} Because tanning behavior may also increase perceptions of interpersonal attractiveness (eg, wanting to be a friend), we were interested in exploring effects of tanning levels on both physical and interpersonal attractiveness. Based on the above reasoning, we hypothesize:

- H1a. Male respondents will perceive a tanned female as more physically attractive than a less tanned female.
- H1b. Female respondents will perceive a tanned female as more physically attractive than a less tanned female.
- H2a. Male respondents will judge a tanned female as more interpersonally attractive than a less tanned female.
- H2b. Female respondents will judge a tanned female as more interpersonally attractive than a less tanned female.

Perceived Health

People with a tan perceive tanning to be healthy and are not as concerned about the long-term effects of tanning.^{13,19} Also,

people with a tan are perceived as healthier compared to people without a tan.^{17,20} In a recent qualitative study, participants acknowledged that a tan gives the appearance of being healthy, even though it may not be so in reality.¹³ Weston found that tanning was associated with increased perceptions of health and well-being.²⁹ Additionally, Hill et al reported that more than half their respondents said that they felt healthier with a tan than without it, and 66% thought they looked healthier, but only 18% believed that a tanned person is actually healthier.³⁰ Thus, there exists a bias in perception, whereby people perceive a tan as healthy, but not healthiest overall. Although gender differences in perceived healthiness have not been explored in prior research (with the exception of Broadstock et al¹⁷), we hypothesize that the higher tanning bed use among women may be also due to the perception that men find women to look healthier when tanned. Therefore,

H3a. Male respondents will perceive a tanned female as healthier than a less tanned female.

H3b. Female respondents will perceive a tanned female as healthier than a less tanned female.

Perceived Height and Weight

One way the desired beauty ideal for a thin and tall appearance is achieved is through tanning.³¹ Research on frequent tanning-bed use among women has been associated with being highly concerned about weight, frequently dieting to lose weight, using laxatives or vomiting to control weight, having friends who placed a great deal of importance on being thin, and trying to look like female models in the media.³² Lindsay and Rainey reported that for young tobacco users, women who tan place more emphasis on the benefits of tanning, such as looking thin, than on the threat of future risks.³³ Achieving an ideal beauty is often related to a desirable body shape.³⁴ Prior studies have examined attractiveness and healthiness as motivations of tanning.^{17,30} Besides assessing attractiveness and healthiness, the present study examined other indicators, such as estimated height and weight, which may be possible motivations for tanning. In terms of cross-sex perceptions, women's higher tanning bed use

may be due to the perception that men find women to look thinner and taller when tanned. Because tanning partly provides an appearance of thinness and people report they look thinner when tanned (although that effect has not been documented to date), we hypothesize:

H4a. Male respondents will perceive a tanned female as taller than a less tanned female.

H4b. Female respondents will perceive a tanned female as taller than a less tanned female.

H5a. Male respondents will perceive a tanned female as thinner than a less tanned female.

H5b. Female respondents will perceive a tanned female as thinner than a less tanned female.

METHOD

Participants and Procedure

After receiving human subjects approval from university institutional review board, 362 male ($n=135$) and female ($n=226$) college students, ranging in age from 19 to 25 ($M=21.04$; $SD=1.14$), were recruited from undergraduate courses at a large northeastern university in the United States. Students participated in the study outside of class time and received extra credit for participation. The sample reported ethnicity as predominantly white (64%), and 16% Asian/Pacific Islander, 2% African American, 5% Hispanic/Latino, 3% bi-/multiracial, with other groups less than 2% each. After providing written consent, participants were placed in a room with up to 10 other people and given a survey to complete individually (approximately 20 minutes) as part of a larger project on tanning bed use. Upon completion, all participants were thanked and debriefed.

Tanning Image Manipulation

Tanning image was manipulated by images in a quasi-experimental design. Surveys were identical except for a tanning photo (female image with light, medium, and dark skin). The photograph of a white female was digitally manipulated, and the skin color was altered to make it into light (not tanned), medium, or dark tanning level. The female was college aged and dressed in summer clothing to allow viewing of exposed skin. The female model was 5'4" tall and weighed 120

Table 1
Descriptive Statistics by Conditions

	No Tan		Medium		Dark	
	M(SD)	Range	M(SD)	Range	M(SD)	Range
Male Respondents						
Physical Attractiveness	56.95 (20.32)	3-85	55.12 (21.83)	4-90	66.67 (17.76)	5-99
Interpersonal attractiveness	3.41 (.54)	1.89-4.11	3.27 (.61)	2.11-4.44	3.63 (.54)	2.33-5.00
Healthiness	72.67 (22.89)	5-100	72.58 (18.92)	5-95	80.60 (12.33)	50-100
Height	65.21 (2.52)	59-70	65.65 (2.29)	60-70	64.40 (1.89)	60-68
Weight	125.49 (12.91)	105-160	123.58 (10.61)	102-148	117.98 (10.24)	90-145
BMI*	20.7		20.2		20.0	
Female Respondents						
Attractiveness	65.29 (17.00)	6-93	63.99 (18.70)	5-90	63.03 (19.12)	7-90
Interpersonal attractiveness	3.46 (.47)	2.22-4.44	3.60 (.43)	2.56-4.44	3.48 (.49)	2.33-4.67
Healthiness	80.84 (13.94)	8-10	78.60 (17.01)	6-100	77.71 (16.11)	9-100
Height	64.67 (1.53)	61-70	65.27 (2.06)	61-72	64.77 (1.60)	62-68
Weight	125.57 (10.44)	95-165	128.91 (11.76)	100-175	127.04 (9.66)	105-155
BMI*	21.1		21.3		21.3	

Note.

* BMI was not used for analyses, but used in the discussion.

pounds. She had a body mass index (BMI) of 20.6 (healthy weight for her height). Body mass index (BMI) is a measure of body fat based on height and weight that applies to both adult men and women. A BMI of less than 18.5 is underweight, 18.5-24.9 is normal weight, 25-29.9 is overweight, and greater than 30 is obese.³⁵ Preliminary tests for differences by experimental group revealed no differences on key variables such as attractiveness and healthiness. Table 1 contains descriptive statistics for all dependent variables by conditions.

Measures

The present study measured perceptions of the female model's (photo) attractiveness, health, height, and weight. In addition, there were a number of socio-demographic measures as well as a measure of the respondent's skin color.

Perceived physical attractiveness. Attractiveness was measured by one question that asked, "How attractive is she?" Participants were instructed to provide their answer as a number between 0 (very unattractive) and 100 (very attractive) (M=62.49, SD=19.16, range=3-99).

Perceived interpersonal attractiveness. An additional measure of attrac-

tiveness was the interpersonal attraction scale,³⁶ which includes ten 5-point Likert-type items, such as "I think she is very attractive" with 1=strongly disagree and 5=strongly agree. Reliability was good ($\alpha=.84$), and the factor analysis indicated a single factor structure (eigenvalue=3.99, 39.92% var.) with 9 item loadings greater than .5. The remaining 9 items were summed and averaged to form a composite scale with a higher score indicating greater perceived attractiveness (M=3.48, SD=.51).

Perceived health. Perceived overall health was measured by one question that asked, "How healthy is she?" Participants were instructed to provide their answer as a number between 0 (very unhealthy) and 100 (very healthy) (M=77.70, SD=16.88, range=5-100).

Height. Height was measured by one question that asked, "If you had to guess, about how tall is this woman?" Participants were instructed to provide their responses in feet and inches. Variables were created with height converted into inches (M=64.96, SD=1.96, range=59-72).

Weight. Weight was measured by one question that asked, "If you had to guess, about how much does she weigh?" Participants were instructed to provide their

Table 2
Zero-order Correlation Matrix for All Variables

	1	2	3	4	5	6
1. Attractiveness	1.00					
2. Interpersonal attractiveness	0.47 ^c	1.00				
3. Healthiness	0.63 ^c	0.26 ^c	1.00			
4. Height	0.15 ^b	-0.01	0.12 ^a	1.00		
5. Weight	-0.03	-0.06	0.04	0.35 ^c	1.00	
6. Respondent skin	-0.02	0.03	0.02	-0.06	-0.06	1.00

Note.

a= $P < .05$, b = $P < .01$, c = $P < .001$

responses in pounds ($M = 125.26$, $SD = 11.27$, range = 90-175).

RESULTS

Analyses

Data were analyzed by a series of 3 X 2 analyses of variance (ANOVAs using Tukey for post hoc) with independent variables including tanning level (light/medium/dark) and respondent sex (male/female), and with dependent variables measuring perceptions of attractiveness, interpersonal attractiveness, health, height, and weight. The level of significance was set at $P < .05$, except for correlations, where significance was set at $P < .01$ to protect against Type I error. Multivariate tests were examined first to reduce error rate (stimulus person tanning level Wilks'

$\lambda = .94$, $F(10, 696) = 2.38$, $P < .01$, $\eta^2 = .03$; respondent sex Wilks' $\lambda = .92$, $F(5, 348) = 6.01$, $P < .001$, $\eta^2 = .08$; stimulus person tanning level X respondent sex Wilks' $\lambda = .92$, $F(10, 676) = 2.97$, $P < .001$, $\eta^2 = .04$); then follow-up univariate analyses were conducted. The zero order correlation matrix for all variables is presented in Table 2. Table 3 provides a summary of main and interaction effects, and Table 4 provides means and standard deviations for the main effects.

Perceived Physical Attractiveness

ANOVA results for perceived attractiveness showed that the interaction between stimulus person tanning level and respondent sex was significant [$F(2,$

Table 3
ANOVA Table for Main and Interaction Effects

	Attractiveness		Interpersonal attractiveness		Healthiness		Height		Weight	
	F	e^2	F	e^2	F	e^2	F	e^2	F	e^2
Main Effects										
Stimulus tanning	2.37	.01	2.28	.01	1.34	.01	6.11 ^b	.03	3.51 ^a	.02
Respondent sex	4.76 ^a	.01	1.55	.00	4.25 ^a	.01	0.68	.00	15.90 ^c	.04
2-way Interaction Effect										
Stimulus tanning X Respondent sex	3.71 ^a	.02	6.29 ^b	.04	3.41 ^a	.02	2.02	.01	4.46 ^a	.03

Note.

a= $P < .05$, b = $P < .01$, c = $P < .001$

Table 4
Means and Standard Deviations for All Main Effects

	Attractiveness		Interpersonal attractiveness		Healthiness		Height		Weight	
	F	e ²	F	e ²	F	e ²	F	e ²	F	e ²
Stimulus Tanning Level										
Light	62.64 ^a	18.45	3.44 ^a	.49	78.23 ^a	17.63	64.84 ^a	1.90	125.54 ^{a,b}	11.23
Medium	60.50 ^a	20.37	3.47 ^a	.53	76.21 ^a	17.96	65.42 ^b	2.15	126.81 ^a	11.57
Dark	64.41 ^a	18.55	3.53 ^a	.52	78.68 ^a	14.80	64.60 ^a	1.73	123.35 ^b	10.80
Respondent Sex										
Male	59.75 ^a	20.54	3.44 ^a	.58	75.42 ^a	18.53	65.07 ^a	2.28	122.14 ^a	11.56
Female	64.18 ^b	18.16	3.51 ^a	.47	79.16 ^b	15.64	64.90 ^a	1.75	127.10 ^b	10.71

Note.

Means that do not share the same subscript are significantly different at $P < .05$.

352)=3.71, $P < .05$). Specifically, male respondents perceived dark tanning ($M=66.67$, $SD=17.76$) as more physically attractive [$F(2, 132)=4.53$, $P < .01$] than both light tanning ($M=56.95$, $SD=20.32$) and medium tanning ($M=55.12$, $SD=21.83$) (both medium and light tanning were not significantly different from each other). The results for female respondents were not significant. The results support H1a, but not H1b. Only male respondents perceived a more tanned female as more physically attractive than a less tanned female.

Perceived Interpersonal Attractiveness

ANOVA results for perceived interpersonal attractiveness showed that the interaction between stimulus person tanning level and respondent sex was significant [$F(2, 352)=6.29$, $P < .01$]. Specifically, male respondents perceived a dark-tanned woman ($M=3.63$, $SD=.54$) as more interpersonally attractive [$F(2, 132)=4.69$, $P < .01$] than a medium-tanned woman ($M=3.27$, $SD=.61$), but neither was different from the light-tanned woman ($M=3.41$, $SD=.54$). The results for female respondents were not significant. Overall, the results partially support H2a, but not H2b. Only male respondents perceived a dark-tanned female as more interpersonally attractive than a medium-tanned female.

Perceived Health

ANOVA results for perceived health

showed that the interaction between respondent sex and stimulus person tanning level was significant [$F(2, 352)=3.41$, $P < .05$]. Specifically, male respondents perceived dark tanning ($M=80.60$, $SD=12.33$) as healthier [$F(2, 131)=2.91$, $P < .05$] than medium tanning ($M=72.58$, $SD=18.92$), but neither was different from light tanning ($M=72.67$, $SD=22.89$). The results for female respondents were not significant. The results partially support H3a, but not H3b. Only male respondents perceived a dark-tanned female as healthier than a medium-tanned female.

Perceived Height

ANOVA results for perceived height showed that there was only a main effect for stimulus person tanning level [$F(2, 352)=6.11$, $P < .01$]. Univariate analyses indicated that the medium-tanned woman ($M=65.42$, $SD=2.15$) was perceived as taller than both the light-tanned woman ($M=64.84$, $SD=1.90$) and dark-tanned woman ($M=64.60$, $SD=1.73$), but perceptions for the light- and dark-tanned women were not significantly different. Thus, H4a and H4b were not supported. In fact, results showed that the medium-tanned woman was perceived as taller than both light- and dark-tanned women.

Perceived Weight

ANOVA results for perceived weight showed that the interaction between respondent sex and stimulus person tanning level was significant [$F(2, 352)=4.46$,

$P < .01$). Specifically, male respondents perceived the dark-tanned woman ($M=117.98$, $SD=10.24$) as thinner [$F(2, 132)=5.45$, $P < .01$] than both the light-tanned woman ($M=125.49$, $SD=12.91$) and medium-tanned woman ($M=123.58$, $SD=10.61$), but perceptions of the medium- and light-tanned women were not significantly different from each other. The results for female respondents were not significant. Overall, the results support H5a, but not H5b. Only male respondents perceived a dark-tanned female as thinner than both light- and medium-tanned females.

DISCUSSION

This study examined the impact of light-, medium-, and darker-tanned female images on male and female respondents' perceptions of physical and interpersonal attractiveness, healthiness, and height and weight estimations. Prior studies have focused on the impact of different levels of tan on perceptions of physical attractiveness and healthiness, but not on more "objective" height and weight estimations.^{17,19} Results from this study indicate that females' perceptions that males perceive tanned females as more physically and interpersonally attractive, healthier, and thinner appear to be accurate. These results will be further explored.

Perceptions of Attractiveness and Healthiness

Contrary to prior studies¹⁷ that report a preference for a medium tan, results for the present study indicate male respondents' preference for dark tans as related to perceptions of attractiveness and healthiness. This was not the case for female respondents. Particularly for physical attractiveness, the results of the present study are similar to recent research that has shown a preference for moderate or dark tans among adolescent girls.³⁷ This study supports the accuracy of women's perception that men find them more physically attractive when tanned. For interpersonal attractiveness, only male respondents perceived a dark-tanned female as more interpersonally attractive than a medium-tanned female. From a skin cancer behavioral perspective, it is discouraging to know that men perceive a dark tan to be more attractive and healthier. Because prior research has

suggested that the appearance-related motivations are effective in changing tanning behavior,³⁸ future interventions should address the attractiveness and healthiness of being tanned.

Knowledge has not shown to translate into favorable outcomes in cases of tanning behavior.³⁹ Filiz et al conclude that almost half of their adolescent sample was aware of the importance of using sunscreen, but neither the use of sunscreen nor sun protection factor (SPF) was optimal, which resulted in high prevalence of sunburns among sunscreen users.⁴⁰ Other research has also shown that women in particular are aware of the dangers of tanning, but women also expose themselves to UV radiation more.¹⁰ This lack of relationship between knowledge of health effects and use of preventive behavior (such as sunscreen use) has been called "the sunscreen paradox." The paradox lies in the fact that people do not use sunscreen as a protective mechanism, but rather as a way of staying longer in the sun, thereby exposing themselves to more UV radiation.^{10,41} Therefore, health-related perceptions are not key to addressing the problem of tanning behavior. Instead, appearance motivation seems to work better in the case of reducing sun tanning behavior and provides a viable approach to designing interventions to reduce tanning bed use and sunbathing.³⁸

The present study showed a clear preference for medium and dark tans, which may be problematic from a health behavior perspective. Research has also shown that tanning behavior is normative; that is, perception of other people's sunbathing behavior may be a strong predictor of self-tanning behavior and vacations to sunny destinations.¹⁰ Therefore, if tanning behavior is normative and carried out collectively, then efforts to decrease tanning may be successful if carried out by peer leaders. Trying to change the normative perceptions related to tanning and focusing on appearance-related dangers of tanning provide an avenue for further research.

Perceptions of Height and Weight

The present study is the first study to examine perceptions of tallness and thinness with respect to tanning behavior. Results from the present study show that a dark-tanned female was perceived as

thinner than both light- and medium-tanned females. Additionally, results documented that a medium-tanned woman was perceived as taller than both light- and dark-tanned women. These findings are crucial, because they tap into appearance-related motivations for tanning and could be used by health practitioners in designing campaigns/interventions.

The height estimations in the present study for both male and female respondents were very close to the actual height, whereas weight estimations were underestimated by male respondents and overestimated by female respondents. The present study extended prior research¹⁷ that examined only perceptions of attractiveness and healthiness. This study also taps the "I look thinner when I'm tanned" perception besides attractiveness and healthiness. This study revealed that the dark-tanned female was perceived as thinner than both light- and medium-tanned females. Thinness is valued in today's American society and is perceived as a "cultural ideal."⁴² Research has shown that young women feel a societal pressure to be thin.⁴³ If tanning provides a perception of thinness, then it follows that women, in particular, may be motivated to tan for the "ideal image." This particular finding may be problematic from a behavioral perspective because it reveals that women's perceptions about how men perceive them may be accurate. Rodin et al described the persuasiveness of body image concerns among women in our society as normative discontent.⁴⁴ Thus, in order to alter the valued attributes of tanning (eg, looking attractive, healthy, thin), campaign efforts need to focus on normative approaches to changing tanning perceptions.

Limitations

There are a number of potential limitations in the present study that should be noted. Only female models were used as a stimulus, and the results may be partly due to peculiar characteristics of the model. Future research could systematically explore effects of sex, build, age, ethnicity, and other characteristics in examining perceptions about levels of tan. Perceptions of health and attractiveness were based on participants' subjective scales. Finally, data were collected from a large northeastern university. These results may not be generalizable

because differing exposure of students to diverse (or similar) peers may change their subjective perceptions of attractiveness.

Implications

This study has a number of practical and research implications. Given that only men perceive a darker tan on white women as more attractive, healthier, and thinner as compared to lighter tans, antitanning interventions need to be tailored by gender. Campaigns and other interventions targeted at males need to reduce the perceptions that tanned females are healthier, thinner, and more attractive.¹⁷ Educational efforts targeting females need to reduce attraction-based motivations³⁸ and to address the need to keep themselves healthy and to not tailor their behaviors to attract males. The present study also showed that race or skin color had no effect on respondent's perceptions. This is important from a health intervention perspective because it shows the universality of perceptions of attractiveness and healthiness. Thus, intervention designers may want to focus on debunking the myths related to tanning bed use and tailor them according to gender, and not race. Finally, the findings of the present study contribute to efforts to develop future interventions to reduce tanning among young people. ■

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