

CHANGES IN SUN TANNING ATTITUDES AND BEHAVIORS OF U.S. COLLEGE STUDENTS FROM 1995 TO 2005

TERRY F. PETTJOHN II

Coastal Carolina University

TERRY F. PETTJOHN

The Ohio State University-Marion

KAELA S. GESCHKE

Mercyhurst College

To investigate changes in U.S. college student sun tanning attitudes and behaviors over the last decade, participants completed sun tanning attitude and behavior surveys in 1995 ($n=151$) and a different sample of participants completed surveys in 2005 ($n=208$). Consistent with predictions, results indicated that college students were more likely to sun tan in 2005 than they were in 1995, although their attitudes about sun tanning have remained fairly stable. Despite government and media programming designed to educate the public about tanning risks, reported sun tanning behaviors have increased over the past decade and sun tanning attitudes have remained constant.

Skin cancer currently inflicts more people in the United States than every other cancer combined. In 2005, the American Cancer Society estimated that 1 million people would be diagnosed with basal cell or squamous cell carcinoma and there would be 60,000 new cases of melanoma (CDC, 2006). Death rates due to skin cancer have risen in the last decade. The Center for Disease Control estimated 9,300 deaths due to skin cancer in 1995 and 10,590 in 2005 (CDC, 2006).

Beginning in 1994, the CDC implemented plans for a national skin cancer prevention and education initiative, which has grown each year since (CDC, 2006). Other research has shown that the majority of college students sun tan and use tanning beds and although access to information on the dangers of tanning has increased, tanning behavior has remained

consistent (Hillhouse, 1996). Additional studies found that education of adults may increase knowledge and affect short term tanning practices, but has little influence on long term tanning behaviors (Bauman, Ferguson, McKenzie, Smith, & Vita, 2002; Beasley, 1997; U.S. Preventive Services Task Force, 2003). Based on these past studies, we hypothesized that U.S. college student attitudes about sun tanning would remain relatively consistent over the last decade (1995-2005), and that U.S. college student sun tanning behaviors would increase.

Methods

To test these predictions, 151 male and female undergraduate college students from a large, public university in the state of Ohio completed a survey of sun tanning attitudes and behaviors in 1995. The 1995

sample was 96% Caucasian, 2% Asian, .7% African-American, .7% Hispanic, .7% "other" and the majority of respondents were female (64.9%) and heterosexual (98%). The average age of the 1995 sample was 22.17 years ($SD=7.32$) and 64% were freshmen, 15.3% sophomores, 7.3% juniors, 8.7% seniors, and 4.7% "other" for class year. Ten years later, 208 different male and female undergraduate college students from the same university completed the same sun tanning survey. The 2005 sample was 94.3% Caucasian, 2.8% Hispanic, 1.4% African-American, .5% Asian, .9% "other" and the majority of respondents were female (61%) and heterosexual (96.6%). The average age of the 1995 sample was 21.15 years ($SD=6.77$) and 66.8% were freshmen, 12.8% sophomores, 8.5% juniors, 8.1% seniors, and 3.8% "other" for class year.

The survey consisted of 24 sun tanning attitude questions and 12 sun tanning frequency questions which were answered using a 5-point Likert scale. Demographic questions were also included to provide information about participant age, sex, race, year in college, and sexual orientation.

Results

Only two sun tanning attitude questions showed a significant change from 1995 to 2005. The 2005 sample of college students indicated that they feel more attractive when they have a suntan, $t(359)=1.94$, $p=.05$, $d=.20$, and they believed that men engage in sun tanning less than the 1995 sample, $t(359)=2.75$, $p=.006$, $d=.29$. The remaining question comparisons showed similar attitudes

between the 1995 and 2005 samples. The sun tanning behavior questions indicated that the 2005 sample engages in more sun tanning behaviors in all seasons (spring, summer, fall, and winter), especially indoors, compared to the 1995 sample (all $ps < .05$). The 2005 sample also indicated a greater frequency of using sunscreen, $t(350)=2.15$, $p=.032$, $d=.23$, tanning for special events, $t(357)=2.76$, $p<.01$, $d=.29$, and using artificial suntan products, $t(358)=3.10$, $p<.01$, $d=.33$. A summary of the survey questions and mean response values for sun tanning attitudes (Table 1) and behaviors (Table 2) are provided.

Table 1
Mean College Student Sun Tanning Attitude Responses from 1995 and 2005

Question	1995 <i>M</i> (<i>SD</i>)	2005 <i>M</i> (<i>SD</i>)
SA1. I look more attractive with a suntan than without a sun tan.*	3.78 (1.03)	3.91 (.89)
SA2. Sun tanned skin is more attractive than skin that is not sun tanned.	3.62 (.93)	3.54 (.93)
SA3. Men engage in sun tanning behavior more frequently than women.	3.38 (.92)	3.38 (.88)
SA4. Suntans look healthy.	3.37 (.98)	3.40 (.99)
SA5. I enjoy engaging in sun tanning behavior.	3.23 (1.20)	3.26 (1.17)
SA6. It is important for me to have a sun tan.	2.79 (1.05)	2.70 (1.03)
SA7. Suntanned men are more attractive than men without sun tans.	3.23 (.91)	3.08 (.97)
SA8. I look more attractive with a sun tan than without a sun tan.	3.72 (1.01)	3.76 (1.01)
SA9. Sun tanned individuals go out on more dates than individuals without sun tans.	2.50 (.84)	2.44 (.84)
SA10. Sun tanned individuals have more fun than individuals without sun tans.	2.21 (.82)	2.13 (.86)
SA11. When I have a sun tan, I feel more attractive than when I do not have a sun tan.*	3.44 (1.08)	3.66 (.99)
SA12. Men prefer to date women who have sun tans over women who do not have sun tans.	2.20 (.78)	2.18 (.82)
SA13. I look more attractive without a sun tan than with a sun tan.	4.0 (.82)	4.08 (.80)
SA14. Sun tanned individuals are healthier than individuals without sun tans.	3.25 (.96)	3.24 (.99)
SA15. Women engage in sun tanning behavior more frequently than men.	2.43 (.86)	2.44 (.95)
SA16. Sun tanned women are more attractive than women without sun tans.	2.26 (.85)	2.3 (2.30)
SA17. Individuals who pursue sun tans are too concerned with outward appearances.	2.91 (.86)	2.90 (.89)
SA18. It is important for my boyfriend/girlfriend to have a sun tan.*	2.07 (.51)	1.9 (.66)
SA19. Women prefer to date men who have sun tans over men who do not have sun tans.	2.68 (.84)	2.9 (2.26)
SA20. I am concerned with premature aging associated with sun tanning behavior.	3.48 (.99)	3.53 (1.18)
SA21. I am concerned about getting skin cancer from exposure to UV rays.	3.58 (1.04)	3.63 (.94)
SA22. Sunscreens should be used when an individual engages in sun tanning behavior.	3.98 (.80)	3.98 (.82)
SA23. Sun tanning enhancers (i.e. baby oil, deep tanning lotions) should never be used.	2.75 (.97)	2.86 (.99)
SA24. Being tan now is more important to me than the risk of skin cancer in the future.	2.01 (.82)	2.09 (.85)

Note. *= $p < .05$. For SA1-24, 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

Table 2
Mean College Student Sun Tanning Behavior Responses from 1995 and 2005

Question	1995 <i>M</i> (<i>SD</i>)	2005 <i>M</i> (<i>SD</i>)
SF1. In the winter, how often do you engage in sun tanning behavior indoors (e.g. tanning bed or lamp)?*	1.48 (1.01)	1.84 (1.28)
SF2. In the winter, how often do you engage in sun tanning behavior outdoors?	1.2 (.71)	1.16 (.61)
SF3. In the spring, how often do you engage in sun tanning behavior indoors (e.g. tanning bed or lamp)?*	1.66 (1.21)	2.12 (1.5)
SF4. In the spring, how often do you engage in sun tanning behavior outdoors?	2.17 (1.27)	1.96 (1.24)
SF5. In the summer, how often do you engage in sun tanning behavior indoors (e.g. tanning bed or lamp)?*	1.26 (.82)	1.67 (1.15)
SF6. In the summer, how often do you engage in sun tanning behavior outdoors?	3.3 (1.50)	3.29 (1.47)
SF7. In the autumn, how often do you engage in sun tanning behavior indoors (e.g. tanning bed or lamp)?*	1.33 (.83)	1.81 (1.25)
SF8. In the autumn, how often do you engage in sun tanning behavior outdoors?	1.77 (1.19)	1.71 (1.15)
SF9. How often do you use sunscreen when engaging in sun tanning behavior?*	1.81 (1.28)	2.13 (1.4)
SF10. How often do you use sun tanning enhancers (i.e. baby oil, deep tanning lotions) when engaging in sun tanning behavior?	2.04 (1.38)	2.25 (1.38)
SF11. How often do you engage in sun tanning behavior for special events? (e.g. weddings, dances, social events)?*	2.35 (1.32)	2.75 (1.40)
SF12. How often do you use artificial sun tan products (i.e. lotions, sprays, or pills)?*	1.40 (.87)	1.73 (1.04)

Note. *= $p < .05$. For SF1-8, 1=never, 2=once a month, 3=once a week, 4=two times a week, 5=three or more times a week. For SF9-12, 1=never, 2=almost never, 3=sometimes, 4=almost always, 5=always.

A 2 (Year: 1995 or 2005) x 2 (Sex: male or female) MANOVA for the sun tanning attitude and behavior questions was conducted to consider how sex may interact with year to determine sun tanning attitudes and behaviors. The year x sex interaction was not significant, $p = .31$. An additional 2 (Year: 1995 or 2005) x 5 (Class year: Freshman, Sophomore, Junior, Senior, or other) MANOVA found no significant year x class year interaction in sun tanning attitudes and behaviors, $p = .87$. Race and sexual orientation differences

could not be investigated due to low sample sizes within these categories.

Discussion

Although the increased use of sunscreen in the past decade is encouraging, the overall trend of the current results suggests that U.S. college students were more likely to sun tan in 2005 than they were in 1995. Outdoor tanning practices remained consistent over the past decade, but it was interesting to learn how indoor tanning practices have increased. These results

also suggest that college student attitudes about sun tanning have not changed overall, despite government and media programming designed to educate the public about skin cancer and tanning risks.

We recognize the limitations of the current research. We did not assess students' knowledge of risks associated with sun tanning and we only tested college students in the Midwest. We are also aware that attitudes and reported behaviors do not always represent actual behaviors and are influenced by subjective norms (Ajzen & Fishbein, 1977). Understanding why people value mates with suntans and how to reduce this often unhealthy preference is an important area of future research. Further investigations into how sun tanning attitudes can be changed and how new tanning technologies are related to health risks will be very informative for the next generation.

References

- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888-918.
- Center for Disease Control. (2006). Fact sheet skin cancer: Preventing America's most common cancer. Retrieved January, 15, 2006 from <http://www.cdc.gov/cancer/factsheets.htm>
- Bauman, A., Ferguson, C., McKenzie, J., Smith, B., & Vita, P. (2002). Impact from repeated mass media campaigns to promote sun protection in Australia. *Health Promotion International*, 17, 51-60.
- Beasley, T. M. (1997). Factors that influence health risk behaviors among tanning salon patrons. *Evaluation & the Health Professions*, 20, 371-388.
- Hillhouse, J. (1996). Predictors of sunbathing and sunscreen use in college undergraduates. *Journal of Behavioral Medicine*, 19, 543-561.
- United States Preventive Services Task Force. (2003). MMWR: Morbidity and mortality weekly report. *Recommendations and Reports*, 52, 13-17.

Author Notes:

Please address correspondence to Terry F. Pettijohn II, Department of Psychology, Coastal Carolina University, P.O. Box 261954, Conway, South Carolina, 29528-6054; e-mail: terrypet@usa.com or to Terry Pettijohn, Department of Psychology, The Ohio State University-Marion, 1465 Mt Vernon Ave., Marion, OH 43302; e-mail: pettijohn.1@osu.edu.

Portions of this Research were presented at the 18th Annual Association for Psychological Science Convention, New York City, New York in May 2006.