

# Gender Differences in Young Adults' Beliefs About Sunscreen Use

Lorien Abrams, ScD  
Cynthia M. Jorgensen, DrPH  
Brian G. Southwell, PhD  
Alan C. Geller, RN, MPH  
Karen M. Emmons, PhD

This study employs focus group methodology to explore gender differences in sunscreen use. Guided by the theory of reasoned action, males and females were found to differ on each of the following constructs: behavior, behavioral beliefs, and normative beliefs. Males and females differed in their sunscreen use, with females adopting a more preventive style of sunscreen use and males a more reactive style. Males and females differed in their salient beliefs that motivated their sunscreen use, many of which were related to traditional American gender roles. In addition, although males and females were aware of both positive and negative sources of normative beliefs regarding sunscreen use, females received more encouragement from their mothers and peers than males. Findings are discussed in terms of their implications for the design of future interventions.

**Keywords:** *gender differences; young adults; sun protection; sunscreen use*

Current etiological evidence suggests a causal link between excessive and unprotected sun exposure and skin cancer,<sup>1</sup> especially for sun exposure received early in life.<sup>2,3</sup> The primary prevention of skin cancer involves promoting sun protection behaviors. These behaviors include minimizing sun exposure, seeking shade, wearing clothing to protect the skin from direct sunlight, and routinely using sunscreen with a sun protection factor of 15 or greater and both UVA and UVB protection.<sup>4,5</sup>

A growing body of epidemiological evidence, including two recent national surveys of sun protection behaviors,<sup>4,6</sup> suggests striking gender differences in behaviors and atti-

---

Lorien Abrams, Harvard School of Public Health, Department of Health and Social Behavior, Boston. Cynthia M. Jorgensen, Centers for Disease Control and Prevention, Communications and Behavioral Sciences Branch, Division of Cancer Prevention and Control, Atlanta, Georgia. Brian G. Southwell, School of Journalism and Mass Communication, University of Minnesota, Alan C. Geller, Cancer Prevention and Control Center, Boston University School of Medicine. Karen M. Emmons, Harvard School of Public Health and the Dana-Farber Cancer Institute, Division of Community-Based Research, Boston.

*Address reprint requests to* Cynthia M. Jorgensen, DrPh, Chief, Communications and Behavioral Sciences Branch, Division of Cancer Prevention and Control, MS K-48, 4770 Buford Hwy, Atlanta, GA 30341; phone: (770) 488-3094; fax: (770) 488-3040; e-mail: cxj4@cdc.gov.

This research was paid for by the Centers for Disease Control and Prevention, with additional research support for analysis through CDC/ATPM Cooperative Agreement No. T260 awarded to Boston University. Special thanks to Dr. Lisa Berkman and Dr. Helene White for their helpful comments on the manuscript.

*Health Education & Behavior*, Vol. 30 (1): 29-43 (February 2003)  
DOI: 10.1177/1090198102239257  
© 2003 by SOPHE

tudes related to sun protection. Females have been found to be more likely to use sunscreen than males<sup>4,12</sup> and to be more likely to stay in the shade than males.<sup>6,12</sup> In addition, females have been found to have a higher level of knowledge of skin cancer than males<sup>5,7,13,14</sup> and to believe that they are more susceptible to skin cancer than males.<sup>5</sup> Males, however, have been found to be more likely than females to wear a hat<sup>5,7,12</sup> and to be less likely than females to sunbathe<sup>4,7,14</sup> or use indoor tanning equipment.<sup>4,14</sup> These differences in behavior, moreover, may be more prominent in adolescence and young adulthood.<sup>4,7</sup>

Although gender differences in sun protection behaviors and knowledge are fairly well established, little is known about the psychosocial factors that explain these differences. For example, it is unclear why men appear to be more reluctant than women to use sunscreen<sup>4,12</sup> or why women, despite higher knowledge levels about skin cancer, choose to sunbathe more than men.<sup>7</sup> Understanding the determinants of these gender differences in behavior will help in developing interventions that promote sun protection. This may be especially important in adolescence and young adulthood, as this is a period when gender differences in sun protection behaviors have been reported to be largest<sup>4,7</sup> and when people accrue much of their risk for skin cancer.<sup>15</sup>

The theory of reasoned action (TRA) is recognized as one of the most useful theories for understanding health behaviors.<sup>16,17</sup> It is well suited to understanding behaviors that are under volitional control such as sun protection.<sup>17</sup> According to the TRA, an individual's behavior is determined directly by his or her behavioral intention, which is, in turn, the result of his or her attitude toward the behavior and his or her subjective perception of norms surrounding the behavior.<sup>17</sup> Both attitude toward the behavior in question and subjective norms are determined by two additional constructs. Beliefs about behavioral outcomes, in combination with the subjective importance of those outcomes, determine a person's attitude toward the behavior. Similarly, beliefs regarding other people's approval of the behavior, in combination with one's motivation to comply with those individuals, determine a person's subjective norm. (For a more in-depth summary of the TRA and for a comparison of TRA constructs with constructs of other prominent psychosocial theories, refer to existing detailed descriptions.<sup>16,17</sup>)

From the perspective of the TRA, then, we would expect to find differences between male and female sunscreen use to be accounted for by differences in the salient behavioral and normative beliefs reported by these two groups. Past studies of the TRA and sun protection behaviors have found, as expected, that attitudes and beliefs are associated with intentions to minimize sun exposure<sup>18</sup> and intentions to use sunscreen.<sup>11,19</sup> However, no prior study has considered whether gender-specific beliefs about sunscreen use exist and, if so, whether these underlie the reported gender differences in sunscreen use.

This article describes the results of formative research undertaken to support the Centers for Disease Control and Prevention's (CDC's) national skin cancer prevention campaign, "Choose Your Cover."<sup>20</sup> Guided by the TRA, the purpose of this analysis is to improve our understanding of gender differences in sunscreen use among young adults. We choose to focus on sunscreen use because of all sun protection behaviors, sunscreen use has the greatest gender discrepancy.<sup>6,12</sup> Furthermore, as previously noted, gender differences in sunscreen use are not well understood.<sup>4,12</sup> This study represents an attempt to elicit the salient behavioral and normative beliefs that underlie sunscreen use.

## METHODS

### Study Design

Focus groups conducted by a professional facilitator were used for data collection. Focus groups can be a useful means of preliminary data collection when little is known about the phenomenon of interest.<sup>21</sup> In discussing the TRA, Ajzen and Fishbein<sup>17</sup> suggested that qualitative efforts to elicit salient beliefs about a particular behavior represent an important step toward the later application of the theory for quantitative prediction.

During a 4-week period in the fall of 1997, six focus groups were conducted with young men and women in Baltimore, Maryland; Orlando, Florida; and Denver, Colorado. Group size ranged from 5 to 10 participants. Each focus group took between 1.5 and 2 hours. Four of the focus groups were stratified by gender (Baltimore and Orlando), and two of the groups were of mixed-gender composition (Denver). Groups of both mixed- and same-gender composition were included in the event that men and women would respond differently in these two types of settings.

### Participants and Setting

All groups were held in private-sector focus group facilities in urban or suburban areas of the selected cities. Using proprietary lists of volunteers maintained by each focus group facility, professional recruiters used a quota sampling method to identify eligible participants and request their participation. Participants were asked several questions about their age, their own and their families' skin cancer history, their own and their families' employment history and income level, their skin tone (light, medium, or dark), and their frequency of sunscreen use (never to always). Participants were eligible if they were between the ages of 18 and 25 years, of middle and low income, had no history of skin cancer, and if neither they nor their families were in the advertising or health care industries. Participants of middle and low income were selected because low socioeconomic status has been shown to be associated with lower levels of sunscreen use.<sup>4,6</sup> In addition, recruitment quotas were set to maximize the number of light- to medium-toned persons reporting inadequate sun protection. Individuals who reported that their skin was dark or who used sun protection always or never were limited to no more than two per group.

Participants between the ages of 18 and 25 years were chosen for several reasons. First, young adulthood is a time of the life course when considerable damage to the skin occurs.<sup>2,22</sup> Young adults compared with older adults have been found to spend more time in the sun,<sup>5</sup> to be the most determined to get a suntan,<sup>5</sup> and to be the least likely to use sunscreen.<sup>4,13</sup> Second, young adulthood is thought to represent a window of opportunity for health behavior change.<sup>23</sup> Young adults are engaged in the process of setting down foundations for adult lives and establishing new patterns of behavior that will last through adulthood.<sup>24-26</sup> It was hoped, therefore, that by focusing on young adults, we could understand gender differences at a stage in the life course when sunscreen use patterns were settled<sup>4,7</sup> but had the potential for change. Participants with lighter skin tones who did not always use sunscreen were selected because of the increased risk that unprotected lighter skin poses for skin cancer.

Fifty-two participants were recruited across the three cities with an average age of 21.3 years (see Table 1). Twenty-five participants were male and 27 were female. Sixty-three

Table 1. Demographic Characteristics of Focus Group Participants

Demographics	All Participants ( <i>N</i> = 52)	Male ( <i>n</i> = 25)	Female ( <i>n</i> = 27)
Mean age (years)	21.3	20.8	21.9
Marital status (%)			
Single	58	60	55
Living with partner	33	36	30
Married	9	4	15
Employment status (%)			
Not currently working	31	28	33
Part-time	21	32	11
Full-time	48	40	56
Student (%)			
Yes	44	44	44
No	56	56	56
Skin tone (%)			
Light	63	40	85
Medium	37	60	15

percent reported light-toned skin, and 37% reported having medium-toned skin, with males more likely to report medium skin tone than females. Most participants were employed full-time or part-time, were not students, and were not married.

### Focus Group Guide

Questions in the focus group guide addressed several salient constructs of the TRA for sunscreen use, as well as for other forms of sun protection (see Table 2). To assess behavior, the focus group facilitator inquired as to how, if at all, participants protected themselves from the sun. If sunscreen was used, the facilitator asked the participants to identify the type of sunscreen worn and the context and frequency of its use. For behavioral beliefs about sun protection and sunscreen use, the facilitator inquired about participants' reasons for and against protecting themselves from the sun. Normative beliefs were explored by eliciting responses regarding the beliefs of other people to sun protection (e.g., parents and friends). Due to time limitations, participants were not explicitly prompted for their evaluations of the outcomes of their behavioral beliefs or for their motivation to comply with their normative beliefs, although relevant data did emerge. Furthermore, participants were only asked about their sun protection behaviors and not about their behavioral intentions.

### Analysis

All focus groups were audiotaped and then transcribed. Important themes and subthemes regarding sunscreen use were identified from the transcripts by two coders. In an effort to minimize the possibility of an experimenter expectation effect, the researchers who performed the coding of the focus group data had not been involved in the writing of the focus group script or in any other aspect of the design of the focus groups. Themes were identified as instances when points were brought forward repeatedly or were dis-

Table 2. Areas Outlined in Focus Group Guide Based on the Theory of Reasoned Action (TRA) Constructs

TRA Construct	Sun Protection Category	Areas Outlined in the Focus Group Guide Based on TRA Construct
Behavior/ behavioral intention	Assess current sun protection behaviors	Determine how, if at all, participants are protecting themselves from the sun Identify the level of sunscreen worn and frequency of usage Identify the level of seeking shade/staying indoors Identify the amount of protective clothing worn Determine how often/consistently sun protection behaviors occur Determine if sun protection behavior differs by time of day, type of weather, and type of skin tone
Behavioral beliefs	Ascertain beliefs for and against adopting sun protection behaviors	Identify reasons and advantages for protecting oneself from the sun Identify reasons and advantages for not protecting oneself from the sun Identify activities, circumstances, or events that make it easier/more likely to adopt sun protection behaviors Identify activities, circumstances, or events that make it harder/less likely to adopt sun protection behaviors Explore when people use protective behaviors
Normative beliefs	Ascertain beliefs of friends, family, and others about sun protection	Identify people/sources that encourage participants to be tan/be exposed to the sun Identify people/sources that discourage participants to be tan/be exposed to the sun What do they think of friends who protect/do not protect themselves from the sun?

cussed at length by the participants.<sup>21</sup> Themes were categorized as instances of behavior, behavioral beliefs, and normative beliefs and by the gender of participant. When essential differences in coding occurred between the two coders, a third researcher was asked for a judgment. Overall, there was a high level of concordance in theme selection between the two coders (79%,  $p < .001$ ), and the expertise of the third coder was only required in several instances. Because data analysis revealed that males and females in the mixed-gender focus groups expressed similar views to their peers in the same-gender groups, the results for mixed- and same-gender focus groups have been integrated.

We present the results stratified by gender for behavior, beliefs about sunscreen use, and normative beliefs surrounding sunscreen use. When data are available, we also present results on participants' evaluation of outcomes and motivation to comply.

Table 3. Themes Related to Behavior, Behavioral Beliefs, and Normative Beliefs by Gender

Construct	Theme	Theme Present		
		Male	Female	
Behavior	Sunscreen is never used	*		
	Sunscreen is used during prolonged sun exposure	*	*	
	Sunscreen is worn every day		*	
	Sunscreen is generally applied after starting to burn	*		
Behavioral beliefs	Positive	Sunscreen prevents severe burns	*	*
		Sunscreen prolongs time can stay in sun	*	*
		Sunscreen prevents adverse health effects of sun	*	*
		Sunscreen prevents skin from peeling and drying out	*	*
		Sunscreen prevents uneven tan	*	*
		Sunscreen preserves youthful appearance		*
	Negative	Sunscreen use is inconvenient	*	*
		Sunscreen is not masculine	*	
		Sunscreen has unpleasant properties (e.g., feels greasy, smells bad)	*	
		Sunscreen is difficult to apply with same-sex peers	*	
		Sunscreen stings when sweats off into eyes	*	*
		Sunscreen sweats off and loses its effectiveness	*	*
		Sunscreen is ineffectual or unreliable form of sun protection	*	*
		Sunscreen is expensive	*	
		Sunscreen makes facial pores break out		*
		Normative beliefs	Positive	Boyfriends/girlfriends
Parents (mom)	*			*
Other adult (doctor, coach, boss)	*			*
Peers				*
Mass media	*			*
Negative	Boyfriends/girlfriends			*
	Peers		*	*
	Mass media		*	*

\*Indicates behavior or belief was brought forward repeatedly or was discussed at length by participants.

## RESULTS

Transcripts from the focus groups offered a number of emergent themes regarding behavior, behavioral beliefs, and normative beliefs. These are summarized by gender in Table 3.

### Behavior

*Male Sunscreen Use.* Similar to previous research findings,<sup>4-12</sup> males appeared to be much less likely than females to use sunscreen and to report reapplying sunscreen. Males reported using sunscreen only in a narrow range of situations, and several males reported

never using sunscreen. Situations that called for sunscreen included those in which males planned to be spending many hours outdoors in the sun, such as at the beach. Typical behavior was summed up by one male as follows:

Well if I'm going to the beach, I will put [sunscreen] on. But other than that, if I'm just going outside for an outdoor activity, I really don't think about it.

Males who did use sunscreen generally reported applying sunscreen after being out in the sun for some time. Many waited to apply sunscreen until after they noticed that they were sunburned or that their skin was feeling tight.

*Female Sunscreen Use.* Females used sunscreen much more regularly and across a wider range of situations than males. Some females spoke of applying sunscreen every day, and all females reported using sunscreen or another form of sun protection when at the beach. Some women also reported regularly reapplying sunscreen, even when using "waterproof" sunscreen.

Unlike males, females generally applied sunscreen before getting out in the sun or soon after getting out in the sun. For women who used sunscreen daily, sunscreen was applied in the mornings, either under makeup or in the form of makeup or moisturizer as these products contained sunscreen. Like males, females used the feeling of their skin feeling hot or burnt as a cue for sunscreen use. However, often for women, this sensation served as a cue for reapplying sunscreen.

### **Behavioral Beliefs**

Both males and females expressed a complex array of positive and negative beliefs about sunscreen use. Overall, males, however, expressed more negative beliefs toward sunscreen use than females.

*Positive Male Beliefs.* For males, avoiding a severe sunburn was the key reason for sunscreen use. Sunburns, especially burns on top of burns, were seen as being uncomfortable, painful, and having the potential to interfere with activities. Some participants noted that sunscreen enabled them to stay out longer in the sun.

The one time I worry about [sunscreen] is when the waves are good [for surfing]. You will go for like 3 hours and you will get a pretty good burn. And then, you know, you want to go the next day. That's the only time I worry about it—when I go 2 days in a row.

For several male participants, health concerns motivated their sunscreen use.

The medical community has made us more aware [of skin cancer]. . . I'll put some sunscreen on. I don't want to get too tan because the next thing you know, I will be having tumors lanced.

A few participants noted that recent events had awakened their concerns about the health effects of sun exposure and thereby encouraged their sunscreen use. For one man, it was noticing sunspots on his body and, for another, having a mole removed from his back.

Sunscreen use was also seen by some to enhance appearance in various ways. Sunscreen prevented the look of peeling skin, which was thought to be unattractive.

Another motivation for using sunscreen was avoiding a “farmer’s” tan or an uneven tan. None of the males reported using sunscreen to minimize the sun’s long-term effects on their skin’s appearance.

*Negative Male Beliefs.* Males reported numerous negative beliefs about sunscreen. Salient among these was the belief that sunscreen use was inconvenient. Males reported that using sunscreen took too much effort to remember, took too much time to apply, and required that one carry a sunscreen bottle around with them. Not surprisingly, males also reported not liking the hassles associated with reapplying sunscreen.

Well, like putting [sunscreen] on every day—like that’s all I have to think about. So it’s just too much to think about in the morning.

I’ll tell you why [I don’t like sunscreen]. Because I hate carrying stuff around. . . . My driver’s license or whatever else, I will put it in my back pocket. That’s it.

In addition to the hassles associated with sunscreen use, several males noted that they did not like sunscreen because of its association with skin care or beauty products. In this context, it was noted that sunscreen was “not a masculine thing.” Males also expressed beliefs that the sunscreen itself, as well as skin care products in general, had several unpleasant properties. Numerous participants complained that the texture of sunscreen was greasy and that it was distasteful to get it on one’s hands. Male participants also noted that they felt uncomfortable smelling of sunscreen, which they described as often having a strong fruity or flower scent.

[I don’t like sunscreen] . . . because we’re men. . . . We don’t like to put oil on. Then you get the stuff on your hands and you smell like a coconut.

Sunscreen was also seen as difficult to apply, especially in the company of male peers. This was largely because males felt that it was not acceptable to ask other males for help in applying the sunscreen to hard-to-reach parts of their bodies.

I think it’s like a masculine thing . . . I mean it’s all right for [your girlfriend] to put suntan lotion on your back [at the beach], but if you’re down there with the guys, you’re not going to be saying, “Hey, buddy, rub some lotion on me.”

[On the beach], you don’t want to rub it on some guy’s back with some girl going by.

Although help from females in applying sunscreen was considered acceptable, help from other males appeared to violate norms for appropriate male-to-male body contact.

In addition, males explained that when playing sports or doing athletic activities, sunscreen sweated into their eyes, causing stinging, burning, and difficulty seeing. In addition, they reported that sunscreen wore off and thereby lost its effectiveness. The high price of sunscreen was also noted as a negative aspect of sunscreen use.

*Positive Female Beliefs.* Females cited numerous beliefs for and against their sunscreen use. Most of all, female participants liked sunscreen because it enhanced their appearance, though in some additional ways to those reported by males. Like males, females noted that sunscreen use prevented their skin from drying out and peeling and pre-

vented uneven tans. However, unlike males, females noted that sunscreen was useful because it preserved their youthful appearance and slowed down the aging of their skin, particularly on their faces. Specifically, females believed that sunscreen helped in avoiding wrinkles and leathery-looking skin and in minimizing freckles and sunspots.

Several women explained that they felt sunscreen use was of greater importance now that they were young adults, as they were beginning to notice wrinkles and lines developing on their faces. With the prospect of aging skin more present, women noted that they had increased the regularity of their sunscreen use and other forms of sun protection.

I did nothing [for sun protection when I was young]. Now I am beginning to put sunblock on my face because I can see the effects. I can see wrinkles and my skin isn't as clear as it used to be. I see my boyfriend. He is outside all day long, and his skin is disgusting now. His back has freckles.

Health concerns were also motivating beliefs for sunscreen use for females. Numerous women voiced concerns about skin cancer, noting that they knew people who had skin cancer and were often reminded of the relation between sun exposure and skin cancer by mass media reports.

Like males, females explained that sunscreen was important to use because it helped prevent sunburns. Also like males, several women reported using sunscreen so that they could stay out longer in the sun without getting sunburned. This was noted to be especially important for sports that required extended sun exposure, as a sunburn would interfere with performance.

*Negative Female Beliefs.* Females also noted several negative beliefs about sunscreen use. Like males, female participants noted that sunscreen use was inconvenient. Females noted that sunscreen use took time and effort and that the sunscreen was difficult to carry around with them because of the large size of the containers. In addition, several women complained that sunscreen was an unreliable form of sun protection.

If I put on sunscreen, my face will become as red as her sweater. If I don't wear it the next day, I do not burn. It's like the total opposite; I don't know what goes on.

It was also noted that sunscreen caused acne on one's face, thus detracting from one's appearance, and that sunscreen tended to sting when it sweated off and got into one's eyes.

### **Normative Beliefs**

Both males and females reported a mix of both positive and negative social influences on their sunscreen use. Compared to females, males reported somewhat fewer influences in favor of their sunscreen use.

*Male Normative Beliefs.* Male sources of normative beliefs included girlfriends, parents, other adults, friends, and the mass media. Of all positive influences, males reported that their girlfriends most influenced their sunscreen use. Girlfriends were consistently reported as encouraging males to wear sunscreen. Girlfriends were also cited as being instrumental in providing and applying the sunscreen on their boyfriends.

My girlfriend has me on a [sunscreen] regimen. . . . So, I have a whole little kit full of [sunscreens with different SPF levels], because she thinks I'm going to get skin cancer.

Males varied in the degree to which they were motivated to comply with their girlfriends. In some instances, a girlfriend's insistence about sunscreen use seemed to override a male respondent's negative attitude toward sunscreen use, although this was not universally reported.

For a few males, mothers were another positive source of beliefs about sunscreen use. However, most noted that their parents (including their mothers) were not very concerned about their sun protection. Males who did receive encouragement to wear sunscreen from their moms did not generally take this encouragement too seriously:

[My mom says,] "You're going to die [from working as a lifeguard without sunscreen]. You're going to get skin cancer." All right, mom. Have a good day. I'm going to work. Leave me alone.

Several males noted that other adults such as their bosses at work encouraged their sunscreen use. One male who worked outdoors noted that although his boss encouraged him to wear sunscreen, he still refused to wear it.

Peers did not offer positive norms for sunscreen. Many males noted that their friends did not use sunscreen and were not concerned about sun protection.

I don't think that people I hang out with have ever worn sunscreen. There's just not a whole lot of concern about a lot of stuff.

Several males observed that sunscreen use was not "cool," and one participant pointed out that none of his friends would ever try to "talk [him] into using it." Males did note, however, that the overall norm in American society supported their sunscreen use. They noted that they had heard about the dangers of sun exposure repeatedly on television news shows. However, several male participants also noted that actors on television shows were never seen using sunscreen, and one cited *Baywatch*, a television show that chronicles the adventures of tanned lifeguards on a beach, as a case in point.

Across all sources of influence, friends and girlfriends were more prominent than parents. Male participants noted that their parents did not have much influence over them anymore. Also, both friends and girlfriends spent more time outdoors with the participants than did parents and were more likely to be present when sunscreen decisions were made.

*Female Normative Beliefs.* Females reported numerous sources of normative beliefs. First, most of all, female participants cited their parents, specifically their mothers, as supporting their sunscreen use. Mothers, for the most part, sent strong signals to their daughters in favor of sunscreen use. Some mothers went as far as to "nag" or "hound" their daughters about sunscreen use.

My mom totally makes me feel guilty about everything. So, if I go out and I wear sunscreen, [I'll say] guess what I did today . . . and I will say it before she says, "Did you wear sunscreen?" You know, I have her down to a "T."

Mothers not only verbally encouraged their daughter's sunscreen use but, in many instances, provided the sunscreen for their daughters. One female participant explained that her mom puts sunscreen in convenient places for her such as in her car or gym bag. Female participants seemed willing to comply with their mothers' requests for their sunscreen use, though in at least several cases, they felt annoyed by the repeated requests.

Norms supporting sunscreen use appeared much stronger in female friends than male friends. Most female participants reported that their friends used some sort of sun protection, if not sunscreen, and several noted that their friends used sunscreen on a regular basis.

I think most of my friends are conscious about putting on a moisturizer [that has sunscreen in it] . . . that is what I use every day.

Several participants encouraged their peers to use sunscreen and felt encouraged to use it by friends. One person described herself as "a kind of mother" to her friends, making sure that they put on sunscreen when outside.

Female peers, though, were not always supportive of sunscreen use. Some participants reported that their friends discouraged their sunscreen use and encouraged them to get a suntan. One self-described pale-skinned participant recalled her friends urging her to try tanning oils instead of sunscreen so that she would get a tan.

Boyfriends and husbands were generally supportive or indifferent to female sunscreen use. Several female participants mentioned that their husbands reminded them to use sunscreen, even in cases when the husbands themselves did not use sunscreen. However, some participants did report that their boyfriends discouraged their sunscreen use in favor of getting a tan, and one female noted that guys found "tanned blondes" most attractive. Females also mentioned a range of other adults who supported their sunscreen use, including doctors and sports coaches.

Like males, females reported having seen both encouraging and discouraging messages in the mass media. Many noted having seen news reports on the aging and health effects of unprotected sun exposure. Females also mentioned having seen tanned role models on TV who made them think that they should not use sunscreen, although a few participants noted that tans are no longer fashionable and gave examples of pale-skinned female celebrities to support their point of view.

## DISCUSSION

To understand previously reported gender differences in sunscreen use,<sup>4-12</sup> we sought to elicit the salient beliefs that may motivate sunscreen use in young adults. For sunscreen use, behavioral beliefs, and normative beliefs, qualitative differences were found between men and women.

Males and females reported different patterns of behavior. For males, sunscreen use was largely limited to extended periods spent out in the sun, typically at the beach. For females, sunscreen use covered a wider range of situations and was more integrated into their daily lives, with several women reporting using it everyday. Women tended to apply sunscreen before going out into the sun or soon after being exposed to the sun, whereas males tended to apply sunscreen after being in the sun or after getting sunburned. These

differences in styles of sunscreen use might be summarized as more preventive in females and more reactive in males.

Although there was substantial overlap in beliefs about sunscreen use—including beliefs about sunscreen use preventing sunburns, sunscreen use preventing the adverse health effects of sun exposure, and sunscreen use being inconvenient—males and females expressed several gender-specific beliefs about sunscreen use, many of which were related to traditional American gender roles. Most important for females was the belief that sunscreen enhanced their skin's appearance in the long term by preventing wrinkles, sunspots, and their skin's premature aging. This concern, which was not present for any of the male participants, is consistent with female American gender roles whereby women place a high level of value on their appearance and beauty.<sup>27</sup>

Males, on the other hand, presented a litany of their own reasons for not liking sunscreen. Males explained that they were not interested in skin care as it was a distinctly feminine concern and thereby at odds with male gender roles. They noted that they found the textural and aromatic properties of sunscreen disagreeable. Also, males noted that sunscreen was difficult to apply, especially in all-male company, given that applying sunscreen to another male (or having sunscreen applied by another male) violated norms for appropriate male-to-male body contact. Prohibitions against male same-gender touching have been previously noted in the literature.<sup>28,29</sup> Consistent with other studies that have found fewer prohibitions against female same-gender touching than in males,<sup>28</sup> females did not note having difficulty applying sunscreen when in all-female company.

Although male gender roles seemed somewhat at odds with sunscreen use, female gender roles seemed to encourage its use. Women's regular use of cosmetics and skin care products appeared to facilitate more positive beliefs about sunscreen use. This may have been the case because established routines for makeup application reduced the inconveniences associated with sunscreen use. Several females noted using the time in the morning allotted for makeup application as a time for their daily application of sunscreen. For a subset of these women, sunscreen use seemed to require no additional steps in their routine as their makeup or moisturizer contained sunscreen. In addition, females did not mind the textural and aromatic properties of sunscreen (and perhaps even liked them), presumably because females were already accustomed to these in other skin care products. Finally, unlike males, females did not note that sunscreen seemed expensive, perhaps because females were accustomed to buying similarly priced skin care products.

Males and females were aware of both positive and negative sources of normative beliefs regarding their sunscreen use, although females noted more sources of positive normative beliefs. Mothers were more present as a source of normative beliefs for females than males. Most females reported being strongly and regularly encouraged to use sunscreen by their mothers, whereas only a handful of males reported that their mothers encouraged their sunscreen use at all. Females also seemed more willing to follow the admonitions of their mothers about sunscreen use than males. Perhaps this greater level of concern by mothers for sunscreen use in daughters than in sons reflects the gender stereotype that skin care is important only for women.

For males, a main source of positive normative beliefs came from their girlfriends as males reported that their girlfriends strongly encouraged their sunscreen use. In at least some cases, males complied with their girlfriends' encouragement and reported using sunscreen because of it. For females, positive normative beliefs from boyfriends or husbands were present, although they seemed more like a reminder than a decisive factor leading to their sunscreen use.

Females reported that their peers regularly used sunscreen and, in some cases, explicitly encouraged them to use it. Males, on the other hand, reported that few of their friends used sunscreen and that their friends were mostly indifferent to their sunscreen use.

Strengths of this study include that it represents an important first step toward understanding why men are less likely to wear sunscreen, a question that researchers have noted as critical for further investigation.<sup>4,12</sup> The use of qualitative methods in this study is well suited to such an area of inquiry in which so little is already known.<sup>21</sup> Furthermore, based on the theoretical framework of the TRA, this study has examined two constructs that are thought to predict behavior—behavioral beliefs about sunscreen use and normative beliefs surrounding sunscreen use—and found gender differences in these constructs. If consistent with further investigation, these differences can serve as the foundation for future theoretically based interventions.

This study has several limitations. First, this study has limited generalizability. The sample for this study covered only the ages of 18 to 25, was small in number, and was limited to three areas of the United States. Furthermore, the sample was selected from proprietary lists maintained by focus group companies. Therefore, these results are thought to be most relevant for light- to medium-skinned young adults in urban and suburban areas of the East Coast and central regions of the United States. Further studies need to be conducted to determine the extent to which these results are generalizable to other groups, such as to adolescents.

Another limitation of this study is that males in the sample were found to be much more likely than females to report a medium rather than light skin tone. This may reflect true differences in skin tone or gender differences in self-perception of skin tone. To the extent that these differences reflect true differences in skin tone, the differences observed in sunscreen use and sunscreen beliefs may be attributable to these differences in skin tone. However, it should be noted that because no dark-skinned individuals were part of the sample, all participants had skin types for which sunscreen use was appropriate. It is also noteworthy that many of the beliefs regarding sunscreen use were related to gender roles, suggesting that it is gender, not skin tone, that is responsible for these results.

It is also possible that factors related to sunscreen use that are not specified by the TRA were overlooked as our analysis was limited to TRA constructs. However, it should be noted that this theory was chosen because it was a good match for the elements believed to be involved in sunscreen use and because the TRA has been shown in the past to have a high level of predictive power for sun protection.<sup>11,19</sup>

Finally, our results are limited by the fact that constructs such as the evaluation of outcomes and the motivation to comply were not systematically measured. Therefore, although our results indicate beliefs important for sunscreen use, it is difficult to draw definitive conclusions about the relative importance of these beliefs. Additional research is required that investigates psychosocial factors associated with sunscreen use quantitatively. The results of this study should thus be seen as a first step toward understanding the salient beliefs that underlie sunscreen use among this population.

## IMPLICATIONS FOR PRACTICE

These findings are suggestive of several strategies for the design of future intervention studies, many of which were used in the CDC's educational efforts and "Choose Your Cover" campaign.<sup>20</sup> Although males and females overlap in salient beliefs about sunscreen use, several salient beliefs appear to be gender specific. Interventions geared at

increasing current levels of sunscreen use may therefore benefit from gender-specific strategies.

For men, one strategy might seek to simply correct the belief that sunscreen comes only in fragrant and greasy formulas by educating people about the existence of brands that do not have these characteristics. A more long-term extension of this strategy might set out to convince the sunscreen industry to offer more sunscreen products tailored to the tastes and needs of men, as few such products currently exist. Another strategy might seek to change the male belief that sunscreen use is at odds with male gender roles. Such a strategy might be achieved by providing role models of strong, athletic men who use sunscreen in the company of other men. However, given deeply rooted norms against male-to-male body contact, it might be advisable to recommend that men rely on sunscreen for parts of the body where sunscreen can be self-applied and rely on other forms of sun protection such as a shirt for hard-to-reach parts such as the back.

Strategies to increase male sunscreen use might also be aimed at male normative beliefs. Normative strategies might seek to encourage girlfriends to encourage their male friends or boyfriends to use sunscreen. Mothers might also be encouraged to remind their sons to use sunscreen, much the way mothers were reported to have done with their daughters.

For women, an effective strategy could play up appearance-related reasons for sunscreen use, such as preventing wrinkles, freckles, and sunspots. Such a strategy might also remind women that sunscreen is available in non-pore-clogging formulas, as this was a concern for women. This recommendation needs to come with a caveat. Using appearance to motivate women to use sunscreen, however, may have a potentially harmful unintended effect—it may encourage or reinforce face-only protection. Women who reported using makeup with sunscreen often did not report protecting other parts of their body. Therefore, any message that emphasizes appearance-related reasons for sunscreen use needs to be careful to remind women to protect the rest of their bodies as well. A normative strategy aimed at women might encourage peers, male or female, to encourage their female friends to use sunscreen.

This study has identified some of the issues that may be influential in promoting sunscreen use in males and females in the United States. With a collective and concerted effort in both research and practice, improvements in sun protection behaviors and ultimately in skin cancer rates can be achieved.

## References

1. Koh HK, Geller AC: Melanoma control in the United States: Current status. *Recent Results Cancer Res* 139:215-224, 1995.
2. Weinstock MA, Colditz GA, Willet WC, et al: Non-familial cutaneous melanoma incidence in women associated with sun exposure before 20 years of age. *Pediatrics* 84:199-204, 1989.
3. Gallagher RP, Hill GB, Bajdik CD, et al: Sunlight exposure, pigmentary factors, and risk of nonmelanocytic skin cancer. *Arch Dermatol* 131:157-163, 1995.
4. Koh HK, Bak SM, Geller AC, et al: Sunbathing habits and sunscreen use among white adults: Results of a national survey. *Am J Public Health* 87(7):1214-1217, 1997.
5. Arthey S, Clarke VA: Suntanning and sun protection: A review of the psychological literature. *Soc Sci Med* 40(2):265-274, 1995.
6. Hall HI, May DS, Lew RA, Koh HK, Nadel M: Sun protection behaviors of the U.S. white population. *Prev Med* 26:401-407, 1997.

7. Robinson JK, Rademaker AW, Sylvester JA, Cook B: Summer sun exposure: Knowledge, attitudes, and behaviors of midwest adolescents. *Prev Med* 26:364-372, 1997.
8. Berwick M, Fine JA, Bologna JL: Sun exposure and sunscreen use following a community skin cancer screening. *Prev Med* 1992;21:302-310, 1992.
9. King PH, Murfin G, Yanagiasko K: Skin cancer/melanoma knowledge and behavior in Hawaii: Changes during a community-based cancer control program, in Mettlin C, Murphy GP (eds): *Progress in Cancer Control IV: Research in the Cancer Center*. New York, Alan R. Liss, 1983.
10. Keesling B, Friedman H: Psychosocial factors in sunbathing and sunscreen use. *Health Psychol* 1987;6:477-493.
11. Hill D, Rassaby J, Gardner G: Determinants of intentions to take precautions against skin cancer. *Community Health Studies* 8:33-44, 1984.
12. Campbell SH, Birdsell JM: Knowledge, beliefs, and sun protection behaviors of Alberta adults. *Prev Med* 23:160-166, 1994.
13. Clarke VA, Williams T, Arthey S: Skin type and optimistic bias in relation to the sun protection and suntanning behaviors of young adults. *J Behav Med* 20(2):207-222, 1997.
14. Robinson JK, Rigel DS, Amonette RA: Trends in sun exposure knowledge, attitudes, and behaviors: 1986 to 1996. *J Am Acad Dermatol* 37:179-186, 1997.
15. Stern RS, Weinstein MC, Baker SG: Risk reduction for nonmelanoma skin cancer with childhood sunscreen use. *Arch Dermatol* 122:537-545, 1986.
16. Montano DE, Kasprzyk D, Taplin SH: The theory of reasoned action and the theory of planned behavior, in Glanz K, Lewis FM, Rimer BK (eds.): *Health Behavior and Health Education*. San Francisco, Jossey-Bass, 1997, pp. 85-112.
17. Ajzen I, Fishbein M: *Understanding Attitudes and Social Behavior*. Englewood Cliffs, NJ, Prentice Hall, 1980.
18. Steen DM, Peay MY, Owen N: Predicting Australian adolescents' intentions to minimize sun exposure. *Psychology & Health* 13(1):111-119, 1998.
19. Hoffmann RG, Rodrigue JR, Johnson JH: Effectiveness of a school-based program to enhance knowledge of sun exposure: Attitudes toward sun exposure and sunscreen use among children. *Children's Health Care* 28(1):69-86, 1999.
20. Jorgensen C, Wayman J, Green C, Gelb C: Using health communications for primary prevention of skin cancer: CDC's choose your cover campaign. *Journal of Women's Health and Gender Based Medicine* 9(5):471-475, 2000.
21. Kruegar RA: *Focus Groups: A Practical Guide for Applied Research*. London, Sage, 1989.
22. Geller AC, Miller DR, Lew RA, Clapp RW, Wenneker MB, Koh HK: Cutaneous melanoma mortality among the socioeconomically disadvantaged in Massachusetts. *Am J Public Health* 86(4):538-544, 1996.
23. Prohaska T, Clark M: Health behavior and the human life span, in Gochman DS (ed.): *Handbook of Health Behavior Research*. New York, Plenum, 1997.
24. Arnett JJ: Emerging adulthood: A theory of development from the late teens through the twenties. *Am Psychol* 55(5):469-480, 2000.
25. Rindfuss RR: The young adult years: Diversity, structural change, and fertility. *Demography* 28(4):493-512, 1991.
26. Bachman JG, Wadsworth KN, O'Malley PM, Johnston LD, Schulenberg JE: *Smoking, Drinking, and Drug Use in Young Adulthood*. Mahwah, NJ, Lawrence Erlbaum, 1997.
27. Renzetti CM, Curran DJ: *Women, Men, and Society: The Sociology of Gender*. Boston, Allyn & Bacon, 1989.
28. Stier DS, Hall JA: Gender differences in touch: An empirical and theoretical review. *J Pers Soc Psychol* 47(2):440-459, 1984.
29. Rabinowitz FE: The male-to-male embrace: Breaking the touch taboo in a men's therapy group. *J Counsel Dev* 69(6):574-576, 1991.