Psychosocial Correlates of Sun Protection Behaviors among U.S. Hispanic Adults

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Abstract

The incidence of skin cancer among U.S. Hispanics increased 1.3% annually from 1992 to 2008. However, little research has focused on skin cancer prevention among the rapidly growing Hispanic population. In this study, we examined theory-driven, psychosocial correlates of sun protection behaviors in a population-based sample of 787 Hispanic adults (49.6% female, mean age = 41.0 years) residing in five southern or western U.S. states. Participants completed an English- or Spanish-language online survey in September 2011. The outcomes of focus were sunscreen use, shade seeking, and use of sun protective clothing. The correlates included suntan benefits, sun protection benefits and barriers, skin color preference, perceived natural skin protection, photo-aging concerns, perceived skin cancer risk, skin cancer worry, skin cancer fatalism, and sun protection descriptive norms. Results of multiple linear regression analyses revealed the following: sun protection barriers were negatively associated with each outcome; descriptive norms were positively associated with each outcome; perceived natural skin protection was inversely associated with sunscreen use; skin cancer worry was positively associated with shade seeking and use of sun protective clothing; skin cancer fatalism was negatively associated

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with shade seeking; and skin color preference was negatively associated with use of sun protective clothing. A number of additional statistically significant associations were identified in bivariate correlation analyses. This study informs the potential content of interventions to promote engagement in sun protection behaviors among U.S. Hispanics.

Keywords

Hispanic; Latino; skin cancer; prevention; sun protection; behavior

Skin cancer is the most commonly diagnosed cancer in the United States (American Cancer Society, 2013). From 1992 to 2008, the incidence of melanoma—the most lethal type of skin cancer—increased 1.3% annually among the U.S. Hispanic/Latino population[1] (Fast Stats, 2013). This increased incidence among Hispanics is especially important because they are the fastest growing racial/ethnic group in the country (Ennis et al., 2011). It is anticipated that the current population of more than 50 million U.S. Hispanics will double by 2050 (U.S. Census Bureau, 2008). Although the incidence of melanoma is lower among Hispanics than non-Hispanic whites (Howlader et al., 2012), when diagnosed with the disease, Hispanics tend to be younger, have more advanced disease, and have a lower survival rate (Wu et al., 2011). Hispanics are also less knowledgeable about skin cancer risks and prevention than non-Hispanic whites (Hay et al., 2009; Ma et al., 2007; Pipitone et al., 2002). The Hispanic population in the United States is heavily concentrated in the southern and western regions (U.S. Census Bureau, 2010) that have among the highest ultraviolet (UV) indexes in the country (U.S. Environmental Protection Agency, 2011). Because of these risk factors, Hispanics are an important population to target for skin cancer health education efforts as well as interventions to promote sun protection behaviors. However, there is a dearth of published skin cancer prevention efforts targeting Hispanics.

The sun protection behaviors recommended to reduce skin cancer risk and premature aging are sunscreen use, shade seeking, and use of sun protective clothing that minimizes skin exposure to the sun. Many Hispanics do not engage in these behaviors on a routine basis (Coups et al., 2012; Coups et al., 2013a; Weiss et al., 2012). For example, in a recent study of 788 Hispanic adults residing in the southern and western United States, routine engagement (i.e., "most of the time" or "always" when outside on a sunny day) in sun protection behaviors was as follows: using sunscreen, 30.9%; shade seeking, 53.2%; and wearing sun protective clothing, 24.4% (Coups et al., 2013a). Data from several studies indicate that a number of sociodemographic factors are associated with Hispanic individuals' engagement in sun protection behaviors (Andreeva et al., 2009; Coups et al., 2012; Coups et al., 2013a). For example, Hispanic women are more likely than Hispanic men to use sunscreen and stay in the shade, but women are less likely to use sun protective clothing than men. Younger Hispanics are less likely to wear sun protective clothing than older Hispanics. Education is positively associated with sunscreen use among Hispanics. These findings—which are in line with prevailing demographic patterns of sun protection

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[1]There is a lack of consensus on usage of the terms Hispanic and Latino (Jaimes et al., 2013). For ease of presentation, we use the term Hispanic for the remainder of the paper.

behaviors among non-Hispanic white populations (Kasparian et al., 2009)—highlight Hispanic subpopulations that may be most in need of interventions to promote sun protection behaviors. Additionally, Hispanics who are more acculturated to U.S. cultural norms are less likely to seek shade and wear sun protective clothing than less acculturated Hispanics. This suggests that sociocultural factors may contribute to Hispanic individuals' engagement in sun protection behaviors. However, notably lacking in the research literature to date is a consideration of psychosocial factors that may be associated with Hispanic individuals' engagement in sun protection behaviors. An understanding of these factors is critical to the development of skin cancer prevention programs targeting Hispanics. We address this important issue in the present study.

Drawing on the Preventive Health Model (Myers et al., 1994), the results of prior research focusing on sun protection behaviors among mostly non-Hispanic white populations (Kasparian et al., 2009), and the results of semi-structured in-depth telephone interviews we conducted with 15 Hispanic adults (unpublished data), we identified psychosocial factors that may be associated with engagement in sun protection behaviors among Hispanics. The Preventive Health Model utilizes an integrated, self-regulation framework and posits that engagement in preventive behaviors is influenced by cognitive, affective, and social factors. The cognitive factors we examined in the present study were: behavioral benefits and barriers, skin color preference, perceived natural skin protection, photo-aging concerns, perceived skin cancer risk, and skin cancer fatalism. Skin cancer worry was considered as an affective factor. Sun protection descriptive norms (i.e. participants' perceptions of their friends' and family members' engagement in sun protection behaviors) were examined as social factors. We focused specifically on the sun protection behaviors of using sunscreen, seeking shade, and wearing sun protective clothing and hypothesized that each of the following factors would be associated with greater engagement in each behavior: lower perceived benefits of having a suntan; greater perceived benefits and fewer perceived barriers of engaging in the behavior; preference for a lighter skin color; lower perceived natural skin protection; greater photo-aging concerns; higher perceived skin cancer risk; greater skin cancer worry; lower skin cancer fatalism; and greater sun protection descriptive norms. Although many of these factors have been examined as correlates of sun protection behaviors in prior research (Kasparian et al., 2009), we are not aware of studies that have focused exclusively on Hispanic individuals. Additionally, we examined several novel factors that were raised as issues by participants during the in-depth interviews, including skin color preference (i.e., the extent to which individuals desire to have lighter versus darker colored skin), perceived natural skin protection (i.e., the belief that one's skin color naturally protects against the sun), and skin cancer fatalism. There has been little to no research examining the association of sun protection behaviors with these factors, which may be of particular sociocultural relevance to Hispanic individuals. Establishing psychosocial factors that are associated with sun protection behaviors among Hispanics can inform behavioral interventions to promote engagement in these behaviors.

Methods

A detailed description of the study procedures and participants is available elsewhere (Coups et al., 2013a) and is summarized here. Prior papers drawn from this study have

focused on demographic, melanoma risk factor, and linguistic acculturation correlates of skin cancer preventive and risk behaviors (Coups et al., 2013a) as well as the prevalence and correlates of skin cancer surveillance behaviors (Coups et al., 2013b). The data reported in this paper have not previously been published.

Procedure

The participants were recruited from KnowledgePanel Latino[SM], which is a nationally representative web panel of U.S. Hispanic adults (administered by the research company, Knowledge Networks, now called GfK Custom Research). Individuals were recruited to the panel using random-digit dialing and address-based sampling, which covers 97% of U.S. Hispanic households. Panel members were eligible for the present study if they reported no personal history of skin cancer and resided in one of five southern and western states (Arizona, California, Florida, New Mexico, or Texas). Panel members were invited via email to take part in the study, which entailed completing an online survey in English or Spanish. Participants provided informed consent prior to completing the survey. Data collection occurred from September 14–26, 2011. Institutional review board approval was obtained for the study.

Participants

A total of 788 individuals completed the survey (representing a 46.6% study acceptance rate). Just under half (47.7%) of the participants completed the survey in Spanish. One individual was missing data for the three sun protection behaviors of focus in this paper (sunscreen use, shade seeking, and use of sun protective clothing), leaving an analytic sample size of $N = 787$. As noted in the Statistical Analyses section, the analyses were weighted to control for a number of factors, including potential differences in the demographic characteristics of the study participants and those who declined to participate.

Measures

The English- and Spanish-language surveys are available upon request from the first author. Survey items that were not already available in Spanish were professionally translated and further refined for plain language adaptation by bilingual research staff members. With the exception of the measure of skin cancer knowledge, scale scores were created for all of the multi-item measures by averaging responses across the respective items.

Demographic factors—Participants reported their age, gender, state of residence, and Hispanic heritage.

Psychosocial factors

Suntan benefits: Perceived benefits of having a suntan were assessed using 6 items adapted from prior research ($\alpha = .95$) (Jackson and Aiken, 2000). A 5-point *strongly disagree* to *strongly agree* scale was used.

Sun protection benefits: Sunscreen, shade seeking, and sun protective clothing benefits were each assessed with 3 items (αs = .74, .79, and .78, respectively) (Bränström et al.,

2010). Participants answered each item using a 5-point *strongly disagree* to *strongly agree* response scale.

Sun protection barriers: Barriers to using sunscreen, seeking shade, and wearing sun protective clothing were assessing using 8-item, 6-item, and 7-item scales, respectively (Bränström et al., 2010), each of which utilized a 5-point *strongly disagree* to *strongly agree* response scale. The sunscreen barriers scale consisted of the 7 items used by Bränström et al. and one item that we added ("For me, using sunscreen … is hard because I don't know what kind of sunscreen to use"). We do not present internal consistency reliability statistics for the barriers scales, because individuals' endorsement of different barriers for each behavior may not be associated with each other (Glasgow, n.d.).

Skin color preference: Participants' preferred skin color was assessed using the following item drawn from the Skin Color Questionnaire (Bond and Cash, 1992): "If you could change your skin color, would you make it … *much lighter*, *a little lighter*, *exactly the same*, *a little darker, much darker*?" We coded responses from 1 (*much lighter*) to 5 (*much darker*).

Perceived natural skin protection: Participants completed a single item that we created for this study to assess the extent to which they believed that their natural skin color protects against the sun ("The natural color of my skin protects me from the sun"). The item used a 5-point response scale from *strongly disagree* to *strongly agree*.

Photo-aging concerns: Concerns about photo-aging, such as getting wrinkles and age spots, were assessed using 3 items drawn from prior research ($\alpha = .89$) (Jackson and Aiken, 2000; Manne et al., 2011). Participants answered using a 5-point response scale from *strongly disagree* to *strongly agree*.

Perceived skin cancer risk: Using a 5-point response scale (from *strongly disagree* to *strongly agree*), participants completed two items ($\alpha = .92$) adapted from prior research regarding their conditional perceived skin cancer risk (e.g., "If I don't protect my skin from the sun, I would feel very vulnerable to getting skin cancer in my lifetime") (Janssen et al., 2011).

Skin cancer fatalism: A single item drawn from the Health Information National Trends Survey (Health Information National Trends Survey, n.d.) was used to assess skin cancer fatalism ("There's not much you can do to lower your chances of getting skin cancer"; 5-point response scale from *strongly disagree* to *strongly agree*).

Skin cancer worry: Skin cancer worry was assessed with 2 items using a 5-point response scale ($\alpha = .81$) (McCaul and Goetz, n.d.; Health Information National Trends Survey, n.d.).

Sun protection descriptive norms: Three items assessed the extent to which participants' friends and family use sunscreen, seek shade, and use sun protective clothing when out in the sun (e.g., "My friends and family use sunscreen when they are in the sun") (Manne et al., 2004). A 5-point *strongly disagree* to *strongly agree* response scale was used. Each item was retained separately in the statistical analyses.

Sun protection behaviors—Participants completed standard survey items (using a 5-point response scale from *never* to *always*) regarding the frequency with which they use sunscreen (1 item), seek shade (1 item), and use sun protective clothing (3 items: wear a long-sleeved shirt; wear long pants or other clothing that reaches the ankles; and wear a wide-brimmed hat) when out in the sun (Glanz et al., 2008). Responses to the 3 clothing items were averaged to create an index of use of sun protective clothing ($\alpha = .63$).

Statistical Analyses

Descriptive statistics (e.g., means, standard deviations, and percentages) were used to describe the psychosocial characteristics of the sample. Bivariate associations between each of the psychosocial factors and the sun protection behaviors (sunscreen use, shade seeking, and wearing sun protective clothing) were examined using Pearson correlation coefficients. Additionally, separately for each sun protection behavior, we conducted a multiple linear regression analysis with the sun protection behavior as the outcome and all of the psychosocial factors included as predictor variables. In all of the analyses, the data were weighted to adjust for potential selection and non-response biases (for more detailed information, see Coups et al., 2013a, and DiSogra, 2009). A cutoff of $p < .05$ was used to determine statistical significance for all analyses.

Results

Descriptive Statistics

The 787 participants were 49.6% female, had a mean age of 41.0 years ($SD = 15.1$; range = 18–91), and lived predominantly in California (45.3%) or Texas (31.1%). Participants reported their Hispanic heritage as follows: Mexican, 71.0%; Puerto Rican, 4.6%; Cuban, 5.1%; Central American, 6.1%; South American, 6.6%; other (including multiple), 6.7%. Descriptive information regarding participants' use of sunscreen, shade seeking, and use of sun protective clothing is available elsewhere (Coups et al., 2013a). In brief, on a 1 (*never*) to 5 (*always*) scale, the frequency of participants' engagement in the sun protection behaviors was as follows: sunscreen, $M = 2.84$, $SD = 1.32$; shade seeking, $M = 3.44$, $SD = 1.17$; use of sun protective clothing, $M = 2.82$, $SD = 0.94$. Descriptive statistics for the psychosocial factors are shown in Table 1. In terms of their skin color preference ($M = 2.91$, $SD = 0.61$), almost three-quarters (71.6%) of the participants indicated that they would retain their skin the same color, 17.6% preferred to have lighter skin, and 10.8% reported a preference for having darker colored skin. For the perceived natural skin protection item ($M = 2.61$, $SD = 1.26$), one quarter (25.6%) of the participants agreed (either "somewhat" or "strongly") that their natural skin color protects against the sun, 31.0% neither agreed nor disagreed, and 43.4% disagreed. Ratings for the skin cancer fatalism item were relatively low ($M = 2.16$, $SD = 1.16$), with one in eight (12.4%) participants agreeing (either "somewhat" or "strongly") with the statement that, "There's not much you can do to lower your chances of getting skin cancer", 22.6% neither agreeing nor disagreeing with this statement, and 65.0% disagreeing with it.

Frequencies of the reported benefits and barriers to using sunscreen, seeking shade, and wearing sun protective clothing are shown in Table 2. With regard to the benefits of each

behavior, avoiding a sunburn and reducing the risk of getting skin cancer were more strongly endorsed than maintaining younger-looking skin. Approximately three-quarters of respondents reported that avoiding a sunburn is a benefit of using sunscreen and wearing sun protective clothing, with 60% indicating that it is a benefit of shade seeking. In terms of sun protection barriers, not having sun protection behavior as part of one's daily routine was reported by approximately one-third of participants for each behavior. Other frequently endorsed barriers to using sunscreen included its cost, unpleasant sensation, and lack of comfort using it. It is also of note that almost one in five (18.3%) participants indicated that it was hard for them to use sunscreen because they didn't know what kind to use. The most commonly reported barriers to seeking shade and wearing sun protective clothing included the difficulty and inconvenience of engaging in these behaviors. Additionally, almost one-third of participants indicated that seeking shade was challenging because it interfered with their work or leisure activities. Relatively few participants indicated that it was hard to engage in the sun protection behaviors because they would prevent them from getting a suntan.

Correlates of Sunscreen Use

Table 3 shows the results of the correlation analyses and multiple regression analysis examining correlates of sunscreen use. Factors associated with more frequent sunscreen use in the bivariate correlation analyses included higher benefits and fewer barriers to using sunscreen, lower perceived natural skin protection, greater photo-aging concerns, higher perceived skin cancer risk and worry, lower skin cancer fatalism, and greater sunscreen descriptive norms. In the multiple regression analysis, sunscreen barriers, perceived natural skin protection, and sunscreen descriptive norms remained significantly associated with sunscreen use. Together the psychosocial factors explained 27% of the variance in sunscreen use.

Correlates of Shade Seeking

As shown in Table 4, the following factors were associated with greater shade seeking in bivariate correlation analyses: lower suntan benefits, greater benefits and fewer barriers to seeking shade, lower perceived natural skin protection, greater photo-aging concerns, greater perceived skin cancer risk and worry, lower skin cancer fatalism, and greater shade seeking descriptive norms. Correlates that remained significantly associated with shade seeking in the multiple regression analysis were: shade seeking barriers, perceived skin cancer risk and worry, skin cancer fatalism, and shade seeking descriptive norms. The psychosocial factors accounted for 15% of the variance in shade seeking.

Correlates of Wearing Sun Protective Clothing

In the bivariate correlation analyses (see Table 5), the factors associated with more frequent use of sun protective clothing were fewer suntan benefits, greater benefits and fewer barriers to wearing sun protective clothing, preferring a lighter skin color, lower perceived natural skin protection, greater perceived skin cancer risk and worry, and greater sun protective clothing descriptive norms. Factors that retained a significant association with sun protective clothing in the multiple regression analysis included sun protective clothing barriers, skin

color preference, skin cancer worry, and sun protective clothing descriptive norms. The psychosocial factors explained 25% of the variance in use of sun protective clothing.

Discussion

The results of the current study have direct implications for the potential content and implementation of interventions to promote sun protection behaviors among Hispanic individuals. In addressing such implications, we focus primarily on the associations identified in the bivariate correlation analyses. The results of the multiple regression analyses are informative in terms of highlighting potentially unique predictors of the sun protection behaviors, but future interventions would likely benefit by targeting the full array of psychosocial factors that were significantly associated with each behavior in the bivariate analyses. Overall, there was considerable consistency with regard to the psychosocial correlates of the three sun protection behaviors and the results suggest that the Preventive Health Model (Myers et al., 1994) is a useful theoretical framework for examining sun protection behaviors among Hispanic individuals.

The associations identified between the sun protection behaviors and suntan benefits, sun protection benefits and barriers, photo-aging concerns, perceived skin cancer risk and worry, and sun protection descriptive norms in the current study of Hispanic adults are largely consistent with results of prior research that has focused primarily on non-Hispanic white populations (Kasparian et al., 2009). In addition, we examined several sociocultural correlates that may be uniquely relevant to the Hispanic population, namely skin color preference, perceived natural skin protection, and skin cancer fatalism. Individuals who reported that they preferred to have darker skin were less likely to use sun protective clothing, but skin color preference was not associated with sunscreen use or shade seeking. Future research is warranted to further explore such associations. Perceived natural skin protection was negatively associated with each sun protection behavior. Although darker pigmented skin provides greater protection against the sun than lighter skin, it does not provide complete UV protection (Gloster and Neal, 2006), which may not be fully recognized in the Hispanic population. Indeed, 45.3% of the study sample reported ever having a severe sunburn with blisters, and 42.5% indicated that they would get a severe or moderate sunburn if they were exposed to midday summer sun without protection (Coups et al., 2013a). Individuals with more fatalistic beliefs about skin cancer reported less use of sunscreen and shade seeking. Thus, it is important to educate Hispanic individuals that excess exposure to UV light is a risk factor for skin cancer that can be mitigated through the use of appropriate sun protection practices.

Hispanic individuals who perceived greater benefits to having a tan were less likely to seek shade and to wear sun protective clothing. Thus, interventions promoting these behaviors among Hispanic individuals should include a discussion of potential negative consequences of tanning as well as safe alternatives to UV tanning (e.g., use of sunless tanning products or spray tanning). The most commonly endorsed barriers to engaging in sun protection behaviors included the difficulty, inconvenience, and awkwardness of the behaviors, as well as not having them as part of one's daily routine. Some barriers are unique to certain behaviors, such as the potential expense and unpleasant nature of using sunscreen. These

may be addressed by educating individuals about the cost-savings of purchasing larger sizes of sunscreen and trying non-greasy or odorless sunscreens, as well as using sunscreens that do not leave a visible residue on darker pigmented skin. We previously reported that 23% of the sunscreen users in the study sample did not know the sun protection factor (SPF) of the sunscreen that they usually use (Coups et al., 2013a). Thus, information about sunscreen SPF should be incorporated into interventions to promote sunscreen usage among Hispanics.

There was considerable evidence that individuals with greater concerns about photo-aging and higher skin cancer worry and perceived risk were more likely to engage in sun protection behaviors. Prior research has shown that there is low awareness of the risks of skin cancer among the Hispanic population (Hay et al., 2009; Ma et al., 2007; Pipitone et al., 2002). Thus, educating Hispanic individuals about the potential risks of skin cancer and photo-aging may serve to promote engagement in sun protection behaviors.

Limitations

Several potential limitations to this research warrant mention. The cross-sectional survey design limits conclusions regarding the causal direction of the observed associations. As with any survey, there is the potential for sampling bias, although the potential effects of such bias are reduced by our use of statistical weights that took into account potential non-coverage and non-response biases. The study sample was drawn from individuals residing in five southern and western U.S. states. The extent to which the study results can be extrapolated to Hispanic individuals living in other states remains to be determined in future research. The multiple regression analyses accounted for relatively modest amounts (from 15–27%) of the variance in the sun protection behaviors, although addition of demographic factors to the regression models would increase the explained variance. Future research is needed to identify additional factors that may be associated with sun protection behaviors among Hispanic populations.

Conclusions

This study identified numerous psychosocial correlates of sunscreen use, shade seeking, and use of sun protective clothing among Hispanic adults. The study results shed light on intervention approaches and content that can be incorporated into programs to promote sun protection behaviors among Hispanic adults. Future research is warranted to design and evaluate such interventions among Hispanic individuals at risk for skin cancer.

Acknowledgments

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Table 1

Descriptive Statistics for the Psychosocial Factors

Psychosocial Factors	Weighted Mean (SD)[a]
Suntan benefits	2.58 (1.08)
Sun protection benefits	
Sunscreen benefits	3.71 (0.94)
Shade seeking benefits	3.62 (0.96)
Sun protective clothing benefits	3.72 (0.94)
Sun protection barriers	
Sunscreen barriers	2.51 (0.78)
Shade seeking barriers	2.77 (0.71)
Sun protective clothing barriers	2.70 (0.83)
Skin color preference	2.91 (0.61)
Perceived natural skin protection	2.61 (1.26)
Photo-aging concerns	3.72 (1.02)
Perceived skin cancer risk	3.71 (1.06)
Skin cancer worry	2.51 (1.13)
Skin cancer fatalism	2.16 (1.16)
Sun protection descriptive norms	
Sunscreen descriptive norm	3.46 (1.10)
Shade seeking descriptive norm	3.45 (1.06)
Sun protective clothing descriptive norm	3.14 (1.19)

Note.

[a]All of the psychosocial variables were measured on a 1 to 5 scale.

Table 2

Reported Benefits and Barriers to Engaging in Sun Protection Behaviors

	Weighted Sample % Endorsing[a] Benefit/Barrier
Benefits to Using Sunscreen	
Reduce skin cancer risk	63.4
Maintain younger looking skin	47.3
Avoid getting a sunburn	75.5
Benefits to Seeking Shade	
Reduce skin cancer risk	61.4
Maintain younger looking skin	48.0
Avoid getting a sunburn	60.3
Benefits to Wearing Sun Protective Clothing	
Reduce skin cancer risk	71.8
Maintain younger looking skin	43.5
Avoid getting a sunburn	72.5
Barriers to Using Sunscreen	
Difficult	18.7
Unpleasant	21.6
Expensive	24.0
Not something I'm comfortable doing[b]	20.5
Interferes with work or leisure activities	14.3
Not part of my daily routine[c]	36.2
Prevents me from getting a suntan	13.7
Don't know what kind of sunscreen to use	18.3
Barriers to Seeking Shade	
Difficult	34.3
Inconvenient	29.0
Not something I'm comfortable doing[b]	24.7
Interferes with work or leisure activities	29.0
Not part of my daily routine[c]	32.0
Prevents me from getting a suntan	13.7
Barriers to Wearing Sun Protective Clothing	
Difficult	32.9
Inconvenient	30.1
Embarrassing, awkward, or uncool	22.8
Not something I'm comfortable doing[b]	30.3
Interferes with work or leisure activities	21.9
Not part of my daily routine[c]	37.9
Prevents me from getting a suntan	14.5

Note.

[a] We denoted individuals as endorsing a benefit or barrier if they answered "somewhat agree" or "strongly agree".

<i>b</i>This item was worded in the survey as "something I'm comfortable doing" and was reverse-coded for analytic purposes.

<i>c</i>This item was worded in the survey as "part of my daily routine" and was reverse-coded for analytic purposes.

Table 3

Psychosocial Correlates of Sunscreen Use

	Bivariate Correlation		Multiple Regression Analysis ($R^2 = .27$)		
	r	P	b	95% CI	P
Suntan benefits	−.04	.316	0.06	−0.02, 0.15	.134
Sunscreen benefits	.20	<.001	0.02	−0.08, 0.12	.713
Sunscreen barriers	−.49	<.001	−0.74	−0.86, −0.62	<.001
Skin color preference	.00	.913	−0.08	−0.22, 0.06	.240
Perceived natural skin protection	−.14	<.001	−0.09	−0.16, −0.02	.011
Photo-aging concerns	.22	<.001	0.06	−0.03, 0.16	.205
Perceived skin cancer risk	.23	<.001	0.02	−0.08, 0.12	.711
Skin cancer fatalism	−.12	.001	0.02	−0.05, 0.10	.495
Skin cancer worry	.17	<.001	0.06	−0.02, 0.14	.157
Sunscreen descriptive norms	.26	<.001	0.20	0.11, 0.28	<.001

Table 4

Psychosocial Correlates of Shade Seeking

	Bivariate Correlation		Multiple Regression Analysis ($R^2 = .15$)		
	r	*P*	b	95% CI	*P*
Suntan benefits	−.16	<.001	−0.05	−0.13, 0.03	.203
Shade seeking benefits	.12	.001	0.06	−0.03, 0.15	.179
Shade seeking barriers	−.25	<.001	−0.33	−0.45, −0.22	<.001
Skin color preference	−.07	.056	−0.10	−0.23, 0.03	.145
Perceived natural skin protection	−.15	<.001	−0.06	−0.13, 0.00	.054
Photo-aging concerns	.14	<.001	−0.01	−0.10, 0.08	.770
Perceived skin cancer risk	.22	<.001	0.10	0.01, 0.19	.037
Skin cancer fatalism	−.15	<.001	−0.10	−0.17, −0.03	.006
Skin cancer worry	.17	<.001	0.11	0.03, 0.19	.006
Shade seeking descriptive norms	.18	<.001	0.15	0.07, 0.23	<.001

Table 5

Psychosocial Correlates of Sun Protective Clothing Use

	Bivariate Correlation		Multiple Regression Analysis ($R^2 = .25$)		
	r	P	b	95% CI	P
Suntan benefits	−.19	<.001	0.01	−0.05, 0.08	.704
Sun protective clothing benefits	.09	.010	0.07	0.00, 0.14	.054
Sun protective clothing barriers	−.44	<.001	−0.47	−0.55, −0.39	<.001
Skin color preference	−.11	.002	−0.14	−0.24, −0.04	.007
Perceived natural skin protection	−.08	.030	−0.05	−0.10, 0.00	.060
Photo-aging concerns	.04	.229	−0.01	−0.08, 0.06	.794
Perceived skin cancer risk	.08	.024	−0.07	−0.13, 0.01	.079
Skin cancer fatalism	−.02	.635	0.01	−0.04, 0.07	.624
Skin cancer worry	.15	<.001	0.09	0.04, 0.15	.002
Sun protective clothing descriptive norms	.22	<.001	0.10	0.04, 0.15	.001