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Linguistic Acculturation and Skin Cancer-Related Behaviors Among Hispanics in the Southern and Western United States

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Abstract

Objective—To examine the association between linguistic acculturation (assessed using the Language Use and Linguistic Preference subscales from the Bidimensional Acculturation Scale for Hispanics) and skin cancer-related behaviors among U.S. Hispanic adults. We hypothesized that, compared to Hispanics denoted as Spanish acculturated, English acculturated Hispanics would report less frequent shade seeking and use of sun protective clothing and higher rates of sunscreen use, sunbathing, and indoor tanning.

Design—Online survey study conducted in September, 2011.

Setting—Survey of Hispanic adults residing in five southern and western U.S. states.

Participants—A population-based sample of 788 Hispanic adults drawn from a nationally representative web panel.

Main Outcome Measures—Self-reported sunscreen use, shade seeking, use of sun protective clothing, sunbathing, and indoor tanning.

Results—Multivariable regression analyses were conducted to examine predictors of the skin cancer-related behaviors. As hypothesized, English acculturated Hispanics had lower rates of

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shade seeking and use of sun protective clothing and reported higher rates of sunbathing and indoor tanning than Spanish acculturated Hispanics. English acculturated Hispanics and bicultural Hispanics (i.e., those with high Spanish and high English acculturation) reported comparably high rates of sunbathing and indoor tanning. Results suggested that bicultural Hispanics seek shade and wear sun protective clothing less often than Spanish acculturated Hispanics but more often than English acculturated Hispanics. Acculturation was not associated with sunscreen use.

Conclusions—Hispanic adults do not routinely engage in behaviors that reduce their risk of skin cancer. Bicultural and English acculturated Hispanics are particularly in need of skin cancer prevention interventions.

Keywords

acculturation; Hispanic; Latino; skin cancer; prevention

Hispanics are the fastest growing racial/ethnic group in the United States. From 2000 to 2010, the Hispanic population in the United States increased by 43%, which constituted more than half of the national population increase during that time period.[1] By 2050, it is estimated that the Hispanic population will exceed 100 million and represent 24.4% of the total population.[2] The incidence of melanoma among Hispanics has been rising for several decades. From 1992–2008, the annual age-adjusted melanoma incidence among Hispanics increased by 19% from 3.95 to 4.70 per 100,000.[3] Although Hispanics have a lower incidence of melanoma than non-Hispanic white individuals, Hispanics are more likely to be diagnosed with melanoma at an earlier age and with more advanced disease that is less amenable to successful treatment.[4] Hispanics are an important population to target for skin cancer prevention and control efforts.[5]

A large proportion of Hispanics do not routinely engage in skin cancer prevention practices, such as using sunscreen, staying in the shade, wearing sun protective clothing, and refraining from ultraviolet (UV) indoor tanning. In a recent study, the percentage of Hispanics who reported often or always engaging in sun protection behaviors when outside on a sunny day was as follows: using sunscreen, 24%; staying in the shade, 54%; wearing a hat, 32%; wearing a long-sleeved shirt, 24%; and wearing long pants, 58%.[6] Approximately 12% of 18–29 year old Hispanics report indoor tanning in the past year.[7]

Relatively little is known about factors that are associated with skin cancer-related behaviors among Hispanics. A particularly important factor to consider is acculturation, which refers to individuals' adoption of attitudes, norms, and behaviors from multiple cultures. Several studies have examined the association between acculturation and skin cancer-related behaviors among U.S. Hispanics. A study of 496 Hispanic adults drawn from the 2005 Health Information National Trends Survey (HINTS) found that greater acculturation to U.S. cultural norms was associated with more frequent sunscreen use, less frequent shade seeking, and less use of sun protective clothing.[6] Using data from 5158 adult Hispanic participants in the 2010 National Health Interview Survey, we similarly found that greater acculturation to U.S. norms was linked with more frequent sunscreen use and less frequent use of sun protective clothing.[8] Additionally, more acculturated individuals were more likely to report having a sunburn in the past year. These prior studies shed valuable light on the link between acculturation and skin cancer-related behaviors among Hispanics, but are subject to limitations—primarily with regard to the assessment of acculturation—that are addressed in the current study.

In line with the broader research literature on acculturation and health,[9] studies of skin-cancer related behaviors among Hispanics have typically used a unidimensional approach to assess acculturation on a continuum from unacculturated to acculturated.[10] In the current

study, we used a bidimensional approach that assessed acculturation with regard to each of U.S. and Hispanic cultures. This approach better reflects the complexity of acculturative processes and outcomes experienced by U.S. Hispanics.[9,11] Thus, we were able to categorize the study participants as being *Spanish acculturated* (i.e., high Spanish acculturation and low English acculturation), *English acculturated* (i.e., high English acculturation and low Spanish acculturation), or *bicultural* (i.e., high Spanish and high English acculturation). We focused specifically on linguistic acculturation in the present study. Language use and preference have been used widely in prior studies of acculturation and health-related behaviors among Hispanics[11,12] and have been found to be the best indicators of acculturation.[13,14] We hypothesized that, compared to Hispanics denoted as Spanish acculturated, English acculturated Hispanics would have lower rates of shade seeking and use of sun protective clothing and higher rates of sunscreen use, sunbathing, and indoor tanning. Given the lack of relevant prior research, we did not specify *a priori* hypotheses regarding the rates of skin cancer-related behaviors among Hispanics denoted as bicultural. A greater understanding of the relationship between acculturation and skin cancer preventive and risk behaviors will shed light on the need for dermatologists and other practitioners to consider acculturation-related issues and processes when treating Hispanic individuals. As secondary research questions, we examined whether the prevalence of skin cancer-related behaviors among Hispanics varied according to their demographic characteristics (i.e., gender, age, education level, latitude of residence, and Hispanic heritage) and objective risk for melanoma. Overall, the current study represents one of the most comprehensive examinations to date of acculturation and other correlates of skin cancer-related behaviors among U.S. Hispanics.

Methods

Procedure

The study participants were drawn from KnowledgePanel Latino[SM], a nationally representative web panel of U.S. Hispanic adults administered by the research company, Knowledge Networks (www.knowledgenetworks.com). Hispanic individuals aged ≥ 18 years are recruited to join KnowledgePanel Latino[SM] using a combined address-based sampling and random-digit dial methodology, which covers approximately 97% of Hispanic households in the United States. Panel members complete online surveys and are provided with a cost-free laptop and Internet access, if necessary. Additional information about KnowledgePanel Latino[SM] is available elsewhere.[15] Panel members residing in Arizona, California, Florida, New Mexico, or Texas were randomly selected and invited via email to take part in the current study. We focused specifically on Hispanic individuals living in these five southern and western U.S. states, because they have high percentages of Hispanic residents (varying from 22.5% to 46.3%, compared to a national average of 16.3%)[16] and relatively high UV indexes. Individuals who reported never being diagnosed with skin cancer were eligible to complete the approximately 25-minute online survey. Study respondents received $5 for participating in the study. All recruitment and survey materials were available to participants in English or Spanish, based on their preference. Survey items were drawn from the skin cancer prevention literature;[17–20] measures not already available in Spanish were translated professionally and further refined for plain language adaptation by several bilingual research staff members. Participant recruitment and survey completion occurred between September 14th and 26th, 2011. Participants provided informed consent online before completing the survey. This study received institutional review board approval.

Participants

Of the 1,717 individuals invited to take part in the survey, 25 were ineligible because they reported a personal history of skin cancer, 904 declined to participate, and 788 completed the survey (52.3% in English, 47.7% in Spanish), giving a completion rate of 46.6%. We compared the (unweighted) demographic characteristics of the study participants and the decliners using independent samples *t* tests and chi-square tests. The study participants were slightly older than the decliners (mean age = 42.3 versus 38.0 years, $P < .001$), included a higher percentage of men (49.9% versus 44.8%, $P = .037$), and had a higher level of education (15.2% versus 9.7% completed at least a Bachelor's degree, $P = .002$). The study participants and decliners did not differ with regard to their state ($P = .550$) or latitude of residence ($P = .556$). As described in the Statistical Analysis section, the statistical analyses we conducted were weighted to adjust for demographic differences between study participants and decliners.

Measures

The English and Spanish language surveys used in this study are available from the first author.

Demographic factors—Participants reported their gender, age, level of education, and Hispanic heritage. The latitude of residence (i.e., degrees north of the equator) was denoted for each participant based on the home address.

Melanoma risk factors—Participants completed questions regarding eight risk factors for melanoma. Drawing on prior research,[17,19] we categorized individuals as to whether they had each of the risk factors as follows: have naturally red or blonde hair; have blue, green, or gray eyes; have at least a few freckles; have very fair or fair untanned skin color; would get a severe or moderate sunburn if exposed to midday summer sun without protection; have had a severe sunburn with blisters; have at least one mole larger than a pencil eraser (about ¼ inch); have at least one first-degree relative diagnosed with melanoma. We calculated the total number of melanoma risk factors (from 0 to 8) for each participant.

Linguistic acculturation—Participants completed the 6-item Language Use (4-point response scale from 1 = *almost never* to 4 = *almost always*) and 12-item Linguistic Proficiency (4-point response scale from 1 = *very poorly* to 4 = *very well*) subscales from the Bidimensional Acculturation Scale for Hispanics.[21] The Language Use subscale assesses how often individuals use English and Spanish languages and the Linguistic Proficiency subscale assesses their ability to use English and Spanish. We created separate indexes of English and Spanish acculturation for each participant by averaging responses to the English-oriented (e.g., "How often do you speak English?"; "How well do you speak English?") ($\alpha = .98$) and Spanish-oriented (e.g., "How often do you speak Spanish?"; "How well do you speak Spanish?") items ($\alpha = .97$), respectively. Following established guidelines,[21] we used a cutoff of 2.5 on both the English and Spanish indexes to determine low versus high acculturation and assigned each participant to one of three groups: Spanish acculturated (high Spanish acculturation, low English acculturation); English acculturated (high English acculturation, low Spanish acculturation); or bicultural (high Spanish acculturation, high English acculturation). Three participants had scores ≤ 2.5 on both the English and Spanish indexes and were assigned to an acculturation group based on their language of survey completion.

Skin cancer-related behaviors—Participants completed recommended survey items regarding multiple skin cancer preventive (sunscreen use, shade seeking, and use of sun protective clothing) and risk behaviors (sunbathing and indoor tanning).[18,20] With regard to

skin cancer preventive behaviors, participants used a 5-point response scale (from *never* to *always*) to indicate how often they use sunscreen (1 item), stay in the shade (1 item), and wear sun protective clothing (3 items: long-sleeved shirt, long pants or other clothing that reaches the ankles, wide-brimmed hat) when outside on a warm sunny day.[18] Responses to the 3 clothing items were averaged to create a sun protective clothing index ($\alpha = .63$). Individuals who reported any use of sunscreen indicated the sun protection factor (SPF) of the sunscreen they use most often as well as the usual timing of their sunscreen application. With regard to skin cancer risk behaviors, single items assessed how often participants sunbathe (using a 5-point response scale from *never* to *always*)[18] and whether they had ever engaged in UV indoor tanning.[20] For analytic purposes, we coded the sunbathing variable according to whether individuals ever sunbathe.

Statistical Analyses

We conducted an ANOVA to examine whether the number of melanoma risk factors differed according to individuals' linguistic acculturation. We used correlation coefficients to examine the associations among the five skin cancer preventive and risk behavior variables. For each of the behaviors, we conducted a separate multivariable linear regression analysis (for the preventive behaviors of sunscreen, shade seeking, and sun protective clothing) or logistic regression analysis (for the risk behaviors of sunbathing and indoor tanning). Demographic factors, the melanoma risk factor score, and the linguistic acculturation variable were included as independent variables in each regression analysis. For all of the statistical analyses, the data were weighted using a variable that adjusted for multiple factors, including the probability of panel selection, Spanish language use, and potential post-stratification non-response and non-coverage biases in both the overall panel (i.e., before the sample for the current study was selected) and in the study sample. The post-stratification adjustment variables included age, gender, education level, state of residence, metropolitan area, Internet access, and primary language by census region. (Additional information regarding the statistical weighting is available elsewhere.[22]) For all analyses, a cutoff of $P < .05$ was used to determine statistical significance.

Results

Sample Characteristics

Descriptive statistics for the study variables are shown in Table 1. Half of the study participants were female and 11.5% had a college degree. The most common states of residence were California and Texas and 70.9% of participants reported being of Mexican heritage. The mean latitude of 32.2 degrees is the approximate latitude of San Diego (California), Dallas (Texas), and Tucson (Arizona). Participants had an average of 2.0 melanoma risk factors and almost one-third of the sample had three or more risk factors. The most commonly reported risk factors were: ever had a severe sunburn with blisters, 45.3%; would get a severe or moderate sunburn if exposed to midday summer sun without protection, 42.5% (specifically, participants reported the following: severe sunburn, 15.2%; moderate sunburn, 27.4%; mild sunburn, 22.6%; turn darker without sunburn, 22.8%; nothing would happen to the skin, 12.1%); have at least one mole larger than a pencil eraser (about ¼ inch), 36.7%; and have very fair or fair untanned skin, 35.9% (specifically, participants reported their untanned skin color as follows: very fair, 6.0%; fair, 29.9%; olive, 13.9%; light brown, 42.9%; dark brown, 7.1%; very dark, 0.2%). With regard to linguistic acculturation, 35.6% of the participants were denoted as Spanish acculturated, 44.9% were denoted as bicultural, and 19.5% were English acculturated. Individuals' number of melanoma risk factors differed according to their linguistic acculturation ($F = 4.66$, $P = .010$). English acculturated Hispanics had significantly more risk factors ($M = 2.2$) than those who were Spanish acculturated ($M = 1.8$). Bicultural Hispanics had an average of 2.0

melanoma risk factors. On a 1 to 5 scale, the mean values for sunscreen use, shade seeking, and use of sun protective clothing were 2.8, 3.4, and 2.8, respectively. Among individuals who reported using sunscreen, 71.6% indicated that they usually use a sunscreen with an SPF of at least 15, although 22.6% of participants did not know the SPF of their sunscreen. In terms of the timing of sunscreen application, 79.4% of participants reported applying sunscreen before going out in the sun, with almost all other individuals indicating that they apply it as soon as they get in the sun. Sunbathing was reported by 39.4% of participants and 5.3% reported ever indoor tanning.

Correlations among Skin Cancer-Related Behaviors

The correlations among the skin cancer-related behaviors are shown in Table 2. There were small to moderate positive correlations among the three skin cancer preventive behaviors (sunscreen use, shade seeking, and use of sun-protective clothing). There was a small positive correlation between sunbathing and indoor tanning. Sunscreen use was not significantly associated with sunbathing or indoor tanning. Shade seeking and use of sun protective clothing each had small inverse associations with sunbathing and indoor tanning.

Multivariable Linear Regression Analyses Examining Correlates of Skin Cancer Preventive Behaviors

Results of the linear regression analyses examining correlates of the skin cancer protective behaviors are shown in Table 3. Factors associated with less frequent sunscreen use included being male, having a lower education level, residing at a lower latitude (i.e., closer to the equator), and having fewer melanoma risk factors. Age, Hispanic heritage, and linguistic acculturation were not associated with sunscreen use. The frequency of shade seeking was lower among men, younger individuals, those reporting “other” Hispanic heritage compared to those of Mexican heritage, individuals with fewer melanoma risk factors, and English acculturated Hispanics compared to those denoted as Spanish acculturated or bicultural. Shade seeking was not associated with education level or latitude of residence. Factors associated with less frequent use of sun protective clothing included being female, younger age, having a higher level of education, residing at a lower altitude (i.e., closer to the equator), having fewer melanoma risk factors, and English acculturation (compared to both Spanish and bicultural acculturation). Hispanic heritage was not associated with the use of sun protective clothing.

Multivariable Logistic Regression Analyses Examining Correlates of Skin Cancer Risk Behaviors

Results of the logistic regression analyses examining correlates of the skin cancer risk behaviors are shown in Table 4. Sunbathing was more commonly reported by younger individuals, those of Puerto Rican, Cuban, South American, or “other” Hispanic heritage compared to those of Mexican heritage, and among bicultural and English acculturated Hispanics compared to those denoted as Spanish acculturated. Gender, level of education, latitude, and the number of melanoma risk factors were not associated with sunbathing. Indoor tanning was more prevalent among women, individuals of Cuban or “other” Hispanic heritage compared to those of Mexican heritage, individuals with more melanoma risk factors, and among bicultural and English acculturated Hispanics compared to those denoted as Spanish acculturated.

Discussion

In this study, we examined the prevalence and correlates of skin cancer protective and risk behaviors in a population-based sample of adult Hispanic individuals living in southern and western U.S. states. There was considerable variation with regard to the prevalence of the

skin cancer-related behaviors among the study participants. With regard to the skin cancer protective behaviors, more participants reported routinely (i.e., most of the time or always) staying in the shade (53.2%) compared to using sunscreen (30.9%) and wearing sun protective clothing (24.4%). This is consistent with prior findings among U.S. Hispanics[6,8] as well as U.S. adults in general.[23] In terms of the skin cancer risk behaviors, 39.4% of participants reported sunbathing but only 5.3% had ever tanned indoors. These findings shed light on the skin cancer-related behaviors for which there is the most need for intervention among Hispanic individuals.

The primary objective of the current study was to examine the association between linguistic acculturation and skin cancer preventive and risk behaviors among Hispanic adults. Consistent with our hypotheses, compared to Hispanics denoted as Spanish acculturated, English acculturated Hispanics reported being less likely to seek shade and wear sun protective clothing and were more likely to report sunbathing and indoor tanning. Contrary to our expectations, linguistic acculturation was not significantly associated with sunscreen use. Prior studies have found acculturation among Hispanics to be associated with sunscreen use in univariable but not multivariable analyses.[6,8] Future research is warranted to further examine the association between acculturation and sunscreen use among Hispanics.

Of particular importance in the current study, our use of a bidimensional measure of acculturation allowed us to compare the skin cancer-related behaviors of Hispanics denoted as bicultural compared to those designated as English acculturated or Spanish acculturated only. An interesting pattern of results emerged in that regard. In terms of preventive behaviors, results suggested that bicultural Hispanics seek shade and wear sun protective clothing less often than Spanish only acculturated Hispanics but more often than English only acculturated Hispanics. However, with regard to risk behaviors, bicultural Hispanics engaged in sunbathing and indoor tanning at comparably high rates to English only acculturated Hispanics. Overall, the picture that emerges is that high English acculturation among Hispanics—regardless of individuals' level of Spanish acculturation—is associated with greater engagement in skin cancer risk behaviors. However, the relatively low rates of shade seeking and wearing sun protective clothing among high English acculturated Hispanics are somewhat offset among bicultural Hispanics.

A number of demographic factors were significantly associated with the skin cancer-related behaviors and these results were largely consistent with prior research among Hispanics[6,8] as well as the general U.S. population.[7,23,24] Hispanic men had lower rates of indoor tanning and reported using sunscreen and seeking shade less often than women, but were more likely to report wearing sun protective clothing. Younger Hispanics reported seeking shade and wearing sun protective clothing less often than older individuals and were also more likely to report sunbathing. Participants' level of education was associated positively with sunscreen use and inversely with wearing sun protective clothing. There was some indication that Hispanics of Mexican heritage were more likely to seek shade and less likely to sunbathe and tan indoors compared to individuals with heritages from several other countries. However, further research is needed to examine potential differences in skin cancer-related behaviors, attitudes, and beliefs among individuals of varying Hispanic origins. It is encouraging that Hispanics with a greater number of objective melanoma risk factors reported more frequently engaging in skin cancer preventive behaviors. However, it is of concern that indoor tanning was more commonly reported among Hispanics with more melanoma risk factors. Interventions to discourage indoor tanning among Hispanics should target individuals with a greater number of risk factors for melanoma. Overall, the study results highlight the importance of developing culturally appropriate, tailored interventions to reduce the risks of skin cancer among Hispanic individuals of varying backgrounds and levels of acculturation. Future research is also needed to examine skin cancer-related

behaviors among particular subgroups of Hispanics, such as those who work outdoors in the sun.

There are several limitations to the current study. The majority of participants reported being of Mexican heritage, which while consistent with national statistics,[2] limits the conclusions that can be drawn regarding associations between Hispanic heritage and skin cancer-related behaviors. The cross-sectional design of the study does not provide insight on the timing and nature of acculturative processes that influence Hispanic individuals' engagement in skin cancer-related behaviors. Future research is needed to examine longitudinal changes in skin cancer-related behaviors that may be influenced by acculturation. We identified differences in the demographic characteristics of the recruited participants and those who declined to participate. However, the potential effects of sampling bias are attenuated by our use of statistical weights that controlled for multiple factors including sample non-response. We used a cutoff of $P < .05$ to determine statistical significance for all analyses. Thus, the **familywise alpha rate across the entire study is greater than .05.

The results of the present study indicate that Hispanic adults in the United States do not sufficiently engage in behaviors that reduce their risk of developing skin cancer. Clinicians should prioritize discussions of skin cancer prevention and risk behaviors among their Hispanic patients who are bicultural or English acculturated. These individuals are more likely than Spanish acculturated Hispanics to be at risk for skin cancer based on their objective melanoma risk factor profile and their engagement in skin cancer-related behaviors. Many bicultural Hispanics may be receptive to interventions in English or Spanish,[25] although individuals' preferred language may vary according to the intervention modality (e.g., in person, written materials, computer-based). Of additional relevance is the need to deliver interventions in a culturally proficient manner.[25] This highlights the need to include issues related to culture, race, and ethnicity in dermatology training programs, as well as the importance of racial/ethnic diversity in the dermatology workforce.[5,26] The majority of sunscreen users in the current study indicated that they use sunscreen with at least SPF 15 and apply it before going out in the sun, which is in line with recommended practices. However, there is still considerable room for clinicians to educate Hispanic patients regarding sunscreen use, as more than one-third (43.2%) of participants reported using sunscreen never or rarely and almost one-quarter (22.6%) of the sunscreen users did not know the SPF of their sunscreen. The relatively low correlations observed among the skin cancer-related behaviors suggest that the engagement in a specific skin cancer protective or risk behavior by a Hispanic individual is not necessarily indicative of whether he/she also engages in other such behaviors. Dermatologists, public health practitioners, and researchers should consider this issue with regard to skin cancer prevention initiatives targeting Hispanics and seek to promote a wide range of protective behaviors. Future studies should further examine associations between acculturative processes and outcomes and skin cancer-related behaviors, attitudes, and beliefs among Hispanics. Additional research is also warranted to develop, test, and disseminate culturally appropriate behavioral interventions to reduce the risks of skin cancer among the rapidly growing U.S. Hispanic population.

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Table 1

Descriptive Statistics for the Study Variables (N = 788)

Characteristic	Unweighted n[a]	Weighted %	Weighted Mean (SD)
Female gender	395	49.6	
Age (years)			41.0 (15.1)
Education level			
≤ Some high school	234	34.3	
High school graduate	234	29.3	
Some college	200	25.0	
College graduate	120	11.5	
State of residence			
Arizona	42	6.4	
California	379	45.2	
Florida	110	14.2	
New Mexico	26	3.1	
Texas	231	31.1	
Latitude of residence (degrees)			32.2 (3.5)
Hispanic heritage			
Mexican	556	70.9	
Puerto Rican	34	4.6	
Cuban	38	5.1	
Central American	46	6.1	
South American	47	6.7	
Other (including multiple)	61	6.6	
No. of melanoma risk factors			2.0 (1.4)
0	110	15.0	
1	206	27.3	
2	203	26.6	
3	141	16.0	
≥ 4	128	15.2	
Linguistic acculturation			
Spanish acculturated	248	35.6	
Bicultural	354	44.9	
English acculturated	182	19.5	
Sunscreen use[b]			2.8 (1.3)
Never	155	19.1	
Rarely	191	24.1	
Sometimes	213	25.8	
Most of the time	124	15.6	
Always	104	15.3	
SPF of sunscreen usually use[c]			
Less than 15	36	5.8	

Characteristic	Unweighted *n*[a]	Weighted %	Weighted Mean (SD)
15 or higher	469	71.6	
Don't know	126	22.6	
Timing of sunscreen application[c]			
Before going out in the sun	504	79.4	
As soon as getting in the sun	105	16.1	
After being in the sun but before skin goes pink or red	13	2.5	
After being in the sun and after skin goes pink or red	8	2.0	
Stay in the shade[b]			3.4 (1.2)
Never	56	7.7	
Rarely	103	13.3	
Sometimes	206	25.9	
Most of the time	274	33.9	
Always	147	19.3	
Wear sun protective clothing[b, d]			2.8 (0.9)
Never	69	7.9	
Rarely	245	29.4	
Sometimes	297	38.4	
Most of the time	148	20.7	
Always	28	3.7	
Ever sunbathe	311	39.4	
Ever engaged in indoor tanning	49	5.3	

Note. SPF = sun protection factor.

[a]This reflects the actual sample size observed in the study.

[b]The variable was scored on a scale from 1 = *never* to 5 = *always*.

[c]This question was asked of individuals who reported using sunscreen at least rarely.

[d]This variable was created by averaging responses across three items; for ease of presentation in this table, individuals were placed in a category from *never* to *always* based on rounding their averaged score to the nearest whole number.

Table 2

Correlations among the Skin Cancer-Related Behaviors

	1.	2.	3.	4.	5.
1. Sunscreen use	—	.23***	.20***	.04	.05
2. Shade seeking		—	.16***	−.14***	−.10**
3. Use of sun protective clothing			—	−.19***	−.13***
4. Ever sunbathe				—	.11***
5. Ever engaged in indoor tanning					—

Note.

** $P < .01$

*** $P < .001$

Table 3

Demographic, Melanoma Risk Factor, and Linguistic Acculturation Correlates of Skin Cancer Preventive Behaviors (Sunscreen Use, Shade Seeking, and Use of Sun Protective Clothing)

	Sunscreen Use			Shade Seeking			Use of Sun Protective Clothing		
Characteristic	**b**	**95% CI**	***P***	**b**	**95% CI**	***P***	**b**	**95% CI**	***P***
Gender			< .001			< .001			< .001
Male	Reference			Reference			Reference		
Female	0.84	0.67, 1.02		0.57	0.41, 0.72		−0.27	−0.40, −0.15	
Age (years)	−0.004	−0.010, 0.002	.160	0.01	0.01, 0.02	< .001	0.01	0.01, 0.01	< .001
Education level	0.13	0.03, 0.23	.014	0.06	−0.03, 0.15	.168	−0.11	−0.18, −0.03	0.004
Latitude of residence (degrees)	0.04	0.01, 0.06	.001	0.01	−0.01, 0.03	.401	0.02	0.00, 0.04	0.032
Hispanic heritage			.274			.006			0.127
Mexican	Reference			Reference			Reference		
Puerto Rican	0.13	−0.31, 0.57		−0.32	−0.70, 0.06		−0.22	−0.53, 0.10	
Cuban	0.10	−0.35, 0.55		−0.30	−0.70, 0.09		−0.22	−0.55, 0.10	
Central American	0.03	−0.34, 0.40		−0.31	−0.64, 0.01		0.15	−0.12, 0.41	
South American	0.45	0.08, 0.83		−0.19	−0.51, 0.14		−0.29	−0.56, −0.03	
Other	−0.09	−0.45, 0.27		−0.55	−0.86, −0.23		−0.04	−0.30, 0.22	
No. of melanoma risk factors	0.13	0.06, 0.19	< .001	0.06	0.00, 0.11	.047	0.05	0.00, 0.09	.046
Linguistic acculturation			.497			< .001			< .001
Spanish acculturated	Reference			Reference			Reference		
Bicultural	0.11	−0.11, 0.32		−0.20	−0.39, −0.01		−0.16	−0.31, −0.01	
English acculturated	−0.01	−0.30, 0.28		−0.60	−0.85, −0.35		−0.54	−0.75, −0.33	

Note. b = unstandardized regression coefficient; CI = confidence interval. All of the characteristics were included together as independent variables in multivariable linear regression analyses. Thus, the association between each characteristic and each outcome is adjusted for all of the other characteristics.

Table 4

Demographic, Melanoma Risk Factor, and Linguistic Acculturation Correlates of Skin Cancer Risk Behaviors (Sunbathing and Indoor Tanning)

	Ever Sunbathe			Ever Engaged in Indoor Tanning		
Characteristic	**AOR**	**95% CI**	***P***	**AOR**	**95% CI**	***P***
Gender			.300			< .001
Male	Reference			Reference		
Female	1.18	0.87–1.60		4.74	2.12–10.60	
Age (years)	0.99	0.98–1.00	.009	0.99	0.97–1.02	.470
Education level	1.12	0.95–1.33	.180	1.21	0.82–1.79	.346
Latitude of residence (degrees)	1.01	0.97–1.06	.587	1.12	1.00–1.26	.061
Hispanic heritage			< .001			< .001
Mexican	Reference			Reference		
Puerto Rican	2.15	1.03–4.49		0.61	0.05–7.54	
Cuban	3.11	1.44–6.69		15.22	4.28–54.16	
Central American	0.55	0.26–1.15		0.67	0.06–7.06	
South American	3.64	1.90–6.96		0.41	0.04–4.17	
Other	2.14	1.17–3.89		4.95	2.00–12.25	
No. of melanoma risk factors	1.04	0.93–1.16	.487	1.30	1.04–1.63	.021
Linguistic acculturation			.041			.007
Spanish acculturated	Reference			Reference		
Bicultural	1.57	1.08–2.29		6.16	1.46–25.98	
English acculturated	1.67	1.02–2.72		12.26	2.57–58.42	

Note. AOR = adjusted odds ratio; CI = confidence interval. All of the characteristics were included together as independent variables in multivariable logistic regression analyses. Thus, the association between each characteristic and each outcome is adjusted for all of the other characteristics.