

2005

The Assessment of Appearance Factors Related to Intentional UV Exposure

Guy Cafri
University of South Florida

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The Assessment of Appearance Factors Related to Intentional UV Exposure

Guy Cafri

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master's of Arts
Department of Psychology
College of Arts and Sciences
University of South Florida

Major Professor: J. Kevin Thompson, Ph.D.

Paul Jacobsen, Ph.D. and Stephen Stark, Ph.D.

Date of Approval:
April 29, 2005

Keywords: Tanning, Skin Cancer, Body Image, Sunbathing, Sun-Protection

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ABSTRACT

Understanding the motives for sunbathing and indoor tanning is an extremely important public health issue. Skin cancer rates have increased dramatically in recent years and UV exposure via sunbathing and utilization of sun lamps and tanning beds are considered important risk factors. Motives for sunbathing and tanning salon use have been thought to be related to appearance concerns, yet little research has examined the specific tan appearance attitudes that may contribute to use of these behaviors. Two studies were conducted with the aim of assessing distinct attitudes related to a tan appearance. In the first study items were created based on a review of the tanning literature and incorporation of constructs developed in the body image field, which were subsequently subject to exploratory factor analysis on 149 female university student sunbathers/tanning salon users. Six factors emerged from the exploratory factor analysis, subsequently labeled general attractiveness reasons for tanning, media influence, family and friends influence, physical fitness appearance reasons for tanning, acne-specific reasons for tanning, and skin aging concerns. In the second study we tested a higher-order factor model using confirmatory factor analysis on a separate sample of 281 female university student sunbathers/tanning salon users. Most of the fit indexes suggested adequate to good model-data fit. Moreover, the factors converged in the expected directions, with the general attractiveness and skin aging concerns factors being the best predictors of UV exposure and sun protection intentions among the appearance factors. The findings from these investigations should yield important information relevant to the development of novel prevention and early intervention programs geared toward the reduction of skin cancer risk.

Introduction

Health Risks of UV Exposure

Ultraviolet (UV) radiation exposure is a significant risk factor for the development of skin cancers (U.S. DHHS, 2002). Most of the psychological research related to reducing the risk of developing skin cancers has focused on examining the attitudes that predict or explain behaviors and intentions of UV exposure and UV protection (e.g., sunscreen use). A consistent finding in the literature is that a central reason for deliberate UV exposure behaviors and intentions is the positive effect exposure has on skin appearance, specifically the development of a tanned appearance (e.g., Leary & Jones, 1993). There is also evidence suggesting that appearance-based prevention techniques are effective at reducing UV exposure and increasing UV protection (e.g., Mahler, Kulik, Gibbons, Gerrard & Harrell, 2003). While the significance of the appearance component is clear, to date very few studies have examined this factor in great depth. A broad aim of this research is a detailed examination of attitudes related to a tan appearance through the creation of multiple factors.

The incidence of skin cancers related to UV exposure has reached epidemic proportions in the United States. More than 1 million new cases of basal and squamous cell carcinoma and 54,200 cases of malignant melanoma were expected to occur in 2003 (ACS, 2003). While basal and squamous cell carcinomas are infrequently fatal, malignant melanoma causes a significant number of deaths, with 7,600 expected in 2003 (ACS, 2003). Importantly, the prevalence of these skin cancers has increased dramatically, with malignant melanoma increasing an average of 4% per year between 1973 and 1996 (ACS, 2000). Health care and related costs also represent a source of concern, with the per-year estimated cost of treating non-melanoma skin cancers (viz. basal and squamous cell carcinomas) in the U.S. estimated at 650 million dollars (Chen et al., 2001), with cost of treating melanoma adding an additional estimated 563 million dollars (Tsao, Rogers & Sober, 1998).

UV radiation is classified as a carcinogen based on research indicates that solar radiation and exposure to sunbeds and sunlamps are risk factors for various forms of skin cancer (U.S. DHHS, 2002). Solar radiation is known to cause both melanoma and non-melanocytic skin cancers (e.g., Armstrong & Kricker, 2001; Diepgen & Mahler, 2002; U.S. DHHS, 2002), and risk is greatest if exposure takes place during adolescence/young adulthood and or if blistering sunburns have occurred (Corona et al., 2001; NCI, 1995; Weinstock et al., 1989). Research also suggests that sunbeds and sunlamps can cause melanoma but not non-melanocytic skin cancers, with risk greatest among people with more time of use, exposure before the age of 30, and those with a history of being sunburned (e.g., U.S. DHHS, 2002; Westerdahl, Ingvar, Masback, Jonsson, & Olsson, 2000; Westerdahl et al., 1994). Use of sunbeds and sunlamps is especially concerning because of the high rates reported among Caucasian adolescents and young adults, in particular females (e.g., 28.1% of Caucasian females ages 13-19 report using tanning salons 3 or more times in their life; Demko, Borawski, Debanne, Cooper & Stange, 2003; for prevalence data see also Cokkinides, Weinstock, O'Connell & Thun, 2002; Geller et al. 2002; Wichstrom, 1994). Therefore, sunbathing and indoor tanning salon use represents important preventable risk factors for skin cancer.

Psychosocial Variables Related to Tanning

A variety of psychosocial variables have been examined in their ability to predict sunbathing and indoor tanning salon behaviors/intentions, including perceived susceptibility to photoage and to get skin cancer, perceived influence of peer sunbathing behaviors, relaxation, and appearance. Although several factors have been examined relatively few studies have examined them, which is in large part due to the focus of research on predictors of sun-protection behaviors (e.g., sunscreen use). Sun-protection however represents only one avenue of research related to assessing risk for skin cancer, sunbathing and tanning salon use are two others, which are distinct from sun-protection behaviors based on data

indicating small to moderate correlations across these different behaviors (e.g., Hillhouse, Stair & Adler, 1996; Keesling & Friedman, 1987; Leary & Jones, 1993; Wichstrom, 1994). Among the variables studied in the prediction of UV exposure behaviors/intentions, research supports appearance attitudes, particularly those related to a tan appearance, as being integral in understanding UV exposure behaviors and useful in the development of skin cancer prevention interventions.

Prior to reviewing the literature it is particularly important to mention that there exist no standard measures for assessing any of the reviewed psychosocial variables or UV exposure, which hinders our ability to make comparisons across studies and thus to make firm generalizations about the effects of particular variables. One variable that has been assessed is perceived susceptibility to getting skin cancer and or premature aged skin. Leary and Jones (1993) found a significant moderate effect ($r = .24$) for the relationship between personal estimates of skin cancer risk and an outcome measure comprised of sunbathing and tanning salon behaviors, with greater UV exposure leading to higher perceived estimates of getting skin cancer. In contrast, Jackson and Aiken (2000) found a significant medium-sized effects (sample 1 $r = -.35$; sample 2 $r = -.39$) for the relationship between a measure of perceived susceptibility to photoage/get skin cancer and intentions to sunbathe, such that higher perceived susceptibility led to less sunbathing intentions. Although the results of these two studies seem contradictory, the difference may be related to measuring intention vs. actual behaviors. More inconsistently, another study found very small non-significant effects for the relationship between perceived skin harm and either time spent sunbathing ($r = .02$) or using indoor tanning salons ($r = .06$) (Hillhouse, Stair & Adler, 1996). A larger scale study of Norwegian adolescents ($N = 15,169$) found a small negative effect for the relationship between perceived susceptibility to get skin cancer and sunbathing behaviors ($r = -.03$; Wichstrom, 1994). Collectively, these results suggest a tenuous relationship between perceived susceptibility and UV behaviors/intentions.

Influence of peer sunbathing behaviors has also been examined in relation to UV exposure. Very early on it was found that there was a significant medium sized effect for the relationship between number of peers who sunbathe and hours spent sunbathing ($r = .25$; Keesling & Friedman, 1987). Similar results were reported in a large sample of Norwegian adolescents ($r = .23$; Wichstrom, 1994). Notably, large effects were subsequently found in another study that used a multi-item measure of norms for sunbathing and intentions to sunbathe (sample 1 $r = .43$, sample 2 $r = .48$; Jackson & Aiken, 2000). Together, the results suggest a medium sized effect for the influence of peer sunbathing behaviors on sunbathing and perhaps a large effect on intentions to sunbathe.

With respect to relaxation, variability in effect sizes suggest anywhere from a small to a large association with sunbathing and tanning salon use. For instance, a small non-significant effect was initially found when relaxation was associated with sunbathing behaviors ($r = .16$; Keesling & Friedman). Another study however found a large association between relaxation and sunbathing behaviors ($r = .42$) and a medium effect for indoor tanning salon use ($r = .26$) (Hillhouse, Stair & Adler, 1996). More studies are needed that examine the effect of relaxation on UV exposure.

Regarding the association between appearance and UV exposure behaviors/intentions, it appears that the size of the effect depends on the dimension of appearance that is assessed, with larger effects coming from studies that assess a tan dimension of appearance. Using a modified version of the Tennessee Self-Concept Scale (TSCS), one study found a small non-significant association with sunbathing behaviors ($r = .15$; Keesling & Friedman, 1987), although the TSCS is not generally regarded as a measure of appearance. Another study found a medium-sized association between general appearance concerns and tanning behaviors ($r = .32$) and a slightly larger correlation when a single item assessing a tan appearance attitude was used ($r = .38$) (Martin, 1999). Similarly, another study found a small negative non-significant relationship between body self-esteem and a composite of sunbathing and tanning salon use behaviors ($r = -.06$), with larger effects observed when the appearance measure assessed physique anxiety ($r = .19$), body self-consciousness ($r = .38$), and an item assessing a tan

appearance ($r = .43$) (Leary & Jones, 1993). These patterns of results were also observed in a large sample of Norwegian adolescents, for whom there were small associations between physical self-concept ($r = .08$) and value of appearance ($r = .15$), and a medium association when a tan appearance dimension was assessed ($r = .29$) (Wichstrom, 1994). A later study found that a tan-appearance dimension yielded a small effect for sunbathing behaviors ($r = .23$) and a medium effect for indoor tanning salon use ($r = .33$) (Hillhouse, Stair & Adler, 1996). In yet another study a tan appearance dimension yielded a large association with sunbathing intentions (sample 1 $r = .66$, sample 2 $r = .50$; Jackson & Aiken, 2000). Together these results suggest the importance of assessing a tan dimension of appearance in relation to UV exposure, with potentially the largest effects coming from studies that assess intentions as outcomes.

Related to data attesting to the relationship between appearance and UV exposure behaviors/intentions, there is research supporting the idea that a tan body ideal emanates from a social context. For instance, results from experimental studies have shown that in general more positive impressions are formed of people who have tans than those who do not (Miller, Ashton, McHoskey, & Gimbel, 1990; Broadstock, Borland, & Gason, 1992). Moreover, one study assessed the media influence of a tan ideal and found medium-sized associations with a measure of a tan appearance (sample 1 $r = .22$, sample 2 $r = .23$) (Jackson & Aiken, 2000). These findings suggest that it is important to consider societal influence of a tan ideal as an important factor within the domain of tan appearance attitudes.

Intervention studies further demonstrate the relevance of appearance-based research on UV exposure behaviors and intentions. Although the results of intervention research is very much independent of research aimed at explaining UV exposure and sun protection, given the ultimate aim of explanatory research is to develop better skin-cancer interventions, it is necessary that results from explanatory studies are consistent with the effectiveness of appearance-based interventions. Generally, studies suggest that appearance-based interventions rather than health-based interventions lead to less intentions to tan and greater intentions to use sunscreen (Hillhouse & Turrisi, 2002; Jones & Leary, 1994; Mahler, Fitzpatrick, Parker & Lapin, 1997; Mahler, Kulik, Gibbons, Gerrard & Harrell, 2003; Mermelstein & Reisenberg, 1992). Importantly, the results of one study suggest a moderating effect, whereby appearance-based interventions are successful among low rather than moderate or high appearance motivated people (Jones & Leary, 1994). It is also important to note that research from the Rhode Island Sun Smart Project suggests that appearance-based intervention (e.g., UV photography, use of black lighting) are among the best received by people in comparison to other types of interventions (participation rates were 95% for UV photography and 83% for a black lighting intervention when people were approached at public beaches) (Rossi, Blais & Weinstock, 1994). Collectively, these results suggest that appearance-based interventions are effective and easy to implement, thus adding to the merit of conducting appearance-based research.

Incorporation of Constructs from the Body Image Field

To this point the term appearance has been used to refer to attitudes related to how a person thinks they look. In fact, the whole field of psychology called body image is devoted to the study of this phenomenon. The purpose of this section is to introduce several constructs and distinctions that might aid in evaluating new dimensions of appearance-concerns related to a tan body image. There are three topics within the body image field that have particular relevance to studying appearance among intentional UV exposure: the distinction between generic vs. specific body image, models of body image and different sources of social influence (e.g., peer, parents, and media), and the distinction between awareness of media ideals vs. internalization of these ideals.

Much of the research in body image field evolved through research related to eating disturbance because appearance concerns among people who have eating disturbances are high (APA, 2000). Although this connection exists it is important that there has not been an exclusive focus in the body image field on body weight and shape, some studies have examined body image related to those

suffering from body dysmorphic disorder (Olivardia, 2004), cosmetic surgery patients (Sarwer, Magee & Crerand, 2004), male pattern hair loss, the use of clothing and cosmetic products, breast cancer, congenital deformations, and HIV/AIDS (Cash & Pruzinsky, 2002.) All these domains of body image, including body weight and shape concerns, would fall under the rubric of specific body image concerns. In turn, measures of body image are often specific to the domain of interest that is being assessed. For instance, in assessing weight/size satisfaction a popular measure is the Body Dissatisfaction subscale of the Eating Disorders Inventory (EDI-BD; Garner & Olmstead, 1984). In contrast, generic body image encompasses more general evaluations of one's body. In order to tap a more global dimension of appearance satisfaction the Appearance Evaluation subscale of the Multidimensional Body-Self Relations Questionnaire (MBSRQ-AE; Brown, Cash, & Milkulka, 1990) is available and widely used. As in other areas of body image research it is important to maintain the distinction between generic and specific body image in research related to a tan appearance because this has implications on both the nature of the inferences that are generated and the magnitude of the observed effect size (this was seen in the research findings on appearance-related reasons for tanning reviewed above).

In most models of eating disturbance social influences precede appearance dissatisfaction (e.g., Shroff & Thompson, 2004; Stice, 2001; Stice, Ziemba, Margolis, & Flick, 1996; van den Berg, Thompson, Brandon & Covert, 2002; van den Berg, Wertheim, Thompson & Paxton, 2002). The same likely holds true in the area of social influences related to a tan appearance, but such a path was not tested in a recent comprehensive model (Jackson & Aiken, 2000). Moreover, it is important to make note of the fact that social influence consists not only of media ideals but parental and peer influences as well (for a review see Thompson et al., 1999). To date, only one study has examined the impact of social influence on tanning behaviors, and this measure was of media influence (image norms for tanness subscale; Jackson & Aiken, 2000), making it important to determine what if any effect peer and parental influences have.

Much has been made in recent years of the distinction between simple awareness of having a thin body and actual internalization of this ideal (e.g., Thompson et al., 1999). The distinction between these constructs has been articulated as the difference between being aware of socially defined ideals of attractiveness versus cognitively and behaviorally buying into these ideals (Thompson & Stice, 2001). Results of exploratory factor analyses generally support the distinction between these two constructs, although the difference might be better articulated as internalization being a more active cognition/attitude, whereas awareness is more passive (Heinberg, Thompson & Stormer, 1995; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). The distinction between awareness and internalization is clearer if one compares a typical awareness item: "Slender women are more attractive" (Stice et al., 1996) to an internalization item: "I wish I looked like a swimsuit model" (Heinberg et al., 1995). The relevance of the internalization awareness distinction is that internalization yields a substantially larger association with the drive for thinness (mean $r = .50$) than does awareness (mean $r = .29$) based on the results of a recent meta-analysis (Cafri, Yamamiya, Brannick & Thompson, 2004). Given the difference between awareness and internalization constructs in the area of assessing body image related to a thin ideal, it might be appropriate to examine whether the same distinction exists in relation to media influence with respect to a tan ideal. To date there has only been one published study that has examined media influence in relation to UV exposure (Jackson & Aiken, 2000), and the nature of the item wordings suggest only an awareness dimensions was assessed, indicating that it might be useful to develop a scale evaluating an internalization component of media influence.

Hypotheses

Based on the reviewed literature several hypotheses can be put forward. First, our scale development will likely yield several distinct factors related to a tan appearance that will be revealed through exploratory factor analysis and subsequently validated through confirmatory factor analysis. Based on the

reviewed literature items will be created that assess the dimensions of general appearance reasons for pursuing a tan, social influences from peers parents, awareness of a tan media ideal, and internalization of a media ideal. Items will also be created to assess several other dimensions of appearance. For instance, appearance-related aging concerns of UV exposure will be assessed because research by Jackson and Aiken (2000) suggests that this might be an important dimension of attitudes related to intentions to sunbathe and sun-protect (the authors called this variable perceived susceptibility to photoage), and a recent appearance-based intervention also suggests that aging concerns influence tanning and sun-protection behaviors (Mahler et al., 2003). Moreover, acne-related reasons for tanning will be assessed because previous pilot work related to reasons for tanning suggested that this might be a dimension of importance (as cited by Hillhouse et al., 1997). Finally, we speculate that a tan might be perceived as enhancing physical fitness appearance, so we will include items assessing this domain of attitudes as well. We expect at least some of these dimensions to emerge in the results of our factor analysis.

A second set of hypotheses proposes that the factors derived from the factor analyses will be both reliable and valid. It is expected that each construct will demonstrate adequate internal consistency and test-retest reliability. With respect to validity, the results of the factor analyses will in part support the construct validity of the factors. Furthermore, given the literature base suggesting the importance of appearance in UV exposure behaviors, it is expected that personal appearance attitudes, rather than social influences, will be the best concurrent predictors of UV exposure behaviors and intentions (i.e., attesting to concurrent validity), with social influence factors being highly correlated with personal appearance attitudes. Another study hypothesis that is related to convergent validity of these factors is that there will be medium to large associations with generic body image.

The development and validation of new constructs that predict tanning intentions and behaviors can add to previous theoretical frameworks. Added predictive utility of intentions and behaviors to tan may also serve as the foundation for the construction and/or elaboration of early intervention and prevention programs. As such, the current research will be useful in advancing our knowledge in important arenas of skin cancer prevention.

Study 1: Initial Scale Development Method

Participants

Participants were 149 female students from the University of South Florida. The inclusion criterion for the study was at least one experience sunbathing or using a tanning salon. Participants were recruited from introductory psychology classes and given course credit for their participation. Participant's ages ranged from 17 years to 29 years ($M = 19.44$, $SD = 2.26$). The self-reported racial/ethnic distribution of the sample was 72.9% Caucasian, 15.3% Hispanic, .7% African American, 2.7% Asian American, 4.0% Native American, and 4.0% Other. In order to collect information on participant skin type, a question about skin's response after prolonged sun exposure was asked. Participants reported the following: 4.3% reported Burn only, never tan, 59% reported Burn first, then tan afterward, and 36.7% reported Not burn, just tan.

Measure

Initially, a pool of 27 items was generated. Items were created with the intention of tapping various hypothesized dimensions of a tan appearance. Among the dimensions were general appearance-reasons for pursuing a tan, different social influences (peer, parent, media), internalization and awareness sources of media influence, acne-related reasons for pursuing a tan, physical-appearance-related reasons for pursuing a tan, and appearance-aging concerns related to getting a tan. All items were rated on a five point Likert scale ranging from "Definitely Agree" at a value of five to "Definitely Disagree" at a value of one.

Planned Analyses

Common factor analysis was used to evaluate the shared variance among the items. The number of factors was determined through examining the results of several methods: scree plot, Kaiser rule (number of eigenvalues > 1), percent of variance accounted for, and theory. Factors were extracted using principal axis factoring. An oblique rotation (i.e., promax) was used due to the correlated nature of the factors. Interpretation of the factors was determined through examination of the standardized regression coefficients. Items with relatively low individual loadings, cross-loadings of .30 or higher, or content that was inconsistent with the other items grouped in its factor were removed. Inter-factor correlations and internal consistency reliability were also reported.

Results

The eigen values and the percent of variance that they account for are reported in Table 1. Although a scree plot suggested a one-factor model, the Kaiser rule, percent of variance accounted for and theory suggested that a six-factor model was most appropriate. It should be noted however that the magnitude of the first eigen value relative to the second eigen value (i.e., a ratio of greater than three) suggests that a higher-order factor structure may be present.

Table 1
Eigenvalues and Percent of Variance Accounted For

	Eigenvalue	Percent of Variance
1	9.81	36
2	2.59	9.6
3	2.03	7.5
4	1.66	6.2
5	1.51	5.6
6	1.17	4.3

From the original 27 items 8 were excluded because of low individual loadings, excessive cross-loadings, and/or content that was inconsistent with the other items in the factor. With respect to factor 1, the item "I look healthier with a tan" was removed because it was inconsistent with the other items that loaded on this factor, relating to a more specific health-appearance dimension for pursuing a tan, and it had a relatively low loading of .53. For the same factor the item "I feel more confident in my appearance when I am tan" was removed because it was redundant with item 3 "I tan because it makes me more confident in my appearance". Finally the item "I tan before a big social event because it makes me feel more attractive" was removed because of an excessive cross loading on factor 5 of .31. On factor 2, the items "People in the media (celebrities, movie stars) always seem to have a suntan", "I think that to be a successful TV star, you should have a suntan", and "I want a tan because our society says it is attractive" had low loadings relative to the other items of .56, .44, and .41, respectively. On factor 3, the item "I would like to be tan because my friends say it is attractive" was removed because it had an excessive cross-loading with factor 1 of .31. Finally, on factor 6 the item "I apply sunscreen when I'm tanning to prevent the aging effects of the sun on my skin" was removed because the behavioral nature of the item was inconsistent with the attitudinal character of the other items in this factor, and because of a relatively low loading of .25 and cross-loading with factor 1 of .35.

Table 2 presents the factor loadings of the resulting 19 items. The coefficients for items 1-4 load on factor one, which fall in the domain of general attractiveness reasons for tanning. For factor two items 7 –10 all assess a media component of social influence. Factor three consists of items 13-15, which assess social influence from family and friends. Factor four consists of items 18-20, which assess

physical fitness appearance reasons for tanning. Factor five consists of items 23-25, together these assess acne-specific reasons for tanning. Finally, factor six, consisting of items 28 and 29, tap appearance aging concerns related to UV exposure. Communalities ranged from .59 to .84.

Table 2
Items Used in Studies 1 & 2 and the Exploratory Factor Loadings

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
1. I tan because it makes me more attractive	.74	.14	.01	.05	.09	.06
2. I tan because it makes me look better	.71	.05	.05	.09	.06	.03
3. I tan because it makes me more confident in my appearance	.94	.06	.06	.02	.03	.01
4. The tanner I am the more attractive I feel	.84	.12	.09	.01	.09	.04
5. People think I am more attractive when I have a tan						
6. Having a tan gives me more sex appeal						
7. I wish I had a tan like the people on TV	.17	.86	.06	.13	.13	.00
8. I want to be as tan as people in magazines	.02	.94	.10	.01	.07	.04
9. I try to be as tan as people in movies	.12	.68	.13	.05	.12	.10
10. I would like my skin tone to be darker like people in TV and movies	.24	.60	.10	.01	.10	.08
11. I try to have a tan like famous people I see in magazines						
12. I wish I was as tan as celebrities in the media						
13. I would like to be tan because my friends say it is attractive	.12	.19	.63	.01	.04	.04
14. I try to get a tan because my family members say it is attractive	.12	.11	.90	.02	.07	.08
15. I want to be tan because my family members think it makes me look healthier	.10	.07	.83	.06	.03	.04
16. I try to tan because my friends think it gives me more sex appeal						
17. I want a tan because people in my family think it makes my skin look nice						
18. A tan gives my body the appearance of having more muscle tone	.07	.16	.05	.87	.05	.04
19. A tan helps me look like I'm in good physical shape	.05	.07	.06	.90	.05	.04
20. I tan because it helps me look in shape	.06	.06	.04	.83	.03	.04
21. I look like I have less fat on my body when I am tan						
22. The more tan I am the more physically fit I look						
23. I tan because it helps reduce the amount of acne on my face and body	.14	.05	.05	.06	.69	.10
24. Tan skin helps me cover up acne-related scars	.11	.04	.03	.03	.80	.05
25. I tan before a big social event because it helps reduce the appearance of acne	.03	.10	.01	.01	.94	.04
26. The less tan I am the more I'm worried about my acne showing						
27. When I am tan I feel less concerned about the						

appearance of acne						
28. I don't tan because it will age my skin quicker	.01	.14	.01	.02	.05	.81
29. I'm hesitant to tan because it will wrinkle my skin	.07	.09	.05	.02	.09	.68
30. I'm concerned about getting blemished skin as a result of tanning						
31. I don't tan as much as I would like because I'm worried about premature skin aging						

Notably, internal consistency was good, with estimates ranging from .70 to .91 (see Table 3). Inter-factor correlations were also rather high, with the exception of associations with factor six, which were small (see Table 4). The small sized correlations between the appearance aging concerns factor and the other factors suggest that it may be an independent or distinct factor. In study two factors one through five will be collectively referred to as appearance reasons for tanning.

Table 3- Reliability estimates

<u>Scale</u>	<u>Study 1 alpha</u>	<u>Study 2 alpha</u>	<u>Study 2 test- retest</u>
Factor 1 – General tan attractiveness	.91	.95	.94
Factor 2 – Media influence	.87	.96	.90
Factor 3 – Family/friends influence*	.82	.94	.91
Factor 4 –Physical fitness motives	.90	.95	.91
Factor 5 – Acne-related reasons	.82	.94	.86
Aging concerns	.70	.85	.89
MBSRQ		.89	.96
Indoor tanning intentions			.90
Sunbathing intentions			.88
Sun protection intentions		.70	.87

Table 4. Study two inter-factor correlations

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1	1.0	.63	.38	.52	.43	-.18
Factor 2		1.0	.44	.40	.46	-.11
Factor 3			1.0	.29	.30	.08
Factor 4				1.0	.33	.11
Factor 5					1.0	-.06
Factor 6						1.0

Factor 1- Personal Appearance, Factor 2- Media Influence, Factor 3- Family/friends influence in study 1 and just family influence in study 2, Factor 4- Physical Fitness, Factor 5- Acne-related concerns, Factor 6- Aging concerns.

Study 2: Evaluating the Factor Structure and Construct Validity of Factors related to Appearance Reasons for Tanning

One of the primary goals of this study was to use confirmatory factor analysis to test a model in which the item loadings and factor structure were specified a priori. The results obtained in the exploratory factor analysis informed the structure of the model tested in this study, such as guiding the assignment of loadings onto factors, testing of a higher order factor model, and excluding the appearance aging concern factor from the higher-order model based on low correlations with the other factors in the first study. A second goal of this study was to test the convergence of the appearance factors with intentions and behaviors related to UV exposure and sun protection. In addition to testing the convergence of the appearance factors with variables related to behaviors and intentions, there was also interest in the extent to which each of appearance variables was able to uniquely predict behaviors and intentions.

Method

Participants

Participants were 281 female students from the University of South Florida. Thirty-one of the participants completed the measures twice over a one-week interval in order to evaluate the temporal stability of all the measures in the study. The inclusion criterion for the study was at least one experience sunbathing or using a tanning salon. Participants were recruited from introductory psychology classes and given course credit for their participation. Participant's ages ranged from 17 years to 29 years ($M = 20.46$, $SD = 2.40$). The self-reported racial/ethnic distribution of the sample was 69.6% Caucasian, 13.6% Hispanic, 7.3% African American, 3.7% Asian American, .4% Native American, and 5.5% Other. Participants were asked their skin's response after prolonged sun exposure, 7.5% reported Burn only, never tan, 60% reported Burn first, then tan afterward, and 31.8% reported Not burn, just tan.

Measures

ART-Q. In addition to the 19 items retained from the exploratory factor analysis, two more items per factor were created in order to increase the number of items in each of the subscales, resulting in a total of 31 items. Items were rated on a five point Likert scale ranging from "Definitely Agree" at a value of five to "Definitely Disagree" at a value of one.

The Appearance Evaluation Subscale of the Multidimensional Body Self Relations Questionnaire (MBSRQ-AE). This measure consists of seven items that assess general attitudes toward appearance (Cash & Pruzinsky, 2002). This measure is perhaps the most-widely used and validated index of overall appearance evaluation, with excellent reliabilities ($< .80$) for both genders (e.g., Brown et al., 1990).

Indoor Tanning Behavioral Tendencies. A four-item measure used to assess artificial tanning behaviors (Hillhouse, Turrisi, Holwiski & McVeigh, 1999). A sample item is: "Please give me your best estimate of how many times you have indoor tanned in the *last 12 months*." Participants respond to each item by checking the box that best approximates the range of times they indoor tan (0, 1-10, 11-20, 21-30, etc.). Three other items ask participants to give estimates of their behaviors over the last 6 months, 3 months, and one month, with the same response format. Typically, items form an index of tanning behaviors, which is scored by taking the midpoint value for each range on each item, standardizing each item, and then summing these values across items (e.g., Hillhouse et al., 1999, Hillhouse et al., 2000). These items have evidence of validity and reliability, as indicated by correlating highly with diary reports ($r = .78$), internal consistency (coefficient alpha = $.94$), and test-retest reliability ($r = .95$) (as cited by Hillhouse et al., 1999).

Tanning Salon Intentions. A four-item measure used to assess intention to use tanning salons (Hillhouse & Turrisi, 2002). The measure is modeled after the Indoor Tanning Behavioral Tendencies measure, such that the item structure, response format, and scoring are the same. However, the items were adapted in order to assess intentions rather than behaviors (e.g., "Please give me your best estimate of how many times you *PLAN TO* sunbathe in the *NEXT 12 months*").

Sunbathing Behavioral Tendencies. In order to assess sunbathing behaviors we developed a measure that was modeled after the indoor tanning behavioral tendencies scale. The measure consists of four items (e.g. "Please give me your best estimate of how many times you have sunbathed in the *last 12 months*"). Scoring method is identical to what was described of the indoor tanning behavioral tendencies scale.

Future Sunbathing Intentions. This is a measure we modeled after the future tanning salon intentions scale in order to assess sunbathing behaviors. The measure consists of four items (e.g., "Please give me your best estimate of how many times you *PLAN TO* sunbathe in the *NEXT 12 months*"). Scoring method is identical to that of the future tanning salon intentions scale.

Sun-protection behaviors. This is a five-item measure that assesses sun-protective behaviors (Jackson & Aiken, 2000). A sample item is: "In the past, how often have you used sunscreen with sun protection factor (SPF) 15 or higher on your face when you were in the sun?" Participants respond to the items on a seven point Likert scale ranging from never to always. The measure has good internal reliability (coefficient alpha = $.91$) and test-retest reliability ($r = .77$) (Jackson & Aiken, 2000).

Sun-protection Intentions. This is a measure we modeled after the sun-protection behaviors scale in order to assess intentions rather than behaviors. This measure also consists of five items (e.g., "In the future, *how often do you intend* to use sunscreen with sun protection factor (SPF) 15 or higher on your face when you were in the sun?"). Participants respond to the same Likert scale that is used for items on the sun-protection behaviors scale.

Assessment of Outcome Variables

In order to take a more parsimonious approach to data analysis, given the large number of possible dependent variables, correlations within and between scales were examined with the aim of reducing the total number of outcome measures. For items within the scales examining UV exposure behaviors/intentions, the items were all highly correlated, ranging from $.65$ to $.89$. The lowest correlations across scales were between 12-month estimates and 1-month estimates. Given that interest was in estimates over a longer period of time, we chose to use 12-month estimates instead of estimates over shorter periods of time or a composite of the estimates. The pattern of correlations among the behaviors and intention variables suggest that behaviors over the past year were highly correlated with intentions to

perform the same behavior over the following year (r -range = .84 - .90). Given these high correlations, it made little difference whether behaviors or intentions were used as outcome variables. Intentions were used because they are typically assessed in research in this area. Notably, as can be seen from Table 5 there were relatively low correlations across the three types of intentions (r -range -.28 to .13), suggesting that these were relatively distinct behaviors that should be assessed separately.

Planned Analyses

In order to assess model fit, the chi square statistic, the Goodness of Fit Index (GFI), the Adjusted GFI (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Nonnormed Fit Index (NNFI), and the root mean square error of approximation (RMSEA) were used. Some rules of thumb were used in interpreting the results of the fit indexes. For instance, a CFI greater than or equal to .95 was interpreted as good fit between the model and the data (Hu & Bentler, 1999). For RMSEA, estimates less than 0.05 indicate good fit, estimates in the 0.05 to 0.08 range indicate acceptable fit, estimates in the 0.08 to 0.10 range indicate marginal fit, and estimates greater than 0.10 indicate poor fit (Browne & Cudeck, 1992). Item loadings were also used to evaluate model fit. Internal consistencies and test-retest reliabilities were reported in order to assess reliability of the constructs. Prior to conducting regression analyses, assumptions for regression models were examined, including screening for influential outliers and multicollinearity. The data contained no influential outliers and conformed sufficiently to the assumptions of correlation and regression. Multiple regression analysis was used to test the extent to which variables were able to predict outcomes of interest. A priori power analyses for the regression models suggested that the sample size required for adequate power (.80) to detect a medium sized effect ($f = .15/R^2 = .13$) with alpha set at .05 for eight predictors is 107 (Cohen, 1992).

Results

The overall results of the fit indices in the initial confirmatory factor analysis suggested adequate model fit. Although a few of the fit indexes suggested insufficient model-data fit: $\chi^2(351) = 893.19, p < .05$, GFI = .79, AGFI = .75, several of the other fit indexes suggested adequate fit: NFI = .85, NNFI = .88, CFI = .89, RMSEA = .083 (90% CI .076, .089). In order to improve fit, standardized residuals and the results of the LaGrange Multiplier Test were examined. These statistics suggested a modification of the model via deletion of items 3 and 15, which were the only two items assessing friends influence on tanning ideals. Rerunning the model after deleting these two items moderately improved fit. $\chi^2(270) = 601.38, p < .05$, GFI = .84, AGFI = .81, NFI = .89, NNFI = .93, CFI = .93, RMSEA = .069 (90% CI .061, .076). Given the improvement in fit after item deletion, further analyses excluded these two items. Deletion of these items meant that what was previously a family/friends factor would become solely a family factor.

The loadings of the items onto the lower-order factors were generally large, ranging from .62 to .91 (see Table 2). The loadings of the lower order factors on the higher order factor were also rather high, ranging from .71 - .78 (Table 2). Moreover, as can be seen from Table 3, internal consistencies and test-retest reliabilities were generally high for all variables in this study, ranging from .65-.96. Most of the factors were also highly inter-correlated. Specifically, factors 1-5 had inter-correlations that ranged from .48 to .76, with the aging concerns not significantly correlated with any of the factors, the values ranged from .02 - .12.

Table 5. Correlation matrix among variables in study two

	1	2	3	4	5	6	7	8	9	10
1.General Tan	1									
2.Media Attractive	.61*	1								
3.Family	.50*	.56*	1							
4.Shape	.71*	.54*	.48*	1						
5.Acne	.57*	.59*	.54*	.63*	1					
6.Age	.11	.12	-.01	.15	.08	1				
7.General Body Image	-.06	.15*	-.12	-.10	-.08	-.04	1			
8.Indoor Tanning Intentions	.36*	.21*	.22*	.30*	.30*	-.11	.06	1		
9.Sunbathing Intentions	.35*	.21*	.21*	.33*	.26*	-.08	-.02	.13*	1	
10. Sun Protection Intentions	-.33*	.21*	.22*	.21*	.26*	.24*	.12	.23*	.28*	1

*Correlation is significant at the 0.05 level (2-tailed).

Examination of the correlations (see Table 5) between the five factors related to appearance motives for tanning (those subject to confirmatory factor analysis) and intentions related to UV exposure/sun protection suggest that there are generally small to medium-sized associations. It is especially noteworthy that all five appearance motives for tanning showed consistent and statistically significant positive correlations with UV exposure intentions, as well as negative correlations with sun-protection intentions. With respect to the appearance aging concerns factor, there generally were smaller statistically non-significant negative correlations with UV exposure intentions, but larger positive associations with sun protection intentions. It is also important that general appearance concerns were uniformly unrelated to the tanning appearance factors, as well the intentions related to UV exposure and sun protection.

The next group of analyses examined the extent to which the five factors related to tan appearance motives, aging concerns, and general body image uniquely predicted UV exposure and sun protection intentions. Although we hypothesized that media and family influence variables would not be directly related to the outcomes of interest, because in most models of body image such social influences typically predict personal appearance concerns that in turn predict outcome behaviors, we nevertheless tested this direct influence. When intention to use a tanning salon was the outcome variable, the predictors accounted for a significant proportion of variance, $R^2 = .19$ $F(7, 205) = 6.65$, $p < .05$, $MSE = 332.68$. As can be seen from Table 6, personal appearance reasons for tanning and appearance aging concerns were the only significant predictors of intention to use a tanning salon. When intention to

sunbathe was the outcome variable, the predictors accounted for a significant proportion of variance, $R^2 = .17$ $F(7, 205) = 5.90$, $p < .05$, $MSE = 619.72$.

Table 6. Multiple regression predicting intention to use indoor tanning salons

Predictors	Unstandardized Beta-Weight	Standardized Beta-Weight	T-value	Significance	Squared Semi-Partial r
General Tan	1.08	.37	3.75	.00	.06
Attractive*					
Media	-.18	-.06	.71	.48	.00
Family	-.16	-.06	.35	.73	.00
Shape	.23	.07	.72	.47	.00
Acne	.26	.08	.89	.39	.00
Age*	-.70	-.15	2.31	.02	.02
General	.21	.06	.91	.37	.00
Body Image					

As with intentions to use a tanning salon, personal appearance reasons for tanning and appearance aging concerns were significant predictors, but so was tanning to improve the appearance of physical shape (see Table 7).

Table 7. Multiple regression predicting intention to sunbathe

Predictors	Unstandardized Beta-Weight	Standardized Beta-Weight	T-value	Significance	Squared Semi-Partial r
General Tan	.81	.21	2.05	.04	.02
Attractive*					
Media	-.055	-.01	.158	.88	.00
Family	.19	.03	.31	.75	.00
Shape*	.87	.20	1.99	.047	.02
Acne	.17	.04	.42	.67	.00
Age*	-.86	-.14	2.09	.04	.02
General	.11	.02	.33	.74	.00
Body Image					

When intention to sun-protect was the outcome variable, the predictors accounted for a significant proportion of variance, $R^2 = .26$ $F(7, 205) = 8.49$ $p < .05$, $MSE = 24.24$. Again, personal appearance reasons for tanning and appearance aging concerns were the only significant predictors (see Table 8).

Table 8. Multiple regression predicting intention to sun protect

Predictors	Unstandardized Beta-Weight	Standardized Beta-Weight	T-value	Significance	Squared Semi-Partial r
General Tan	-.32	-.39	4.18	.00	.06
Attractive					
Media	-.00	-.01	.06	.95	.00
Family	.07	.04	.55	.59	.00
Shape	.06	.06	.67	.50	.00
Acne	-.09	.09	1.10	.27	.00
Age	.46	.35	5.75	.00	.12
General	.08	.08	1.26	.21	.00
Body Image					

Discussion

The results of studies one and two suggest that there are multiple dimensions related to a tan appearance and that these are reliable and valid constructs. While the findings generally support the idea that general attractiveness reasons for tanning, media influence, family influence, physical fitness appearance reasons for tanning, and acne-specific reasons for tanning constitute independent dimensions, they also suggest these are part of a higher-order factor related to tan appearance motives. In addition to exhibiting high estimates of internal consistency and test-retest reliability the factors converged in the expected directions. When controlling for the influence of the different appearance factors, the best predictors of UV exposure and sun protection intentions were general attractiveness and skin aging concerns.

There were some surprising findings related to the development of appearance dimensions in this study. First, the skin aging concerns factor was found to be relatively independent of the other factors based on low inter-factor correlations. While on face value this factor should be related to the other appearance factors because the content of the items address appearance concerns, it makes theoretical sense that it does not go along with the other factors because the other factors assess reasons a person would pursue a tan, whereas this factor assesses reasons not to pursue a tan. Another surprising finding was that the items assessing friends influence were inappropriate when forced to fit a specific factor model. The problem appeared to originate from item wordings that had word stems too similar to items assessing other factors. Clearly, future studies should attempt to resolve this problem by exploring different item wordings.

While the convergent validity of the five factors with UV exposure and sun protection intentions were in the expected directions, some findings are especially noteworthy. For instance, it was expected that the factors related to tan appearance motives would be positively associated with UV exposure intentions, but unexpected was a consistent inverse relationship between these factors and sun-protection intentions, however, this is consistent with findings from one previous study (Jackson & Aiken, 2000). Similarly, with respect to the appearance aging concerns factor, the results demonstrated an expected positive association with sun protection intentions, but an unexpected small inverse relationship with UV exposure intentions. Moreover, it should be mentioned that while the media, family, and friends influence factors were not hypothesized to have a direct relationship with the outcome measures in this study because these have been shown to be temporal antecedents to personal appearance concerns based on previous work done in the body image field (e.g., Thompson et al., 1999), our results suggest that nevertheless there was a direct effect. It is also important and somewhat surprising that the

appearance factors did not converge in the predicted direction with a measure of general appearance/body image.

Among the most intriguing finding of this study was that the general attractiveness and appearance aging concerns factors were almost uniformly the only significant predictors of sunbathing, tanning salon use and sun protection intentions after controlling for other appearance factors. It is noteworthy however that several of the variables included in the regression models were not thought to have a direct influence on the outcome variable, such as the influence of the media and family, therefore not finding these factors to be significant predictors is not surprising. These findings have important theoretical relevance because they suggest that general attractiveness and appearance aging concerns uniquely contribute to prediction of intentions related to UV exposure and sun protection, and that both these dimensions are necessary in understanding increasing/reducing skin cancer risk. These findings also have relevance for the design of intervention studies. For instance, several current appearance-based interventions that focus on the damaging effects of UV exposure only assess for effects on intentions to use sunscreen (Mahler et al., 1997; Mahler et al., 2003) or only on reductions of intentions to use tanning salons (Hillhouse et al., 2002), when in theory both outcomes may be affected by the interventions. Moreover, the findings of this study also support the prospective efficacy of an intervention designed to reduce the positive valuation of a tan appearance, similar to the cognitive-behavioral body image intervention strategies that are currently available (Cash, 1997).

Several limitations of this study should be mentioned. With respect to external validity, the exclusive use of female college students who are predominantly Caucasian limits the extent to which these findings can be generalized to other groups of people. It is however important to recognize that this population represents a very high-risk group, both in terms of skin-type susceptibility and use of behaviors that lead to skin cancer (e.g., Cokkinides et al., 2002; Demko et al., 2003). Nevertheless, it would be important for future studies to utilize sampling procedures that are more inclusive of gender, ethnicity, age, and level of education, in order to examine differences across groups. Another important limitation of this study was reliance on cross-sectional data. It would be important to examine the variables longitudinally in order to evaluate how attitudes and behaviors change over time. For instance, it might be fruitful to examine how social pressures (parents, peer, and media) influence personal attractiveness attitudes related to being tan, and in turn how these influence intentions and behaviors to UV expose and use sun protection.

The development and validation of new appearance dimensions in this study that predict tanning and sun protection intentions adds to the theoretical framework previously developed for understanding the complex processes that underlie UV exposure and sun protection behaviors. Moreover, the improvement in understanding of factors that predict intentions and behaviors to tan may also serve as the foundation for the construction of new and elaboration of existing intervention and prevention programs. Future research should work towards developing a better understanding and prevention of behaviors that place people at risk for developing skin-cancer.

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Appendices

Appendix A: Measures

Indoor Tanning Behavioral Tendencies

1. Please give me your best estimate of how many times you have indoor tanned in the last 12 months.

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ 51-60
- _____ 61-70
- _____ 71-80
- _____ 81-90
- _____ 91-100
- _____ > 100

If greater than 100, please estimate exactly how many times you have indoor tanned in the last year: _____

2. Please give me your best estimate of how many times you have indoor tanned in the last 6 months.

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ > 50

If greater than 50, please estimate exactly how many times you have indoor tanned in the last 6 months: _____

3. Please give me your best estimate of how many times you have indoor tanned in the last 3 months.

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ 16-20
- _____ 21-25
- _____ > 25

If greater than 25, please estimate exactly how many times you have indoor tanned in the last 3 months: _____

Appendix A Continued

4. Please give me your best estimate of how many times you have indoor tanned in the last 1 month.

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ > 15

If greater than 15, please estimate exactly how many times you have indoor tanned in the last month: _____

Tanning Salon Intentions

1. Please give me your best estimate of how many times you PLAN TO USE a tanning salon in the NEXT 12 months

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ 51-60
- _____ 61-70
- _____ 71-80
- _____ 81-90
- _____ 91-100
- _____ > 100

If greater than 100, please estimate exactly how many times you plan to indoor tan in the next year: _____

2. Please give me your best estimate of how many times you PLAN TO USE a tanning salon in the NEXT 6 months.

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ > 50

If greater than 50, please estimate exactly how many times you plan to indoor tan in the next 6 months: _____

Appendix A Continued

3. Please give me your best estimate of how many times you PLAN TO USE a tanning salon in the NEXT 3 months.

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ 16-20
- _____ 21-25
- _____ > 25

If greater than 25, please estimate exactly how many times you plan to indoor tan in the next 3 months:

4. Please give me your best estimate of how many times you PLAN TO USE a tanning salon in the NEXT 1 month.

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ > 15

If greater than 15, please estimate exactly how many times you plan to indoor tan in the next month: _____

Sunbathing Behavioral Tendencies

1. Please give me your best estimate of how many times you have sunbathed in the last 12 months

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ 51-60
- _____ 61-70
- _____ 71-80
- _____ 81-90
- _____ 91-100
- _____ > 100

If greater than 100, please estimate exactly how many times you have sunbathed in the last year: _____

Appendix A Continued

2. Please give me your best estimate of how many times you have sunbathed in the last 6 months.

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ > 50

If greater than 50, please estimate exactly how many times you have sunbathed in the last 6 months: _____

3. Please give me your best estimate of how many times you have sunbathed in the last 3 months.

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ 16-20
- _____ 21-25
- _____ > 25

If greater than 25, please estimate exactly how many times you have sunbathed in the last 3 months: _____

4. Please give me your best estimate of how many times you have sunbathed in the last 1 month

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ > 15

If greater than 15, please estimate exactly how many times you have sunbathed in the last month: _____

Sunbathing Intentions

Appendix A Continued

1. Please give me your best estimate of how many times you PLAN TO sunbathe in the NEXT 12 months

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ 51-60
- _____ 61-70
- _____ 71-80
- _____ 81-90
- _____ 91-100
- _____ > 100

If greater than 100, please estimate exactly how many times you plan to sunbathe in the next year: _____

2. Please give me your best estimate of how many times you PLAN TO sunbathe in the NEXT 6 months.

- _____ 0
- _____ 1-10
- _____ 11-20
- _____ 21-30
- _____ 31-40
- _____ 41-50
- _____ > 50

If greater than 50, please estimate exactly how many times you plan to sunbathe in the next 6 months: ____

3. Please give me your best estimate of how many times you PLAN TO sunbathe in the NEXT 3 months.

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ 16-20
- _____ 21-25
- _____ > 25

If greater than 25, please estimate exactly how many times you plan to sunbathe in the next 3 months: ____

Appendix A Continued

4. Please give me your best estimate of how many times you PLAN TO sunbathe in the NEXT 1 month.

- _____ 0
- _____ 1-5
- _____ 6-10
- _____ 11-15
- _____ > 15

If greater than 15, please estimate exactly how many times you plan to sunbathe in the next month: _____

Sun-protection

1. In the past, how often have you used sunscreen with sun protection factor (SPF) 15 or higher on your face when you were in the sun?

- (1) never
- (2) rarely
- (3) less than half of the time
- (4) about half of the time
- (5) more than half of the time
- (6) almost all of the time
- (7) always

2. In the past, how often have you used sunscreen with SPF 15 or higher on every exposed part of your body when you were out in the sun?

- (1) never
- (2) rarely
- (3) less than half of the time
- (4) about half of the time
- (5) more than half of the time
- (6) almost all of the time
- (7) always

3. In the past, how often have you worn a hat when you were in the sun?

- (1) never
- (2) rarely
- (3) less than half of the time
- (4) about half of the time
- (5) more than half of the time
- (6) almost all of the time
- (7) always

Appendix A Continued

4. In the past, how often have you worn protective clothing to cover your body (e.g. long sleeved shirt, pants, or skirt) when you were in the sun?

- (1) never
- (2) rarely
- (3) less than half of the time
- (4) about half of the time
- (5) more than half of the time
- (6) almost all of the time
- (7) always

5. In the past, how often have you tried to stay in the shade when you were outdoors?

- (1) never
- (2) rarely
- (3) less than half of the time
- (4) about half of the time
- (5) more than half of the time
- (6) almost all of the time
- (7) always

Sun-protection intentions

1. In the future, how often do you intend to use sunscreen with sun protection factor (SPF) 15 or higher on your face when you are in the sun?

- (1) never
- (2) rarely
- (3) less than half of the time
- (4) about half of the time
- (5) more than half of the time
- (6) almost all of the time
- (7) always

2. In the future, how often do you intend to use sunscreen with SPF 15 or higher on every exposed part of your body when you are out in the sun?

- (1) never
- (2) rarely
- (3) less than half of the time
- (4) about half of the time
- (5) more than half of the time
- (6) almost all of the time
- (7) always

Appendix A Continued

3. In the future, how often do you intend to wear a hat when you are in the sun?
 (1) never
 (2) rarely
 (3) less than half of the time
 (4) about half of the time
 (5) more than half of the time
 (6) almost all of the time
 (7) always
4. In the future, how often do you intend to wear protective clothing to cover your body (e.g. long sleeved shirt, pants, or skirt) when you are in the sun?
 (1) never
 (2) rarely
 (3) less than half of the time
 (4) about half of the time
 (5) more than half of the time
 (6) almost all of the time
 (7) always
5. In the future, how often do you intend to try to stay in the shade when you are outdoors?
 (1) never
 (2) rarely
 (3) less than half of the time
 (4) about half of the time
 (5) more than half of the time
 (6) almost all of the time
 (7) always

The Appearance Evaluation Subscale of the Multidimensional Body Self Relations Questionnaire

Instructions: Using the scale below, please circle the number that best matches your agreement with the following statements.

Definitely Disagree 1	Mostly Disagree 2	Neither Agree Nor Disagree 3	Mostly Agree 4	Definitely Agree 5
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- | | | | | | |
|---|---|---|---|---|---|
| 1. My body is sexually appealing. | 1 | 2 | 3 | 4 | 5 |
| 2. I like my looks just the way they are. | 1 | 2 | 3 | 4 | 5 |
| 3. Most people would consider me good looking. | 1 | 2 | 3 | 4 | 5 |
| 4. I like the way I look without my clothes on. | 1 | 2 | 3 | 4 | 5 |
| 5. I like the way my clothes fit me. | 1 | 2 | 3 | 4 | 5 |
| 6. I dislike my physique. | 1 | 2 | 3 | 4 | 5 |
| 7. I'm physically unattractive. | 1 | 2 | 3 | 4 | 5 |