

How to Improve Adolescents' Sun Protection Behavior? Age and Gender Issues

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Objective: To explore adolescents' self-reported reasons for sun protection, as adolescents as a group continue to have poor sun protection practices. **Methods:** Seventeen age- and gender-segregated focus groups were conducted in Australian high schools. **Results:** Reasons for using sun protection included personal comfort, appearance, policies, fear of skin cancer, expectations of authority figures, peer actions, and habit. **Reasons**

for not using sun protection included desire for a tan, inconvenience, low perceived risk, and fashion. Age and gender effects were found. **Conclusions:** Avenues for intervention with adolescents include authority figures, peer advocacy, the fashion industry, and improved sun protection products.

Key words: skin cancer, sun protection, adolescents, perceptions, barriers

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Skin cancer is one of the most common forms of cancer in a number of countries, and rates of melanoma have increased significantly during the 1980s and 1990s.¹ In the United States, there are more than one million cases of nonmelanoma skin cancer each year.² Sun exposure and sunburn during the childhood and teenage years have been identified as critical in the development of skin cancers.^{3,4}

In response to the high rates of skin cancer in Australia, during the 1980s and 1990s educational campaigns were mounted to minimize ultraviolet (UV) exposure. National prevention campaigns resulted in high levels of awareness of

prevention in the Australian community.⁵ Although there have been improvements in sun protection behavior among adults, adolescents' sun protection practices remain poor.⁶⁻¹⁴ Some research even suggests that adolescent sun protection practices may have worsened during the 1990s.¹⁵

These patterns of behavior do not appear to result from lack of awareness of the relationship between UV exposure and skin cancer.^{16,17} Studies of students show a rapid decrease in the use of sun protection around the ages of 12-14, to low levels that persist until the age of 18 years.^{10,18,19} Factors that have been associated with greater use of sun protection among adolescents include having fair skin; having a friend who uses sunscreen; having parents who insist on sunscreen use; and having better knowledge, positive attitudes toward sun protection, and less risky behaviors.^{6,7,20}

A relatively small number of intervention studies have been conducted with the aim of increasing adolescents' knowledge, attitudes, and practices with regard to sun protection behavior.^{14,21-24} Interventions to improve levels of sun protec-

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tion among this age-group have shown consistently positive effects on knowledge, but had poor or mixed effects on behavior.^{14,21-23}

Given the persistently low level of sun protection behavior among adolescents, it is necessary to explore in some depth the potential reasons for their behavior. Although a small number of studies have explored these issues in a quantitative format,²⁵ their findings may no longer be relevant for those who have grown up in the context of campaigns emphasizing sun protection. Issues such as age and gender differences also require exploration, given the importance of developmental changes to adolescent behavior.

The theory of planned behavior²⁶ is a useful tool for exploring the relationship between sun protection perceptions and practices. The theory posits that intention and factors that influence intention will predict behavior. Three factors are proposed to influence intention: attitude toward performing a behavior (positive or negative evaluation of the behavior), subjective norms (perceptions about others' views of the behavior), and perceived behavioral control (the perceived degree of control an individual may have over that behavior). Previous quantitative studies of children and adults^{27,30} have demonstrated the utility of this model in relation to sun protection behavior.

The present study aimed to use focus-group methodology to explore adolescents' (12- to 17-year-olds) self-reported reasons for using or not using sun protection when outdoors, including age and gender-related differences.

METHODS

A market research company (Novena Marketing) was contracted to facilitate the focus groups and provide verbatim transcripts. The facilitator (author NP) was provided with a detailed discussion framework, which was developed on the basis of the study aims and previous research. This was further developed during 3 hour-long consultation sessions with other authors. A mock focus group was conducted with 6 female 15- to 16-year-old students to refine the approach.

Sample

Ninety-five students from the school years 7-12 (aged between 12 and 17 years) were recruited through 3 public high

schools in NSW, Australia, which would provide representation from a range of socioeconomic backgrounds. Students were enrolled in the study via year and class groupings, resulting in some age overlaps in some groups.

Procedure

Teachers distributed information and consent letters. Active written consent was required from both student and parent. For students aged 12-16 (years 7-10), the relevant head teacher scheduled the groups during class time. Students aged 16-17 (year 11-12) who wished to participate mailed their signed consent form to the researchers, who scheduled focus group sessions at the market research company outside school hours. An affinity technique, where students recruited same-aged friends, was used to increase numbers in the 16- to 17-year age-group. Students in the 16- to 17-year-old focus groups were reimbursed (AU\$30) for their time.

Focus group discussions lasting from 45 to 60 minutes were held during summer time with 3 age-groups: 12-14, 14-16, and 16-17. Focus groups were segregated by gender as well as age range group. One of the authors (FT) was present as an observer in all the focus groups. Each focus group contained a minimum of 4 and a maximum of 9 students.

At the outset of each group, students completed a brief anonymous questionnaire. Each focus group was audiotaped. Ethics approval was obtained from the University of Newcastle Human Research Ethics Committee and the NSW Department of Education & Training.

Measure and Discussion Guide

The questionnaire included items on age, hair color, skin color, eye color, and usual sun protection behavior. In each group, participants described outdoor activities they were involved in and associated sun protection. This information was summarized visually as a focus for discussion. The discussion framework used has been presented in Appendix A.

Data Coding and Analysis

A thematic analysis was performed by the focus group facilitator (NP), which was audited by the focus group observer/author (FT). Auditing involved verifying that the transcripts were consistent with the extracted themes. Author CP indepen-

Table 1
Reasons for Using or Not Using Sun Protection Common to All
Age-groups and Both Genders^a

	Reason for Using Sun Protection	Reason for Not Using Sun Protection
Attitudes	Heat avoidance (personal comfort) Fear of skin cancer (single theme)	Desire for a tan (fashion/image)
Subjective Norms	Prompts from mother (parent/family action) Prompts when with family (parent/family action) Prompts from teacher/coach (authority fig. actions) Media messages (single theme) Intended length of exposure (context) Absence of cloud/high temperature (context) Occasional peer prompts (peer actions)	Media focus on young (sun protection for younger children) Lack of prompting from parent or authority (absence of prompting)
Perceived Behavioral Control	None	Forgetting (single theme)

Note.
^a Themes in parentheses

dently analyzed the data by generating inductively derived codes, which were subsequently used to draw out themes. Both sets of coding were in agreement on the primary themes, with some additional depth of detail extracted by CP. The more detailed analysis was used.

The theory of planned behavior²⁶ was used as a framework for structuring and interpreting participants' responses as previous quantitative studies²⁷ have demonstrated the utility of this model in relation to sun protection behavior.

Respondents' views on the use of sun protection were coded in terms of reasons for using sun protection and reasons for not using sun protection and grouped using factors from the theory of planned behavior;²⁶ ie, attitudes toward the behavior, subjective norms, and perceived behavioral control. Each age or gender category was coded as nominating a given reason if that reason was nominated in any one of the groups within that category.

RESULTS

Sample

Forty-four females and 51 males participated in the 17 focus groups. Three focus groups were conducted in each of the 3 age-groups, with the exception of 14- to 16-year-old girls, where only 2 groups

were able to be conducted. Due to the groups' being segregated by school year rather than chronological age, the groups contained overlapping age ranges. The majority of the participants described themselves as having medium skin and light brown or dark brown hair. Most groups contained at least one student with fair or red hair and fair skin. Most participants reported exposure to the sun for at least 15 minutes between 10 AM and 2 PM at least once per week during the previous summer. During such exposure the majority of the participants reported using sunscreen or clothing as sun protection sometimes or more often, whereas approximately half reported wearing a hat sometimes or more often. The average number of participants per group was 6.

Reasons for Current Use of Sun Protection

Table 1 lists the reasons for using sun protection that were common to all 3 age-groups and both genders. Table 2 lists the reasons in which there were variations on the basis of age or gender. Tables 1 and 2 are mutually exclusive.

Attitudes

Personal comfort. Avoiding heat was raised as a motivating factor by all groups.

Table 2
Reasons for Using Sun Protection That Differed by Age or Gender

Reason	Males			Females		
	12-14	14-16	16-17	12-14	14-16	16-17
ATTITUDES						
Personal Comfort						
Avoid pain of sunburn	✓	✓	✓	✓	✓	
Avoid glare/headache	✓	✓	✓	✓		✓
Appearance						
Avoid peeling	✓	✓		✓	✓	✓
Avoid moles/freckles	✓			✓	✓	✓
Avoid facial burn				✓	✓	✓
Avoid wrinkles					✓	✓
Wear what "suits"					✓	✓
Wear what is "cool"/others wear		✓	✓	✓		
Experience						
Personal contact with skin cancer case (self or close other)	✓	✓	✓	✓		✓
Previous severe sunburn		✓	✓		✓	✓
Improved Performance						
Protective gear preventing heat or glare impeding sporting performance	✓		✓			
Own Skin						
Type	✓	✓	✓	✓		
Current sunburn		✓	✓			
SUBJECTIVE NORMS						
Parental/Family Action						
Prompts on departure	✓	✓	✓			✓
Punishment/ restrictions for non compliance	✓	✓	✓	✓		✓
Provision (in bag) of appropriate protective clothing or sunscreen	✓	✓	✓	✓		
(Re)application of sunscreen	✓					
History, frequency, consistency and multiple person prompts	✓	✓	✓	✓	✓	
Presence of family results in choosing /bringing shade, less activity,						
bag for protective gear	✓	✓	✓	✓	✓	
Prompts from other family			✓			✓
Mother not tanning						✓
Context						
At beach or soccer/cricket	✓	✓		✓	✓	
Actions of others nearby		✓	✓			
Policy						
Sporting uniform	✓	✓	✓			
Provided sunscreen		✓	✓			
Peers						
Female friends encouraged use	✓					
Closer friends encouraged use	✓					
Sharing of sunscreen by peers	✓	✓	✓	✓		✓
Sight of sunburn on peers		✓	✓	✓	✓	✓
Follow actions of peers		✓	✓	✓	✓	
Use more likely without peers			✓	✓		
PERCEIVED BEHAVIORAL CONTROL						
Habit/Preparation	✓		✓	✓	✓	
Presence of Shade	✓	✓	✓			
Financial Provision			✓			

All groups with the exception of females aged 16-17 raised avoiding the pain of

sunburn as a motivating factor for using sun protection. All groups with the excep-

Table 3
Reasons for Not Protecting Self Against Sun That Differed by
Age or Gender

Reason	Males			Females		
	12-14	14-16	16-17	12-14	14-16	16-17
ATTITUDES						
Temporary Nature of Burn	✓	✓	✓	✓		
Inconvenience						
Reapplication of sunscreen or change of clothing	✓	✓		✓		✓
Discomfort (protective fabrics, sunglasses)	✓		✓	✓		✓
Heat of clothing/ protection		✓		✓		✓
Carrying of protective gear	✓	✓	✓			✓
Feel of sunscreen	✓	✓				
Sting of sunscreen (in eyes)	✓			✓		
Perceived Risk						
No need for protection in some places		✓				
Long-term risk not salient		✓	✓			
Perception of cancer as easily treated						✓
Use of protection only if visibly burnt				✓		✓
SUBJECTIVE NORMS						
Peer Actions						
Wearing of what team wears		✓	✓			
Timing based on peer availability		✓	✓	✓		
Wearing of what peers wear			✓			
Focus on fun/social interaction				✓	✓	✓
Desire to remain at beach for whole day				✓		✓
Fear of ridicule/embarrassment			✓	✓	✓	✓
Policy/Uniform						
Uniform with short sleeves & shorts		✓	✓			
Uniform with no hat		✓	✓			✓
Fashion/Image						
Desire to wear only what is fashionable		✓	✓	✓	✓	✓
Images of famous people (tan no burn)		✓				
Items only fashionable in some places			✓			
Hats spoiling hairdo					✓	✓
Desire for even tan					✓	✓
Sun Protection for Younger Children						
Parental focus on younger siblings	✓			✓		
Coaches' focus on younger peers		✓				
Absence of Prompting						
Absence of parent to enforce	✓					
Lack of school policy				✓	✓	✓
PERCEIVED BEHAVIORAL CONTROL						
Impracticality						
Not practical in water	✓	✓	✓			
Theft of unattended items	✓	✓	✓			
Timing of best waves			✓			
Lack of shade at beach/sport	✓	✓	✓			✓
Sunglasses awkward			✓			
Timing of public transport			✓			
Effort Required						
Effort of reapplication/dressing		✓		✓	✓	✓
Planning & preparation required		✓	✓	✓		
Laziness			✓	✓	✓	
Scheduling						
Preference for visiting beach near midday	✓		✓	✓		
Financial Cost of Sunscreen						✓

tion of females aged 14-16 nominated avoiding glare as a reason for their use of

sun protection.

Appearance. All groups nominated ap-

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pearance as a reason for their use of sun protection. All groups other than males aged 16-17 nominated avoiding peeling skin. Male groups aged 14-16 and 16-17 and female groups aged 12-14 nominated wearing what their peers wore, whereas all female groups nominated the need to avoid the appearance of sunburn. Females aged 14-16 and 16-17 years nominated the need to avoid moles and the desire to avoid wrinkles. Females aged 14-16 and 16-17 reported that they wore sun protection where it "suited" their appearance.

Personal contact with skin cancer and sunburn. With the exception of females aged 14-16 years, all groups noted the experience of having personal contact with a skin cancer survivor as motivating their use of sun protection. With the exception of the 12- to 14-year-old groups, previous severe sunburn was reported to provide motivation for sun protective behavior. Recent sunburn was also nominated as a reason for using sun protection by males aged 14-16 and 16-17.

Other attitudes. Males aged 12-14 and 16-17 years reported that improved sporting performance provided motivation to protect their eyes from the sun. All male groups and females aged 12-14 nominated having a fair skin type or having freckles as a motivating factor in their use of sun protection. A fear that they would develop skin cancer was nominated by all groups as a factor motivating them to use sun protection. Some groups (12- to 14-year-old males and females, 16- to 17-year-old males) also nominated the fear of skin cancer removal as a motivating factor.

Subjective Norms

Actions of parent/family. Prompts from a parent or family member, particularly a mother, were nominated by both genders and all age-groups as motivating factors for the use of sun protection. This factor was nominated first and with greater emphasis than other factors for the 2 younger age-groups.

FACILITATOR: *When you're out in the sun what makes you protect yourself from the sun?*

ALL: *Mum!* [laughter]

FACILITATOR: *How does she [mum] try to get you to protect yourself against the sun?*

A: *She does the mum thing.*

B: *You've got no choice but to do it – she grounds you*

C: *She grabs your arm.*

D: *When I'm packing she'll make sure I've got the sunscreen in the bag and then when I'm ready to go, she'll make me put it on again and put zinc on my lips.*

[Males Aged 12-14]

All groups noted they were prompted to use sun protection when with the family, whereas most reported that their mothers prompted them on departure from the house or placed sun protection in their bags. All groups other than 16- to 17-year-old females reported being out with their families meant sun protection was provided for or encouraged. These groups also noted that the history, frequency, and consistency of family prompts resulted in independent use of sun protection measures. All groups other than older females reported that a desire to avoid restrictions imposed by parents resulted in their choosing to use sun protection.

The 14- to 16- and 16- to 17-year-old male groups noted that parental prompting was perceived as "annoying." For the 16- to 17-year-old groups (both male and female) parental actions were given less emphasis (in terms of discussion time and level of animation). The older age-groups also noted that they received prompts from family members other than their parents. Females aged 16-17 years had the least regard for parental influence and also mentioned that having a mother who did not get a tan motivated their use of sun protection.

FACILITATOR: *Do your parents still have influence over you?*

ALL: *Yes.*

A: *Yes, usually you listen to what they are saying. It makes it easier if you do what they want.*

B: *You can just agree with them. They usually say stuff to help you out so you put it on.* [Males Aged 16-17]

C: *You don't exactly get into trouble – they just annoy you about it. They just don't leave you alone, saying you should put sunscreen on. It annoys you so you make them happy so they leave you alone.*

[Male Aged 16-17]

Parental expectation. Both males and females aged 14-16 and 16-17 nominated parents' expectations as a positive influ-

ence on use of sun protection. These groups reported they were expected to know how to protect their skin and trusted to take action. Females aged 16-17 years reported parental expectations took the form of allowing them to make a "personal decision" whether to use sun protection.

A: I couldn't be bothered putting on sunscreen; then I started listening to my mum when I got a bit older and started to look after myself a bit better, I suppose.

[Male Aged 16-17]

B: When you are at that age at primary, sometimes you like to do the opposite to what you are told. That's how it is. But as you get older, you reason with yourself and realize that it's stupid.

[Male Aged 16-17]

Authority figures. All groups reported that prompts or directives from teachers and coaches had a positive impact on use of sun protection. Teacher prompts were mentioned in conjunction with swimming carnivals and school excursions, but rarely in relation to daily activities. Females aged 14-16 and 16-17 also mentioned notes from their school for outside-school activities had a positive impact on use of sun protection on those occasions.

Context. For the 2 younger age-groups, sun protection was more likely to be used when going to the beach or playing sports such as soccer and less likely for activities such as swimming in the backyard pool or playing sports such as baseball where sun protection was not encouraged. The older males and females were less likely to use sun protection when going to the beach. For beach-going females using sun protection was seen as inconsistent with their intention to tan.

All groups noted expectations regarding the length of time that would be spent outside affected use of sun protection. Approximately an hour was mentioned as the length of time before sun protection was likely to be used. The absence of cloud, the current temperature, and a lack of breeze (ie, a feeling of being hot already) were mentioned as influencing sun protection use. The actions of adjacent people were also nominated by males aged 14-16 and 16-17 as influencing use of sun protection.

Peer actions. All groups noted that

occasional prompts from peers resulted in use of sun protection (primarily sunscreen), either others' offering sunscreen or the sight of sunburn on peers. The older 2 male age-groups and the younger 2 female age-groups reported they followed the actions of peers when using sun protection. The 16- to 17-year-old males and the 12- to 14-year-old females reported being more likely to use sunscreen when alone than with peers.

Other factors. The males in each age-group nominated policies in sporting teams as a factor motivating use of sun protection. This was primarily where the uniform provided protection or the sporting club provided sunscreen close to the field of play. All groups nominated media messages as a reminder to wear a shirt, sunscreen, and hat for sun protection. However, this message was not perceived as having a strong influence on current behavior.

Perceived Behavioral Control

Males aged 12-14, males aged 16-17, females aged 12-14, and females aged 14-16 reported having developed a habit of protecting their skin when younger resulted in current use of sun protection. Having a bag prepared with sun protection was also nominated as a reason for using sun protection outdoors. Each of the male age-groups indicated they used shade where available. Males aged 16-17 reported that sporting clubs had been provided with funds for the purchase of hats, and this influenced the availability of hats when playing sport.

Reasons for Not Using Sun Protection (Summarized in Tables 1 and 3)

Attitudes. Each of the male age-groups and the females aged 12-14 reported the apparent effects of sunburn were temporary, producing a short-term increase in use of sun protection. All groups reported their desire for a tan resulted in not using sun protection. This desire was expressed most strongly by the 16- to 17-year-old groups for both genders. The older females also reported that it was a matter of personal choice, to achieve a particular look.

With the exception of females aged 14-16 years, all groups perceived sun protection as associated with inconvenience and discomfort, and it was used less often as a result. Having to reapply sunscreen

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and repeatedly put on or take off hats and clothing in order to swim was considered a disincentive to use. All male groups nominated the inconvenience of carrying sun protection as a reason for nonuse.

Females aged 12-14 and 16-17 years reported they were often not concerned about sun protection unless they could see or feel their skin burning. Females aged 16-17 years also reported an expectation they would inevitably develop some form of skin cancer, but it would be removed and not be fatal:

I think I'll get cancer, I know I'll get cancer, because I don't care about protection now. I won't die of cancer - I'll just have a few things taken out.
[Female aged 16-17]

Males aged 14-16 and 16-17 reported the risk of skin cancer was in the long term, and their focus was on more immediate matters. Males aged 14-16 also reported they felt protected in some environments such as in the water.

Subjective Norms

Peer actions. Males aged 14-16 and 16-17 years noted they tended not to use sun protection when peers on sporting teams were not using it. Females in all age-groups nominated the social aspect of their activities resulting in their forgetting to use sun protection and the desire to remain at the beach with friends for the entire day. Fear of embarrassment, ridicule, or judgment from peers was nominated as a reason for not using sun protection by females of all ages and males aged 16-17 years. Males aged 14-16, males aged 16-17, and females aged 12-14 indicated the need to conduct their activities around the availability and interest of peers limited their ability to engage in sun protective behavior.

A: ...when you're at the beach with friends, you're playing and you don't really notice.

B: You're having too much fun.

C: You have to spend the whole day there.
[Females Aged 12-14]

Policy. Males aged 14-16, males aged 16-17, and females aged 16-17 indicated sporting uniforms for particular sports did not provide adequate sun protection. With the exception of males aged 14-16, all groups mentioned the lack of a school

policy that encouraged sun protection behavior, in comparison to "no hat, no play" policies experienced in earlier schooling.

A: They used to do it in primary school. If you didn't have a hat you had to sit in the shade, couldn't go out in the sun. Before we went out at lunch we all had to put on sunscreen...At my school you just don't do it anymore.

B: At my primary school... if you didn't have a hat you couldn't play. I've never seen that at high school.

C: Apart from swimming carnivals. Teachers walking around with sunscreen.

B: Unless PE teachers tell you to. But other teachers don't really care.

[Males Aged 16-17]

Fashion/Image. All groups other than males aged 12-14 years nominated factors relating to image or fashion as reasons for not using sun protection. Females and males aged 16-17 noted the importance of only wearing what is considered to be fashionable, including the lack of fashionable hats or hats themselves not being fashionable. Females aged 14-16 and 16-17 nominated the need for an even tan and the negative effect of hats on hair.

You don't see anyone wearing wide-brimmed hats. Except as a joke.

[Male aged 16-17]

The requisites of fashion and image also preclude among most the use of "fake" tanning lotions to achieve a tan without exposure to UV rays. The use of such lotions is associated with fakes/people pretending to be something they are not. Additionally, such lotions were seen as variable in effectiveness.

Focus on younger children. All groups noted media messages appeared to be focused on young children. Males and females aged 12-14 noted that their parents or families focused their attentions on protecting the skin of younger children:

I watched my little sister grow up and every summer for the past 4 years mum has been grabbing (her) and putting her up on the bench and putting sunblock across her face.

[Male aged 12-14]

Absence of Parental/Authority Figure Prompts

Groups in the 12-14 year age-group nominated the absence of a parent to prompt their use of sun protection was a factor on the occasions when they did not use sun protection. All groups nominated the lack of prompting from authority figures such as fathers, teachers, and coaches as a reason for not using sun protection.

FACILITATOR: *But you're not wearing sunscreen when you play soccer?*

A: *You don't really think about it.*

B: *No, our parents sometimes say 'put sunscreen on' but not the club.*

[Males aged 16-17]

Perceived Behavioral Control

All male groups and females aged 16-17 nominated practical problems as a limitation on ability to use sun protection, including while spending long periods of time while in the water, the lack of shade at the beach, and the likelihood that any unattended items would be stolen. All groups noted that time and effort was required to engage in sun protection, particularly the application and reapplication of sunscreen and the need to plan ahead in order to have necessary items. Most groups indicated their own "laziness" meant they did not use sun protection. All groups noted that they forgot to use sun protection on some occasions.

Males aged 12-14, males aged 16-17, and females aged 12-14 reported the desire to schedule activities when friends were available meant they could not avoid outdoor activity during the middle of the day. The cost of sun protection was raised by 16- to 17-year-old participants. Males reported they would not take expensive items to the beach due to the risk of theft.

DISCUSSION

Adolescents' attitudes toward sun protection indicated awareness of the risk of skin cancer, as identified by other Australian studies.^{16,18} However, the impact of awareness was ameliorated by a reliance on immediate sensations (eg, feeling their skin burning or feeling cool while in the water), the distant timing of effects, apparent short-term impact of sunburn, and the perception that skin cancer is inevitable and easily remedied. Personal contact with someone who had experienced a

skin cancer was common. However, it is likely that much of this contact relates to nonmelanoma skin cancers (the more common and less lethal forms of skin cancer), allowing adolescents to discount the potential seriousness of their UV exposure.

Another important aspect of adolescent attitudes towards sun protection was that of personal comfort and convenience. Although the sensations of heat and glare were reported as important cues to the use of sun protection, some protective behaviors were perceived as inconvenient, particularly the need to reapply sunscreen. The unwillingness of males in particular to carry sun protection suggests that males are unlikely to have an adequate level of sun protection unless sun protection products are readily accessible at outdoor venues.

The need to maintain an acceptable appearance featured strongly in adolescents' attitudes toward sun protection. Maintaining a fashionable appearance was of major importance to older adolescents, presumably as a result of increases in socialization and focus on body image with age. The use of hats and long-sleeved clothing clearly will not be adopted by these groups unless they are incorporated into current fashion and carried by popular labels.

Subjective norms relating to parental actions and expectations figured strongly for the younger students. The parent-focused sun protection campaigns in Australia during the 1980s and 1990s may have laid a foundation for family-based encouragement of sun protection which is still accepted to some degree by adolescents. The data are in accord with a US study indicating that parents' frequent insistence on use of sunscreen is independently associated with sunscreen use by 11- to 18-year-olds.³¹ One cause for concern is the apparent attitude of older girls that sun protection is a matter of personal choice, which may be a result of their increasing independence.

The study participants perceived a mismatch between sun protection policies in the primary and high school environments. Although a "no hat, no play" policy may not be appropriate for adolescents, the study participants appeared to interpret the lack of emphasis on sun protection at school as a lack of concern about this aspect of their health. Sun protection policies in some

sporting codes such as cricket need to be extended to all sports.

The comments regarding peer influences suggest that adolescents do not actively encourage or discourage sun protection, other than in terms of supporting the importance of fashion. Participants' views on media campaigns demonstrate that the mnemonic effect of the previous child-focused campaigns is enduring. However, the lack of age-appropriate media messages for adolescents was perceived as indicating that sun protection was less important for them.

The desire for a tan and a dislike of pale skin remained a strong motivator for avoiding sun protection, particularly among older adolescents, which is consistent with previous research.⁸ There have been some advances in recent decades in terms of a reduced proportion of adolescents reporting a preference for a moderate or dark tan³² and attributing positive qualities to a tan.¹⁵ This is particularly so for older females and appears to be linked to the views and actions of the female parent.

Participants' responses regarding perceived behavioral control over sun protection practices suggested that in general adolescents saw sun protection as within their control, but felt that the effort required to be consistent in the use of sun protection required too high a level of motivation. Some aspects outside of their control included the lack of shade at the beach, the lack of security for any items taken with them to the beach, and the financial cost of some forms of sun protection. Developing positive habits and having a bag continually prepared with sun protection products were also perceived as important.

The data also support the usefulness of the theory of planned behavior²⁶ in conceptualizing adolescent sun protection behavior. Just as quantitative surveys of adults and children²⁷⁻³⁰ have supported the association of attitudes, subjective norms, and perceived behavioral control with sun protection behavior, the adolescent participants' responses indicated that each of these factors was perceived to be a relevant influence. As the relative importance of these factors appears to vary between adults and children and by type of sun protection,²⁷⁻³⁰ a quantitative exploration of such associations in an adolescent population would be useful to inform sun protection campaigns.

CONCLUSIONS

The study data indicate a number of avenues for possible intervention including

● **Media campaigns:** Increased use of age-appropriate media campaigns are required that increase the salience of the risk, combat self-exemptions (eg, skin cancer need not be serious), and redirect the focus away from immediate sensations or feelings as indicators of their risk.

● **Authority figures:** It is important to support and increase the impact of parents, teachers, schools, sporting clubs and coaches in encouraging and supporting sun protection in adolescents. Improving the implementation of sun protection policies in high schools requires attention.

● **Peer support and advocacy:** Programs that impact adolescents as a group and recognize the importance of peer behavior are required. Although addressing peer issues in isolation is not likely to be effective, the views and actions of their peers are so important to this group that they must be addressed. Social aspects such as sharing sunscreen and looking out for close others who may be unprotected should be incorporated.

● **Fashion:** Continued attempts need to be directed toward the perception that tanned skin is more attractive than pale skin. Partnerships with the fashion and media industry continue to be important in maintaining the gains made in this area and making progress towards valuing natural skin tone.

● **Sun protection products:** A creative approach is required to developing sun protection products that are compact, comfortable, and fashionable. Improvements in sunscreen wearability and longevity are also required.

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Appendix A Discussion Framework Summary

Discussions focused first on sun protection issues, then tanning-related issues, and last on fake tanning lotions.

Q: I'd like to start by talking about spending time in the sun today. I want to begin by focusing on more specific issues according

Q: (For each outdoor activity): How often do you do this? How long do you spend doing this? Is this something you do on the spur of the moment or do you plan or prepare for it? (If they plan or prepare) What do you have to do to prepare for ...?

Q: What kind of things, if any, do you do to protect yourself from the sun when [insert activities]?

Q: What makes you think of protecting yourself from the sun when [insert activities]? Is there anyone else who makes you think of protecting yourself from the sun when ...? Who?

Q: When you do protect yourself from the sun, what are some of your reasons for doing this?

Q: For those times that you didn't protect yourself from the sun, what were some of your reasons for not doing this?

SUN TANNING

Q: What things do you like about a suntan?

Q: What do you think when you see someone who has no suntan at all?

Q: How much of a suntan do you like to have?

Q: Why do you prefer a [light / medium / dark] suntan?

Q: What makes you want to have a suntan?

Q: Which of these things are most important for making you want a tan?

Q: Thinking back to last summer, can you tell me what you did to get the tan you wanted?

Q: When you were sun baking, how often did you apply sun screen?

Q: What were your reasons for applying sunscreen [once / every hour / only reapply after swimming] when you were sun baking?

IF APPLICABLE:

Q: What were your reasons for not applying sunscreen when you were sun baking?

Q: Were there any other things you did when sun baking to protect yourselves?

USING FAKE TANNING LOTIONS

Q: What do you think of fake tanning lotions?

Q: Have you ever used a fake tanning lotion?

IF YES, PROBE WITH

Q: When / under what circumstances did you use a fake tanning lotion?

IF NO, PROBE WITH

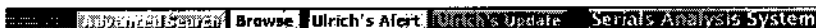
Q: What are your reasons for not using a fake tanning lotion?

Q: Would you prefer to use a fake tanning lotion instead of getting a suntan?

IF YES, PROBE WITH

Q: What are your reasons for this?

Q: Thinking about what we have talked about today, can you give us some advice about what would help other teenagers like yourself to protect themselves from the sun more?



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