

Understanding the behaviour of the target market: What do adolescents think about when asked questions about their behaviour in the sun?

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Abstract

We undertook a project to develop a psychometrically sound instrument measuring adolescent sun-related behavior for use in the evaluation of a social marketing program. During the preliminary stages, we conducted a pilot study to test the face validity of the instrument with adolescents. Think-aloud sessions were completed with 24 adolescents. Results identified gaps in our understanding of adolescent sun-related behavior. Adolescents interpreted ‘tanning’ as specifically lying at the beach in the sun, however also reported behaviours to ‘get a bit of sun’, suggesting adolescents and researchers have different interpretations of key terms. The study highlights that use of the think-aloud technique can improve understanding behaviours of the target market and improve the validity of measures of adolescent sun-related behaviour.

Background

Skin cancer is a major public health concern. Australia and New Zealand combined has the world’s highest rates of melanoma, 36.6 per 100,000 (Ferlay *et al.* 2010). In Australia, social marketers have recently focused on improving the sun protection behaviors of the notoriously hard-to-change group, adolescents. Sun exposure during the adolescent years is an important determinant of future melanoma risk (Weinstock *et al.* 1989, Cust *et al.* 2011, Kricker *et al.* 2007, Whiteman, Whiteman and Green, 2001). Unfortunately however, adolescents are a group who spend more time in the sun and engage in fewer sun protection behaviors than adults (The Cancer Council NSW and NSW Health, 2007). Furthermore, available evidence suggests sun protection practices among Australian adolescents have declined significantly over time. Livingston *et al.* (2007) reported a significant increase in the percentage of students who did not routinely practice any of the three protective behaviours (wearing a hat, using sunscreen, wearing clothes covering the body) from 18% to 23% in the period 1993-1999.

Interestingly, excessive sun exposure among adolescents continues to occur despite high levels of knowledge about the hazards of sun exposure. Numerous studies have noted a poor correlation between increased knowledge on the dangers of sun exposure and intentions to sun protect (Arthey and Clarke 1995; Lower, Girgis, Sanson-Fisher, 1998; Mermelstein and Reisenberg, 1992; Cockburn *et al.* 1989). This gap between knowledge and behaviours highlights the challenge for social marketers in changing the behaviours of adolescents. Adolescents are identified as a priority group for social marketing campaigns to improve sun protection (The Cancer Council NSW and NSW Health, 2007). As new campaigns are developed there is a need to ensure measures used to evaluate such programs are valid and reliable.

Self report measures of behaviour are the most widely used measures of sun protection behaviour (Saraiya *et al.* 2004; Glanz *et al.* 2005). However, the ability of surveys to obtain accurate information depends in part on their understandability and appropriateness for the target audience (Carbone *et al.* 2002). Measures of adolescent sun exposure need to be appropriate to the specific needs of the adolescent group. Cognitive interviewing methods offer one approach to understanding how a survey item is understood and how answers are generated. Cognitive interviewing methods are traditionally used to assist improve the reliability and validity of questionnaires through reducing systematic error in recall (Nielson *et al.* 2002, Beatty and Willis 2007, Ward and Traweek, 1993, Ouimet *et al.* 2004). One such cognitive interviewing technique is called the ‘concurrent think-aloud interview’ whereby respondents think aloud when answering survey questions and responses are probed extensively for details about how they arrived at their answers (Jobe and Mingay 1989).

We undertook a project to develop a psychometrically sound instrument measuring adolescent sun-related behaviour to be used in the evaluation of social marketing program targeting adolescents. During the preliminary stages of development, the research team pilot tested the instrument with the target market, adolescents to test the face validity of the instrument.

Method

Participants

A convenience sample of 24 adolescents was identified through academic staff and students from a local university in Wollongong on the south coast of New South Wales, Australia. Participants had to be aged between 12 and 18 years and agree to participate in a 1 hour, audio-taped session called a ‘think aloud session’. The sessions were held on the university premises during school holiday time. Participants were made aware prior to providing their written consent that the session would be audio taped and that the survey related to sun protection. Parental consent was also obtained from each participant. Participation was voluntary, with each participant made aware prior to the commencement of the session of their option to withdraw at any time. Ethics approval for the study was obtained from the University’s Human Research Ethics Committee. All participants were provided with a \$10 gift voucher for their time. There were 11 females and 13 males who participated in think aloud sessions. Their ages ranged between 13 and 18 years, and all participants were currently enrolled in secondary school.

Survey Instrument

The survey instrument contained 38 questions about sun related behaviours including specific sun exposing and sun protecting behaviors that were considered relevant to ultraviolet (UV) exposure among adolescents. Different prompts were used to recall behaviours, this included recall of behaviours when outside last weekend; behaviours during summer in general; behaviours when at school; and behaviours during the summer holidays. Specific sun protection behaviours assessed included: wearing a broad brimmed hat, wearing a shirt with sleeves, wearing SPF 30+ sunscreen, wearing sunglasses, and staying in the shade. The sun protection behaviour items included in the survey were based on the recently recommended standardised US measures of adolescents’ habitual sun protection during summer (Glanz *et al.* 2008). Sun exposing behaviours included in the survey were conceptualised as those behaviours that maximise exposure of the skin to the sun with the primary purpose of achieving a biological response such as a tan (Dobbinson and Hill, 2004). Five new items

were developed to explore sun exposing behaviours of adolescents; these related to time spent tanning (two items), as well as delaying, reducing or avoiding sun protection.

Cognitive Interviews

The purpose of the cognitive interviews was to determine the validity of the survey by probing respondents to see if they interpreted the questions in the intended manner, to observe how that worked through the items; to assess if response categories and wording were appropriate; and see if there were items missing relating to behaviours they performed in the sun that were not captured by the survey instrument. During the session, the session facilitator followed a pre-determined written protocol which included key points for discussion. Notes were kept by the facilitator for each session as well as an audio recording of the session.

Data Analysis

Audio recordings from interviews were transcribed and notes were reviewed by the interviewer for accuracy and completeness. Interviewer notes were also examined to add detail to the transcripts. Next, the interviewer conducted a content analysis and responses were examined for emerging themes across interviews. Content analysis is a scientific, objective, systematic, quantitative, and generalisable description of communications content. (Kassarjian, 1977). Transcripts were reviewed and coded by hand.

Results

Three key themes emerged in the analysis of data. These related to: issues with recall of behaviours; differences in the interpretation of key terms than what was intended; and, gaps in survey regarding the behaviours assessed.

Issues with recall

In response to questions relating to summer sun exposure, participants commented that the term ‘summer’ was too difficult to respond to given that it referred to such a broad range of times i.e. weekend, school time and holiday time.

“It’s kind of hard with the first question if you don’t really know if you are talking about holidays or if it’s the weekend or school” (Male 15 yrs)

Issues were also encountered with recall of sunburns last summer. Participants reported difficulty recalling exactly how many sunburns they had experienced last summer as well as being unsure as to the severity of redness that counted as ‘sunburn’.

“Sunburns last summer, I think I had two really bad ones other than just being a bit red, a little bit red doesn’t really count does it?” (Female 16 yrs)

Interpretation of key terms

When considering the term ‘sun protection’ participants clearly interpreted the term as referring to the use of sunscreen. More specifically, sun protection was not interpreted as including hat use, wearing sunglasses or wearing protective clothing.

“I interpreted sun protection as just sunscreen” (Male, 14 yrs)

Participants suggested that questions about sun protection behaviours could be changed so as to provide more detail after the term ‘sun protection’ to remind respondents of what was included.

“You could have in brackets after protection (hat, clothing, sunscreen) just so people know it includes those things.” (Male, 16 yrs)

When thinking about the behaviour of ‘tanning’ participants were very context specific with the interpretation that tanning only occurs at the beach, when lying on a towel and exposed to full sun.

“You’re on a towel and not moving from the towel for that amount of time.” (Female, 15 yrs)

Additional to being context specific, tanning was also viewed as a deliberate activity that was time specific.

“So like, you might be at the beach for 3 hours but you’re not going to put down 3 hours because you didn’t spend 3 hours actually tanning, you might put down one or something like that.” (Male 16 yrs)

Gaps in the survey regarding the behaviours assessed

Through probing responses by the facilitator it was identified that most participants did not identify themselves as ‘tanners’ with the majority of participants reporting negative beliefs about ‘tanning’.

“You don’t want to be seen to be doing it with the purpose of tanning” (Male, 17 yrs)

“I hate sunbaking but I would like to get more sun and be browner” (Female, 15 yrs)

“I don’t like to say that I am tanning” (Female, 16 yrs)

“Tanning is ridiculously brown girls lying at the beach” (Female, 17 yrs)

Participants did however consider that at the end of summer they would expect their skin to look browner than their current winter skin tone, also identifying they would ‘wear brief clothing’ or ‘delay using sun protection’ to get a bit of sun however did not consider this ‘tanning’ behavior.

“I just want to get a bit of sun. Skin looks a bit healthier rather than be indoors and looking all ghostly” (Female, 14 yrs)

Some participants also suggested the term ‘incidental sun exposure’ described their behaviour when outside doing activities

“Incidental exposure is when you’re just doing activities, like swimming, and as a bonus you get a bit of sun” (Male, 18 yrs)

Discussion

Data obtained using the think-aloud technique was extremely useful in assessing the face validity of the instrument of adolescent sun-related behaviours and ultimately improving the validity of the developed measure. The think-aloud technique identified gaps in our understanding of adolescent sun-related behavior. Adolescents interpreted the term 'sun protection' to mean sunscreen, and felt that other forms of sun protection needed to be listed in the question if they were to be considered. This is important because the agreed definition of, and included components of, sun protection are the combination of avoiding peak UV hours, staying in the shade, wearing a hat, wearing protective clothing, wearing sunglasses and applying sunscreen (TCCNSW and NSW Health, 2001). There is substantial variation in the assessment of individual behaviours used in previous studies (Saraiya *et al* 2004). Given the use of sunscreen is considered a secondary level of protection (TCCNSW and NSW Health, 2001), our data supports that survey instruments should include the assessment of each sun protection behaviour individually.

Before researchers include questions using recall of behaviors 'during summer in general' consideration should be made to the difficulty adolescents have in generalising behaviors over that period. Issues encountered by adolescents recalling summer behaviours suggests that use of more specific contexts should be considered, such as 'when at school' or 'on holidays'. Furthermore, collection of self report data on the incidence of summer sunburn should be done during the summer season or shortly thereafter to reduce potential recall biases. This is consistent with issues of recall bias of summer sun protection behaviours observed among adult populations (Adams *et al* 2009).

The difference between researchers' and respondents' interpretations of the term 'tanning' is also a significant finding. The majority of intervention studies use some form of verbal report to measure outcomes (Glanz *et al.* 2005) as well as population surveillance frequently assessing sun exposing behaviours specifically in the context of 'tanning'. For example the Australian National Sun Survey includes the item "Have you made any attempt to get a suntan this season?" The recently proposed standard measures of sun exposure for behavioural and epidemiologic research by Glanz *et al* (2008) included an item 'spending time in the sun in order to get a tan'. Given the different interpretation of the term 'tanning' identified in this study, further exploration of the accuracy of responses to questions about 'tanning' is warranted. The influence of social desirability bias should be considered. Most teenagers participating in the think-aloud sessions were aware tanning was not good for you however gave conflicting responses in terms of not seeking a tan while still obtaining a tan. Recent mass media campaigns focused on tanning as a negative behaviour, for example the Cancer Institute NSW Dark Side of Tanning Campaign (www.darksideoftanning.com.au) may have contributed to this trend. The difference between incidental tanning and intentional tanning warrants further exploration among the adolescent group. A limitation of the study was that it was completed during the winter. As many of the participants were inside during peak UV hours, they responded in the hypothetical regarding their most recent weekend sun related behavior.

In conclusion, this study highlights that use of cognitive methods, such as the think-aloud technique, can improve the face validity of measures of adolescent sun related behaviors. Data from cognitive interviews improved understanding behaviors of the target market. Given the focus on behavior change in social marketing initiatives, confirming the face validity of measures of other health behaviors may be beneficial.

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