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(2014)

A qualitative exploration of sun safety beliefs among Australian adults.
Australian Psychologist, 49(4), pp. 253-270.

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<http://doi.org/10.1111/ap.12054>

A qualitative exploration of sun safety beliefs among Australian adults

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Acknowledgements

This study was funded by an Australian Research Council grant (LP0991856) and the Cancer Council Queensland. The funding bodies had no role in the study design; in the collection, analysis, and interpretation of data; in the writing of the manuscript; or in the decision to submit the manuscript for publication.

Abstract

Informed broadly by the theory of planned behaviour, this study used qualitative methodology to understand Australian adults' sun-protective decisions. Forty-two adults participated in focus groups where they discussed behavioural (advantages and disadvantages), normative (important referents), and control (barriers and facilitators) beliefs, as well as potential social influences and images of tanned and non-tanned people. Responses were analysed using the consensual qualitative research approach to determine the dominant themes. Themes of fashion and comfort were prominent, the important role of friends and family in sun safe decision-making was highlighted, as was the availability of sun-protective measures (e.g., in an accessible place or in the environment). Additional themes included the need to model sound sun-protective behaviours to (current and future) children, the emphasis on personal choice and personal responsibility to be sun safe, and the influence of Australian identity and culture on tanning and socially acceptable forms of sun protection. These beliefs can be used to inform interventions and public health campaigns targeting sun safety among Australians, a population with the highest skin cancer incidence in the world.

Keywords: adults; Australia; beliefs; consensual qualitative research; sun protection; theory of planned behaviour.

What is already known on this topic	What this paper adds
1. Protecting oneself from the sun can be inconvenient and impractical	1. Feeling good, comfortable, and pleasant is a consistent consideration when deciding whether to sun protect or not.
2. Planning can facilitate sun protection	2. Planning can be impeded to some extent by the limited availability of sun-protective measures and time spent unexpectedly in the sun.
3. Risk acknowledgement and concerns about maintaining health and appearance can motivate sun-protective behaviours	3. Personal choice and responsibility may facilitate the adoption or avoidance of sun protection.

A Qualitative Exploration of Sun Safety Beliefs Among Australian Adults

In Australia, melanoma of the skin is the third most common type of cancer and has continually increased over the past three decades (Australian Institute of Health and Welfare, 2012). Ultraviolet (UV) exposure is a significant risk factor for the development of skin cancer (World Health Organisation, 2013), although this risk is substantially reduced by protecting the skin through the use of broad-spectrum, water-resistant sun protection factor (SPF) 30+ sunscreen, wearing sun-protective clothing (i.e., hats, long-sleeved clothing, and sunglasses), and seeking shade when UV levels reach their peak, particularly between 10am and 3pm (Cancer Council Australia, 2012).

The 2010-2011 National Sun Protection Survey (Volkov, Dobbinson, Wakefield, & Slavin, 2013) found that only 57% of adults wore sunglasses, 45% wore hats, 36% used sunscreen, 28% stayed in the shade, and 19% wore a three-quarter or long-sleeved top while outdoors. Furthermore, males, younger adults, those with skin that tans and does not burn easily, and individuals who have not suffered from, or do not know someone who has suffered from, skin cancer are all less likely to be sun safe (Bränström et al., 2010; Clarke, Williams, & Arthey, 1995; Dobbinson et al., 2008a; Garside, Pearson, & Moxham, 2010; Hall, May, Lew, Koh, & Nadel, 1997; Hedges & Scriven, 2010; Jones, Harris, & Crispin, 2000; Woolley, Buettner, & Lowe, 2004). It is therefore important to identify the reasons underlying irregular performance of these behaviours to inform efforts to increase sun protection and reduce skin cancer incidence.

Sun-protective Beliefs

Previous research has identified several beliefs influencing sun protection including inconvenience (Garside, Pearson, & Moxham, 2010), comfort, fashion, and practicality (White et al., 2008a). Among 890 adults who had been sunburnt in the previous week (Pollard, White, & Harper, 2009), 23% forgot to protect, 18% believed that the sunscreen had

worn off, 7% thought they did not need to protect, 7% could not be bothered protecting, and 6% reasoned that the sun burnt them through their clothing or sunscreen.

The desirability of a tan is another issue that may affect sun protection. Volkov et al. (2013) found that out of 5412 adults, 42% believed that a suntanned person looked more healthy, 36% agreed that their friends thought a suntan was positive, 27% reported liking a suntan, and 10% believed a suntanned person was actually healthier. Preferences for no tan increase when there is more sun protection advertising on television (e.g., Dobbinson et al. 2008b), although this effect is diluted by the portrayal of sun-protective measures in the media. For instance, Dixon, Dobbinson, Wakefield, Jansen, and McLeod (2008) have noted that 89% of models portrayed outdoors in Australian fashion magazines did not wear hats and 87% were not in the shade.

The Theory of Planned Behaviour

Given that specific beliefs can facilitate or inhibit sun protection, comprehensive evaluation of these key beliefs is important. Several social-cognitive theories have been used to assess the influence of specific beliefs on sun-protective efforts, including the health belief model (Carmel, Shani, & Rosenberg, 1994), protection motivation theory (Ch'ng & Glendon, 2013), and the health action process approach (Craciun, Schüz, Lippke, & Schwarzer, 2012). Given that recent research highlights the importance of attitudes, social pressures, and barriers in influencing sun protection (e.g., Geller et al., 2002; Bränström et al., 2010), a theoretical model that encapsulated these beliefs was considered appropriate for this study.

The theory of planned behaviour is a well-validated model to examine the beliefs determining people's behaviour (TPB; Ajzen & Fishbein, 1980). The TPB posits that a person's intention to perform behaviour is the immediate antecedent of the behaviour. *Attitude* (a positive or negative evaluation of performing a behaviour), *subjective norm* (perceived social pressure to perform a behaviour), and *perceived behavioural control*

(perceived ease or difficulty of performing a behaviour; also believed to influence behaviour directly) inform people's intentions. The TPB has been useful in predicting sun-protective behaviours and sunbathing (e.g., Bränström, Ullén, & Brandberg, 2004; Jackson & Aiken, 2000; 2006; Myers & Horswill, 2006).

The TPB specifies a belief-based system underlying attitudes, subjective norm, and perceived behavioural control. Underlying attitudes are beliefs concerning the consequences (advantages and disadvantages) of performing the behaviour (*behavioural beliefs*). Subjective norm is determined by the perceived expectations of important referent groups (*normative beliefs*). Perceived behavioural control is based on people's beliefs about factors that allow (motivators) or prevent (barriers) performance of behaviour (*control beliefs*). The TPB has been used to identify underlying beliefs about performing sun-protective behaviours among young Australians (White et al., 2008a) and offers a viable starting point in this study to investigate adults' sun-protective decision-making. Despite its use, there are concerns about the TPB's validity and utility (see Sniehotta, Presseau, & Vera Araújo-Soares, 2014), with suggestions that the theory is not sufficiently elaborated to account for the complexity of volitional behaviour. Consequently, we included questions concerning additional normative influences which have been found to influence adults' sun-protective behaviour and we employed a methodology which could accommodate data which did not fit the theory.

Additional Normative Influences

Previous research examining people's sun-protective decision-making has identified two additional normative influences; *group norms* and *image norms*. These influences are not typically conceptualised in the TPB and their inclusion may offer a more comprehensive understanding of sun protection. Group norms are the norms of specific salient reference groups (peers and friends), which influence behaviour because the group is behaviourally relevant (Terry & Hogg, 1996; Terry, Hogg, & White, 1999; White, Terry, & Hogg, 1994).

Group norms may guide decision making by prescribing beliefs, attitudes, and behaviours (White et al., 2008b). For example, people may be more likely to use sun-protective measures if they think it is valued and performed by other group members. Group norms have been shown to influence female university students' intentions to be sun safe (Terry & Hogg, 1996), while behavioural norms (a subcomponent of group norms) have been shown to influence sunbathing and sun-protective behaviour (Jackson & Aitken, 2000). White et al. (2008b) found a direct influence of group norm on young Australians' sun-protective intentions and behaviour. The contribution of group norms is explored in this study to identify salient referent groups influencing adults' sun-protective behaviours.

Image norms are another normative influence potentially relevant to understanding people's sun-protective decisions (Jackson & Aiken, 2000). Image norms are the cognitive representations of stereotypical members of particular groups (e.g., tanned people), and reflect the self-presentational concerns of individuals about their image (Jackson & Aiken, 2000). These image norms generally represent the values of society as reflected in the media. Sun-protective behaviours may be improved by changing these normative perceptions about the attractiveness of being tanned or pale (e.g., Jackson & Aiken, 2006). Given the potential of altering image norms to increase sun-protective behaviours, this study explored adults' views of tanned and non-tanned individuals.

Rationale for Methodology

Previous qualitative research has identified important attitudes, knowledge, motivations, and sociocultural beliefs influencing sun protection (e.g., Murray & Turner 2004; Peattie, 2002). Relatively few studies have explored adult Australians' beliefs about sun protection, their opinions about referent group influences, or their views of tanned and non-tanned people. Most quantitative research has suggested that barriers such as forgetfulness and laziness (Pollard et al., 2009), concerns about adequate Vitamin D (Youl,

Janda, & Kimlin, 2009), and perceptions of healthiness (Dobbinson et al., 2008a) contribute towards inadequate sun-protective practices. A focus group methodology was appropriate for this study as sun-protective behaviours are often performed in a group and influenced by others.

Research Questions

Based on the belief structure underlying the TPB, we asked participants about: (1) The advantages and disadvantages of performing sun-protective behaviours (behavioural beliefs), (2) The important individuals or groups that would approve or disapprove of them performing these behaviours (normative beliefs), and (3) The barriers to and motivators for performing sun-protective behaviours? (control beliefs). In relation to potentially important normative influences, we were interested in participants': (i) opinions about important referent groups that may influence sun-protective decisions (group norms), and (ii) descriptions of the typical characteristics of people who do and do not have a tan (image norms). Finally, we were interested in any other important beliefs not covered by the TPB framework.

Method

Participants

We used snowball sampling to recruit adults aged ≥ 18 years, from urban (e.g., Brisbane), regional (e.g., Townsville), and coastal (e.g., Gold Coast) areas in Queensland, Australia, since sun-protective behaviours are more likely to be practised in regional than urban areas (Queensland Health, 2012) and accordingly underlying beliefs may differ. Queensland has the highest incidence of skin cancer in the world (Queensland Cancer Registry, 2010). The total sample consisted of 42 (self-identified) Caucasian adults and one Asian adult (23 females, mean age 38 years, $SD = 16$ years) who lived in Queensland. Twenty participants were aged under 35 years, 11 were between 36 and 50, and 11 were aged

over 50. Twenty-five participants were married/de-facto and 17 were single. Almost three-quarters were employed full-time. Before tanning, over 50% of participants reported having fair skin ($n = 26$), 12 had olive or brown skin, and four were very fair. About a quarter of participants ($n = 10$) had suffered from some form of skin cancer (melanoma, basal cell carcinoma, or squamous cell carcinoma). Around half of participants knew family members ($n = 24$) or friends and peers ($n = 20$) who had suffered from some form of skin cancer. Over three-quarters (78%) of participants performed sun-protective behaviours. People reported using multiple measures, with sunscreen the most commonly mentioned (88%), followed by hats (41%), long-sleeved shirts (26%), sunglasses (17%), and seeking shade between 10am and 3pm (12%).

Focus Groups

The first author conducted eleven focus groups between May and August 2010 (i.e., end of Autumn through Winter). Age, gender, and the size (two to six participants) of focus groups varied given that snowball sampling techniques were utilised. To allow full-time workers to participate, several focus groups were conducted on weekends. A \$50 gift card was provided to all participants. Recruitment for focus groups continued until no new insights or themes emerged from transcripts, indicating that theoretical saturation had been attained (Strauss & Corbin, 1990).

Procedure

QUT's University Human Research Ethics Committee granted ethical clearance for this study. Participants read an information sheet explaining the voluntary nature of participation, the benefits and risks of the project, and the right to withdraw at any time. Participants consented to the focus group being recorded and confidentiality was assured through de-identified transcriptions.

Interview Guide

Focus groups were guided by a TPB-based framework based on the research questions listed above and participants were asked if there were any other factors not covered in the discussion that influenced their sun-protective behaviours. Prior to implementation, this guide was piloted with three participants to refine the protocol.

Results

Data analysis

Focus groups ranged in duration from 40 minutes to 2¼ hours. After external transcription, the first author compared transcripts with audio-recordings to check their accuracy. Hill's consensual qualitative research approach (CQR; Hill, Thompson, & Williams, 1997), used previously in focus groups (e.g., Veach, Bartels, & LeRoy, 2001) and in examining health-related beliefs (e.g., Parr, Kavanagh, Young, & McCafferty, 2006), informed data analysis.

The first three authors independently reviewed each focus group transcript before meeting face-to-face to discuss, refine, and come to consensus on emerging domains and categories. The fourth author then audited three transcripts to assess whether the ascription to domains and categories adequately reflected the themes from the transcripts. Feedback from the auditor was incorporated into the data analysis.

Each set of beliefs (i.e., behavioural, normative, or control) is presented below in a "hub and spoke" diagram, with the inner circle denoting the specific subset of the belief (i.e., advantage or disadvantage, approvers or disapprovers, barriers or facilitators). We retained the TPB structure in the analysis given its prior application in this area, although we asked additional questions to ensure we captured beliefs beyond this established framework. The surrounding circles represent the higher-order domains that emerged from the analysis and the outer boxes indicate each category within that domain and the sun-protective behaviours corresponding to this belief.

Descriptive labels were assigned to indicate the representativeness of categories. A rating of *general* was assigned if the category was raised by all but 1 case, a rating of *typical* applied if raised by more than half of participants, and a rating of *variant* applied from two cases upwards to the rating of typical. Different shades of grey in the text of the hub and spoke diagrams denote the frequency rating of each belief.

To ensure awareness of the range of potential sun-protective behaviours that would be discussed, participants were asked to name behaviours they associated with sun protection. Participants in all 11 focus groups mentioned sunscreen and hats, while nine groups reported wearing long-sleeved clothing (without reference to UV protection factor), sunglasses, and seeking shade (estimations of time range varied). Four groups mentioned the use of an umbrella (i.e., beach or rain) as a sun-protective behaviour, although did not explicitly mention umbrellas with UV protection properties. Participants in ten focus groups mentioned the Slip! (on a shirt), Slop! (on some sunscreen), Slap!(on a hat) sun protection campaign, suggesting it was memorable. This national campaign, launched in 1981 in Australia, featured a jingle with an animated seagull encouraging people to be sun safe. In 2007, the phrase was extended to include Seek! (shade) and Slide! (on wraparound sunglasses). In each group, the researcher mentioned any of the major sun-protective behaviours (as defined by the Cancer Council Australia) not raised by participants to ensure that these behaviours would be salient when discussing subsequent questions.

The following section is structured according to the model and accompanied by quotes representing each general or typical category. Where evident, differences between participants on the basis of age, gender, and locality are noted in text.

Behavioural - Advantages of Performing Sun-Protective Behaviours

Domain 1 - Maintaining health and appearance.

The advantages (behavioural beliefs) of performing sun-protective behaviours are identified in Figure 1. All participants cited the maintenance of health and appearance as advantageous, with hats, long-sleeved clothing, and umbrellas cited for their ability to protect the body from sun exposure. Sunglasses were mentioned by older adults for their role in protecting the eyes from abnormalities (pterygiums and cataracts):

“Sunglasses should be more put to the fore as what people should be wearing all the time because having had a cataract op I think it’s quite important.”

Four variant categories were also listed as advantages in this domain (see Figure 1).

Domain 2 - Avoiding acute discomfort and feeling more comfortable.

Avoiding sunburn was a frequently mentioned advantage of performing most sun safe behaviours in coastal and regional areas, with discomfort from sunburn considered a certainty unless protective measures were adopted:

“I tend to tan reasonably well but I think the strength of the sun here is so strong that I know that if I don’t wear sunscreen I know I will get burnt.”

Participants also acknowledged the important contribution sunglasses and hats made to increasing comfort by preventing glare and keeping the sun out of their eyes:

“You miss them (sunglasses) if you haven’t got them, out in the sun you know you really get used to sunglasses probably more than any of the other measures we’ve mentioned. You walk out into bright sun and the first thing you want are sunglasses...”

Keeping and feeling cooler was a frequently mentioned advantage, highlighted more by females than males. The combination of heat and humidity in summer encouraged participants to seek shade to lower body temperature and increase comfort:

“It’s just hot and disgusting (in summer) so yeah sitting in the shade feels nicer and it just cools you down.”

There were nine additional variant categories within this domain (see Figure 1).

Domain 3 - Sun protection can be fashionable.

Fashion was identified as a key advantage of wearing hats, long-sleeved clothing, and using beach umbrellas. This theme was mentioned more frequently by females and younger adults. In some cases sunglasses were worn solely because they were fashionable rather than due to concerns about eye health:

“I never actually knew that like you know you should wear sunglasses in the sun to protect your eyes, I just thought it was yeah, a cool thing to do.”

Additional Domains

Additional domains noted included participants feeling good about being sun safe and sun protection being convenient (see Figure 1).

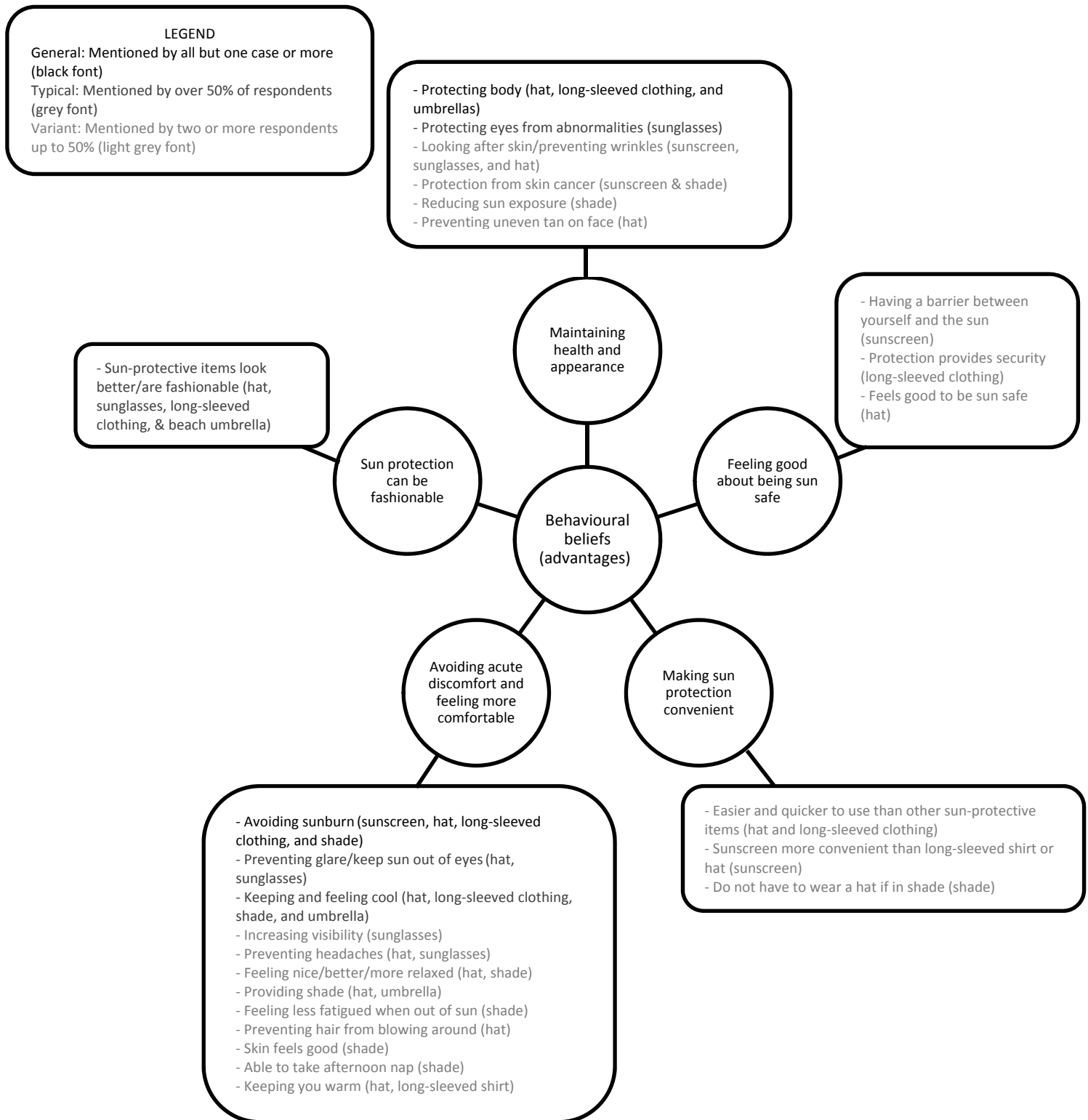


Figure 1. Advantages of performing sun-protective behaviours (behavioural beliefs).

Behavioural Beliefs - Disadvantages of Performing Sun-Protective Behaviours

Domain 4 - Protection is imperfect.

While sun safe measures were recognised as important, they were thought to provide incomplete protection (see Figure 2), a belief more commonly held by adults in major cities. For instance, participants seeking shade perceived susceptibility to sun filtered through or reflected from surrounding surfaces:

“You take a bit of a false sense of security from shade too because you still have... you still get filtered sun and if you’re there for a whole day you’d still get sunburnt.”

Within this domain, three variant categories also emerged (see Figure 2).

Domain 5 - Sun protection can be unfashionable.

Sunscreen, hats, long-sleeved clothing, sunglasses, and umbrellas were considered unfashionable to wear or use. Hats and long-sleeved shirts in particular were considered more appropriate in workplace settings:

“You wouldn’t blend in as well with everyone else if you were totally covered with a hat and long sleeve. I understand that if you’re out in the workplace that would be an easier way to do that. I think if everyone else is doing that then that’s okay. But I think, yeah there’s this perception or maybe it’s just not the thing that’s in at the moment to wear a big hat and long sleeve...”

Proposals included enlisting the fashion industry to make hats more attractive:

“There are hats around but honestly they’ve got a brim of about five centimetres wide and I think yeah there has to be someone designing something better than what there is and someone who is you know in the fashion magazines wearing them to promote them.”

There were four variant categories within this domain (see Figure 2). For instance, having ‘hat hair’ (hairstyle messed up) was cited as one disadvantage of wearing a hat.

Additional Domains

Several additional domains containing only variant categories emerged in this analysis. Participants mentioned that at times there was a lack of appropriate information on measures, such as explanations of the sun protection factor on bottles of sunscreen. Other domains included negative health impacts from being sun safe, discomfort from being sun safe, and fear of social rejection if wearing sun-protective items (due to fashion).

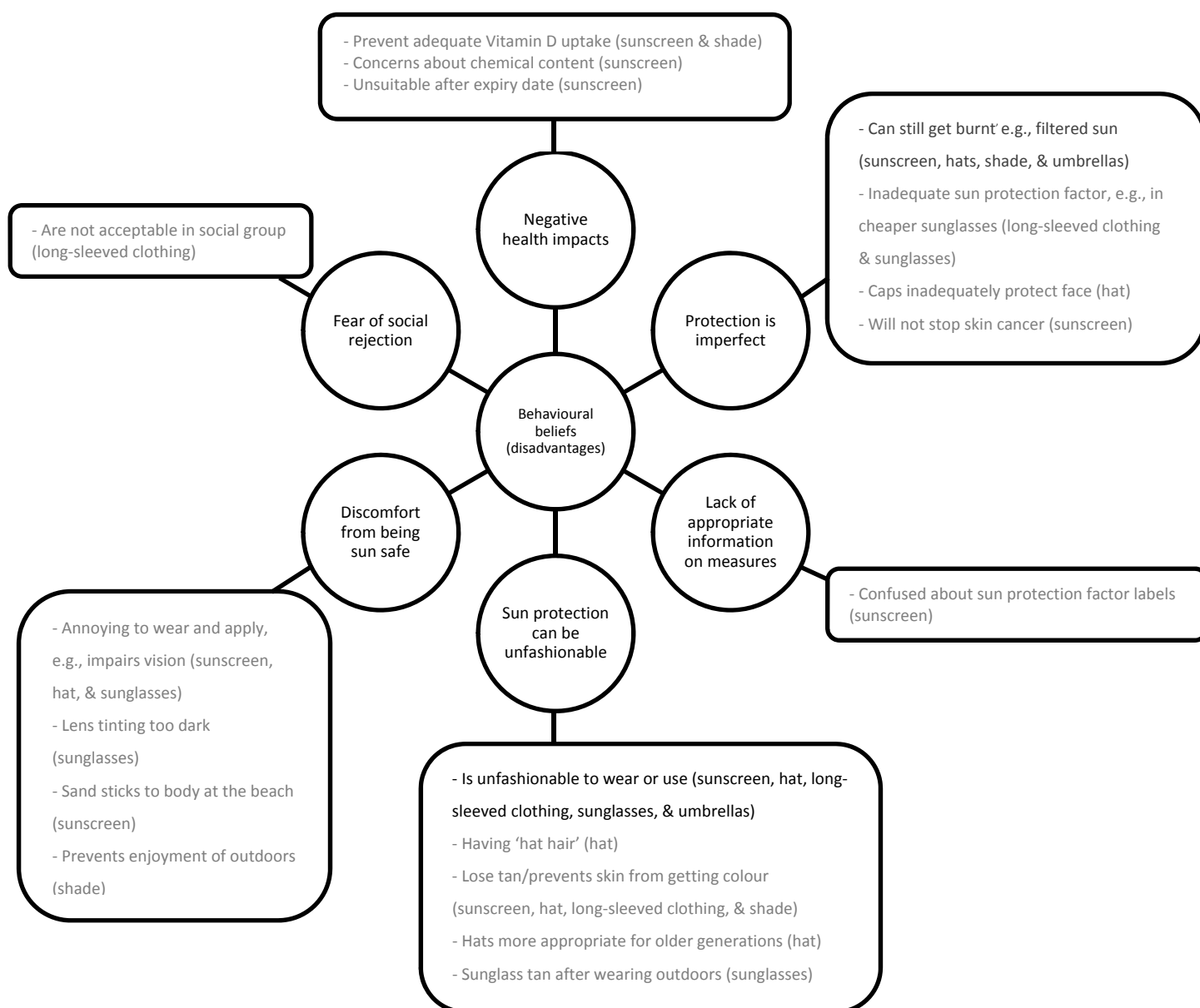


Figure 2. Disadvantages of performing sun-protective behaviours (behavioural beliefs).

Normative beliefs – Approvers of Sun-protective Behaviours

All domains representing approvers of sun-protective behaviour consisted of variant categories (see Figure 3). These major domains included work-related approval, the approval of health professionals, the general public, family members, and the social approval of close friends.

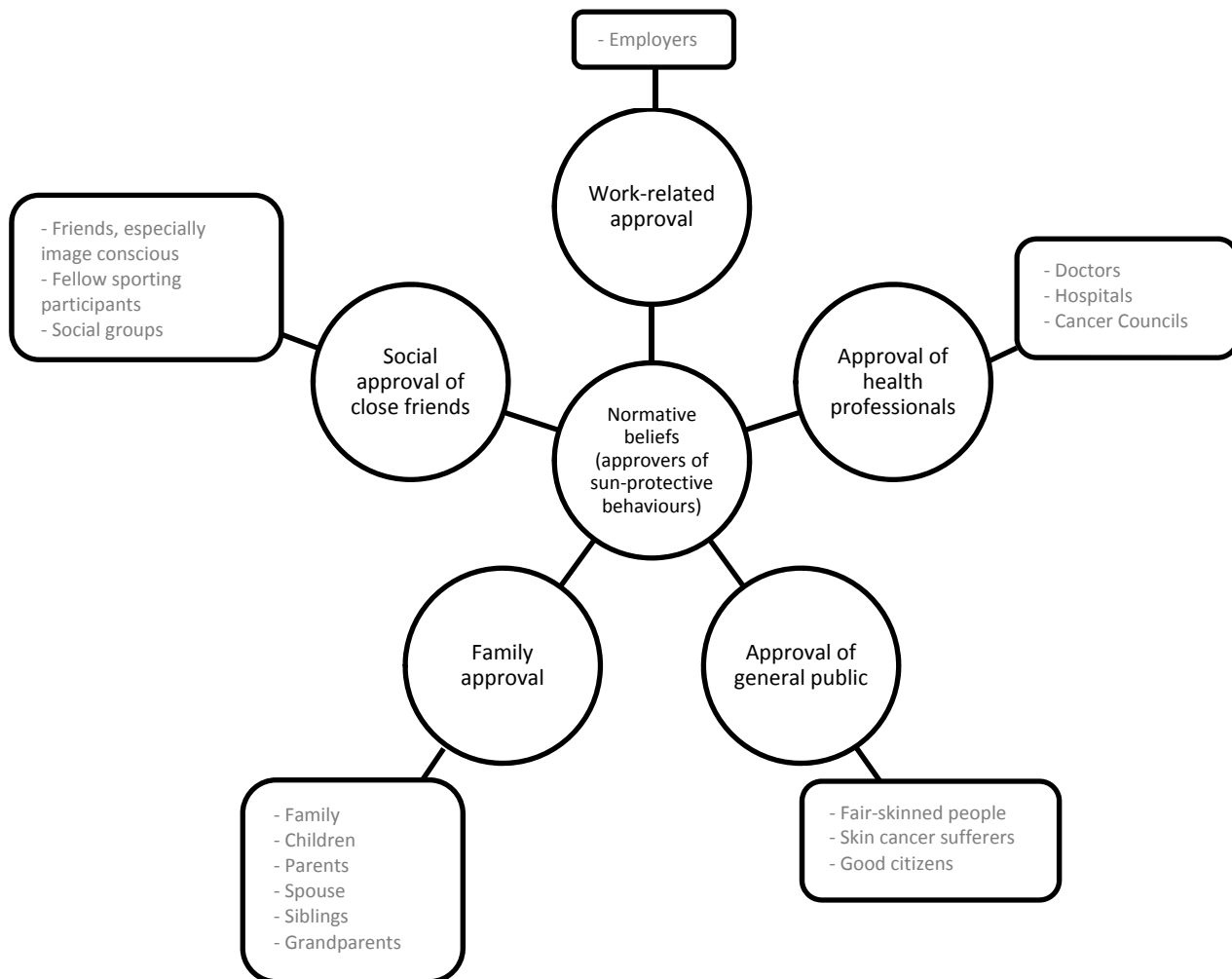


Figure 3. Individuals or groups who would approve the performance of sun-protective behaviours (normative beliefs).

Normative Beliefs – “Disapprovers” of Sun-protective Behaviours

The individuals/groups who disapproved of sun-protective behaviour clustered into two domains with variant categories (see Figure 4). Social disapproval (due to fashion concerns) and family disapproval were both noted by participants.

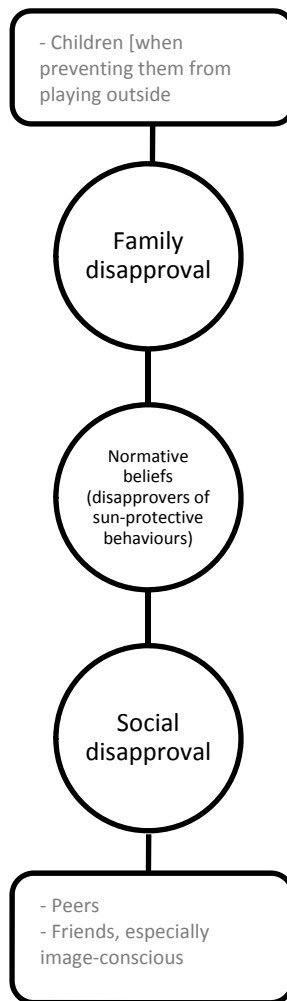


Figure 4. Individuals or groups who would disapprove of the performance of sun-protective behaviours (normative beliefs).

Normative Beliefs – Other Individuals or Groups who Might have an Opinion

Individuals/groups who might have an opinion about sun protection were grouped into three domains, all containing variant categories (see Figure 5). Participants mentioned companies, health-related individuals or organisations, and social influences.

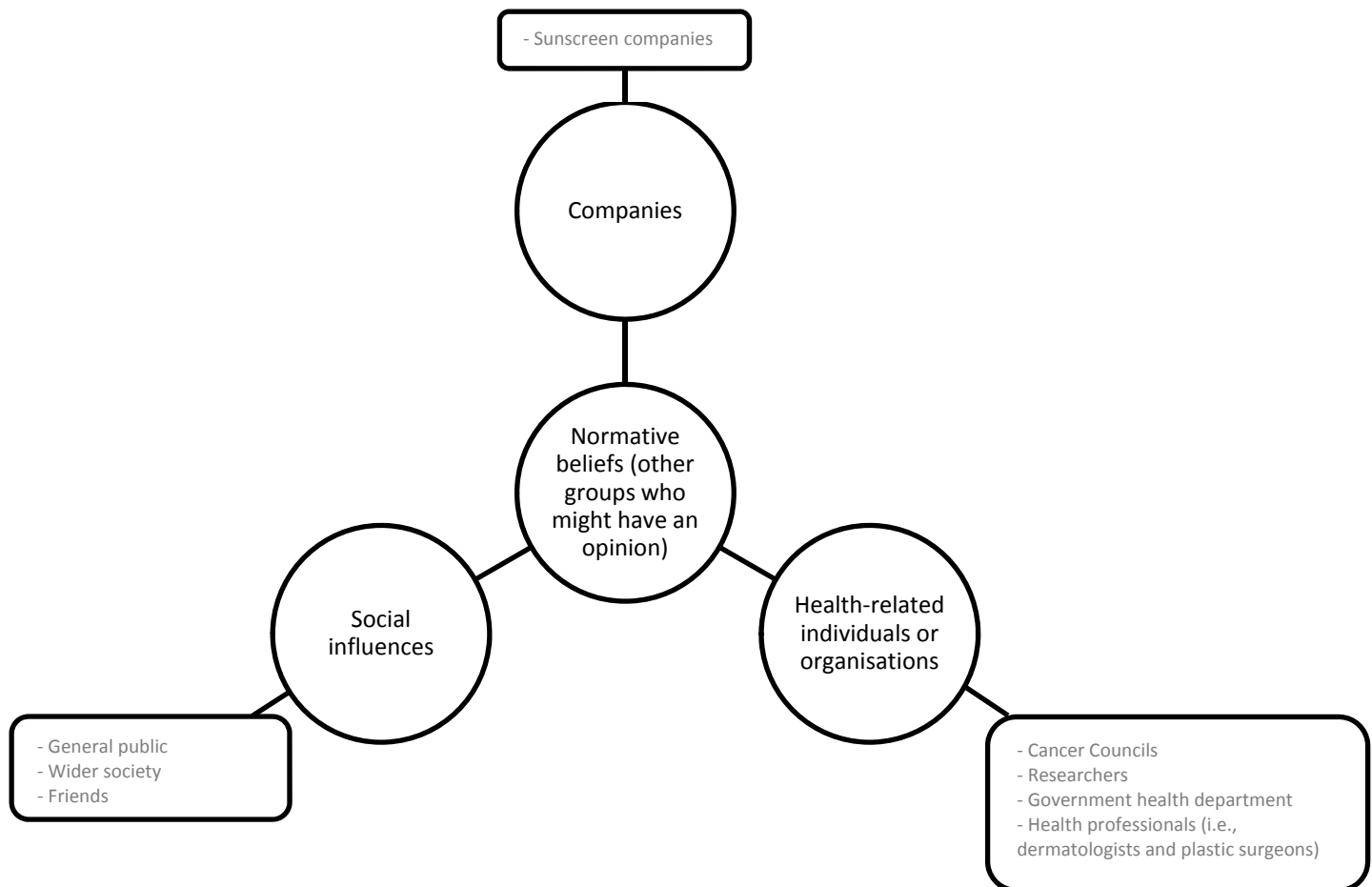


Figure 5. Other individuals or groups of people who might have an opinion about the performance of sun-protective behaviours (normative beliefs).

Control beliefs - Barriers to Performing Sun-protective Behaviours**Domain 6 – Being sun safe is unpleasant.**

Hats and long-sleeved clothing were considered too hot, humid, and sweaty to wear by most adults. All participants except one suggested that long-sleeved shirts were too hot to wear, particularly in more humid areas (e.g., north Queensland). The counterargument suggested that this ‘too hot’ argument was more perception than reality:

‘I went through that in [oil company] when I was there with getting people to wear the neck to toe clothing as they call it and part of their argument was oh it’s too hot. But I don’t think it really is, from my own experiences it’s no hotter than shorts and you wear light cotton clothing and it’s no hotter than what you would be in shorts and short-sleeved shirt’.

Other participants, although maintaining that long-sleeved clothing was too hot to wear and describing resistance to their introduction in workplaces, observed that the materials had improved over time:

“There was great resistance to it with the field staff in changing to the long clothes, with yeah being comfortable and hotter and that’s where gradually you know the breather...things came into the shirts along the arms and necks and things like that. And the back as well gradually improved to try and make them cooler and then to breathe better.”

Others were only prepared to wear long sleeves at the beach when completely exposed:

“I struggle with even a sleeve in summer, I’m sleeveless the whole way through. That’s why I feel for guys in suits in the middle of summer. It’s just I don’t like feeling hot and sweaty. But if I was on the beach, yeah I will put something over.”

Participants complained about the texture of sunscreen, neglecting to apply it when they were expecting to be in the sun only briefly:

“Some sunscreen is really disgusting and oily and I guess if you’re only going to be there for an hour or so I would prefer not to wear it.”

Two additional variant categories emerged within this domain. Participants noted that sunscreen gets in eyes, hair, or on hands, and looks “weird” or “orange” if not rubbed in properly.

Domain 7 - Sun protection is impractical.

Participants indicated that several measures were impractical in certain situations. For instance, some occasions were unexpectedly in the sun:

“I went to a first birthday party the other day in the middle of the day and they had it outside which is ridiculous.”

The expense of buying sunscreen, sunglasses, and long-sleeved clothing was noted as impractical, more so by adults living in major cities. Although not all sunscreen was considered expensive, cheaper sunscreen was avoided because it was perceived as oilier. Adults did not want to apply more expensive sunscreen liberally:

“I think the oily sunscreens are the cheaper sunscreens which are more affordable to buy but the dearer sunscreens are like forty, fifty dollars and really you don’t want to slather yourself on that, you’d prefer just to keep it for just say your face.”

The limited availability of several sun safe measures, noted more often by females and adults in regional areas, made it difficult to adopt them regularly. For instance:

“I would probably only have one or two pieces of clothing that would be light enough and long-sleeved to be comfortable. So it’s the actual availability of that piece of clothing.”

Additionally, eight variant categories emerged within this domain (see Figure 6).

Domain 8 - Sun protection is inconvenient.

Long-sleeved clothing, sunscreen, and sunglasses were perceived as inconvenient to use, mentioned more so by younger adults. Participants noted that applying sunscreen resulted in stinging faces and slippery hands, the latter proving unsuitable for outdoor activities requiring hand grip:

“If you go swimming you can get it in your eyes if you’ve got (it) on your face... But if you go surfing and you put it on with your hands then you’ve got slippery hands. Same if you go climbing and you’ve got sunscreen on your hands it’s not good for the climbing gear.”

Sunscreen, hats, sunglasses, and umbrellas were all identified as inconvenient to carry around, noted more commonly by younger adults. In some cases though, the necessity of wearing sunglasses outweighed this inconvenience:

“They’re (sunglasses) a pain in the neck because you’re carrying them around and they get scratched in your bag but it’s a necessity for me to wear them outside so just get used to it.”

This domain included six additional variant categories (e.g., it was difficult to stay in the shade when other friends preferred to be in the sun).

Domain 9 – Lack of planning

Participants suggested that forgetting or misplacing sunscreen, hats, and sunglasses was a barrier to performing these behaviours. For instance:

“There’s nothing worse than going out and forgetting your sunnies because it’s a really overcast or rainy day and then by the afternoon you go in the car and it’s like sunny.”

Three variant categories also concerned planning (see Figure 6).

Additional domains

Additional domains concerning barriers included knowledge of appropriate measures (e.g., knowing which sunglasses offered the best protection) and sun protection not being prioritised.

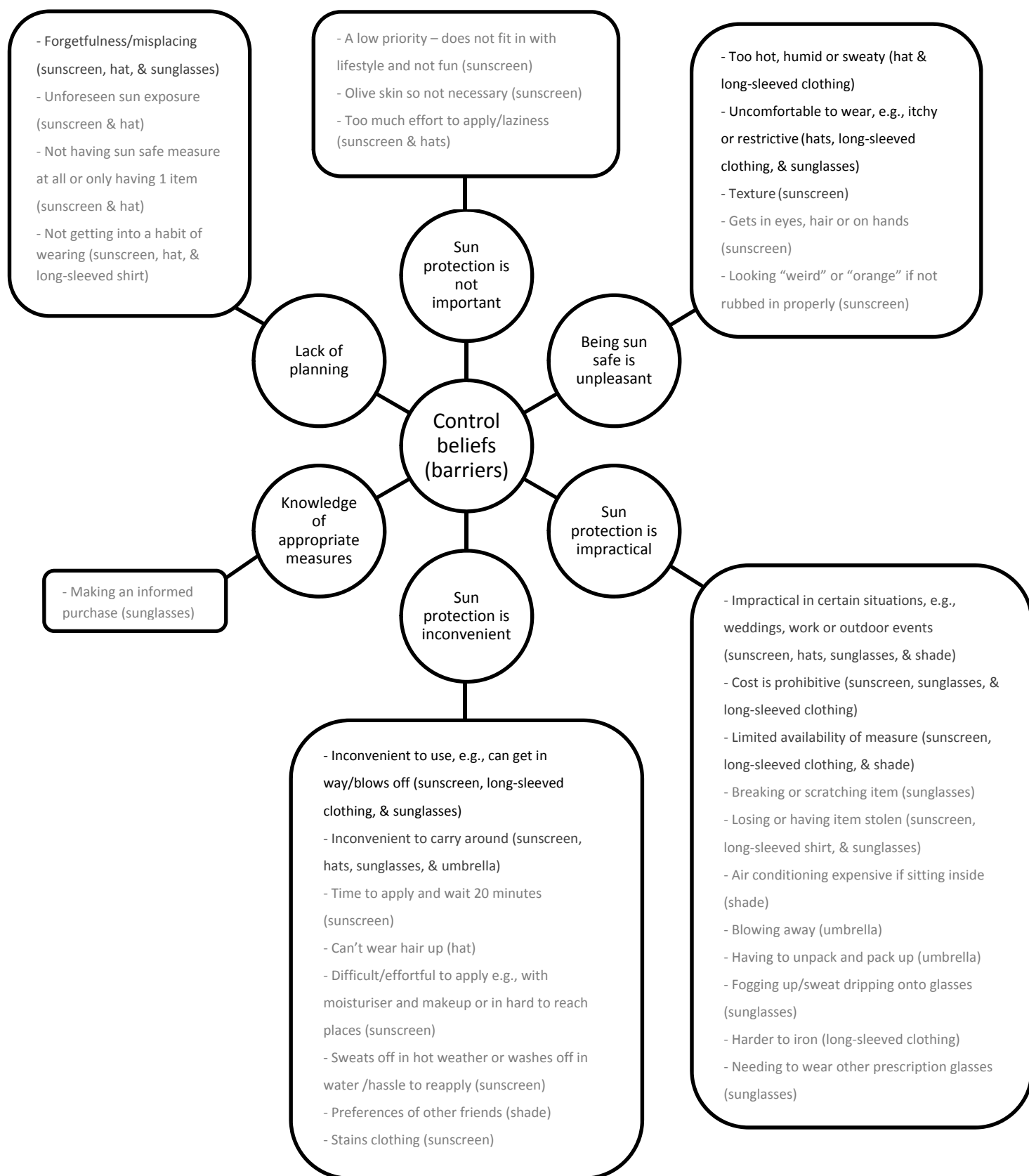


Figure 6. Barriers to the performance of sun-protective behaviours (control beliefs).

Control Beliefs - Facilitators of Sun-protective Behaviours

Domain 10 - Increasing comfort.

Facilitators (control beliefs) of sun-protective behaviours are presented in Figure 7. The heat and brightness of the sun provided a strong incentive to practice sun-protective behaviours to increase comfort. Shade was considered essential for comfort during summer:

“On the weekends I’ll be in the sun between ten and three but yeah like I said if it’s that hot I’ll just automatically be in the shade or seeking shade. I cannot hack lying out in the hot, hot sun.”

This domain also included nine variant categories concerning comfort. For instance, shade was comfortable when having a “siesta” (afternoon nap).

Domain 11 - Planning enables sun protection.

The availability of sunscreen, hats, sunglasses, shade, and umbrellas also facilitated their use in multiple situations:

“I have consciously now bought one of those little bottles... to try and keep in one of my bags, so that if I do get caught out I’ve at least got (it)...”

Whether respondents organised sun protective measures typically depended on them knowing if they were going to be out in the sun for an extended period:

“If I know I’m going to be in the sun all day, you know it’s a job that’s going to be outside all day; I’ll look for a long-sleeved shirt.”

Forming a routine/habit was critical for several participants. Workplace routines influenced individuals who did not typically adopt such measures:

“It was just routine, it wasn’t mandatory or anything, it was just something that they did (applied sunscreen before work), they were used to doing it and I was working with a new crew and that’s the way they did it and I did it their way for a while”.

While the thought of beach outings appeared to prompt routines, similar considerations did not accompany more spontaneous actions:

To the beach it's always the towel, the hats and the sunscreen... so that is a routine now. But just recently, Sunday morning woke up thought we'd go for a walk into the city. Sun was out and I thought I don't feel like wearing a hat, and I didn't, and I paid for it because you can feel the heat of the sun even though it's early."

Four variant categories, concerning individual and organisational planning, were also subsumed within this domain (see Figure 7).

Domain 12 - Acknowledgement of personal risk.

When out in the sun for extended periods, respondents who acknowledged their personal risk were motivated to be sun safe.

"If I think I'm going to a place where I'm going to be in the sun all day then I'll take one (hat) but I'll generally only put it on when my head starts burning."

It was considered "common sense" to avoid sun exposure between 10am and 3pm, although this was associated more with the possible discomfort from sunburn rather than skin damage:

"Even though I know that my skin is getting damaged every time I'm in the sun, there's still part of you that doesn't really pay attention to it unless you get burnt. Which again is a common sense thing, but it doesn't matter if you burn or not you're still getting sun damage, but it's a mental thing that you just associate the sun and the UV and the cancer and everything with being burnt."

Several other variant categories emerged within this domain concerning risk (see Figure 7).

Additional Domains

Three additional domains, all with variant categories, emerged when discussing facilitators of sun-protective behaviour. Facilitators included believing that it was fashionable to be sun safe, cues to action, and modelling to and from others.

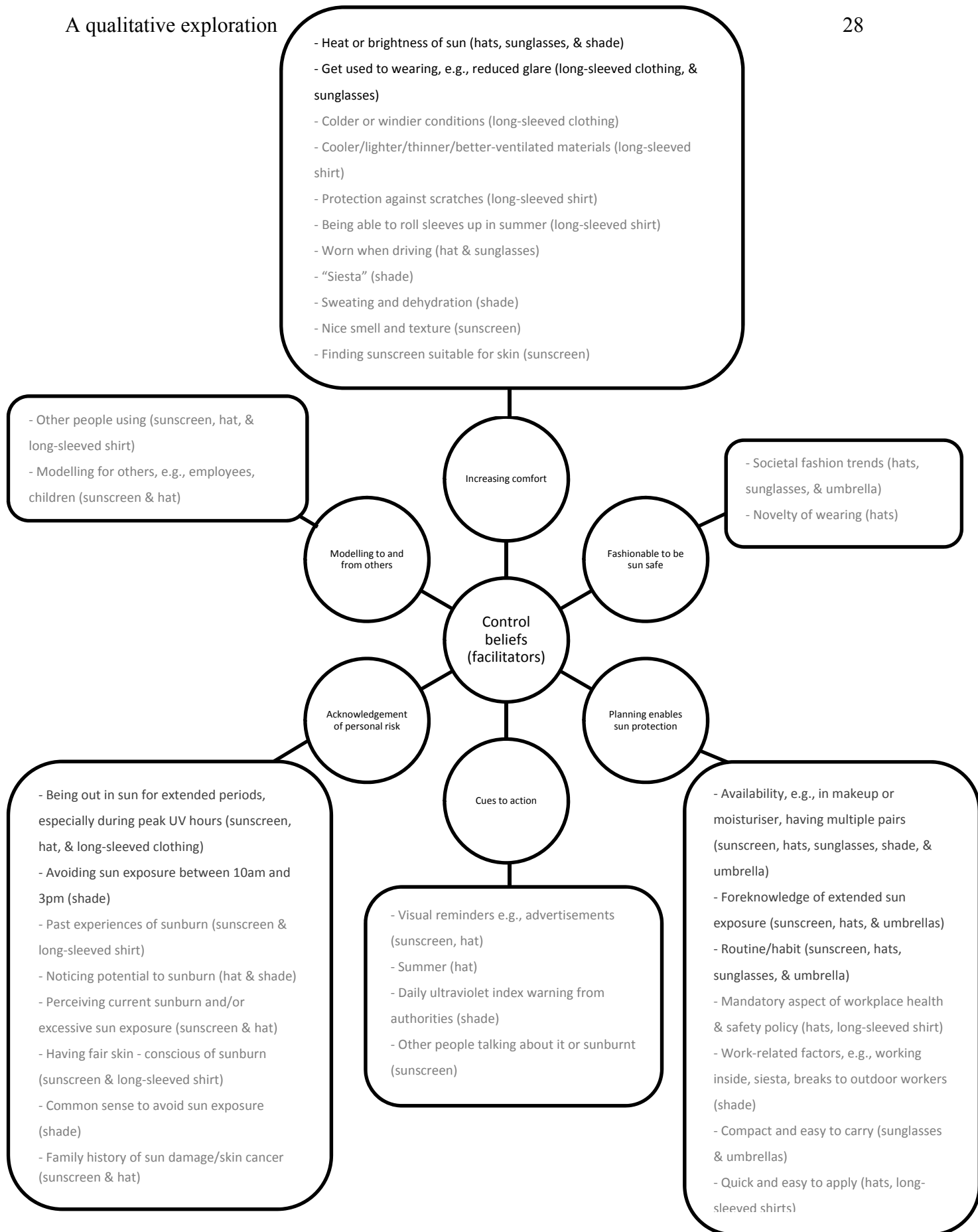


Figure 7. Facilitators of performing sun-protective behaviours (control beliefs).

Group norms

Group norms consisted of two domains; both with variant categories (see Figure 8).

Participants noted being influenced by the behaviours of their social and work groups.

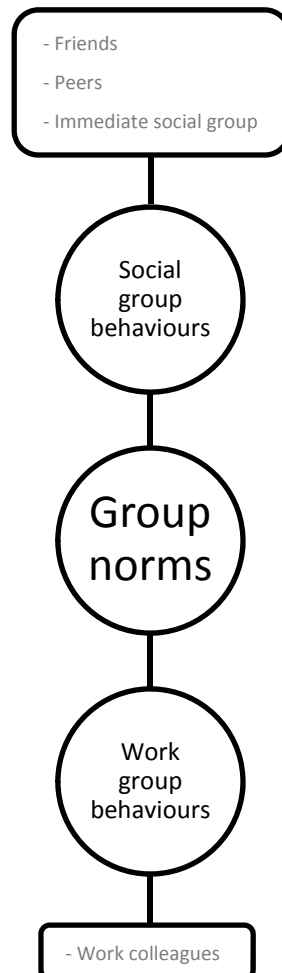


Figure 8. Groups who influence the performance of sun-protective behaviour (group norms).

Image norms - Tanned People

Discussions surrounding perceptions of tanned people elicited four domains. Tanned people were viewed as outdoor people, described negatively, labelled as having unattractive skin (for dark tans), or seen as fashionable (see Figure 9). Individuals who thought a tan was fashionable cited the “Bronzed Aussie”, a colloquial term representing the supposedly iconic symbol of a tanned Australian (Kirk, 2000).

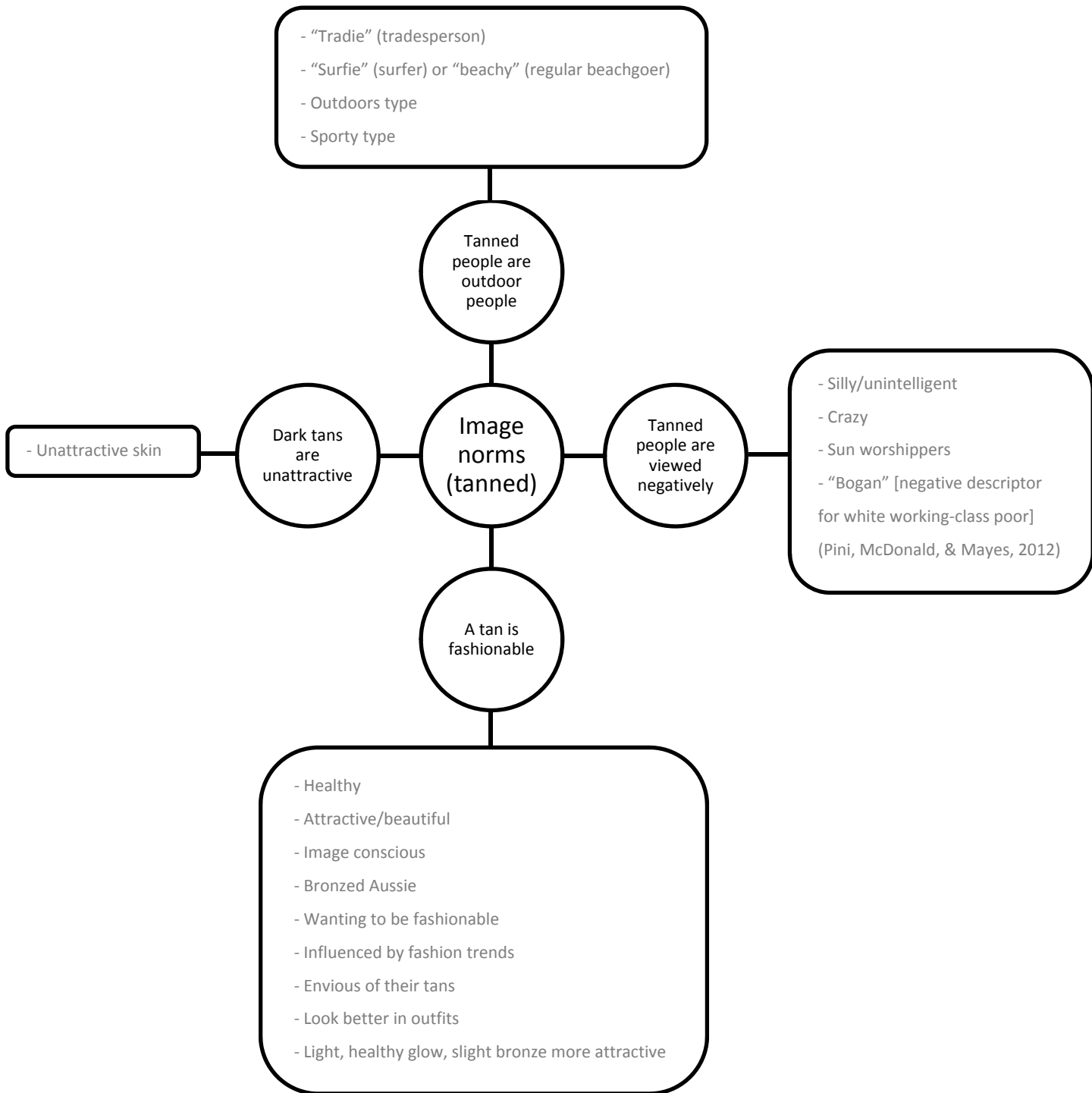


Figure 9. Typical characteristics of tanned people (image norms).

Image norms – Non-tanned People

Five domains with variant categories were elicited in discussions of non-tanned people (see Figure 10). Non-tanned people were described as unpopular/unfashionable, not Australian, smart and healthy, unwell, or viewed neutrally.

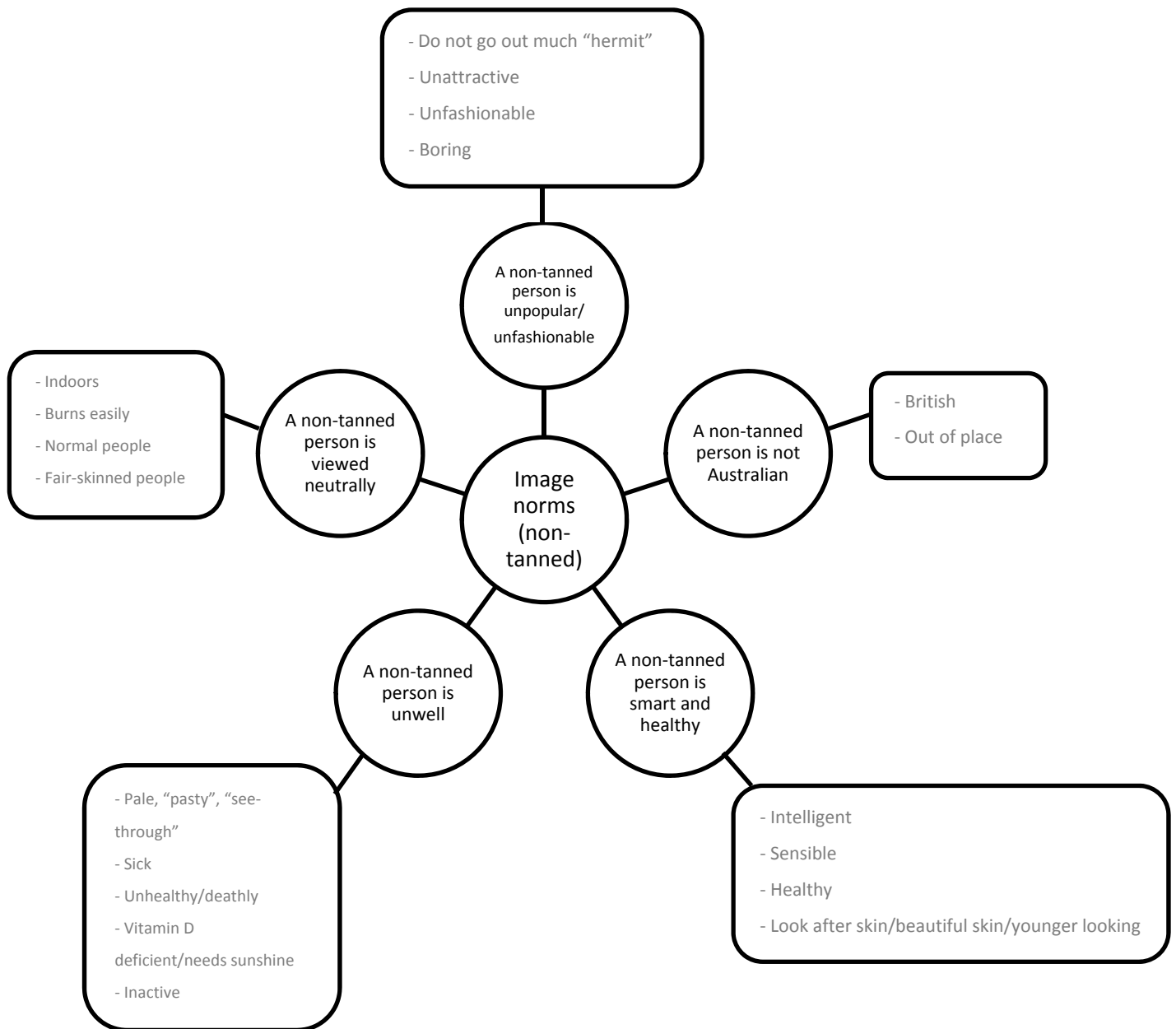


Figure 10. Typical characteristics of non-tanned people (image norms).

Additional domains

Several additional domains emerged that did not fit within the TPB framework (see Figure 11). These themes concerned the personal nature of sun protection, modelling to children, and the influence of Australian identity on desiring a tan.

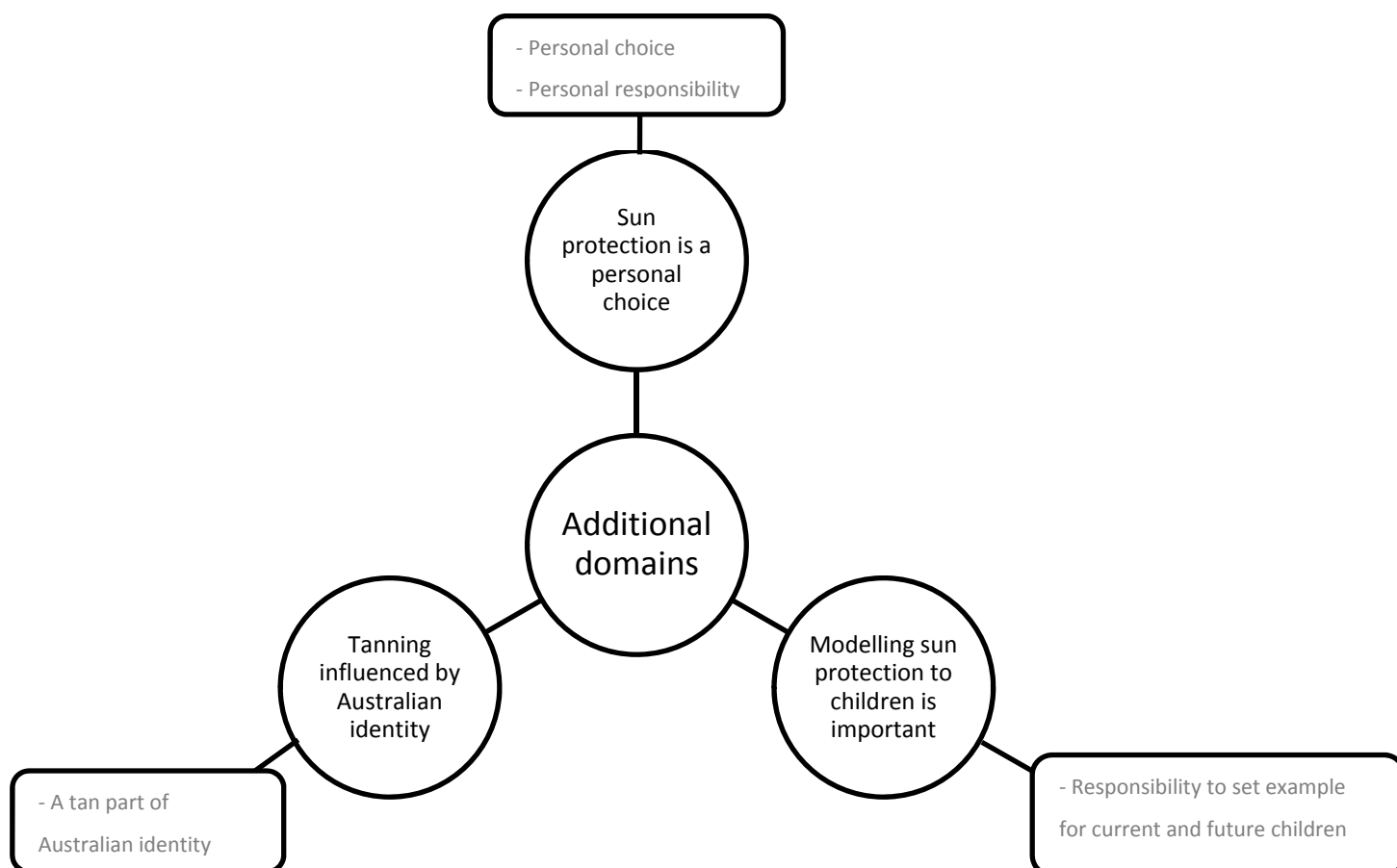


Figure 11. Extra domains not captured in the TPB analysis.

Domain 13 - Sun protection is a personal choice.

The notion that sun protection is a personal choice was mentioned consistently by adults, particularly those above the age of 35 years. Participants highlighted the ability of adults to make choices for themselves after completing high school. One participant noted that choices only had consequences for the individual:

“I don’t think it should be (enforced by employer), I think it should only be a choice if you do. I mean you’re only helping yourself if you don’t do it it’s not like you’re going to be harming anybody else but yourself, so I think it should be just personal choice.”

Almost a third of participants suggested that sun protection was a personal responsibility:

“People have to accept responsibility for themselves and... I mean I’m not going to... if I ever got a cancer I can’t go and blame anyone because it’s my lack of usage of [sun-protective behaviours]...”

Domain 14 - Modelling sun protection to children is important.

Several participants noted that their children made them more conscious of the need to be sun safe, with role modelling seen as an important step to ensure their child would use sun protection:

“What motivates is if she’s (young daughter) got to wear it, I’ve got to wear it.”

Domain 15 - Tanning influenced by Australian identity.

Several participants suggested that being in the sun and having a tan were part of Australian identity and culture:

“Australia is supposed to be, and especially Queensland it’s you know the sunshine state and everything and yeah they really yeah they sort of... everyone wants to get a tan kind of thing.”

Discussion

Several notable beliefs influencing sun protection emerged from this analysis. Concerns about comfort, fashion, practical barriers, and dialogue on personal responsibility and choice were consistently mentioned.

Behavioural belief (advantage) and control belief (barrier and facilitator) – Avoiding acute discomfort and feeling more comfortable/pleasant.

The need to feel comfortable and pleasant when using sun-protective measures was voiced regularly during discussions. Sun-protective measures were adopted to avoid sunburn, brightness, and overheating from sun exposure. Conversely, participants highlighted the discomfort resulting from sun protection, including sweatiness, unpleasant skin, and the restrictiveness of clothing. Comfort motivates individuals to seek shade and wear sunglasses to reduce glare (e.g., White et al., 2008a; Potente, Coppa, Williams, & Engels, 2011), and notably, these advantages are immediately experienced.

Behavioural belief (disadvantage) – Sun protection can be unfashionable.

Fashion concerns consistently emerged as a significant influence on sun protection, although opinions differed depending on the situation. While beach umbrellas, hats worn at the races, and long-sleeved shirts worn in more formal contexts (e.g., business) were considered fashionable, normal everyday umbrellas, hats, and informal long-sleeved shirts were generally not. Fashion and appearance-based concerns from sun protecting (i.e., ‘hat hair’), have been identified as influences on sun protection in adolescent populations (Pakrou et al., 2008; White et al., 2008b). Furthermore, participants in our study noted that the fashion industry did not promote these measures for everyday use. This lack of promotion, coupled with the perceived scarcity of fashionable sun-protective clothing, may explain why adults find it difficult to locate a hat that “looks okay” (Bulliard, Reeder, & McAllister, 2000) and why older generations are more likely than younger generations to wear hats (Pruim, Wright, & Green, 1999).

Control beliefs (barriers) – Sun protection inconvenient or impractical

Practical impediments to performing sun safe behaviours were noted regularly. Different measures were thought impractical, lacking portability, or inconvenient. Inconvenience of use has previously been cited as an influence on sun protection (Garside, Pearson, & Moxham, 2010). Sunscreen has been criticised for being too messy, staining

clothes, and burning the eyes during application (Solky et al., 2007), while adolescents have suggested that sunscreen in public places would facilitate availability (White et al., 2008a).

Additional domain - Personal choice and responsibility

Participants discussed sun safe behaviour in individualistic terms, emphasising personal choice and responsibility to be sun safe. These discussions considered the consequences of not protecting (e.g., skin cancer) only relevant for the individual. Fortunately, discourse concerning personal responsibility can support sun protection efforts, (e.g., Wright & Bramwell, 2001). It may be important to cultivate this attitude during adolescence, given that personal responsibility for sun protection is perceived to increase during this time (Young, Logan, Lovato, Moffat, & Shoveller, 2005).

Strengths and limitations of study

The study's weaknesses include: participants were mostly Caucasian, snowball sampling was used as a recruitment strategy, and focus groups varied in size. Also, using a theoretical approach as a starting point to identify key beliefs may have constrained responses.

The study's strengths include the use of an established theoretical framework to elicit key beliefs that can be tested with a wider population to inform sun safety interventions. Importantly, however, given the narrow focus of the standard TPB constructs (Sniehotta, Presseau, & Araújo-Soares, 2014), we also elicited key beliefs concerning the salient groups that can influence members' sun safe behaviour (group norms) and the dominant societal representations of tanned and non-tanned individuals as reflected in the media (image norms). In addition, the approach adopted also identified several beliefs not captured within the TPB (e.g., personal choice and responsibility).

Further, we included a community-based sample of adults from an area with the highest incidence of skin cancer in the world. Although we did not monitor self-selection bias

in our sample, we included adults with and without previous experience of skin cancer and similar numbers of males and females from urban, coastal, and regional locations. The face-to-face consensus and auditing process undertaken allowed a rich discussion of domains and categories based on the interpretations of four experienced researchers.

This study has several implications for using the TPB in this behavioural context. Given the emergence of additional domains, the most holistic understanding of influences on sun-protective behaviour is likely to be broader than that captured by the standard TPB constructs. It is important to maintain that qualitative data not conforming to the TPB framework should be acknowledged and not forced to 'fit' the theory. Future tests of the TPB in the sun safety domain should include measures capturing personal choice and responsibility. Further, modelling, potentially based on social learning theory (Bandura, 1977), appears to be important to gain a fuller understanding of sun safe behaviour. The findings for tanning and Australian identity suggest that measures of identity, potentially based upon social identity theory (Tajfel & Turner, 1986), would also be appropriate inclusions.

Future research

Based on the categories that emerged strongly, several themes should guide future research. For behavioural beliefs (advantages), the belief that sun-protective measures can protect the body and valuing this outcome is important. For control beliefs (barriers), believing that sun-protective measures are too hot, humid, sweaty to apply or use, or are uncomfortable to wear will limit sun-protective behaviour. Additionally, believing that sun-protective measures are inconvenient will lead to poorer sun-protective outcomes. For control beliefs (facilitators), believing that sun-protective measures are readily available will result in more effective protective behaviour. Future research could operationalise each hypothesis within a TPB belief-based study to establish which beliefs make independent contributions to

the prediction of sun-protective behaviour, and examine whether key beliefs differ depending on age, gender, and locality, as our data suggest. Key beliefs emerging from both qualitative and quantitative research could then be operationalised in an intervention to evaluate whether modifying beliefs affects the performance of sun-protective behaviour.

Applied implications

The key beliefs elicited from this study can be translated into practice through public health interventions and health promotion efforts. First, sun-protective measures that are more comfortable to wear in hot or humid conditions could be developed and promoted. Health promotion efforts could assist adults to integrate sun-protective behaviour into everyday life, possibly through action planning and coping planning strategies (Sniehotta, Schwarzer, Scholz, & Schüz, 2005) encouraging adults to set sun-protective goals and anticipate barriers to performing each behaviour. Adults can be encouraged to weigh up the cost of inconvenience with the benefits provided by sun protection. Furthermore, designing and promoting the use of affordable and portable sun-protective items will assist in improving perceptions of availability.

This study is important for the field of health psychology in Australia because it highlights the contribution that qualitative, theory-driven research can make to systematically understanding the wide range of beliefs that may influence behaviour. The results highlight opportunities for vital collaboration between health psychologists and public health practitioners, health promoters, social marketers, and the fashion industry.

In this area of investigation, health psychology offers distinct, valid, and, reliable concepts and thus a common framework for investigating beliefs relevant to the practice of sun-protective behaviour. Additionally, social-cognitive theories that prescribe a rigorous and systematic approach to conceptualising and measuring beliefs can underpin the development, evaluation, and refinement of comprehensive health promotion strategies. Furthermore,

rigorous health psychology research can examine changing attitudes and beliefs and enable mass media messages to be pitched at levels that appropriately match the Australian community's needs, concerns, knowledge, and awareness about sun protection. Lastly, the empirically-supported psychological principles used in health psychology can complement existing evidence-based sun protection campaigns focusing on raising awareness and information provision.

This study is likely to progress knowledge for Australian health psychologists by providing a rigorous example of belief elicitation utilising a well-founded quantitative analytic technique (CQR). This process has identified beliefs that fall both within and outside the parameters of a specific health psychology theory.

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