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Short Title: Parents' beliefs about their young child's sun-protective behaviours

Full Title: Keeping kids sun safe: exploring parents' beliefs about their young child's sun-protective behaviours

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Abstract

Objectives: Melanoma of the skin is the third most commonly diagnosed cancer in Australia.

Given the high incidence of sunburn in children and the level of sun protection provided by parents is often infrequent and/or insufficient, this research employed qualitative methodology to examine parents' beliefs about their young child's sun safe behaviour.

Methods: Parents (N= 21; n=14 mothers, n=7 fathers) of children aged 2-5 years participated in focus groups to identify commonly held beliefs about their decision to sun protect their child. Data were analysed using thematic content analysis. **Results:** Parents generally had knowledge of the broad sun safe recommendations; however, the specific details of the recommendations were not always known. Parents reported adopting a range of sun-protective measures for their child, which depended on the time of year. A range of advantages (e.g., reducing the risk of skin cancer, developing good habits early, parental peace of mind), disadvantages (e.g., false sense of safety, preventing vitamin D absorption), barriers (e.g., child refusal), and facilitators (e.g., routine, accessibility) to performing sun safe practices were identified. Normative pressures and expectations also affected parents' motivation to be sun safe with their child. **Conclusions:** These identified beliefs can be used to inform interventions to improve sun safe behaviours in young children who reside in a region that has the highest skin cancer incidence in the world.

Keywords: cancer, oncology, sun safety, theory of planned behaviour, children

Background

Melanoma of the skin is the third most commonly diagnosed cancer in Australia, with the major cause of melanoma being excessive exposure to the ultraviolet radiation from sunlight [1]. Despite this risk, there is a high incidence of sunburn in children and the level of sun protection provided by parents is often infrequent and/or insufficient [2-5]. The protection of young children against harmful sun exposure is especially important as excessive sun exposure during the first 10 to 20 years of life greatly increases an individual's risk of skin cancer in adulthood [6]. A number of interventions have been introduced to improve the sun-protective behaviours of children and adolescents [7-10]. **These interventions have focused their attention on raising children's attitudes toward and awareness and knowledge about the importance of sun protection with some positive effects evident on changing behaviour. However, these effects are often not translated to out-of-school settings [9] or to consistent behavioural performance [10]. A shift in intervention focus, therefore, is necessary.**

The majority of interventions concentrate on young children themselves and school care-takers despite research suggesting that initiatives which concentrate on modifying the attitudes and behaviour of parents is important to increase program efficacy [11,12]. Toddlers and pre-school age children, in particular, spend a considerable amount of time in the sun and generally do not have the capability of implementing sun-protective behaviours themselves [13]. For this reason, children up to the age of 5 years are highly dependent on the lifestyle behaviours, such as sun protection, that their parents/caregivers enforce [14]. As parents have considerable control over their child's health during the younger years, it is important to understand those beliefs that guide parents' decisions about their child's health behaviours, and to apply this knowledge in the development of effective interventions [15].

The current study adopts a Theory of Planned Behaviour belief-based framework (TPB; 16,17) to explore parental beliefs for their child's sun protection. The TPB is a sound decision-making model where behaviour is determined by intentions and intentions are determined by attitudes, normative expectations (subjective norms), and perceptions of control (perceived behavioural control; also proposed to influence behaviour directly). An important feature of the TPB is the hypothesis that the antecedents of attitudes, subjective norms, and perceived behavioural control are corresponding salient behavioural, normative, and control beliefs, respectively, reflecting the systems of beliefs that underpin an individual's intention and behaviour [16]. These beliefs can be used to develop theoretically-based and empirically-driven health messages that are relevant to the target group [15,18,19]. Targeting the beliefs reflects the typical means by which intervention designers can change behaviour based on the theory [15]. Formative research on beliefs, therefore, is necessary for depth of understanding of the behaviour in a given population [15,18]. Building on the recent research in this area [20], the aim of the current study was to explore, using a TPB belief-based framework, parental behavioural, normative, and control beliefs toward ensuring sun-protective behaviours for their young child.

Methods

The research was conducted between July 2013 and April 2014 in Queensland, Australia. Ethical clearance was provided by the University's Human Research Ethics Committee.

Participants

A purposive sampling method was adopted [21] to recruit parents aged 18 years or older (N=21; n=14 mothers, n=7 fathers, age range = 34-48 years) with a child aged between 2 to 5 years. Five single sex focus groups were conducted and participants were all independent

of each other. The majority were born in Australia (n=18) and in a partnered relationship (n=19). Education levels varied among participants with seven holding a post graduate degree, seven an undergraduate degree, five a diploma, and two had completed high school as their highest level of formal education. The majority of fathers were in full-time employment (n=5). One mother was in full-time employment, eight were employed part-time or casually, four indicated they were employed in home duties, and one was a student. Twelve of the participants had an experience with skin cancer which involved either themselves or someone close to them.

Design and Procedure

A TPB belief-based semi structured interview guide was developed [16,17] to elicit parents' beliefs about their child's sun safe behaviours as outlined by Cancer Council Australia [22]: i) wearing sun-protective clothing (collar and sleeves, long shorts or skirt, and sun-protective swimsuits); ii) applying SPF 30+ sunscreen, iii) wearing a hat, iv) seeking shade, and v) wearing sunglasses. Focus group questions were on discussions about the advantages and disadvantages, normative expectations, and inhibitors and facilitators associated with ensuring their child engages in these sun safe behaviours. The discussions ranged in time from 1 ¼ hours to 2 hours and were audio taped. **Data were transcribed verbatim and analysed by the second author according to the six stages of thematic analysis outlined by Braun and Clarke [23]. To ensure stability of coding, the first author, who was not present during the focus groups, reviewed the codes as well as sections of deidentified transcripts and commented on any inconsistencies in coding assignment. All themes were reviewed, refined, and named by the first and second authors. In addition, confirming summaries occurred throughout the discussions to validate participants' responses. Furthermore, a reflexive journal was kept by the interviewer as a record of first impressions about each focus group and key ideas**

expressed; this journal was used to assist with the data analysis and as a guide to indicate a point at which theoretical saturation had been reached.

Results and Discussion

While parents were asked separate questions for each of the five sun-protective behaviours, their responses often yielded similar beliefs across the behaviours. Thus, results are reported as sun-protective behaviours in general unless unique beliefs emerged for specific sun safe behaviours.

Sun Protection Knowledge and Behaviour

Parents were asked about their knowledge of the sun protection recommendations put forward by Cancer Council Australia [22] for young children. The majority identified wearing a hat, wearing sun-protective clothing, and applying sunscreen; with reference often made to the Australian health promotion campaign slogan ‘slip, slop, slap’ (slip on a shirt, slop on sunscreen, and slap on a **hat**). In relation to their practices for their child, parents reported adopting a range of sun-protective behaviours, with the majority adopting different approaches to sun protection in summer compared to winter. Parents often reported taking an increased vigilance and adoption of a greater range of sun safe behaviours in the hotter months of the year: *“Yeah in winter I don’t do much either except a hat... In summer it’s a hat, its shade, sunscreen, swimming shirts, reapplying sunscreen, umbrellas.”* [Mother].

These findings have important implications for policy development and suggest that, although parents may be informed about sun safe behaviours for their child, having this knowledge is not necessarily a prerequisite for effective action. Given parents adopt different behaviours across the year, which is contrary to recommendations, educational campaigns that often focus on imparting accurate information may not produce desirable behaviour [24]. Thus, instead of being concerned about parents’ general knowledge and how it affects their actions, it may be more useful to focus efforts on the psychological influences that guide the

behaviour – gaining insight into the beliefs about the behaviour [24]. Beliefs that are contrary to or supportive of the desired behaviour can then be challenged or strengthened, respectively.

Behavioural Beliefs: Advantages and Disadvantages of Sun-Protective Behaviour

The most common **advantages** parents identified related to protecting their child's skin, and included reducing the occurrence of sun burn, skin damage and reducing the risk of skin cancer. Protection of the eyes was the main perceived advantage of the use of sunglasses. The reduction of parental guilt and the peace of mind associated with being active in protecting their child from the sun, were further reported advantages by many parents. As one father said, *"Peace of mind. I find if the kids are out in the sun and they haven't got cream on you feel just terrible. You feel like you are not doing your job as a parent, not protecting them."* Other advantages included instilling positive attitudes towards and establishing good habits for sun safety in their children: *"...it teaches them what is appropriate to wear outside when it is hot. Training them to think, that way they are aware of the sun."* [Mother] and, *"The other thing it's become habitual... You know the kids just don't think of going swimming without a rashie on."* [Father]. Parents also frequently reported that sun protection increased their child's comfort (cooler, more hydrated, reduced glare [sunglasses]) and allowed greater time in the sun for play and activities.

Parents identifying health benefits of sun protecting their child, specifically reducing the risk of skin damage and cancer, is consistent with sun protection research among general population groups [19]. Reducing parental guilt and instilling a habit for sun safety in their child, however, are beliefs that are unique for this target group and suggest that parents have distinctive attitudinal beliefs that underlie their sun-protective decision-making for their child. Having an 'ethic of care' [25] toward sun protecting their child, therefore, may help parents to prioritise undertaking this important health behaviour and reduce their guilt as they

are doing the right thing by their child and fulfilling their role obligations as a parent. Given parental role construction [20] and habits [26] are shown to have positive effects on decision-making, it may be useful for health promotion interventions to address these beliefs in their programs. **This focus may be especially important given current interventions show little evidence for their effectiveness in instilling transferability and consistency of children's sun safe practices [9,10].**

Other advantages included reducing the need for other sun-protective behaviours, with sunscreen reported as the main sun-protective behaviour that could be limited if, for example, sun-protective clothing or shade were utilised: *"It's less work putting sunscreen on if you're going to put on the long sleeved rashie... So that's a positive"* [Father]. For some parents, the advantages identified were that sun protection was provided without the use of chemicals, with greater effectiveness compared to sunscreen which could rub off and with less resistance from children. Participants also reported on the advantages in adopting only one or a few of the sun-protective behaviours, as opposed to engaging their child in all five, based on its effectiveness as a method of protection from the sun or as a means of providing an alternative sun protection measure. These findings are somewhat contrary to other investigations where sunscreen was the most frequent method of sun protection across all age groups [27], **and indicate that parents believe they are providing their child with effective protection from the sun even if they only engage in a few of the sun protection measures recommended or simply just one behaviour (e.g., shade).** The findings also suggest that parents may avoid using sunscreen if other sun protection measures are in place, despite recommendations that it should be an adjunct to other forms of protection [22]. It is therefore important in understanding parents' decisions for their child's sun safety to consider sun-protective behaviour as a range of behaviours and not necessarily separate individual

behaviours. It may also be useful for health messages to highlight the importance of sunscreen use in combination with other sun-protective behaviours.

Disadvantages of sun-protective behaviour was also discussed, with the most common being the discomfort experienced by their child (e.g., sunscreen stinging children's eyes, sun-protective clothing being too hot, shade making children cold). Paradoxically, while parents identified children's discomfort as a main disadvantage of sun protection, the comfort provided by sun protection was identified by many parents as an advantage of ensuring children adopt sun-protective practices. This attitudinal ambivalence (i.e., holding both positive and negative evaluations) may have an attenuation effect on parents' decisions to sun protect their child [28]. Thus, it is important for health promoters to reduce the level of ambivalence in parents regarding the advantages and disadvantages in this context; perhaps by encouraging parents' beliefs that the advantages outweigh the disadvantages.

Parents own discomfort in the actual application of their child's sunscreen (greasy, thick and difficult to apply) was also reported as a disadvantage to providing sun protection. Almost half the parents discussed the time and energy required of them to ensure sun protection was enforced, with discussion focusing on their child's resistance and the time sun protection involves: *"It takes time, there's anxiety. The complaint is of course, it's in my eyes, don't like it, it's greasy. They jump up and down, you know."* [Mother]. It is important, therefore, to provide parents with suggestions on how to sun protect their child with minimal effort and less resistance from their child. For example, choosing play areas where there are high levels of shade thus limiting the choice to play in the sun, using sunscreen that is easy to apply, and providing positive reinforcements such as rewards to the child for being sun safe.

Another disadvantage discussed was that sun protection measures are expensive (e.g., sunscreen, sun-protective swimsuits). Furthermore, parents discussed that ensuring their child is always sun safe limits exposure to the benefits of the sun and vitamin D and provides for

ineffective or a false sense of sun protection: *“I guess (shade) is one of the least effective methodologies of avoiding sunburn, even when you’re in the shade the reflective you know UV can burn you.”* [Father]. A few disadvantages were also reported that were specific to sunscreen, including the discolouration and staining of clothes by sunscreen and the regular application of chemicals to the skin with a concern of the potential future negative health risks of long term sunscreen use: *“...it’s putting chemicals on my children’s skin, especially starting from a young age, I just don’t like it.”* [Mother]; *“... the long term side effects of sunscreen are unknown.”* [Father]. To counter parents’ beliefs of the disadvantages to sun protecting their child, it may be advantageous to provide parents with a list that outlines a range of sun safe products that are inexpensive yet effective. It may also be beneficial to educate parents on current evidence regarding the safety of sunscreen, and vitamin D and sun exposure [29-31].

Normative Beliefs: Approval and Disapproval of Sun-Protective Behaviour

Grandparents, partners, friends with children or other parents, health professionals, and childcare/school staff were individuals and groups identified as approving of protecting children from the sun. Overall, there was a general agreement among the parents that most people would approve of sun-protective behaviour due to the growing awareness of the issues associated with unprotected exposure to the sun.

While childcare centres and schools were identified as approving of most sun-protective behaviours, they were also perceived as disapproving of children wearing sunglasses, with concerns for management of lost property and safety offered as reasons for opposition, *“I don’t know how they would go if you said you wanted your child to wear sunglasses. ... [the centre/school personal] may think it is not as safe if you smash them, whatever.”* [Father]. Grandparents were also discussed as a group who, although in general were perceived as supporting sun-protective practices, were sometimes thought of as a group

who perceived sun protection as not always necessary, “*Oh you know, you know they [the grandchild] look really nice with a tan or you know it’s [the grandchild] too white, it [the grandchild] needs to go out in the sun.*” [Mother]. A few parents also identified friends with a preference for natural health as individuals who may disapprove of sunscreen use based on its chemical content.

Taken together, these findings suggest that pressure from significant others to sun protect their child may be important and are consistent with other studies on the influence of social factors toward sun protection [20, 32-34]. Thus, by creating a greater awareness of sun safety among significant others, parents may consequently feel a greater pressure to ensure their child engages in sun-protective behaviours. However, parents may also hold mixed beliefs toward social pressures to engage their child in sun protection. As was the case with attitudinal ambivalence, conflicting normative influences may also need to be addressed in resultant interventions to ensure social influences have a positive impact on parents’ decisions to sun protect their child.

Control Beliefs: Facilitators and Inhibitors of Sun-Protective Behaviour

The most common belief motivating participants to engage in sun-protective behaviour with their children was having a habit or rule in place, “*Oh if you start from a young age and you just say ‘this is what it is’, don’t give them a choice; ‘if you go out you have to cover up’ and that’s the way we’ve always done it with hats, ‘if you don’t have a hat on, you stay in the shade, you don’t go out and play.*” [Mother]. Similarly, the ‘no hat no play’ rule was referred to by many parents and illustrates the adoption of childcare/school policy terminology in parents’ everyday language. Linked to this belief, many parents reported the ease in ensuring sun protection in specific circumstances where habits had been previously created (e.g., going to the beach, swimming in the pool), “*And I think there is more of a link for them in their thinking that when you put your swimmers on you need sun*

cream.” [Mother]. However, while having a habit or rule in place was identified by many parents as a control belief facilitator for the use of three of the sun-protective behaviours (hat, sunscreen and clothing), it was mentioned by only a small number of parents as a factor that made it easier to ensure sunglasses and shade use. In fact, parents specifically referred to the absence of a rule or habit as a barrier to sunglass use with their children. For many parents, their own attitudes to sunglasses were an inhibitor to sunglass use and sunglasses were perceived by many as less important than sunscreen, clothing, hats, and shade: *“Yeah, Slip, Slop, Slap has been driven in, but this (sunglasses) is kind of new. So maybe in 30 years’ time, all the kids will be wearing them.”* [Father].

Other facilitating factors included the availability of sun-protective gear - including a consistent location for sun safe gear, having spare hats and sunglasses, and provisions of shade cloths and trees at parks, *“So they’ve got one or two hats and they tend to be hung up. I’ve got little hooks by the front door and inside and that’s when you walk in the door you hang your hat up there.”* [Mother]. Additionally, parents indicated that having a fair skinned child and the adoption of sun-protective behaviour by other children and adults (siblings, friends, participants themselves, and sporting celebrities) made sun protection easier. Conversely, some parents indicated that sun protection was made more difficult by others (other children, friends, family) not adopting sun-protective behaviour. One mother quoted her son by saying, *“He’s not doing it so why should I?”* Ease of use of sun-protective clothing was also considered important. Many parents commented on the ease of using hats, for both the children and adult. In relation to sunscreen, parents discussed the ease of application and novelty of sunscreen as motivating factors for sunscreen use with their child. Specifically, reference was made to roll on sunscreens, sprays, and different colour sun creams/zinc. Design and quality of sun protection measures were further factors discussed. In reference to fashion, adequate ventilation, ease of use (e.g., hat for pony tail), chlorine

resistant fabric (e.g., for rashies), and features to aid in keeping sun protection measures on the child (e.g., toggle devise to keep hat on head, strap for sunglasses) were design features discussed that would help parents to ensure sun safe measures were in place for their child.

Aside from the facilitators discussed, many factors that made sun protection difficult were also identified by parents. Children's resistance to and whingeing about sun protection and the subsequent discomfort for parents was one of the most commonly reported control beliefs. With specific reference to sunscreen, children's resistance to its use and the parental effort required to ensure it was used was identified by most parents. Sunscreen was believed to be "greasy", "messy", and to "leave stains on clothes, cars and furniture" as well as "cause discomfort to children" (e.g., stinging eyes, getting in mouth). Keeping sun-protective gear on the child was another common inhibiting belief. One father joked, "*You know what we need; Spray on hats!*" [Father]; and another father, "*...if it is windy it's just a battle sometimes to keep it on*". A child's preference for what was perceived as more fashionable non sun-protective clothing (e.g., cap over wide-brimmed hat) was also identified as a barrier by a small number of parents as was damage or loss of sun protection items; as one mother said referring to sunglasses, "*Lost and broken, twisted...scratched. They just don't care where they throw them and the lenses are so scratched...*". Other commonly reported inhibiting factors included the impractical nature of sun protection in some circumstances; participant's own belief that sun protection is not necessary (olive skin requires less protection, sunglasses don't allow eye contact, a little bit of sun is good, caps are better than nothing); and the time, energy, and planning involved. One father summed up the latter barrier, "*Sometimes you just don't think it is worth it [the effort].*" [Father].

Overall, these findings suggest that, although parents discussed facilitators to help them engage in sun protecting their child, they described many more barriers. **Thus, preventative intervention work may benefit from extending current programs to**

include multi-component programs, targeting action at different social ecological levels of health promotion [35]. At the individual level, strategies could include having a plan to ensure sun protection is performed regularly thus instilling a habit, having a home rule that inhibits play unless sun protection measures are adhered to, and having sun protection measures available such as positioning hat racks and sunscreen at the entrance to outdoor areas to increase their accessibility. At the societal level, rules for sun protection in schools and childcare centres should be reinforced not only with having specific sun safe policies but also making them more explicit to parents. In addition, manufacturers and fashion designers could continue to think about designing products for children that are easy to apply, novel in appearance, and have features that are child friendly and instil some sense of fun in performing the behaviours.

Conclusions

There is a dearth of literature on sun-protective behaviours in young children and limited application of effective sun safe behaviour interventions for young children; hence, research is needed in this area. **The current study provides the first step, using sound theory, to elicit the underlying beliefs that influence the decisions of parents in providing sun protection for their young child. Despite these strengths, limitations are also noted including the sample being predominately Caucasian and in a partnered relationship which may limit transferability of data across different cultural and family structure groups.** Nevertheless, the current study furthers our understanding of parents' beliefs toward keeping their child sun safe **in which clear advantages and disadvantages (attitudinal beliefs), social expectations (normative beliefs), and facilitators and barriers (control beliefs) were identified. Moreover, parents identified a range of underlying beliefs, some of which were unique perspectives about sun protection for young children; such as parents' views of a single sun protection measure (e.g., shade) as**

effective and not an adjunct to other measures (e.g., sunscreen), the benefit of reducing parental guilt and the disadvantage of child discomfort, the mixed perspective of normative expectations of others, and the barrier of child resistance. These parent-specific beliefs should be considered when designing interventions aimed at increasing sun protection for young children. Overall, the current study provides knowledge about the beliefs that underpin parents' decision for their young child's sun protective behaviours. Future interventions targeting these beliefs will be more effective as the health messages can be tailored to the specific group and behaviour. These identified beliefs can be used to inform interventions to improve sun safe behaviours in young children who reside in a region that has the highest skin cancer incidence in the world.

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