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SOCIAL MARKETING-BASED STRATEGY FOR SUN PROTECTION INTERVENTIONS

REPORT PREPARED FOR THE SOUTH WEST PUBLIC HEALTH OBSERVATORY

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Executive Summary

We were requested by Dr Julia Verne to provide a literature-based, judgement-based (i.e. no new primary research) draft social marketing strategy for sun protection activity in the South West region. The request is driven by rising melanoma rates in the South West region and recognition of the need to increase sun protection knowledge and, ultimately, behaviours among specific segments of the population.

The promotion of sensible sun protection behaviours is constrained by:

- The perception that skin cancer risk in the UK is low. The population is not sensitized to skin cancer as a major health risk in the same way as are Australasian populations [1]
- The lack of central government support for and endorsement or funding of interventions
- Strong normative beliefs, particularly among young people about the social value of suntans and prevailing social norms regarding the attractiveness of suntans and acceptable behaviours modelled among peers [2]
- A lack of integration of messages and behaviours among stakeholder groups (e.g. schools, where there is evidence that policies are inconsistent and, in some schools, children may actually be discouraged from bringing sunscreen to schools[3]).

Additionally, recent media coverage hyping the benefits of Vitamin D as both a preventative and curative element (including cancers) will also impact on the way future interventions are received.

Insights that led to the recommendations that follow are:

- 'trigger' moments are very important – sun protection is not something that is of major concern / top of mind in the UK winter, so linking activities to moments when sun protection is high on people's agendas is important.
- there are two main tasks to be done: first, gaining a general awareness that too much sun is harmful, but understanding this on its own is unlikely to shift behaviour. Second, creating specific propositions that people will accept – these offerings leading to lower risk behaviours in an acceptable way.

In the sort term, we recommend immediate implementation of:

- activities that can leverage off the existing SunSmart UK brand
- direct beach and other outdoor lifestyle face-to face-interventions
- highly targeted communications at parents, teachers, young adults and outdoor workers to continue the long term task of building sustained awareness of skin cancer risks and appropriate behaviours. Ideally, this would be best achieved nationally through high profile mass media such as television, however funding for this appears unlikely.

In the longer term, priority in developing and implementing interventions should be given to:

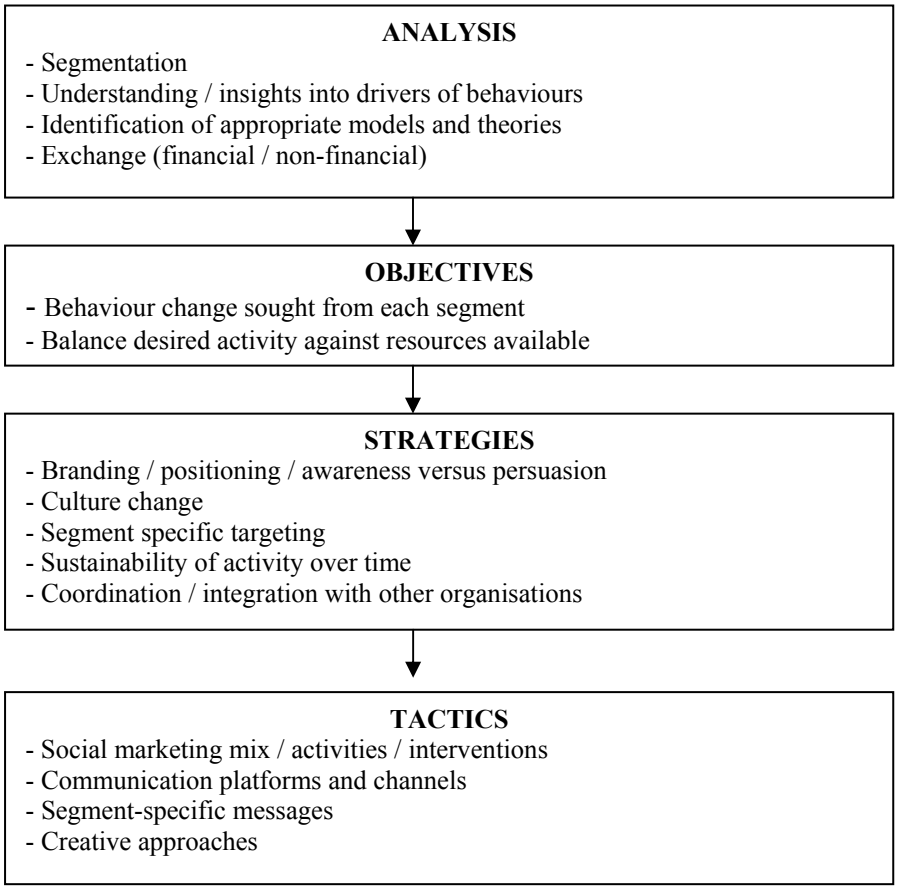
- obtaining government assistance in raising awareness of the link between unwise sun exposure and skin cancer in the UK, and in the South West region in particular
- ensuring integration of messages and actions among stakeholder groups and consistency with national, regional and local initiatives.

- gaining media buy-in and support in promoting sensible sun protection behaviour, clarifying the link between sun exposure and vitamin D (and claims made for the latter)
- addressing overall gaps in the population's knowledge and awareness of safe sun exposure practices
- focusing specifically tailored interventions on clearly identified segments, drawing on theoretical foundations and knowledge of the very different attitudes and beliefs held by each segment to develop appropriate messages
- raising awareness of the need for early detection and treatment, supported by appropriate infrastructure to facilitate screening and referrals to specialist services where appropriate
- utilising collaborative activity with appropriate organisations such as pharmacies, food retailers and sporting organisations to link with, and leverage off, their activity in this area and to ensure that their communication themes are consistent with recommended 'best practice'
- setting benchmark measurements in place as the first step in the development of an on-going tracking programme to measure intervention effectiveness and to enable interventions to be fine-tuned as necessary
- conducting primary research within each segment to deepen knowledge and insights and to enable programmes to be monitored over time.

Introduction

The recommendations provided in this report are based on insights into the attitudes and beliefs underpinning current sun protection behaviours and on examples of effective interventions reported in the literature. We have used this material and a small number of relevant theories that have been proven to provide effective underpinnings for previous interventions to develop an integrated set of interventions targeting specific identified population segments in tandem with wider educational activity.

In developing these recommendations, we used a well recognised social marketing process. This commences with an analysis of the key issues, identification of priority market segments, then identifying the attitudes and behaviours underpinning each segment's behaviour. Finally, relevant theories were identified that might be relevant in the development of potential interventions. A summary of this process is shown in the flowchart overleaf.



The analysis undertaken has been supplemented by a small pilot study of the behaviours and attitudes of a convenience sample of university students in relation to sun exposure and sun protection. These findings have acted alongside the literature and our judgement in informing our strategies. A summary of the principal findings from this study are detailed in the supplementary document.

Sun Protection Context and Policy Issues

There are a number of contextual factors that affect the development of potential interventions. First, current debates across both academic and consumer media regarding sun exposure and vitamin D must be recognised as complicating factors that are not fully controllable. For example, in relation to the Vitamin D debate, messages from sources such as consumer media regarding the positive effects of sun exposure in building Vitamin D levels can undermine those from other sources, such as official sun protection recommendations[4] regarding limiting exposure to sunlight.

Second, we have an increase in overseas holidays, often to destinations where sunburn can occur far quicker than in the UK[5]. Here previous research indicates British tourists, especially men, place a high value on tanning[6] . However, it is a mistake to believe that the major threats occur with sunbathing holidays. 60% of sunburns occur at home in the UK, and often as a result of outdoor activity other than deliberate sunbathing[7]. Therefore in these instances, intervention strategies need to reflect day-to-day practicalities rather than specific holiday scenarios.

Central to any intervention strategies is the need to raise awareness of the specific UK skin cancer risk[8]. This can draw on official government and related agencies' support to publicise the risk both in home environments and on overseas holidays, stressing messages such as one severe sunburn during childhood or adolescence may double the risk of melanoma development[9]. The impact of climate change and possible depletion of the ozone layer are currently factors for which the impact is subject to speculation rather than empirical data[10] and have been disregarded in the development of recommendations.

The WHO has identified exposure to ultraviolet radiation as a major threat to human health, and halting the year-on-year rise in UK skin cancers was a specific target in the 1992 White Paper "The Health of the Nation"[11], yet there is little evidence of coordinated interventions aimed at addressing the skin cancer threat; the issue was declared in the mid 1990s as having "no obvious link" to the school curriculum[12, p. 22] . Recent estimates put the 2002 total cost of skin cancer in England as in excess of £190 million, with almost 40% of the burden falling on the NHS [13]. While UK skin cancer rates are one-quarter of those of more high profile countries such as Australia, malignant melanoma (MM) rates in the UK are rising by some 8% per year, faster than the increase in any other cancer[14], yet the issue does not seem to be perceived as a priority by central government.

This lack of priority may be related to the number of new cases of malignant melanoma of the skin each year compared to other cancer types. Official statistics indicate that there are around 8,900 (3% of all malignant neoplasms) new cases of malignant melanoma each year in the UK and 1,800 deaths. This is a relatively small percentage when compared to the most common cancer types, breast, lung, bowel (colorectal) and prostate, that account for over half of all new cases and 47% of deaths[15]. However, unlike most cancers melanoma is disproportionately high in younger people. Malignant melanoma is the most common cancer in young adults (aged 15 – 34) and approximately one third of all cases of melanoma occur in people under 50. Furthermore malignant melanoma is twice as common in young women than in young men, but more men die from it [16]. Given this, the importance of intervention

strategies that focus on men in terms of prevention and early detection is paramount; on average, about 20 years of life are lost for each melanoma death[17].

The picture changes significantly when in addition to malignant melanoma of the skin non-melanoma skin cancer (NMSC) new cases are included. In the UK every year over 72,000 cases of non- melanoma skin cancers (NMSC) are registered and this figure is accepted as being incomplete. Other studies estimate that at least 100,000 cases of NMSC are diagnosed each year[18,19]. Even when using the lower figure of 72,000 new cases this constitutes over 20% of all malignant neoplasms every year. Although the survival rate for NMSCs is over 95% they can metastasise and in 2005 there were 511 reported deaths in the UK from NMSCs[20]. Incidence of MM and NMSC is approximately doubling every 20 years and this will increase over the next five years as a result of an ageing population [16].

Between 1971 and mid-2006 the UK population aged over 65 grew by 31 per cent, from 7.4 to 9.7 million. The post-War 'Baby Boomer' cohort is now mid 50s – early 60s, however the largest population segment percentage growth is at ages 85 and over (5.9 per cent). In 2006 the number of people aged 85 and over grew by 69,000 reaching a record 1.2 million[21]. As 80% of NMSCs occur in people aged 60 years and over [21], the increase in both population percentage and actual numbers of older people may herald a potential skin cancer problem.

The UK Department of Health website (www.dh.gov.uk/12/05/08) has specifically identified a number of key areas for health promotion and health prevention. These priority areas include obesity, sexually transmitted diseases, alcohol, substance misuse, smoking and healthy living but despite the growing incidence of skin cancer there is no direct reference made to health promotion and health prevention with regards to this area. With the incidence of skin cancer having doubled over the past decade [22] it is therefore surprising that the UK Department of Health has not highlighted sun awareness as a key health promotion and health prevention area. Furthermore government funding had actually reduced for Cancer Research UK's SunSmart campaign from £150,000 in 2006/07 to £104,000 in 2007/08, a 31% reduction overall[23] .

Research has shown that one incidence of serious childhood sunburn can double the risk of malignant melanoma [24] and that with simple behavioural changes such as avoiding the strongest sun and appropriate use of sunscreen, hats and 'long' clothes 90% of cases could be prevented [25]. The prevalence of skin cancer, its seriousness and preventability makes sun safety an ideal focus for health promotion efforts but results so far of efforts to promote sun safety have generally been disappointing [23]. Despite intensive publicity over the last thirty years aimed at prevention, Australia has been at the forefront of a global epidemic in skin cancer among fair-skinned people. There has been a leveling off and reduction in melanoma mortality for younger Australian women compared to a continued rise in melanoma mortality rates for older Australian men[26]. Failure to convert increased awareness into actual behavioural change is a reoccurring theme within the sun safety literature[27]. It is interesting to compare the lack of attention to sun protection compared to other, higher profile health issues, for example "it has been hypothesized that media attention to breast cancer is higher than attention to other cancer types because several groups have created a successful mobilization effort"[28 (p. 494)].

Recommended Strategy

The apparent contradiction between the UK Government cancer strategy and the reality of skin cancer rates requires further debate and resolution in regards to adequate resourcing for appropriate interventions.

Coordination with other related national, regional or local programmes that might be running such as in schools is obviously beneficial, but involvement of a wide range of organisations such as healthcare providers, private sector and nonprofits organisations should also be encouraged although inter-organisation or inter-agency coordination is far from unproblematic[29] .

Confounding Factors

1. The Vitamin D debate

While there is considerable debate in the academic literature regarding positives[30, 31] and negatives[32, 33]of sun exposure, little balanced debate filters through to consumer media. Already in Australia, there is a growing perception that sun protection may result in not having enough Vitamin D, potentially undermining the effectiveness of long-running sun protection campaigns[34]. The issue is further complicated by the lack of a readily comprehendible guide to optimal quantities of Vitamin D across different population groups[35]; concerns are even evident on this issue within the WHO[36].

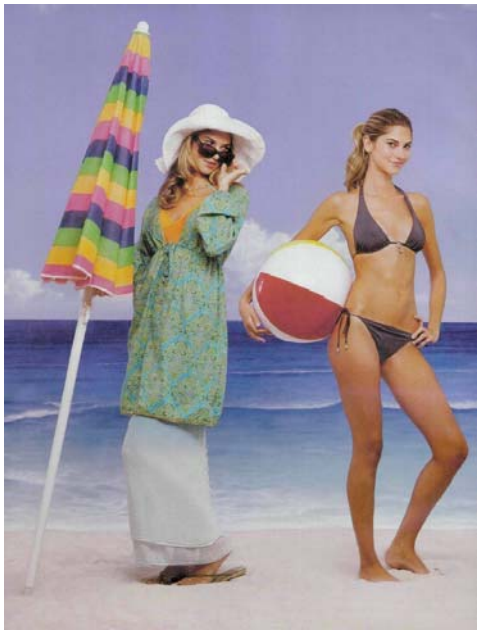
The coverage of Vitamin D in consumer media must give cause for concern, given the somewhat simplistic treatment of the topic, as the examples from main media on-line editions illustrate:

"Vitamin D may fight breast cancer" (BBC News 23 March 2004)
"Vitamin D 'can lower cancer risk'" (BBC 28 December 2005)
"Daily intake of Vitamin D 'can cut cancer risk by half'" (The Guardian, 28 December 2005
"Lung cancer 'link to lack of sun'" (BBC News 18 December 2007)
"Vitamin D 'may help slow ageing'" (BBC News 8 November 2007)
"Sunshine – vitamin D and heart disease protection included" (Daily Telegraph, 7 January 2008).
"Low Vitamin D heart health risk" (BBC News 8 January 2008)

More worrying is the challenge to official sun protection messages in some popular media, as illustrated by the following extract and accompanying illustration, reproduced below, from an article in *Psychology Today* titled "The Great Sunlight Standoff" which sums up the battle of images and perceptions faced in developing interventions in this area.

> *"Hold the sunscreen –at least for a few minutes. Evidence is emerging that some unfiltered sun exposure repels ills from heart disease to cancer to multiple sclerosis,*

not to mention depression – enough to add seven years to your life. Are you ready for a more nuanced view of sunshine"[37, p. 97].



Given the amount of coverage of Vitamin D in the consumer literature, the pilot study included an open-ended question to determine knowledge of sources of vitamin D. Table 1 below indicates that there is little meaningful awareness of sources. While the percentage identifying sunlight is higher than the other sources, several respondents indicated some awareness' of the dangers of overexposure by qualifying their responses with comments such as 'limited exposure', or 'early morning sun'.

Table 1: Open Ended Responses to Ways the Body can Acquire Vitamin D

Sources of Vitamin D	**% of respondents indicating this source**
Food	13
Fruit and vegetables	10
Sunlight	36
Vitamin Supplements	18

2. Sunbeds

There is a large body of literature stressing concerns regarding the use of sunbeds and the lack of effective industry legislation[38], coupled with an acknowledgement of a lack of awareness among sunbed users of the dangers of excessive use[39]. However – and this is very important for our social marketing strategies - even when some knowledge is gained, evidence from both the USA and Europe indicates that behaviour, particularly among a key user group of adolescents, does not change[40]. In 2006 the International Agency for Research on Cancer (IARC) concluded that there is convincing evidence to support a causal relationship between sunbed use and skin cancer, particularly with exposure before the age of 35 years[41].

The 2012 Skin Cancer Vision (SCV)[42] recognised that despite recent data that shows an association between sunbed use and occurrences of MM and NMSC, sunbed use is likely to increase, especially amongst teenagers and young adults. Although the SCV report does not represent UK Government policy it does provide an insight into the proposed development of skin cancer services up to 2012. In relation to sunbeds the report proposed that sunbed use be regulated in terms of restricting use by under-18's, phasing out unsupervised coin operated facilities, providing clear information about hazards and also phasing out sunbed use on local authority premises. The Sunbed Association (www.sunbedassociation.org.uk) supports a ban on under 16s but not under 18s, arguing that there is no proven link between skin cancer and sunbed use. This is despite the fact that it has been estimated that sunbeds cause 100 deaths from melanomas every year in the UK[43]. Despite growing awareness of the dangers of sunbeds many men and women continue to use sunbeds regularly[38]. The term '*tanorexic'* is being used in relation to people who obsessively tan and may have an addiction to the UV rays of tanning beds, even experiencing a 'high', much like a drug addiction [44]. In April 2008 the UK Health and Safety Executive (www.hse.gov.uk) provided a document for consultation which recommended that under 18's be discouraged from using sunbeds; guidance for operators on their legal responsibilities was included in their document.

The proposal to phase out local authority leisure centre sunbeds is not new, a call to ban sunbeds was made at the annual conference of the Chartered Institute of Environmental Health (CIEH) in 2003. Despite this in 2005, it was reported that over half of local councils were still offering tanning booths in their leisure facilities[45]. However, a preliminary investigation of local authority web sites in the South West of England did not identify any leisure facilities offering UV tanning facilities in April 2008[46].

As long as the psychological association between having a tan and health continues to be reinforced in the promotional materials used by tanning salons the use of sunbeds is likely to continue to increase, especially amongst teenagers and young adults. The two graphics below were taken from tanning salon web pages and are deemed to be representative of the type of promotional materials used. In Australia at least, portrayal of models in magazines contradicts public health messages regarding sun protection behaviour [47] and in the USA, television programmes glamorising tanning salons, including featuring celebrities who have used sunbeds etc, have been heavily criticised [48] for failure to include any warnings regarding potential negative effects.

The pilot study findings showed that approximately half of respondents had used a sunbed within the last twelve months, 10 % of respondents had used a sunbed at least once in the previous three months with 5% of respondents using sunbeds at least once a week.

Boy burned in tanning salon visit http://news.bbc.co.uk/10/04/08

A 13-year-old boy is recovering after sustaining severe burn blisters to his face after visiting a tanning salon three times in a day. He spent a total of 21 minutes under the lights of the stand-up booth.
He has been told to stay at home for a week after the burns became infected.
The boy's mother, said she had warned her son about the dangers of sunbeds before and had threatened to "ground him" and take away his pocket money if he used them again.
The salon's owner said he was "gutted" by the incident and is arranging meetings with officials to prevent it happening again.

http://www.iso-italia.co.uk/

www.beautyandthebeachtorquay.co.uk

Implication for Future Interventions

These two factors may hamper official sun protection communication but are beyond our direct control. Their effects must, however, be factored in when developing future interventions. In addition, there appears to be an assumption that the level of knowledge of common terms among target population segments is higher than it is likely to be in reality. For example, while there has been considerable effort placed on promoting UV indexes in several markets such as Australasia, there is evidence of a lack of understanding of its implications for sun exposure behaviour and of people taking the index data into account in their outdoor behaviour[49]. If indexes are to be used, it would be advisable to work with the media to educate people as to the relevance of the indexes to personal behaviours and to assist media such as radio stations in developing simple, understandable formats for presenting the information[50]. At an even more basic level, there appears to be confusion about what sunscreens do and somewhat muddled perceptions as to the amount of protection they

offer, together with confusion regarding whether and by how much they can prolong time spent in the sun [51] [52] .
Two aspects must be considered in recognising and combating confounding influences and in raising awareness of basic issues: news coverage and implicit messages via the portrayal of characters in television programmes or portrayal of models in magazines. Mass media can be useful for raising awareness but do not lead to long-term behaviour change[53]. However, maintaining good media relations is important as "news values can conflict with science, media and public health agendas" [54, p. 50] and the information presented by mass media outlets is criticised for its lack of accuracy and tendency to 'hype' reports [55].

Sun protection is not seen as a high profile topic and coverage does not generally include educational information[27]. Further, it is possible that the media coverage of vitamin D may have undermined the integrity and impact of our sun protection campaigns[56]. It is recommended that the media be 'brought on board', gaining their assistance in publicising the extent and severity of skin cancer problems, clarifying the Vitamin D issue relative to sensible sun exposure, and providing coverage of intervention programmes. In building relationships with the media, their preferred role in championing interventions and the type, frequency and nature of information they seek should be clarified.

An interesting omission from media coverage analysed to date is the link between excessive sun exposure and risk of developing cataracts which appears largely ignored in the northern hemisphere, although an integral part of Australasian interventions[57]; this may be a minor, but useful addition to any portfolio of useful and relevant material for media liaison.

That completes our initial analysis. We are now ready to introduce some key social marketing principles that we see as very important for sun protection behaviour change, and then move to the strategy itself.

Key Social Marketing Principles for sun protection

- Our propositions to people need to be 'fun easy and popular' not 'boring difficult and lonely'. If we apply this to sun protection, examples might include rather obvious things such as making it easy to get hold of sun protection products. 'Fun' is less obvious in this arena, but as we will see later, UV beads make it fun for kids to assess UV. The 'Popular' concept suggests that ideally you need role models / local beach interventions to create a 'social norm' of covering up.
- Segment and conquer: there are a number of clearly demarcated segments who are particularly vulnerable to sun exposure. Each of these has different reasons for their risky behaviour, and different solutions that need to be implemented. These will be discussed in detail later.
- Sun protection social marketing suffers from the same set of problems affecting many other health promotion sectors: people are not particularly motivated by being told to cut down on some immediate pleasure (sunbathing) for some possible, remote sounding benefit at some time in the distant future (maybe you will get skin cancer in 30 years).

- Sun protection messages compete with a wide variety of other health messages in the UK, and we need to be clear about its relative priority versus other risky behaviours. We then need to be sober and realistic about the priority of all these messages in the lives of our citizens:

(Source of diagram: NSMC: 2008)

- If the above are indirect competitive noise messages, sun protection behaviours also compete directly with some groups needs for a tan, the need to be masculine, or just the inconvenience of applying protection.
- Sun protection social marketing has an interesting angle that many other health promotions do NOT share: a big part of the solutions lie with commercial products. This strongly suggests that commercial-social partnerships should be fruitful. This also implies that commercial firms who stand to benefit from increased sales should also bear some share of the public costs of behaviour change. Possible strategies are discussed in the Summary section.

- Some marketing techniques work on the simple 'Pavlovian' stimulus-response principle. Examples may include posters in offices by lifts suggesting we should use the stairs. There is some evidence that these can work as triggers to people to behave in certain ways. The 'place specific' nature of many sun protection situations lends them to this kind of approach. The 'pool cool' case study later in the report is an example.

In our view, a clear conclusion can be drawn from the above. Broadcast/mass media awareness campaigns are important in highlighting the 'too much sun –> cancer risk' message. But these are expensive and will only work over an extended period, backed up with direct interventions. Short term solutions can be found: localised sun protection messages and interventions can be tightly targeted towards vulnerable groups at times and places when they most need protection and are most receptive to it. Behaviour changes asked for must be easy to do, realistic, and account for citizens social and self identities – for example compromising on 'safe tanning' rather than 'nagging' people not to tan at all. Face to face driven interventions are more likely to work.

Behavioural Goals

We have been unable to locate any research among the population of the South West region that can provide benchmark measures of existing sun protection awareness and / or attitudinal or behavioural data. We recommend that this data be obtained in order to provide the foundation for tracking changes in attitudes or behaviours for the future. In setting appropriate objectives, it must be recognised that raising awareness of risks associated with unwise sun exposure is a necessary, but not of itself sufficient goal. The long term goal must be behaviour change on a population basis, however there is evidence that many past initiatives have increased knowledge and awareness but not changed behaviours, especially among adolescents [58, 59].

As interim objectives, the following short term awareness and attitudinal aims are recommended:

- Increase knowledge of the role of excessive sun exposure in development of skin cancers; benchmark measurements are extremely important in the long term management of sun exposure.

- Increase awareness of sensible sun exposure behaviours, including optimal sunscreen application, given evidence that the SPF rating of sunscreen is "generally higher than achieved in practice"[60, p. 105]. Again, benchmark measurements are extremely important.

- Increase knowledge of skin cancer detection techniques, including self-examination as well as GP and pharmacies

- Increase awareness of the dangers of sunbed use

Longer-term objectives should include:

- Decreasing misconceptions regarding the impact of burning

- Decreasing the strength of the link between suntans and social attractiveness. We recognise that this latter goal is particularly difficult and we recommend working within the current social norm that suntans are attractive. A 'nagging' approach is highly likely to be counter-productive.

The magnitude of change that will be possible will depend on the resources available to support interventions, but we recommend that specific objectives be agreed and then used as benchmark indicators for the development of an integrated tracking and measurement system.

Relevant Theoretical Foundations

Theories can be used to guide both the development and implementation of interventions through identification of important influences on actual and potential behaviour [61] and thus guiding "researchers to routes to persuasion and to beliefs to target in persuasive efforts" [62 (p. 268)]; Theory-driven approaches have been found to lead to more persuasive messages across the range of socio-economic groups[63].

No one theory is superior in every situation; both the Health Belief Model (HBM) and the Theory of Reasoned Action (TRA) and its more recent successors, the Theory of Planned Behaviour (TPB) [64] and the Integrative Model of Behavioural Prediction and Change (IM) have been used extensively in the past in areas such as health-protective behaviours including sun protection. They have proven useful in identifying and explaining risk perceptions and underlying attitudes and beliefs[65]. We could not find any specific research detailing links between attitudes and behaviour in the sun protection area. However, we can speculate: for example it may be that attitudes such as "getting a tan is very important to me" is a good predictor of risky behaviour. On the social norms front, "all my friends have a tan in the summer" may be a good predictor of risky behaviour. Finally perceived behavioural control perceptions: "I find it difficult to organise myself when preparing an outdoor trip" may also predict risky behaviour.

Note that the TRA, like all behavioural models, is less than perfect in predicting future behaviour, with usually at least 50% of variance unexplained[65]. This is partly because social cognition models such as the TPB and IM emphasise rational decision making, but do not explain apparently irrational behaviours such as high knowledge of risks associated with unwise behaviours, but widespread failure to act on this knowledge[66]. We know there is a poor correlation between knowledge regarding skin cancer risk from excessive sun exposure and effective protection behaviours, especially among younger age groups[67].

Therefore, we sought models we could use to explain emotive / 'irrational' behaviours? (Just in passing we note that the word 'irrational' is often inappropriate: for young girls ignoring skin cancer risks is not irrational – they have made a choice that makes sense for them). A useful additional theory where subjective and emotional factors may be significant factors in driving behaviour is Leventhal's Theory of Self Regulation [68, 69] which provides a structure for understanding the way in which both rational and emotional factors operate in parallel and influence how a person perceives threat of illness, the relationship between these perceptions, how illness symptoms are reported, and how these personal beliefs influence decisions about self-care behaviours that lead to either promoting or ignoring threats of illness.

Applying this to sun protection, we can see that a complex set of mental processes may unfold. Imagine a young adult wondering what to take to the beach for a day out with friends. Where is skin cancer risk in their list of priorities? As things stand currently – probably pretty low down - for a variety of reasons. We can provide education that may raise their awareness and understanding that there is a risk. We can then make it easy for them to do something about it. Emotional considerations such as worrying about looking foolish in front of friends ('I'm not putting on sun cream and getting laughed at'), wanting to look good ('I want a tan'), being naturally lazy ('I can't be bothered to pack clothes and a hat'), wanting to fit in

('all my mates will have a lovely tan – I want one too'), will act against sun protection. Others such as fear ('I don't want to get ill'), vanity ('I don't want to burn and look bad') will act in favour.

Concepts such as self identity are also of possible use to us. Here, people who have a perception of themselves as 'grown up' and 'sensible' are much more likely to reduce their risky behaviours. People who see themselves as 'risk takers' will act accordingly. In the longer term you may be able to commission work that enables you to profile such people and identify priority groups according to these priority segments. In the context of sun protection behaviours, the media coverage noted earlier may influence attitudes towards sun exposure; subjective and emotional beliefs regarding the attractiveness of a tan and the confidence in one's self image and identity together with unrealistic optimism regarding personal consequences may override rational knowledge regarding risks of excessive sun exposure.

The social cognition models and SRM model should be regarded as complementary to each other as they share many common characteristics and allow the identification of the determinants of behaviour which may vary across population segments or cultures, thus guiding the development of communication messages appropriate to elicit the desired behaviour change. Further, "any given behaviour is most likely to occur if one has a strong intention to perform the behaviour, has the necessary skills and abilities required to perform the behaviour, and there are no environmental or other constraints preventing behavioural performance" [70, p. 52].

In considering the context in which decisions are made in relation to sun protection, the principles of exchange and competition must also be recognised. For example, consistent with the normative beliefs component within the IM model and the emotion pathway of the SRM model, in targeting teenagers and young adults, we are asking that behaviours they value be given up and / or behaviours adopted that may not be valued by many within this group – in return for a proposition regarding potential benefits that must be taken on trust based on scientific consensus[71]. The task is made increasingly difficult when this consensus is subject to challenges in popular media such as the *Psychology Today* article cited earlier.

Behavioural competition comes from many sources such as persuasive activities and behaviours among peer groups, direct counter-marketing from commercial sources (sunbed providers) and indirect counter-marketing from competing ideas such as the Vitamin D coverage all impact on behaviours. Individuals will perform a cost-benefit analysis regarding the potential financial, social and psychic advantages versus disadvantages of changing their behaviours. The relative strength of the various factors influencing their decisions can only be gained by research; we have been unable to locate studies that have examined, as opposed to merely noting, the interplay of both rational and emotional decision processes in the specific context of sun protection. Clearly there is a case here for in depth research but in the mean time we would recommend that judgements are made based on a rounded understanding of the typical mentalities that are prevalent within each of the target groups including:

- their current understanding of the risks
- their personal experience of sun exposure

- their attitudes towards health risks (for young people perhaps 'it will never happen to me'; for outdoor workers 'I can't be bothered with all that', etc)
- their priorities – social, personal and economic that may impact on their use of sun protection
- their abilities to think rationally versus their use of emotion or other heuristics
- competitive influences such as the tanning industry.

Figure 1: Fishbein et al. Integrative Model of Behavioural Prediction and Change [72]

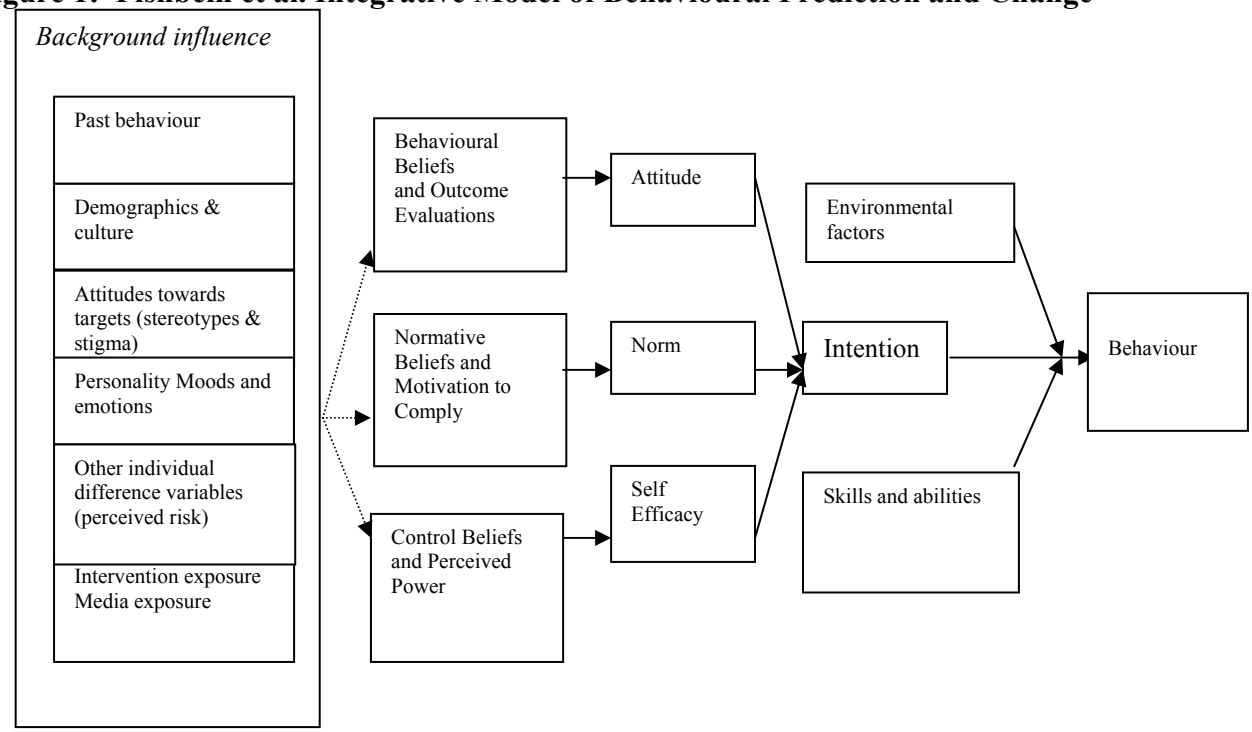
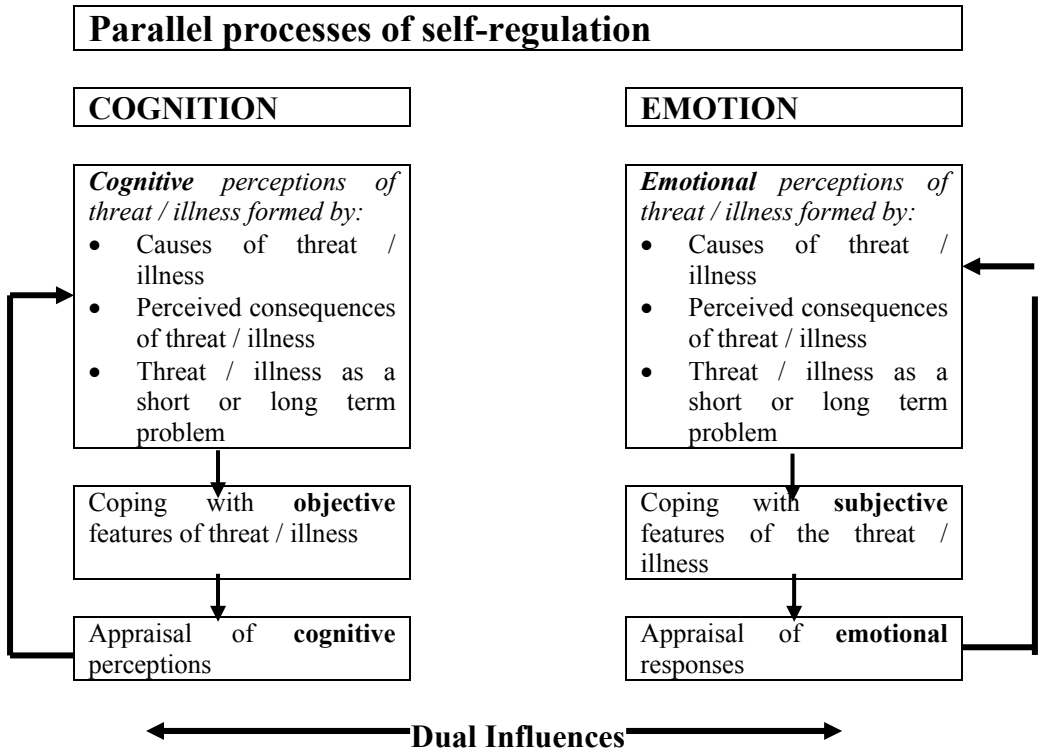


Figure 2 Leventhal's Self Regulation Model



South West Sun Protection Target Segments, Insights and Probable Behavioural Triggers

Teenagers / Young Adults

Good sun protection behaviours learned as children do not carry over into adolescence[73]. In fact, teenagers have the lowest skin protection rate of any age group[74]. Hence this group must be a primary target.

Insights from Literature

For this group, knowledge of the potential dangers of excessive sun exposure, be it from sunbathing or sunbed use, does not result in sun protection-related behaviours. The perception is that a tan is 'sexy'[75, 76]increasing perceived attractiveness and raising adolescents' sense of self esteem[77]. Young female sunbed users have been identified as being more anxious about relationships than others[78] . There are several dangerous attitudes prevalent within this group particularly that it is 'worth' getting sunburnt in order to get a tan[79] and that less protection is needed as tan progresses [13].

Adolescents are also prone to optimism bias, believing that they are personally at less risk of ill-health than the general population[80]. This is consistent with Leventhal's model; rational knowledge of risk is shown to be countered, if not over-ridden by, the emotional desire of adolescents to be seen as part of an 'in' group[81]. In addition, young women have a higher knowledge of skin cancer than do their male counterparts, but are also more likely to sunbathe and to use sunbeds[82]. Conversely, young males see sunscreen as cosmetic and not masculine, leading to a reluctance to apply it when with their peers[83].

There are numerous studies indicating that adolescents are aware of risks but that social norms and perceptions over-ride consideration of personal actions if they are not compatible with peer behaviour[84, 85, 86]. These studies all highlight the weaknesses inherent in basing interventions primarily on rational aspects without considering the impact of emotional factors.

Insights from UWE pilot study

The pilot study findings show that in terms of sun protection behaviours, males showed somewhat riskier behaviour, with 40% never staying inside during the middle of the day, compared to 29% of females; similar behaviour was evident in relation to seeking shade during the middle of the day. Males were also far less likely to regularly apply sunscreen, with only 15% of males regularly applying sunscreen compared to 30% of females, and 28% of males reapplying sunscreen after swimming, compared to 71% of females. While only 40% of females compared to 53% of males indicated they wore some form of hat to prevent sunburn, females were more likely to wear a hat more regularly than males; however only 1% of females and 3% of males always wore a hat outside. Almost all females indicated they wore sunglasses if outdoors for more than 30 minutes; only 77% of men did so. Further, while 2/3 of women wear lip protection if outside for more than 30 minutes, only a quarter of males do so (all these behaviours show statistically significant differences).

The increasing significance of body image for men[87] is reflected in the pilot study findings with 70% of males and 74% of females agreeing that a suntan makes them feel more attractive to others and therefore they feel better about themselves.

Probable Behavioural Triggers

As noted earlier, this group is strongly influenced by peer norms and emotional factors in addition to rational knowledge. Changing social perceptions of the acceptability of tanning has proven difficult and will require considerable resources to be invested over time. The emphasis of any immediate interventions should therefore be on obtaining a tan safely. This segment is likely to respond to interventions on an emotion-driven rather than rational information processing basis[88]. They are most likely to respond to appearance-based appeals, including indicators of premature ageing, wrinkling etc[89]. An intervention that achieved considerable success in Southern California and which warrants serious consideration here is the use of UV photography /photo-ageing to illustrate the extent of existing skin damage; this intervention has immediate results, but also achieved changes in perceptions regarding sun protection[90]. This intervention could be trialed at a number of locations including popular beaches in the region, concerts and similar events.

Mothers of Young Children / Childcare Facilities

This group must be a priority target for interventions as up to 80% of lifetime exposure to UVR occurs before adulthood[91, 92]

Insights from Literature

While parents appear to take adequate measures to protect infants from the sun, these measures are not continued as children become toddlers[93]. In the USA, less than half of parents regularly used sun protection for children, with unwise attitudes evident such as sun exposure being 'healthy', children looking 'better with a tan' and it being OK to stay out in the sun longer if sunscreen is used[94]. It is possible, perhaps even likely that similar attitudes are held by parents in the UK, however the issue warrants specific research to determine the extent and strengths of these attitudes.

It is probable that many parents do not understand the link between excessive sun exposure in childhood and the increased risk of skin cancer later in life[95,96]. Research in both Australia and the UK indicates that parents need information on strategies to effectively implement sun protection behaviours with both children and adolescents, and also on the way sunscreen efficacy is affected by factors such as water exposure[97].

Probable Behavioural Triggers

In terms of the relevant theories, many of the key factors such as personal relevance, seriousness of consequences and efficacy / benefits are factors that appear, from the above, to be areas of uncertainty rather than firm beliefs. Interventions should be based on latent concerns for 'doing the best thing' for children and families and focus on providing facts about cancer risks together with practical advice for mothers.

We would re-emphasise the last point about parents 'wanting the best' for their kids. No parent wants to be regarded as a 'bad' mum or dad. This is a powerful, if rather negative, motivator, and should be considered maybe in conjunction with schools based campaigns. A more positive spin would be something based on the 'Block the sun not the fun' campaign overleaf:

Block the Sun Not the Fun
This was a direct intervention at child care centres in Colorado and was developed using the Health Belief Model. The objective was to increase beliefs regarding:
- Susceptibility of children to overexposure to sun
- Severity of skin cancer
- Benefits of sun protection

and to:
- Reduce barriers to using sun protection strategies.

Behaviours, including application of sunscreen, scheduling of outdoor activity at times other than when UV is highest, increase in encouragement of use of shade areas and of appropriate clothing were targeted.

Workshops were held for centre staff and information packs were provided to parents, including sample packs of sunscreen and fridge magnets.
Results indicated a significant increase in reported sun protection behaviours; a concern is the high staff turnover rates which will necessitate reminder activity[98].

Schools and Parents of School Children

Insights from Literature

There is an apparent contradiction between the active role undertaken by schools as part of Australasian programmes such as SunSmart and the current UK situation where sunscreens may be regarded as medicines and not permitted on school grounds, as evidenced by the following media coverage:

"School stops boy using sunscreen" (BBC News, 4 May 2004) – this article relates specifically to a school in the Bristol area.

Further, there is some concern evident that, where children are permitted to bring sunscreen to school, teachers will not assist them in applying it for fear of being accused of child abuse [25]. In addition, a 2007 study indicated that 95% of schools in the south-east of Ireland had no documented sun protection policy (Channel 4 News, 9 July 2007). This study undertaken for the British Association of Dermatologists also found that 100% of schools scheduled outdoor activities between 10.00am and 2.00pm. Here the need for joined up thinking is paramount: recognising the benefits of outdoor play, balanced by appropriate sun protection. We can find no equivalent data for the South West region. There are government policies relating to UK schools that are statutory, such as the child protection policy, which is part of the Education Act 2002. However, having a school policy regarding sun protection is not a statutory requirement for schools: (www.teachernet.gov.uk/management/atoz/p/policies/). This would appear to be an aspect of sun protection that warrants urgent investigation.

There are considerable resources available to schools via websites such as Cancer Research UK's SunSmart pages http://www.cancerresearchuk.org/sunsmart/ , however we can find no information regarding how frequently this material is accessed, how useful it is to schools and parents, or what information is sought and valued by them. It is recommended that, as a priority, research be undertaken with schools in the SWPHO area to obtain this data in conjunction with the investigation of current school sun protection policies noted above and an investigation of actual or perceived barriers to the effective implementation of recommended sun protection strategies such as those advocated via Cancer Research UK. We fully recognise the difficult regulatory environment that schools operate within, and the multiplicity of directives and policies that teachers are expected to implement. Given this, the need is for a simple solution: perhaps a letter home to parents requiring their children to bring in sun cream to be used on sunny days.

Two contrasting case studies are provided overleaf. The first is the Australasian SunSmart programme which has resulted in incremental improvements in attitudes and behaviours over time. The second is a smaller, somewhat isolated UK intervention that, in common with several other interventions raised awareness but did not alter behaviour.

This is perhaps the most well known programme, having originated in Australia in the 1980s and then been adapted for use in other countries including New Zealand and England. The Australasian campaigns have received significant and sustained levels of government funding which has enabled a multi-faceted campaign, incorporating substantial face-to-face activity, to extend across childcare centres, schools, local government organisations, sporting organisations and occupational health and safety / workplace organisations. Included in the programme are profitable merchandising operations selling sun protection products including sunglasses, sunscreen and clothing. The longevity of the campaign and its consistent, integrated messages in Australasia have enabled community norms to be changed, resulting in significant changes in attitudes, beliefs and behaviours over time [99].

The UK has not been as fortunate in obtaining consistent funding, resulting in more sporadic activity over time and relatively low levels of both knowledge and behaviour regarding safe sun exposure practices[100]

Safe in the Sun
This was a curriculum-based intervention for primary schools, involving 11 unspecified schools in the south of England. Educational material was provided, including books and videos, with children asked after the material had been used to draw and write about aspects of sun protection. Awareness and knowledge improved significantly but behaviour change did not [101]

Our analysis of these two case studies suggests that

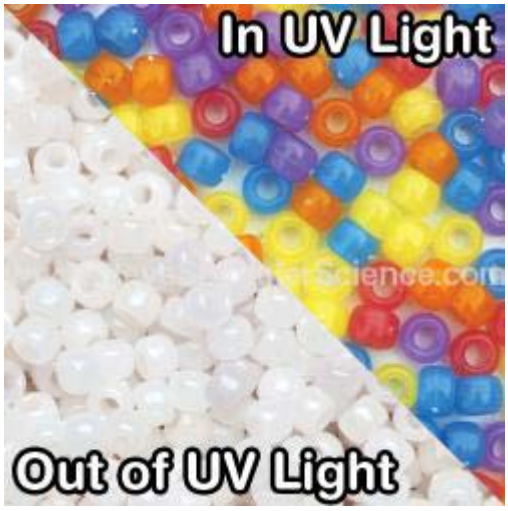
- SunSmart works in Australasia because it is a sustained, over time, national campaign that includes a well funded awareness campaign backed up with direct interventions including face-to-face activity. The campaign provides a basic motive – long term health; but the interventions are crucially important in making it easy to change behaviour.
- It is reasonably easy to judge why 'Safe in the Sun' did not succeed in changing behaviour. We know that long term poor-health-sometime-in-the-future messages do not easily motivate people to act now. We also know that general awareness is a long way from prompt action. 'Safe in the Sun' did not offer a specific action, nor make it easy and compelling to do so.

While there is an overarching policy issue to be resolved, there are some relatively inexpensive interventions that can be explored. Two examples are provided overleaf.

Sticker Campaign: Raising Awareness alongside the American Pool Cool key skin cancer prevention messages discussed in the next section

UV Warning Patches are small stickers that can be placed on your cheek, shoulder, arm, or anywhere that is exposed to the sun. They are sensitive to ultraviolet radiation and change colour when exposed to sunlight. You will know instantly when you are being exposed to UV Rays. They can be used as incentives for kids
http://www.poolcool.org/uvpatches.html

Educational Activity: Fun and creative way to help demonstrate the effect of UV (Ultraviolet light). UV sensitive beads contain a pigment that changes colour when exposed to UV radiation. The beads are white in colour when shielded form sunlight. The beads can be made into necklaces, bracelets or form part of various garments
www.stevespanglerscience.com/product/1350



Activities:

- Use different level SPF lotions on a plastic bag then put some beads into the bag to see how well the sunscreens help you keep bad rays from your body!
- Test your sunglasses and eyeglasses! See how much radiation is getting into your head through different sunglasses you use.
- And of course have FUN with them! Kids love to make bracelets and necklaces out

www.solarbeads.com/education

Sporting Participants and Spectators

Insights from Literature

Successful strategies used as part of the Australian SunSmart programme included provision of shaded areas for competitors, encouragement of spectators to bring their own shade devices (depending on the nature of the sporting event), encouragement of both competitors and spectators to wear sunglasses and sunscreen, competition uniforms with long sleeves and, at junior levels, 'no hat, no start' [102].

We note the recently announced initiative for all English County League first class cricketers to be checked for skin cancer this summer[103] offers several opportunities. First, endorsement of clubs and / or high profile players for sensible sun protection and for regular screening can be sought. The obvious candidates here would be Somerset players, ideally well known names such as Marcus Trescothick. Second, where skin cancers are detected, prompt treatment can be highlighted as an incentive for others to seek help. Additionally, sporting venues offer the opportunities for signage and for the provision of free samples of sunscreen and merchandise, together with distribution of appropriate information.

The importance of role models, be they sporting personalities or other high profile individuals, should not be underestimated as "a compelling event, such as a celebrity diagnosis of cancer, can generate substantial news coverage, capable of producing temporary changes in behaviour"[104 (p. 491)]. The 37 year old *Trainspotting* actor Ewan McGregor has recently had several moles removed from his face because of skin cancer and he admitted it was important to be vigilant[105]. It may be possible to recruit McGregor for further celebrity campaigns.

The interventions recommend among this sector can also be used for the other sectors considered within this document.

Probable Behavioural Triggers

Due to the diverse makeup of both participants and spectators, behavioural triggers are likely to be a combination of those discussed for young people and also mothers of young children. Spectators are unlikely to be hostile per se to sun protection messages: it may just be a matter of reminding them and providing easy solutions. So, some local stimulus material at the venue, with convenient opportunities to purchase sun protection products, may well be successful. Campaign/intervention costs could be shared with commercial firms who may wish to benefit from sales of items like sunscreen, clothing, sunglasses, or hats.

As with the previous segment, there are some relatively inexpensive interventions that can be explored. Two examples are provided overleaf.

Pool Cool Case Study

This intervention was aimed specifically at staff working at aquatic facilities as attendants or lifeguards in Hawaii and in Massachusetts and centred on educating staff about personal and customer risk from sun exposure, using incentives feedback and technical assistance. The intervention appears to have impacted on staff sunburn rates and pool sun safety policies, however overall sun protection behaviours do not appear to have altered significantly. The programme is currently being refined and extended[106, 107].

Source: http://www.poolcool.org/How2participate.html#how

UV Exposure Cards These are credit-card size UV meters used detect and monitor sun exposure. The cards react to UV light by changing to darker shades of purple when UV rays are stronger. When the cards are removed from sunlight, the colour slowly returns to its original (lighter) colour. They can be re-used multiple times provided they are not left sitting in the sun for extended periods of time.

Source: http://www.poolcool.org/How2participate.html#how

Outdoor Workers

Insights from Literature

There are conflicting views in the literature about the risks to this group, with some studies suggesting people with "heavy occupational exposure to the sun" have lower risk of melanoma than those with intermittent exposure[108], potentially leading to complacency. Australian research indicates that sun protection behaviours among this group are suboptimal, being focussed primarily on wearing wide brimmed hats rather than long sleeve shirts, or sunscreen use[109].

It must be remembered that, due to their occupations, these groups cannot avoid the sun during the hours UV rays are likely to be at their highest[110]. The segment is also extremely diverse, comprising of groups such as (but not restricted to) the following:

- Council staff whose primary work is outdoors
- Police and other emergency services
- Builders and other related trades
- Gardeners
- Farmers
- Roading and railway track maintenance staff
- Sports ground / outdoor activity staff (which may link to the discussion of the previous segment).

This group is predominantly male, aged 16-65, probably with traditional working man attitudes about masculinity acting as a barrier to applying sun protection, or wearing protective clothing.

The Union of Construction, Allied Trades and Technicians (www.ucatt.co.uk) on their health and Safety web page highlights the issue of work related dermatitis but does not make any direct reference to the issue of skin cancer. However, the UCATT web pages do link to an industry backed occupational health scheme for construction workers and their families called Constructing Better Health (http://www.constructingbetterhealth.co.uk). On this site there is a dedicated page for skin health issues and as part of this there is a section on skin cancer, although as with the UCATT the dominant focus is on dermatitis.

Probable Behavioural Triggers

Factors such as personal relevance, seriousness of consequences and efficacy / benefits should be stressed. Unions may assist in lobbying for free skin cancer checks in a similar manner to those being undertaken for cricketers, drawing on latent concerns for 'doing the best thing' for members. For rural populations, organisations such as the Young Farmers may be useful conduits (www.nfyfc.org.uk).

Multiple strategies may be needed: communication via their employers, professional associations where relevant and / or unions encouraging sun protection policies and

procedures[111], information and education via organisational and site-specific health and safety facilities and through training facilities such as provided for trade training.

There needs to be linked referral facilities for individuals identified as having suspicious lesions. However, as noted earlier, this segment is likely to have a high percentage of male members; the reluctance of men to seek medical advice is well documented in the literature. An effective strategy in instigating both screening and subsequent treatment is to use the influence of "female significant others"[112, p. 340] such as wives, partners or mothers. This may be a matter of targeting the women directly where possible, such as via workplace records, with communications, or offers of short demonstrations with free samples as incentives.
For rural populations, Women's Institutes may be a useful ally. One-on-one counselling in relation to both sun protection practices and early detection of melanomas has been proven to be effective in the USA[113]; appropriate venues may, subject to resources, include county shows and other similar events.

That concludes our discussion of individual segments. We are now ready to consider communication strategies in more detail.

Overall Communication Strategies

In communicating with each of these segments, consideration should be given to the credibility of the communication source. Branding of a specific South West set of initiatives, in the manner of the American 'Pool Cool' programme discussed earlier is not recommended due to the level of resourcing needed to establish and maintain the brand. However, there is likely to be some equity in the existing SunSmart UK brand and we recommend that this be investigated as a potential overall umbrella brand under which all activity in the region could be coordinated. Given the limited resources likely to be available for any interventions, it is vital that activity be integrated and coordinated with other organisations in order to maximise the impact of activity and ensure that communications are consistent.

Unlike the Australasian SunSmart activity, there is unlikely to be funding available for mass media communication, however desirable this may be in terms of educational and initial awareness-building functions. Potential communications platforms, channels and message foundations have been discussed for each of the key segments and are summarised in the following tables labelled Summary of Segment-Specific Interventions. It is important to consider the way in which messages are communicated to the various segments.

Across social marketing in general, fear appeals (focusing on the potential negative consequences of not changing behaviours) have been shown to be ineffective. They may decrease unrealistic optimism ("skin cancer will never happen to me") but, consistent with behavioural theory, also reduce the perception that outcomes are within individual control[114]. There is considerable debate evident in the literature regarding message framing, in terms of whether to phrase messages in positive (potential gain) or negative (potential loss) terms; American studies indicate gain framed skin protection messages have been more effective, i.e.:

"Protecting yourself from the sun is the surest way to prevent skin cancer" and "Using sunscreen increases your chances of maintaining healthy, young looking skin"[115, p. 191].

versus

"Expose yourself to too much sun and you risk developing skin cancer" and "Not using sunscreen decreases your changes of maintaining healthy, young-looking skin"

Behaviour changes in the sun protection area lend themselves to a very visual approach: how people look is very important to their motives - so illustrations of faces and bodies is the currency of shifting perceptions – preferably, as noted above, through positive framing of messages not negative. So, messages such as "do X and good things will happen" is generally preferable to "if you don't do Y then bad things will happen".

However, there is evidence from an EU study that message framing preferences vary significantly across cultures[116]; we therefore recommend that all messages developed for use within the region be pretested to ensure their acceptance among the identified target segment groups.

Detection Strategies

Strategies to prevent sun damage to skin must be accompanied by strategies for the early detection of skin cancers, given that early detection is acknowledged as the key to successful treatment [117]. Approximately half of melanomas are detected by individuals themselves; the remaining by GPs [118, 119]. Social marketing can potentially help educate and encourage self examination in order to detect melanomas at early stages. It is estimated that, if skin self examination was undertaken across the entire population, early detection, including of precancerous moles, "has the potential to reduce cancer mortality by more than half" [120, p. 1381].

Several detection strategies have been reviewed in the literature, offering potential foundations for the development of intervention strategies, but also raising challenges that need to be addressed. For example, melanoma screening clinics have proven popular with UK GPs, and may have reduced public anxiety, but have not led to increased detection rates [121]. It is suggested that melanoma screening clinics attract 'the worried well' rather than those most at risk [122] and are therefore unlikely to be cost-effective, although this is subject to some debate in the (primarily American) literature[123]; an audit of a 1998 melanoma screening day in Swansea at which "despite high participant satisfaction and perceived value, the pick-up rate of malignancy was significantly lower than at rapid access pigmented lesion clinics"[124, p. 784]. The University of the West of England – Bristol, is currently involved in research into automated diagnosis of melanoma using photometric stereo techniques with future work looking at the development of a portable device. http://www.uwe.ac.uk/cems/research/groups/mvl/projects/skininspection.html

There is somewhat cautious agreement in the literature that screening should be targeted at high risk groups, coupled with an acknowledgement that people's perceptions of their personal level of risk may not be accurate[125]. Once high risk individuals have been identified, methods of communicating with them and inviting them for a precautionary check must be determined; some strategies have been outlined in the earlier discussion of specific target segments. There is evidence that using personally addressed invitations signed by sporting or media personalities to visit a screening clinic have been a successful component of community-based screening programmes such as the Australian 'SkinWatch' programme[126]. Other successful targeted screening programmes have proven effective in the USA for example, over 70% of those screened in a Veteran's Affairs population revealed skin changes warranting further investigation[127]. As noted earlier, other venues such as county shows and concerts should also be considered in order to reach high risk groups.

There is a need to improve education for GPs [128]and, possibly, improve their resources if there are likely to be significant impacts on workloads as the result of any potential intervention[129] and / or significant time before specialist consultations. Delays between GP consultations and assessment by a plastic surgeon resulted in trials of telemedicine systems in the Plymouth area[130]; the long term success of this intervention warrants further investigation. We recommend that specific research be conducted with medical professionals to identify perceived gaps in their knowledge or competencies in identifying at-risk patients and / or conducting skin cancer screening. Where deficiencies are identified, the research should

explore what information or training is preferred in order to improve skills, and preferences for the form and format of ongoing information in the area.

Given the GP 'noise factor', i.e. the problems of prioritising sun protection versus the hundreds of other messages GP's have to juggle, we would recommend wherever possible removing the checking procedures and education of self checking away from general practice and towards specific, place/time driven events or situations, perhaps led by nurses, health visitors, health trainers, or similar health professionals. Examples may include visits by health workers to workplace sites to conduct a short workshop with outdoor workers on self-examination.

Multiple strategies need to be considered:

- raising awareness of the link between sun exposure and potential development of skin cancer
- raising awareness of the relatively short time period in which skin cancers can develop (i.e. not an 'old person's condition') and the link between early detection and successful treatment
- reduce optimism bias, especially among younger age groups – this is likely to be most successful when interpersonal communications rather than mass media are used [131], such as the UV photo strategy discussed earlier
- improving self efficacy in terms of self checking, given that self efficacy is a powerful predictor of both intentions and behaviour[132, 133]
- balance the need for educating people as to the real risks and consequences of unsafe sun exposure against the probability that fear appeals are likely to trigger defensive responses [134].

Recommendations for the Measurement of the Effectiveness of Specific Interventions

Skin cancer typically takes fifteen years or more to develop after sunburn [135], therefore initiatives running currently or implemented in the near future will not have immediate measurable effect on skin cancer rates. Consistent with the objectives proposed earlier, attitudinal and reported behavioural change may be the best interim measures. We recommend using survey methods to create benchmark measures with key stakeholder groups, including each of the identified key segments in order to examine knowledge, attitudes and behaviours and to probe for insights into triggers that are most likely to lead to behaviour change.

In tandem with the recommendations for future research in the following section, we recommend that all existing and potential new interventions be subject to formal evaluation of effects and effectiveness in order to:

- legitimise existing and future budgets through demonstration of positive changes in knowledge, attitudes and, ultimately, behaviours
- evaluate the cost-effectiveness of specific intervention components
- inform future planning cycles.

Standard pre-post measures of local activities should be sufficient to establish the success or otherwise of these activities.

Recommendations for Future Research

As per the initial brief, the recommendations in this report are based primarily on an extensive review of the relevant literature. Suggestions for future research within individual stakeholder groups such as GPs and schools have been discussed earlier. In addition, for all indentified target segments, qualitative and quantitative research to enable identification of specific socio-psychological triggers and barriers, and attitudes to possible social marketing solutions should be undertaken. A strong data base will provide a foundation for future liaison and / or lobbying with government policy makers as well as providing a strong basis for the development of future interventions.

The questionnaire used for the pilot study could form a basis, subject to modification as appropriate, for future quantitative studies, with additional questions included to explore the relative strength of emotional versus cognitive influences across the segments and also the identification of preferred vehicles through which members of each segment would prefer to receive relevant information.

Note 1: The student pilot study undertaken should be regarded as indicative of prevailing attitudes, beliefs and prevailing norms underpinning actual sun protection behaviour for the 'well educated young adult' segment. Further research within this segment is recommended, extending into secondary schools across the region and across socio-economic groups to capture a wider range of data from this key target segment.

Note 2: Ethics approval is likely to be required for some of these studies, particularly in areas such as secondary school students.

Qualitative research should be used to explore and develop potential intervention material and to pre-test material before implementing it, including aspects such as message framing and preferences for rational versus emotional appeals.

Where possible, this research should be coordinated across different UK regions to identify regional similarities and differences and thus inform both national and regional interventions. As the increase in skin cancer rates is by no means a UK-only issue, opportunities for collaboration across multiple EU countries in order to bid for EU research funding should be considered.

Summary of Segment-Specific Interventions

Sector	Strategies	Tactics
a) Upstream Activity		
Segment: Public Policy Makers		
Central Government / Department of Health	Liaise with national and other local organisations regarding concerted and integrated lobbying for adequate funding	Stress need to recognise rapid increase in melanoma rates and rates in SWPHO region specifically Provide integrated social marketing plan
	Liaise with local government and related organisations regarding local funding	Develop specific costed interventions and lobby for financial assistance, involving media in lobbying activity
	Monitor advertising and media coverage; alert appropriate authorise of incorrect / unacceptable promotional or publicity activity (e.g. claims of "total sun block" should be referred to the Advertising Standard Authority)	Monitor main media plus websites (e.g. http://www.maan.co.uk/shop/product/details/ultra-block-spf-50/path/sun-care/brand/blockhead advertises Total Sun Block
Segment: Related Organisations, National and Regional		
	Liaise with national organisations and other regional organisations including Active Bristol, regional cancer charities etc regarding future media activity and specific interventions Need to ensure that all communications are synchronised and consistent, integrated messages are created Obtain access to relevant research	Agree on communication platforms and opportunities to leverage off national brands such as SunSmart (establishment of regional brand not recommended due to limited resources and potential conflict with national brand)
Segment: Medical Professionals		
Note: Cancer Manual 2004; skin cancer guidelines updated 2007.	Investigate training needs for all professional groups (GPs, nurses etc) and desired formats for training and also for patient information (e.g. leaflets such as currently available for breast cancer self checks) In research, investigate satisfaction with / usefulness of this resource	Assist in developing targeted interventions aimed at high risk groups, with appropriate referral facilities Note technological advancements such as hand held scanners – liaise regarding trials and evaluation

Target Segment	Strategies	Tactics
b) Key Target Segments		
Segment: Media		
National media (via national organisations such as Cancer Research UK)	Liaise with national organisations and other regional organisations including Active Bristol, regional cancer charities etc regarding intended media activity; leverage off national activity	Develop proactive plan of intended media activity Agree on designated spokespeople on national basis and for linkage to regional organisations
Regional media (TV, radio, newspapers	Initial material to stress specific challenges within the SWPHO region regarding skin cancer rates relative to other areas of the country Clarify Vitamin D issue Take clear stand on sunbed issue Clarify UV index Clarify meaning of SPF / UPF ratings	Early summer: Initial media release Factual and positive approach – stress importance of early detection - use local personalities if possible to give 'human interest' - provide details of specific interventions such as UV camera in order to obtain media coverage
	Ongoing: develop relationships with media; involve in development of interventions and dissemination of research Determine what information is sought and in what form Leverage off current / topic events e.g. cases of burns from sunbeds, celebrities such as Ewan McGregor – seek public 'champions'	Develop ongoing series of press releases to ensure that key facts, issues and desired behaviours are kept 'top of mind', such as highlighting problem of sun protection being provided to babies but not toddlers, link between excessive sun exposure and cataracts, continue to stress dangers of sunbeds etc.

	Strategies	Tactics
Segment: Teenagers / Young Adults		
Female and male	Direct one-to-one interventions e.g. beaches (UV camera / thermography) Free sunscreen / clothing e.g. caps	Appearance / image based strategy, stressing the avoidance of premature ageing, acknowledging importance of social norms and emotional factors
		Counter promotional activity of sunbeds via ongoing media commentary Also endeavour to influence / change social norms over time (long term activity required due to resistance to change for this factor)
		Seek celebrity endorsers for messages regarding self screening and early detection
Segment: Young Children		
Mothers	Information based strategies	Simple, commonsense information and advice via GP surgeries / chemists and childcare centres, stressing "doing the best thing" for children
Childcare centres	Need for official policy / guidance as for schools	Need for communication regarding policies and procedures between centres and parents
		Need to ensure centres develop and maintain shaded spaces and encourage activities within shaded areas

	Strategies	Tactics
School Children		
Government / Department of Education, Schools, Parent –Teacher Associations, Teacher Unions, Parents	Link between government policy and school policies needed Determine information needs / access to and satisfaction with existing information resources such as SunSmart website	Schools could be venue for distribution of UV stickers and solar beads activity as part of education activity (reinforcement / incentives)
	Clarification of sunscreen as medication needed and also assistance for children seeking to apply sunscreen lotion prior to outdoor activity	Need to ensure schools develop and maintain shaded spaces and encourage activities within shaded areas
	Attend / present at conferences as appropriate	Encourage debate re policies and policy implementation

	Strategies	Tactics
Segment: Sporting Participants & Spectators		
Sporting clubs and associations	Leverage off existing initiatives such as screening of all first class cricket players Encourage similar activity from all national / regional sporting organisations	Seek permission to distribute information at matches; gain endorsement from organisations and high profile individuals regarding sun protection behaviour and the importance of screening / early detection of melanomas
	Use venues for disseminating information and detection	Signage and booths at appropriate venues, providing information and free skin checks (using UV camera as for other segments) and possibly trialling hand held scanner
Sporting participants	Develop and encourage / enforce appropriate sun protection behaviours	Adopt policies of no participation without adequate sun protection
		Distribute UV stickers to child competitors as appropriate
Spectators	Develop and encourage appropriate sun protection behaviours	Encourage spectators to 'bring their own shade' (including hats with brims, sunglasses etc / shade protection such as umbrellas where appropriate)
		Distribute UV stickers to child spectators as appropriate

	Strategies	Tactics
Segment: Outdoor Workers		
Employers	Encourage provision of free screening for all workers	Consider personal invitations to 'at risk' individuals, with incentives including endorsement from high profile personalities and / or merchandise such as caps etc.
		Distribute UV sensitive indicators as trial
Trade Unions	Encourage provision of free screening for all workers and raise awareness of risk factors	Encourage lobbying of employers for free screening
	Seek to include material in existing generic and site specific health and safety training – investigate preferred form and format of information	Extend material available on websites (e.g. UCATT), seek assistance in ensuring material is included in educational institutions' training programmes
Professional Organisations	Seek opportunities to speak / provide information at conferences and seminars	Encourage debate regarding appropriate methods of reaching members and strategies, including those listed above
Women's Institutes and National Federation of Young Farmers	Raise awareness of risk factors and encourage self screening and screening via GPs etc Encourage 'female significant others' to encourage men to adopt adequate protection strategies and to seek screening	Link to WI and NFYF campaigns and projects as appropriate Seek opportunities to distribute information and set up screening facilities with appropriate referral systems at country shows and other local events Link into seasonal work programmes
Educational institutions providing vocational education and training	Seek to include material in existing health and safety training – investigate preferred form and format of information	

	Strategies	Tactics
Potential Partnerships		
Active Bristol (and other related organisations)	Link to all Active Bristol and related organisations; Develop sun awareness 'champions'	Seek opportunities to distribute information and set up screening facilities with appropriate referral systems at appropriate events
	Ensure organisations model appropriate sun protection behaviours at all events	Distribute UV stickers to child participants as appropriate
Retailers	Seek opportunities to support / leverage off planned retail activity such as sun screen promotions Seek opportunities to use retail outlets as venues for conducting research and / or distribution of information material	Offer opportunities for provision of samples / distribution of products (joint publicity / logos etc) for appropriate events
Sunscreen products	Seek cooperative opportunities	Offer opportunities for provision of samples / distribution of products (joint publicity / logos etc) In association with Cancer Research UK / SunSmart, explore possibilities of offering endorsement of products via use of logo etc for products carrying SPF15 or higher rating (similar to Soil Association Trade Mark)

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