Mass Media Barriers to Social Marketing Interventions:
The Example of Sun Protection in the UK

Summary
The role of mass media in communicating health related information to the wider population is the focus of this paper. Using the example of sun protection within the UK, we highlight some of the major challenges to raising awareness of steadily increasing melanoma rates and of effective sun protection strategies. The implications of potential barriers to official sun protection messages via conflicting messages in the media are discussed in terms of editorial on sun protection and in the way in which television programme content portrays the issues. Implications for public policy and future research conclude the paper.

Introduction
Mass media such as television and newspapers can potentially enhance social marketing activity through reinforcing the key messages regarding desired behaviours. Conversely, it can weaken the impact of social marketing communications through confusing or conflicting messages. Those planning social marketing interventions need to appreciate these factors and to seek ways of working with media organisations to ensure consistency of messages sent and maximise the potential impact of activity.

Sun Protection / Skin Cancer – Context
Skin cancer rates in the UK have doubled over the past decade (NICE, 2006), with estimates of the annual cost of skin cancer treatment in England in excess of £190 million (Hiom, 2006). While UK skin cancer rates are one-quarter of those of more
high profile countries such as Australia (Jones et al., 2000), more Britons die of melanoma each year than in Australia (Cancer Research UK., 2008). This can be attributed to both earlier detection and higher levels of awareness of effective sun protection strategies in the latter country; some 20 years of life are lost for each melanoma death (Miranda, 2008). In the UK Malignant melanoma (MM), rates have risen steadily by some 8% per year, faster than the increase in any other cancer (Cancer Research UK., 2008).

Gandini et al (2005) state that IARC “has reviewed in great detail the relationship between melanoma and sun exposure and has accepted sun exposure as the main cause of cutaneous melanoma in humans” (p. 46) Young age groups are at particular risk; research has shown that one incidence of serious childhood sunburn can double the risk of malignant melanoma (Crane et al., 1999) and that simple behavioural changes such as avoiding the strongest sun and appropriate use of sunscreen, hats and ‘long’ clothes could prevent 90% of cases (Peattie et al., 2001).

**Influence of Media Coverage on Health Behaviour**

News items carried via mass media such as television are primary sources of health information and 76% of people are reported to act on information provided, however a review of ten years of US local TV news coverage of medical news found frequent factually incorrect and potentially dangerous advice broadcast (Pribble et al., 2006). Recent analysis of news coverage of prostate cancer in Australia identified 10% as being inaccurate or misleading (Mackenzie et al., 2007)

Mass media is claimed to be at least as important as health care providers as information sources regarding health-related topics (Clarke and Everest, 2006),
creating and maintaining assumptions, beliefs and perceptions (Nelkin, 1996). This is illustrated by media coverage of the controversy over the combined measles, mumps and rubella (MMR) vaccine that began in the late 1990s following media reports of a study by Wakefield et al (1998) that appeared to imply a link between the MMR vaccine and adverse health consequences such as autism. Some consumer media were cited as “campaigning on the issue” to persuade parents that there was a potential risk (Speers and Lewis 2004: 172), the Daily Mail running some 700 articles around the topic in 1998 alone (Social Market Foundation, 2006; BBC 2006).

However the subsequent studies that refuted the speculative causal link made by Wakefield and his co-authors (McMurray et al., 2004; Petts and Niemeyer, 2004), were not extensively reported in the mass media (McGreevy, 2005; Speers and Lewis, 2004). The public may have reacted to the repetition of the general theme of the controversy, rather than to the scientific evidence as the percentage of UK children being vaccinated with the combined MMR vaccine fell from 92% to around 80%, and as low as 50% in some metropolitan areas (Speers and Lewis, 2004; Wood-Harper, 2005). Low vaccination rates – and a corresponding substantial increase in the incidence of measles are being directly blamed on the consumer media on the MMR controversy (Rose 2009).

Additional areas in which news media coverage of health-related topics has substantially influenced behaviours include mammography and hormone replacement therapy (Canales et al., 2008).

**Social Marketing and Sun Protection**
With the incidence of skin cancer having doubled over the last decade (NICE, 2006) it is surprising that the UK Department of Health has not highlighted sun protection strategy awareness and early skin cancer detection as a key health promotion area. Large-scale communication programmes have been implemented with success in countries such as Australia (Sinclair & Foley, 2009; Dobbinson et al, 2008), and the USA (Del Mar et al., 1997; Gelb et al., 1994). However, such programmes have not been funded in the UK and Government funding for Cancer Research UK’s SunSmart campaign actually reduced from £180,000 in 2006/07 to £127,000 in 2007/08 (Cancer Research, 2009). This is at a time when additional investment in awareness and detection programmes and support from mass media coverage would appear to be more appropriate.

The current UK funding levels have facilitated the development of web-based activity, including downloadable resources such as leaflets and posters for schools and other organizations. It does not allow for the use of mass consumer media which Donovan & Henley (2003) suggest play an important role in educating and informing, as part of an integrated programme aimed ultimately at behavior change.

As information about sun protection and skin cancer is largely passively acquired via consumer media, with active searching only undertaken to resolve a specific problem (Eadie & MacAskill, 2007) over-reliance on leaflets distributed via the Internet and / or print-based resources may not be effective with all target segments.
News Media Coverage regarding Sun Protection

In addition to the lack of awareness of skin cancer as a major health risk, there are a number of additional barriers to effective communication of a consistent sun protection message. Confusing and contradictory messages are often apparent: “news values can conflict with science, media and public health agendas” (Kline, 2006: 50) and the information presented by mass media outlets is criticised for its lack of accuracy and tendency to ‘hype’ reports (Larsson et al., 2003).

This is particularly evident in the context of sun protection in coverage of the role of Vitamin D as the following section illustrates.

News Media Coverage of Vitamin D related issues

Vitamin D has numerous health benefits and, while it can be obtained from food sources and dietary supplements as well as sunlight, debate in the media has centred on sun exposure (see for example, Akerman, 2007; Gillie, 2006). There is considerable debate in the academic literature regarding positives and negatives (see, for example, Gillie, 2006, Diffey, 2004; Ness et al., 1999) of sun exposure: little balanced debate filters through to consumer media. 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 (Janda et al., 2007). Vitamin D deficiency is a recognised problem within some minority groups whose cultural norms dictate that most skin is covered by clothing (Ladhani et al., 2004). The issue is further complicated by the lack of a readily comprehedible guide to optimal quantities of Vitamin D across different population groups (Glerup et al.,
2000); concerns are even evident on this issue within the WHO (Lucas et al., 2006) but not discussed by the consumer media.

While the association between Vitamin D deficiency and increased risk of some cancers, cardio-vascular disease, diabetes, multiple sclerosis and rheumatoid arthritis is acknowledged in the scientific literature, causality is noted as not being determined (Youl et al., 2009). Further, the relative influences of factors including diet, lifestyle and environmental factors on these illnesses are not yet understood (Hedges and Scriven, 2008; IRAC 2008). 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 in Table 1 illustrate. Note: many of the topics were covered in multiple media; we have shown only the first medium to carry the story.

**INSERT TABLE 1 ABOUT HERE**

Attention-grabbing headlines do not reflect Vitamin D’s contribution to health and well-being relative to other factors. For example, a *Times* newspaper article with the headline ‘Secret to summer loving: Vitamin D’ which implied exposure to sunlight might improve male fertility through higher levels of Vitamin D. Only in the article copy was the greater impact of other factors noted (Affleck (2005).

**Implications of Vitamin D media overage for Sun Protection**

More worrying is the challenge to official sun protection messages in some popular media, as illustrated by the following extract from an article in *Psychology Today*
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” (Ackerman, 2007: 97).

While no UK specific studies could be located regarding the impact of news media coverage, findings from Australia should give cause for concern. A large-scale (over two thousand respondents) survey of the Queensland population found significant increases since 2004 in the percentage of the population believing that the use of sun protection creams increases the risk of Vitamin D deficiency and that Vitamin D helps prevent cancer. In addition, many people significantly overestimated the amount of sunlight needed to maintain healthy Vitamin D levels. The authors suggest that misconceptions regarding these issues may influence people to reduce existing sun protection behaviours (Youl et al., 2009).

A study of sun protection behaviours among undergraduate university students (Eagle et al 2008) included an open-ended question to determine knowledge of sources of Vitamin D. Table 2 indicates that there is little meaningful awareness of sources among this group. 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’.
Influence of Editorial and Programme Content

In addition to media news coverage, editorial and programme content also play a role in building and maintaining the implicit relationship between having a suntan and perceptions of health / attractiveness, consistent with the Integrative Model of Behaviour Change, an extension of the widely used Theory of Planned Behaviour, shown in Figure 1. Young adults must be a significant target for communication as they are still able to alter their behaviour and thus possibly reduce their risk of skin cancer (Hedges and Scriven, 2008).

Editorial and programme content can influence behaviour (Moriarty and Stryker, 2008). The Theory of Social Comparison, originally developed in the 1950s, (Festinger, 1954) has been used to demonstrate that young people compare their perceived attractiveness with that of models or celebrities featured in the media and are motivated to change their physical appearance to emulate these people (McDermott et al., 2005). Thus, models, celebrities or actors in television programmes with tanned skin may be used as perceived ‘aspirational norms’.

In Australia at least, portrayal of models in magazines contradicts public health messages regarding sun protection behaviour (Dixon et al., 2007) and in the USA, television programmes glamorising tanning salons, including featuring celebrities who have used sunbeds etc, have been heavily criticised (Poorsattar and Hornung, 2008) for failure to include any warnings regarding potential negative effects.
Adolescent Optimism and Perceptions of Behavioural Risk

Among adolescents international research indicates that a tan is perceived as ‘sexy’ (Curtis, 2008; Grunfeld. 2004; Cafri. et al. 2006; & Lowe et al., 2000), increasing perceived attractiveness and raising adolescents’ sense of self esteem; young female sunbed users have been identified as being more anxious about relationships than others and thus more reliant on tans to increase their perceived appeal (Fiala et al., 1997). There are several dangerous attitudes prevalent within this group particularly that it is ‘worth’ getting sunburnt in order to get a tan (Geller et al., 2002) and that less protection is needed as tan progresses (Hiom et al., 2006).

Adolescents are also prone to optimism bias, believing that they are personally at less risk of ill-health than the general population (Harris et al., 2000). This is consistent with Leventhal’s Self Regulatory Model (Leventhal et al., 1999) whereby 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. 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 (Abroms et al., 2003). Conversely, young males see sunscreen as cosmetic and not masculine, leading to a reluctance to apply it when with their peers (Jones et al., 2000). Although Malignant Melanoma is twice as prevalent among young women than young men (aged 15 – 34) more men die from it (ISD, 2008) and, as noted previously, on average, about 20 years of life are lost for each melanoma death (Burnet et al., 2005; Diffey, 2005)
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 (see for example, Luo & Issaacowitz, 2007; Brandstrom et al., 2004; Sjoberg et al., 2004). These studies all highlight the potential influence of the way media portray social impacts of sun tanning behaviours such as attractiveness in both editorial and programme content.

**INSERT FIGURE 1 ABOUT HERE**

**Sunbeds**

There is a large body of literature stressing concerns regarding the use of sunbeds (Autier, 2004), coupled with an acknowledgement of a lack of awareness among sunbed users of the dangers of excessive use (Chan, 2007). There is specific evidence to support a causal relationship between sunbed use and skin cancer, particularly with exposure before the age of 35 years (IARC, 2006). However, 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 (Lazovich and Forster, 2005).

In July 2009, media prominence was given to research that confirmed the carcinogenic dangers of sunbeds, with headings such as the following:

<table>
<thead>
<tr>
<th>Publication date</th>
<th>Headline</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 July</td>
<td>Sunbeds now seem to be as deadly as great white sharks</td>
<td>Telegraph <a href="http://www.telegraph.co.uk">http://www.telegraph.co.uk</a></td>
</tr>
<tr>
<td>30 July</td>
<td>Experts issue powerful Tanning bed warning</td>
<td>CBS News <a href="http://www.cbsnews.com">http://www.cbsnews.com</a></td>
</tr>
<tr>
<td>30 July</td>
<td>‘No doubt’ sunbeds cause cancer</td>
<td>BBC News <a href="http://newsvote.bbc.co.uk">http://newsvote.bbc.co.uk</a></td>
</tr>
</tbody>
</table>
This appeared in tandem with editorial illustrating graphically that sunbed users were prepared to ignore the risk in pursuit of a tan, as the following three examples illustrate:

<table>
<thead>
<tr>
<th>Publication date</th>
<th>Headline</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 July</td>
<td>Why I’d rather die by using a sunbed than be pale</td>
<td>Mirror</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="http://www.mirror.co.uk">http://www.mirror.co.uk</a></td>
</tr>
<tr>
<td>31 July</td>
<td>Skin cancer? They don’t care. Tanning bed users ignore warning</td>
<td>News &amp; Observer</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="http://www.newsobserver.com">http://www.newsobserver.com</a></td>
</tr>
<tr>
<td>6 August</td>
<td>Tanning beds moved into top cancer risk, tanners remain undeterred</td>
<td><a href="http://www.gastongazette.com">http://www.gastongazette.com</a></td>
</tr>
</tbody>
</table>

Despite growing awareness of the dangers of sunbeds many men and women continue to use sunbeds regularly (Autier, 2004). As long as the psychological association between having a tan and health continues to be reinforced in the promotional materials used by tanning salons and in editorial and programme content, the use of sunbeds is likely to continue to increase, especially amongst teenagers and young adults (Dorset Cancer Network 2009). The recently announced ban on the use of sunbeds by under 18s (Smith, 2010) may go some way to reducing sunbed use, but there is a need also to recognise the potential of a ‘rebound’ effect due to the perceived social value of a sun tan.

**UV Indexes**

In the absence of mass communications regarding sun protection, efforts should be made to ensure that awareness can be leveraged off any form of news or publicity that may be linked to sun protection. Many media, especially radio stations, report the UV index data in the summer; however this may not be a particularly strong tool,
given evidence from other markets. There has been considerable effort placed on promoting UV indexes in several markets such as Australasia, but utilisation is low (Carter & Donovan, 2007; Blunden et al., 2004; Alberink et al., 2000). In the UK, there is evidence of a lack of understanding of its implications for sun exposure behaviour (Eagle et al., 2009). Additionally, there is a lack of understanding of correct use and the effects of sunscreen use, the meaning of SPF factors on sunscreen product labels and holistic sun protection behaviours Hedges and Scriven, 2008).

**Implications / Directions for Future Research**

The UV Index is just one possible area where collaboration with the media to educate people as to the relevance of personal sun protection behaviours is recommended. Collaboration to assist media such as radio stations in developing simple, understandable formats for presenting the information would also be beneficial (Richards et al., 2004).

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, and by how much they can prolong time spent in the sun (Difffey and Tayler, 2004; Difffey, 2001). Again, collaboration with the media could have significant positive benefits.

While mass media sun protection interventions appear from the experience, of other countries, to be warranted, current UK funding levels at just over £500,000 prevent this (Cancer Research, 2010). Planners of social marketing interventions, not just within the sun protection / skin cancer detection area, need to understand the influence
of the media on attitudes and beliefs. They can then develop strategies for liaising with media organisations regarding editorial / news and programme content regarding balanced coverage of issues and ways in which recommended behaviours can be ‘modelled’. However, specifically within sun protection all parties would benefit from a greater understanding of the major issues. There is a need for a coordinated research agenda to determine the relative importance of a range of health-related information sources across specific topic areas and population segments. There is also a need to understand how and why the news media portray specific issues (Heneghan et al, 2007) in order to help develop more effective communication strategies. News media and the Internet should be monitored for coverage of specific topics and changes to coverage over time, with this data being used to inform strategies aimed at ensuring accurate and balanced coverage of issues. In addition, a survey of the developers of a range of major social marketing programmes and news media editors should be undertaken to identify best practice in addressing social norms and effective media liaison strategies. Furthermore although it is known that media can influence behaviour (Moriarty and Stryker, 2008) the extent of that influence relative to other factors requires further investigation.

**Funding:**
Declaration of funding sources: This work was supported by funding from the South West Public Health Observatory

**References**


Curtis, B. (2008) “We Just want to look good” A qualitative study into adolescent girls and sun exposure in the UK. Sourced from edissertations-dev.nottingham.ac.uk

Daily Mail (2008) Skin Cancer cases increase by 46% in just seven years, Daily Mail, on line edition Accessed 22/02/08 from http://www.dailymail.co.uk/health/article-517677/Skin-cancer-cases-increase-46-cent-just-seven-years.html


Dorset Cancer Network (2009) Social Marketing Intervention to reduce adolescent and young people’s sun bed usage in Dorset. NHS Bournemouth and Poole


<table>
<thead>
<tr>
<th>Date</th>
<th>Headline</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 May 2009</td>
<td>Aid could be found in Vitamin D</td>
<td>The Boston Globe <a href="http://www.boston.com">http://www.boston.com</a></td>
</tr>
<tr>
<td>5 May 2009</td>
<td>No proof: Study could not link low Vitamin D to colds</td>
<td>The Washington Post (via <a href="http://www2.journalnow.com">http://www2.journalnow.com</a>)</td>
</tr>
<tr>
<td>12 May 2009</td>
<td>Is there a link between Vitamin D, flu immunity?</td>
<td>Virgo Publishing <a href="http://www.vpico.com">www.vpico.com</a></td>
</tr>
<tr>
<td>13 May 2009</td>
<td>Vitamin D helps reduce diabetes risk</td>
<td>Private Healthcare UK</td>
</tr>
<tr>
<td>13 May 2009</td>
<td>Vitamin D deficiency common in premenopausal women with breast cancer despite supplementation <a href="http://professional.cancerconsultants.com">http://professional.cancerconsultants.com</a></td>
<td></td>
</tr>
<tr>
<td>14 May 2009</td>
<td>Wrong sunlight can lower your Vitamin D levels</td>
<td><a href="http://www.thehealthierlife.co.uk">www.thehealthierlife.co.uk</a></td>
</tr>
<tr>
<td>15 May 2009</td>
<td>High Doses of Vitamin D may prevent relapses</td>
<td><a href="http://ms.about.com">http://ms.about.com</a></td>
</tr>
<tr>
<td>16 May 2009</td>
<td>Millions face serious health risks over lack of Vitamin D in diets</td>
<td><a href="http://www.dailymail.co.uk">www.dailymail.co.uk</a></td>
</tr>
<tr>
<td>16 May 2009</td>
<td>Elderly need more ‘sun vitamin’</td>
<td><a href="http://newvote.bbc.co.uk">http://newvote.bbc.co.uk</a></td>
</tr>
<tr>
<td>21 May 2009</td>
<td>Vitamin D ‘key to healthy brain’</td>
<td><a href="http://newsvote.bbc.co.uk">http://newsvote.bbc.co.uk</a></td>
</tr>
<tr>
<td>22 May 2009</td>
<td>New model of Cancer development: Low Vitamin D levels may have role</td>
<td>Science Daily <a href="http://www.sciencedaily.com">www.sciencedaily.com</a></td>
</tr>
<tr>
<td>26 May 2009</td>
<td>Vitamin D may lessen Age-related Cognitive Decline</td>
<td><a href="http://www.medicalnewstoday.com">http://www.medicalnewstoday.com</a></td>
</tr>
<tr>
<td>26 May 2009</td>
<td>Vitamin D doesn’t protect against cancer</td>
<td>Doctor NDTV <a href="http://doctor.nvtv.com">http://doctor.nvtv.com</a></td>
</tr>
<tr>
<td>29 May 2009</td>
<td>Low Vitamin D levels may impair thinking</td>
<td><a href="http://www.reuters.com">www.reuters.com</a></td>
</tr>
<tr>
<td>31 May 2009</td>
<td>Boosting levels of Vitamin D ‘could cut cancer by up to 25%’</td>
<td><a href="http://www.dailymail.co.uk">www.dailymail.co.uk</a></td>
</tr>
<tr>
<td>June 1 2009</td>
<td>Promote Vitamin D testing for public Joint Canadian Tanning Association urges Canadian Cancer Society <a href="http://www.newswire.ca">http://www.newswire.ca</a></td>
<td></td>
</tr>
<tr>
<td>2 June 2009</td>
<td>How avoiding the sun to protect against skin cancer has left Georgia Coleridge facing the threat of brittle bones</td>
<td><a href="http://www.dailymail.co.uk">www.dailymail.co.uk</a></td>
</tr>
<tr>
<td>3 June 2009</td>
<td>MS research highlights role of Vitamin D</td>
<td><a href="http://www.abc.net.au">www.abc.net.au</a></td>
</tr>
<tr>
<td>17 June 2009</td>
<td>Vitamin D call as march bids to cut MS rate</td>
<td><a href="http://news.scotman.com">http://news.scotman.com</a></td>
</tr>
<tr>
<td>24 June 2009</td>
<td>Vitamin D guidelines and beauty benefits</td>
<td><a href="http://www.examiner.com">http://www.examiner.com</a></td>
</tr>
<tr>
<td>24 June 2009</td>
<td>Vitamin D and depression</td>
<td><a href="http://www.examiner.com">http://www.examiner.com</a></td>
</tr>
<tr>
<td>24 June 2009</td>
<td>Huge Vitamin D study planned</td>
<td><a href="http://www.privatemdlabs.com">http://www.privatemdlabs.com</a></td>
</tr>
</tbody>
</table>
Table 2: Open Ended Responses to Ways the Body can Acquire Vitamin D

<table>
<thead>
<tr>
<th>Sources of Vitamin D</th>
<th>% of respondents indicating this source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>13</td>
</tr>
<tr>
<td>Fruit and vegetables</td>
<td>10</td>
</tr>
<tr>
<td>Sunlight</td>
<td>36</td>
</tr>
<tr>
<td>Vitamin Supplements</td>
<td>18</td>
</tr>
</tbody>
</table>
Figure 1: Fishbein et al. Integrative Model of Behavioural Prediction and Change (Fishbein, 2000)

**Background influence**

- Past behaviour
- Demographics & culture
- Attitudes towards targets (stereotypes & stigma)
- Personality Moods and emotions
- Other individual difference variables (perceived risk)
- Intervention exposure
- Media exposure

**Behavioural Beliefs and Outcome Evaluations**

- Attitude
- Environmental factors
- Normative Beliefs and Motivation to Comply
- Intention
- Skills and abilities
- Control Beliefs and Perceived Power
- Self Efficacy
- Behaviour

- Moods and emotions
- Environmental factors
- Skills and abilities