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**Title of Paper:** Sun Protection: North and South – A Comparison of Attitudes and Behaviours of Young Adults in the UK and NZ: Implications for UK Interventions

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**Abstract:**

Skin cancer rates have steadily risen in the UK, doubling approximately every twenty years. There has been no significant mass media expenditure within the UK on improving public awareness of the link between sun exposure and skin cancer risk. In countries such as New Zealand, where extensive mass media and population segment-specific interventions have run for several years, melanoma rates show a decline, suggesting that mass media interventions should be considered within the UK and other European countries to help reduce skin cancer rates. Before considering the possibility of using similar mass media-based communication strategies to those used in New Zealand, an understanding of the attitudes and beliefs that underpin existing sun protective behaviours in both countries would be beneficial. We focus on adolescents as a target as this segment has particularly poor sun protective behaviours and appears resistant to health-based interventions. We therefore compare the attitudes, beliefs and actual reported behaviours of young adults in the UK and New Zealand identifying less than optimal sun protective behaviours in both countries. The findings suggest that the UK or other countries - should not adopt similar communication strategies to New Zealand without addressing underlying normative factors underpinning behaviours.

## **Introduction**

The incidence of skin cancer and its potential severity is not well recognised, yet in the UK every year studies estimate that at least 100,000 cases of non-melanoma skin cancers (NMSC) are diagnosed which constitutes over 20% of all malignant tumours every year (Garvin & Eyles, 2001; Lower et al, 1998). Although the survival rate for NMSCs is over 95% they can spread to other parts of the body (metastasise) and in 2006 there were 577 reported deaths in the UK from NMSCs, 20% of deaths occurring in people under the age of 60 years (Cancer Research UK, 2010). It has been estimated that the lifetime risk of developing malignant melanoma is 1 in 91 for men and 1 in 77 for women in the UK (Cancer Research UK, 2009). The incidence of malignant melanoma and NMSC is approximately doubling every 20 years and this will increase over the next five years as a result of an ageing population (ISD Online, 2008). Melanoma is the second most common cancer in 15 – 34 year olds, with UK rates rising by 49% from 1991 – 2000 alone (Hedges & Scriven, 2008). In NZ melanoma rates have begun to decline, with reductions over the 1995 - 2005 period of 3.6% for males and nearly 20% for females (NZHIS, 2005). It is estimated that the annual cost of treating all forms of skin cancer in England alone is in excess of £190 million (Hiom, 2006); in New Zealand it is \$33million (£15 million) (SunSmart New Zealand, 2010). UK government funding for the national SunSmart activity was £420,000 in 2009 (Cancer Research UK, 2010), well below the level needed to fund any mass media interventions. In comparison, New Zealand has run multi-component, mass media interventions under the SunSmart brand focussing on consistent messages to “slip slop slap & wrap” - covering up, putting on sunscreen, wearing a hat and sunglasses - since the mid 1980s (Watts, Reeder & Glasgow, 2002), and spends

approximately \$1,000,000 (approximately £380,000) per annum on public awareness and related interventions – for a population of only 4 million (SunSmart NZ, 2010).

### **Methodology**

This study was undertaken using a convenience sample of students from a university in Bristol, being located in a region of the UK with one of the highest incidences of skin cancer in the country (SWPHO, 2009). These students were then compared with a similar cohort from a university in Auckland, New Zealand in order to illustrate the attitudes, beliefs and behaviours of one specific segment of the target population.

Participation was entirely voluntary and not required as part of coursework.

The questions were drawn from the literature, particularly previous studies by Langford et al (1998) and Jopson and Reeder (2004). The study used a four page questionnaire administered to students in class during April 2008.

### **Findings**

In spite of the significant investment in sun protection education awareness in New Zealand, it is somewhat surprising that only 36% of both males and females, and only 16% of those of European origin, had not been sunburnt in the previous summer. In the UK, 38% of males and 31% of females reported not having been sunburnt. There is a significant difference between the behaviour of genders in both countries (UK  $p = .022$ ; New Zealand  $p = 0.009$ ) and between countries (males  $p = 0.012$ ; females  $p = 0.004$ ). There are two possible reasons for the high incidence of sunburn. Sunburn may be an accepted 'price' of acquiring a suntan (Hiom, 2006; Shoveller, 2003). Alternatively, sunburn may be incidental (as opposed to deliberate) due to people being 'caught out' when outside but not deliberately sunbathing (Hedges & Scriven, 2008) due to an underestimation of the power of the sun (Garside et al., 2010).

In order to understand the strengths of attitudinal and normative influences on behaviours, a range of questions drawn from the literature were then asked. The influence of social norms appears far stronger among the UK cohort than the New Zealand one, especially item c) Most of my friends think a suntan is a good thing ( $p = 0.30$  UK gender;  $p = 0.000$  males and females). One surprising difference between the UK and New Zealand samples relates to item i) It's safe to get sunburnt once or twice a year (UK  $p = 0.11$ ; NZ  $p = 0.002$ ; males =  $0.000$ ; females  $0.002$ ). While there is evidence of some disagreement across all groups regarding the statement that it is safe to get sunburnt once or twice a year, disagreement is strongest among the UK sample. This may be due to several factors. Naturally acquiring a tan has been the norm for New Zealand's fair skinned population and, fair skinned people can get burned within 15 minutes in northern parts of New Zealand when the UV index is highest (NZ Melanoma Unit, 2010) , thus the responses in item i may reflect risk denial in relation to sunburn.

### **Conclusions / Recommendations**

Short term interventions in isolation, aimed at changing the perceived social value of a suntan are likely to be ineffective (Turrisi et al., 2007) and advocating avoidance of a tan could result in reinforcement of existing behaviours (Floyd et al., 2000). It would seem that following the same path as New Zealand has done without addressing norms would not be the best option in the UK or other European countries. The acceptability of whatever approach is chosen should be tested across a wider range of ages and subcultures before being implemented as there is some evidence that message framing has widely different impacts across cultural groups (Orth et al., 2007).

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