Evaluation of the 'Don't Let the Sun Get Under Your Skin' Campaign

July 2014
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EXECUTIVE SUMMARY

The sun safety programme of the HPA launched a campaign, ‘(Don’t Let the Sun Get) Under Your Skin’ (UYS), to promote sun-safe knowledge, attitudes, and behaviours among young New Zealanders. Two of the main campaign activities include events that feature the use of an ultraviolet (UV) camera to show young people the damage they have on their face from sun exposure and an UYS Facebook page. An evaluation of the UYS campaign was undertaken to explore any possible impact on the target audiences and to help guide the strategic direction of the youth sun safety programme.

The research methodology involved a quasi-experimental evaluation design, comprising a post-test with the three following groups of respondents classified by their exposure level to the campaign:

- Exposed group: those who heard of UYS
- Highly Exposed group: those who had their UV photo taken at an UYS event or assembly
- Comparison group: those who reported no awareness of or exposure to the campaign.

An online survey was developed to measure the key knowledge and attitudes relevant to the campaign objectives. Recruitment methods included Facebook advertising and contacting participants who had attended an UYS event during the summer of 2013/14. Logistic regression was used to compare agreement with attitudinal and knowledge-based statements between the three exposure groups. Odds ratios were calculated to compare statistically significant differences, adjusting for gender, age, and skin type.

The final data set contains 234 respondents. Of the respondents who were recruited from having attended an UYS event or assembly, 12.3% participated in the survey. Of the respondents who were recruited via Facebook advertisements inviting them to participate in the survey, the response rate is unknown, as exposure to the advertisements is not known.

The results relating to campaign awareness and engagement are as follows:

- 48.3% heard of the campaign.
- 43.7% attended an UYS event or assembly, and of those, 95.1% had their photo taken with the UV camera.
- Of those who had their UV photo taken at an UYS event or assembly:
  - 95.7% agreed that they knew what to expect inside the tent.
  - 95.7% agreed that they learned about the sun damage on their face.
  - 89.2% agreed that they learned about how to protect their skin from sun damage.
The results relating to attitudes and knowledge among the entire sample are as follows:

- 77.8% agreed that they like getting a suntan.
- 26.1% agreed that they would rather have a tan now than protect their skin from damage.
- 82.1% agreed that it is important to them to avoid sun damage by protecting their skin when outside.
- 60.7% agreed that it is likely that they already have some permanent damage to their skin from the sun.
- 76.5% agreed that tanning can make their skin age faster than it naturally would.
- 55.6% agreed that getting a suntan means that the skin has been damaged.
- 91.9% agreed that the same is true for getting a sunburn.

The following statistically significant differences in knowledge and attitudes between the exposure groups were found:

- Those in the Highly Exposed group were more likely than those in the Exposed group to agree that they like getting a suntan.
- Those in the Highly Exposed group were more likely than those in the Comparison group to agree that it’s likely that they already have some permanent damage to their skin from the sun.
- Respondents in both the Highly Exposed and Exposed groups were more likely than those in the Comparison group to agree that getting a suntan means that the skin has been damaged.

Overall, the respondents in this survey sample have some conflicting attitudes regarding sun safety, which may reflect the fact that some gains in sun safety promotion have been made in New Zealand, but more work needs to be done to address pro-tanning attitudes. Attitudes toward tanning and sun protection do not appear to be different between the exposure groups, except for those in the Highly Exposed group having a higher desire to get a suntan compared with the Exposed group. It is unclear why this difference exists but may be due to selection bias. It is also likely that those in the Exposed group have had a different experience with UYS (e.g., exposure to the UYS Facebook page) compared to those in the Highly Exposed group which may affect their tanning attitudes differently. The findings may suggest that the camera activity may have been helpful to communicate the message that young people already have permanent skin damage from sun exposure. It appears that general exposure to the campaign may increase awareness that a suntan indicates skin damage and that the camera activity may not offer an additional benefit in terms of increasing uptake of this message.

Several limitations of the study mean that caution must be used in interpreting the results. The study design represented the most appropriate strategy for the programme’s size and evaluation objectives, but the absence of a pre-test limits the ability to conclude that any differences in the outcome variables by exposure group are attributed to the campaign. Employing different recruitment methods may have impacted the results and response rate, which is low. It is therefore possible that selection bias exists in the sample. The division of the sample into three groups...
allowed for analyses by type of campaign exposure received, but the size of the smaller sub-
groups may have limited the ability to detect some statistically significant differences. A
randomised controlled trial would offer a strong option for evaluating the impact of the campaign;
however, these kinds of methodologically rigorous studies are often not feasible or appropriate to
carry out for small campaigns such as UYS. Despite these limitations, the study provides some
insight into the future development of the youth sun safety programme.
BACKGROUND

The sun safety programme of the HPA launched a sun safety campaign to help establish sun-safe knowledge, attitudes, and behaviours at a young age. ‘(Don’t Let the Sun Get) Under Your Skin’ (UYS) was launched in the summer of 2011/12 and targets New Zealand adolescents aged 13 to 17 years as a primary audience and young New Zealanders aged 18 to 24 years as a secondary audience. The campaign has the following objectives:

- increase sun safety behaviours
- decrease prevalence of pro-tanning attitudes
- increase understanding of the personal risks of sun exposure
- increase understanding of the benefits of using sun protection.

The campaign uses a variety of media to promote sun safety messages, including paid and unpaid media (eg, print advertisement, UYS Facebook page) as well as promotions at secondary school assemblies and outdoor events (eg, surfing competitions and ski field events) around New Zealand. The promotional events and assemblies feature the use of a special ultraviolet (UV) camera to take photos of youth that show them the damage to their skin that they may have already received as a result of sun exposure. Event staff also talk to youth about sun safety and how they can protect themselves from developing sun damage. Figures 1-3 on the next page show examples from the UYS campaign.

HPA decided to undertake an evaluation of the UYS campaign to explore any possible impact on the target audiences and to help guide the strategic direction of the youth sun safety programme. A member of HPA’s Research and Evaluation team carried out the evaluation.
Figure 1: UYS Facebook page

Figure 2: UYS promotional event

Figure 3: UV photo taken as part of the campaign event
METHOD

The evaluation design was quasi-experimental, comprising a post-test with two groups exposed to the campaign and an unexposed group. An online survey was developed to measure the key knowledge and attitudes relevant to the campaign objectives. These knowledge and attitudes were measured among young people who had heard of or who had engaged with the UYS campaign (the ‘exposed’ groups) and among those who had not heard of or had any interaction with the campaign (the ‘comparison’ group). Respondents were recruited using two methods. Those who attended an UYS event or assembly during the period of December 2013 to March 2014 were asked to voluntarily provide the sun safety programme team with their email address. They were later invited to participate in the study via an email containing a link to the online survey. Facebook advertising (not on the UYS Facebook page) was used to recruit additional participants, mainly to comprise the comparison group. Two questions regarding campaign awareness and attendance at an UYS event/assembly were included in the survey to determine participants’ exposure to the campaign and to group them accordingly. To help inform the sun safety programme development, the survey also included questions relating to the experience of participating in the UV photo activity. Demographic and phenotypic questions (gender, age, and skin type) were also asked. See Appendix A for the questionnaire content.

Campaign exposure was divided into three groups, based on responses to three campaign awareness/engagement questions (Questions 4, 6 and 7 in Appendix A):

- Comparison: have not heard of the campaign and did not have their photo taken at an UYS event or assembly (n=98)
- Exposed: have heard of the campaign but did not have their photo taken at an UYS event or assembly (n=40)
- Highly exposed: had their photo taken at an UYS event or assembly (n=96)

Further details relating to the exposure group classification can be found in Appendix B.

The outcome variables were the seven items relating to sun safety knowledge and attitudes that are relevant to the campaign objectives. These were measured by agreement (strongly agree, agree, disagree, strongly disagree, don’t know) with the following statements:

- I like getting a suntan.
- I’d rather have a tan now than protect my skin from damage (like wrinkles and dark spots).
- It’s important to me to avoid sun damage by protecting my skin when outside.
- It’s likely that I already have some permanent damage to my skin from the sun.
- Tanning can make my skin age faster than it naturally would.
- Getting a suntan means that the skin has been damaged.
- Getting sunburnt means that the skin has been damaged.
Agreement with the above statements was dichotomised as agree/no agree. A ‘don’t know’ response was categorised as ‘no agree’. Logistic regression was used to compare agreement between the three exposure groups and to compare differences by age, gender, and skin type. Odds ratios were calculated to compare statistically significant differences between all three exposure groups (i.e., Exposed versus Comparison, Highly Exposed versus Comparison, and Highly Exposed versus Exposed) and were adjusted for gender, age, and skin type. Unadjusted odds ratios were calculated to compare statistically significant differences by gender, age, and skin type.

Skin type was self-reported and adapted from the Fitzpatrick Scale (Fitzpatrick, 1988) into the following three categories:

- **Type I**: Just burn and not tan afterwards
- **Type II**: Burn first, then tan afterwards
- **Type III**: Not burn at all, just tan.
RESULTS

RESPONSE RATE AND SAMPLE SIZE

The number of youth who provided their email address at an UYS event or assembly and subsequently invited to participate was 820. Of those, 101 responded in the survey that they had attended an event or assembly. The response rate for this subgroup is therefore 12.3%.

An additional 202 responses were received, most likely from the Facebook advertisement, for a total of 303 responses. It is not possible to calculate the response rate of those who were recruited through Facebook, as exposure to the advertisement is unknown.

A total of 69 responses were ineligible and removed from the dataset for the following reasons:

- outside of the target age group (ie, younger than 13 years or older than 24 years)
- incomplete response (ie, did not complete Question 5)
- unknown campaign exposure (ie, responded ‘don’t know’ to Questions 4 and 6).

The final data set therefore contains 234 responses.

SAMPLE CHARACTERISTICS

Table 1 shows the characteristics of the sample. The following characteristics are notable:

- a large proportion of females
- a small proportion of 19 to 23-year-olds
- an overall distribution of skin type that is similar to the adult NZ population (Armstrong, Gray, Tu, & Walton, 2013), but a higher proportion of Type I and a smaller proportion of Type II in the Exposed group compared with the Comparison and Highly Exposed groups.
### Table 1: Sample Characteristics.

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Comparison</th>
<th>Exposed</th>
<th>Highly exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>66</td>
<td>29</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>(28.2%)</td>
<td>(29.6%)</td>
<td>(37.5%)</td>
<td>(22.9%)</td>
</tr>
<tr>
<td>Female</td>
<td>168</td>
<td>69</td>
<td>25</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>(71.8%)</td>
<td>(70.4%)</td>
<td>(62.5%)</td>
<td>(77.1%)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-15</td>
<td>127</td>
<td>52</td>
<td>24</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>(54.2%)</td>
<td>(53.06)</td>
<td>(60.0%)</td>
<td>(53.1%)</td>
</tr>
<tr>
<td>16-18</td>
<td>97</td>
<td>43</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>(41.5%)</td>
<td>(43.9)</td>
<td>(35.0%)</td>
<td>(41.7%)</td>
</tr>
<tr>
<td>19-23</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>(4.3%)</td>
<td>(3.1%)</td>
<td>(5.0%)</td>
<td>(5.2%)</td>
</tr>
<tr>
<td><strong>Skin type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type I (Only burn)</td>
<td>61</td>
<td>26</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>(26.1%)</td>
<td>(26.5%)</td>
<td>(42.5%)</td>
<td>(18.8%)</td>
</tr>
<tr>
<td>Type II (Burn first, then tan)</td>
<td>110</td>
<td>45</td>
<td>14</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>(47.0%)</td>
<td>(45.9%)</td>
<td>(35.0%)</td>
<td>(53.1%)</td>
</tr>
<tr>
<td>Type III (Only tan)</td>
<td>47</td>
<td>16</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>(20.1%)</td>
<td>(16.3%)</td>
<td>(20.0%)</td>
<td>(24.0%)</td>
</tr>
<tr>
<td>Don't know</td>
<td>16</td>
<td>11</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(6.8%)</td>
<td>(11.2%)</td>
<td>(2.5%)</td>
<td>(4.2%)</td>
</tr>
</tbody>
</table>

**CAMPAIGN AWARENESS AND ENGAGEMENT**

Table 2 shows the levels of awareness and engagement with the campaign, which were used to classify respondents into an exposure group. About half of the respondents (48.3%) had heard of the campaign. Just under half (43.7%) had attended an UYS event or assembly, and of those, nearly all (95.1%) had their photo taken with the UV camera. It should be noted that this campaign
awareness rate should not be considered to be representative of the population of young New Zealanders due to the purposive sampling method.

Table 2: Campaign awareness and engagement*

<table>
<thead>
<tr>
<th>Questionnaire item</th>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heard of the UYS campaign (Question 4)</td>
<td>113</td>
<td>100</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>(48.3%)</td>
<td>(42.7%)</td>
<td>(9.0%)</td>
</tr>
<tr>
<td>Attended an UYS event or assembly (Question 6)</td>
<td>101</td>
<td>126</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(43.7%)</td>
<td>(54.6%)</td>
<td>(1.7%)</td>
</tr>
<tr>
<td>Had photo taken with the UV camera (Question 7)</td>
<td>96</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(95.1%)</td>
<td>(3.0%)</td>
<td>(1.7%)</td>
</tr>
</tbody>
</table>

*May not total to 234 due to skipped questions

CAMERA ACTIVITY IMPRESSIONS

Respondents who had their UV photo taken at an UYS event or assembly were asked about their impressions of the camera activity. Table 3 shows that, overall, the majority of respondents agreed that they knew what to expect inside the tent (95.7%), learned about the sun damage on their face (95.7%), and learned about how to protect their skin from sun damage (89.2%).

Table 3: Impressions of the camera activity*

<table>
<thead>
<tr>
<th>Questionnaire item</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I knew what to expect inside the tent – the process was clearly explained to me.”</td>
<td>89</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>(95.7%)</td>
<td>(4.3%)</td>
<td></td>
</tr>
<tr>
<td>“I learned about the sun damage that’s on my face.”</td>
<td>89</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>(95.7%)</td>
<td>(4.3%)</td>
<td></td>
</tr>
<tr>
<td>“I learned about how to protect my skin from sun damage.”</td>
<td>83</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(89.2%)</td>
<td>(8.6%)</td>
<td>(2.2%)</td>
</tr>
</tbody>
</table>

* based on 93 responses (does not total 96 due to skipped questions)

KNOWLEDGE AND ATTITUDES

Table 4 shows the results and analyses relating to the outcome variables of interest. About three quarters of respondents (77.8%) agreed that they like getting a suntan. About a quarter (26.1%) agreed that they would rather have a tan now than protect their skin from damage. The majority (82.1%) agreed that it is important to them to avoid sun damage by protecting their skin when outside. More than half (60.7%) agreed that it is likely that they already have some permanent damage to their skin from the sun. Three quarters (76.5%) agreed that tanning can make their skin age faster than it naturally would. About half (55.6%) agreed that getting a suntan means that the
skin has been damaged, while the vast majority (91.9%) agreed that the same is true for a sunburn.

There were no differences in any of the knowledge or attitude statements by gender or age. The following statistically significant differences by skin type were found:

- Those with Type II and Type III were more likely to agree that they like getting a suntan, compared with those with Type I (II: OR=3.83, p=.00; III: OR=2.95, p=.02)
- Those with Type II and Type III were more likely to agree that they would rather have a tan now than protect their skin from damage compared with those with Type I (II: OR=5.23, p=.00; III: OR=6.35, p=.00)
- Those with Type II were more likely to agree that tanning can make their skin age faster than it naturally would, compared with those with Type I (OR=1.93, p=.05)
- Those with types I and II were more likely to agree that getting a suntan means that the skin has been damaged, compared with those with Type III (I: OR=2.32, p=.03; II: OR=2.51, p=.01)

The following statistically significant differences between the exposure groups were found:

- Those in the Highly Exposed group were more likely than those in the Exposed group to agree that they like getting a suntan (AOR=2.70, p=.03).
- Those in the Highly Exposed group were more likely than those in the Comparison group to agree that it's likely that they already have some permanent damage to their skin from the sun (AOR=3.25, p=00).
- Respondents in both the Highly Exposed and Exposed groups were more likely than those in the Comparison group to agree that getting a suntan means that the skin has been damaged (AOR=2.73, p=.02; AOR=2.14, p=.01).
Table 4: Agreement with attitude and knowledge statements

<table>
<thead>
<tr>
<th>Questionnaire item</th>
<th>Overall</th>
<th>Comparison</th>
<th>Exposed</th>
<th>Highly Exposed</th>
<th>AOR* E vs C (p value)</th>
<th>AOR* HE vs C (p value)</th>
<th>AOR** HE vs E (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like getting a suntan.</td>
<td>182</td>
<td>76</td>
<td>25</td>
<td>81</td>
<td>0.49 (.10)</td>
<td>1.32 (.47)</td>
<td>2.70 (.03)</td>
</tr>
<tr>
<td></td>
<td>(77.8%)</td>
<td>(77.6%)</td>
<td>(62.5%)</td>
<td>(84.4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I’d rather have a tan now than protect my skin from damage.</td>
<td>61</td>
<td>27</td>
<td>7</td>
<td>27</td>
<td>0.65 (.39)</td>
<td>0.90 (.75)</td>
<td>1.38 (.51)</td>
</tr>
<tr>
<td></td>
<td>(26.1%)</td>
<td>(27.6%)</td>
<td>(17.5%)</td>
<td>(28.1%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It’s important to me to avoid sun damage by protecting my skin when outside.</td>
<td>192</td>
<td>81</td>
<td>36</td>
<td>75</td>
<td>1.96 (.27)</td>
<td>0.76 (.46)</td>
<td>0.39 (.11)</td>
</tr>
<tr>
<td></td>
<td>(82.1%)</td>
<td>(82.7%)</td>
<td>(90.0%)</td>
<td>(78.1%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It’s likely that I already have some permanent damage to my skin from the sun.</td>
<td>142</td>
<td>46</td>
<td>25</td>
<td>71</td>
<td>1.85 (3.25)</td>
<td>3.25 (.00)</td>
<td>1.75 (.18)</td>
</tr>
<tr>
<td></td>
<td>(60.7%)</td>
<td>(46.9%)</td>
<td>(62.5%)</td>
<td>(74.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanning can make my skin age faster than it naturally would.</td>
<td>179</td>
<td>70</td>
<td>34</td>
<td>75</td>
<td>2.49 (.08)</td>
<td>1.50 (.25)</td>
<td>0.60 (.33)</td>
</tr>
<tr>
<td></td>
<td>(76.5%)</td>
<td>(71.4%)</td>
<td>(85.0%)</td>
<td>(78.1%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting a suntan means that the skin has been damaged.</td>
<td>130</td>
<td>44</td>
<td>27</td>
<td>59</td>
<td>2.73 (2.14)</td>
<td>2.14 (.01)</td>
<td>0.78 (.56)</td>
</tr>
<tr>
<td></td>
<td>(55.6%)</td>
<td>(44.9%)</td>
<td>(67.5%)</td>
<td>(61.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting a sunburn means that the skin has been damaged.</td>
<td>215</td>
<td>88</td>
<td>38</td>
<td>89</td>
<td>2.04 (.38)</td>
<td>1.31 (.62)</td>
<td>0.64 (.60)</td>
</tr>
<tr>
<td></td>
<td>(91.9%)</td>
<td>(89.8%)</td>
<td>(95.0%)</td>
<td>(92.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Odds ratio adjusting for age, gender, and skin type. Reference group is the comparison group.

** Odds ratio adjusting for age, gender, and skin type. Reference group is the exposure group.
OPEN-ENDED COMMENTS (VERBATIM)

Participants were asked if there were any comments relating to the campaign that they wished to share. The following verbatim comments were provided:

- I thought it was a really good idea to have the UV pictures, because it gave some people a wake up call to start taking care of their skin :)
- Though it is a good campaign it is very one sided which I don't like. Though yes we do need to cover up, we should know about the benefits that the sun has. When I was at the tent, a lady made a comment about how she liked these people ones because it completely covered them and all the needed was a sunhat. She didn’t once meant that it is important to be exposed in some places, still having sunscreen on to get the vitamin D from the sun and also to build up a protection against the sun with minimum damage. I think that this should be added in your campaign
- na bro it was pretty mint ae
- I did not. Get email. My picture
- Thanks for the wristband <3
- It was very good.
- Explain the benefits of vitamin D from sun exposure also vit D protects against cancer’s
- Loved the UV ray bands that were given out I would swear by it :)”
- it was wonderful
- It was a great experience and I liked the band I got
DISCUSSION

ATTITUDES

Overall, the respondents in this survey sample have some mixed attitudes regarding sun safety. The majority like getting a suntan, which is consistent with findings from prior research with a nationally representative sample of young New Zealanders which found that 68.7% agreed that “Most of my friends think that a suntan is a good thing” and 52.9% agreed that “A suntan makes me feel better about myself” (Peck, 2011). Respondents with skin types II or III had greater pro-tanning attitudes compared with those having Type I and therefore may be at a higher risk for skin damage. Those with Type I skin may not desire a tan as much as those with Types II and III simply because their skin type does not allow them to tan.

While the majority of the sample desires a tan, the majority also believes it’s important to protect their skin from sun damage and prefer to protect their skin rather than get a tan. These conflicting attitudes may reflect the current situation in New Zealand where, while sun safety promotion has had some effectiveness in instilling a desire to protect one’s skin, further work needs to be done to change a culture that still desires a suntan. Perhaps these respondents want a tan but not a sunburn, and they see sunburn avoidance as a form of protection.

Attitudes toward tanning and sun protection do not appear to be different between the exposure groups, except for those in the Highly Exposed group having a greater desire to get a suntan compared with the Exposed group. It is unclear why this difference exists but may be due to selection bias, discussed further in the Limitations section. It’s also likely that those in the Exposed group have had a different experience with UYS compared to those in the Highly Exposed group (eg, Exposed respondents are followers of the UYS Facebook page), which may affect their tanning attitudes differently.

KNOWLEDGE

Respondents with Type II skin were more likely to acknowledge that tanning can accelerate skin aging, compared with those with Type I. Similarly, those with types I and II were more likely to acknowledge the association between a suntan and skin damage. These differences by skin type may be a result of the respondent reflecting on his or her own personal risk, which would be consistent with the question wording, as opposed to an actual knowledge difference.

The findings indicate that respondents in the Highly Exposed group have greater knowledge of the permanent, damaging effects of sun exposure on their skin compared with the Comparison group (and compared with the Exposed group, although the difference was not statistically significant). This may suggest that the camera activity was helpful to communicate a key sun safety message, and the absence of a statistically significant difference between the Highly Exposed and Exposed group could be a result of a small sample size within the exposure groups.
It appears that both exposure groups had greater knowledge about the damaging effects of a suntan, compared with the Comparison group. This finding suggests that general exposure to the campaign may increase awareness of this particular sun safety message and that the camera activity does not offer a benefit additional to general campaign awareness in terms of increasing uptake of this message.

Very few open-ended comments were provided, but they were generally positive about the campaign. Two respondents mentioned the importance of getting Vitamin D, which could compromise sun-safe behaviours. Previous research with New Zealand adults, however, has indicated that sun exposure and sun protection behaviours are not associated with those reporting that they spent time outdoors in order to get more Vitamin D (Gray, 2010).

LIMITATIONS

There are some limitations of the study. Respondents in the different exposure groups were recruited using different methods, which may have impacted the results. This difference in recruitment method may have also affected the response rate, which is low among those who had attended an UYS event/assembly and unknown among those recruited through Facebook. It is therefore possible that selection bias exists in the sample. For example, those who are more sun safety conscious may have responded to the Facebook advertisements compared to those who were recruited at an UYS event or assembly. This possibility could explain the higher pro-tanning attitude among the Highly Exposed group compared with the Exposed group, but the relationship does not hold for those in the Highly Exposed group compared with the Comparison group. The pro-tanning discrepancy is therefore not understood.

There may be some misclassification of skin type due to the self-report nature of the survey. It is also possible that some respondents’ exposure group has been misclassified if campaign recall was compromised. Further, while the division of the sample into three groups allowed for some analyses by type of campaign exposure received, the size of the smaller sub-groups may have limited the ability to detect some statistically significant differences. Another limitation involves the study design, which does not incorporate the use of a pre-test due to feasibility challenges. Any differences in the outcome variables by exposure group, therefore, cannot be attributed to the campaign. However, the study design that was employed offers an opportunity to explore any potential differences in sun safety knowledge and attitudes by exposure group, and it may provide some input into the future development of the programme. A randomised controlled trial would offer a strong option for evaluating the impact of the campaign; however, these kinds of methodologically rigorous studies are often not feasible or appropriate to conduct for small campaigns such as UYS.
REFERENCES


APPENDIX A  QUESTIONNAIRE

2013-14 Under Your Skin Campaign Evaluation

Thanks for taking the time to complete this survey. It will take about 5 minutes. We’d like to hear your opinion on a few things, so just tell us what you really think. Your name will not be used.

First, a few questions about you:

Q1. Are you...
   
   Male
   Female

Q2. How old are you? (the age you turned at your last birthday)
   
   [Dropdown of ages 8 to over 24]

[Disqualification message for those not aged 13-24:]

Thank you for your interest in our survey. It has been designed for people aged 13 to 24 years only, so people of other ages do not qualify to participate. Thanks anyway!

[Message for those aged 13-14:]

For those of you who are under 15 years old, you may want to tell your parents that you are taking a survey about sun safety before continuing.

Q3. Suppose your untanned skin was exposed to strong sunshine at the beginning of summer. If you stayed in the sun for 30 minutes and used NO sun protection at all, would your untanned skin…?

   Just burn and not tan afterwards
   Burn first, then tan afterwards
   Not burn at all, just tan
   Don't know

Q4. Have you heard of a campaign called ‘Don’t Let the Sun Get Under Your Skin’?

   Yes
   No
   Don’t know
Q5. Tell us how much you agree or disagree with these statements. (Select one for each row.)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like getting a suntan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'd rather have a tan now than protect my skin from damage (like wrinkles and dark spots).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It’s important to me to avoid sun damage by protecting my skin when outside.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It’s likely that I already have some permanent damage to my skin from the sun.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanning can make my skin age faster than it naturally would.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting a <strong>suntan</strong> means that the skin has been damaged.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting <strong>sunburnt</strong> means that the skin has been damaged.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As part of the Don’t Let the Sun Get Under Your Skin campaign, there have been some events around the country that have a tent like this.

Q6. Have you attended an event or school assembly that had this tent?

   Yes
   No
   Don’t know

[If yes, go to Q7. If no or don’t know, go to Q10.]
Q7. Some people who visited the tent had their picture taken with an Ultraviolet (UV) camera, like this one. Did you have your photo taken with the UV camera?

Yes
No
Don’t know

[If yes, go to Q8. If no or Don’t know, go to Q9.]

Q8. Please tell us what you think about the camera activity:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>I knew what to expect inside the tent - the process was clearly explained to me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I learned about the sun damage that’s on my face.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I learned about how to protect my skin from sun damage.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q9. Is there anything else you’d like to tell us about the Don’t Let the Sun Get Under Your Skin event?
[open text box]

Q10. If you would like your name to be put into the prize draw to win 1 of 20 iTunes vouchers, please give us your name and email address so we can get in touch with you if you’re chosen as the winner.

We won’t use your information for any other purpose.

Be sure to click on DONE below to complete the survey!

[name and email text boxes]
APPENDIX B  EXPOSURE GROUP CLASSIFICATION

Respondents were grouped into one of three exposure groups depending on their response to each of three questions relating to campaign awareness and engagement.

<table>
<thead>
<tr>
<th>Q4 response – have you heard of UYS?</th>
<th>Q6 response – have you attended UYS event or assembly?</th>
<th>Q7 response – did you do through camera activity?</th>
<th>n</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>75</td>
<td>Highly exposed</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td>1</td>
<td>Exposed</td>
</tr>
<tr>
<td></td>
<td>Don’t know</td>
<td></td>
<td>2</td>
<td>Exposed</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>n/a</td>
<td>33</td>
<td>Exposed</td>
</tr>
<tr>
<td>Yes</td>
<td>Don’t know</td>
<td>n/a</td>
<td>1</td>
<td>Exposed</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>n/a</td>
<td>83</td>
<td>Comparison</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>10</td>
<td>Highly exposed</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td>2</td>
<td>Exposed</td>
</tr>
<tr>
<td>Don’t know</td>
<td>Yes</td>
<td>Yes</td>
<td>11</td>
<td>Highly exposed</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td>Don’t know</td>
<td>No</td>
<td>n/a</td>
<td>10</td>
<td>Comparison</td>
</tr>
<tr>
<td>Don’t know</td>
<td>Don’t know</td>
<td>n/a</td>
<td>3</td>
<td>Removed</td>
</tr>
<tr>
<td>Yes</td>
<td>Skipped</td>
<td>Skipped</td>
<td>1</td>
<td>Exposed</td>
</tr>
<tr>
<td>No</td>
<td>Skipped</td>
<td>n/a</td>
<td>2</td>
<td>Comparison</td>
</tr>
</tbody>
</table>