Effects of an appearance-focussed versus a health-focussed intervention on men's attitudes towards UV exposure

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Abstract

This study investigated men's experiences of an appearance-focussed, facial-ageing, intervention designed to increase sun protection intentions, compared to a health literature intervention. Seventy men took part, with thirty-five in each condition. The men completed questionnaires at baseline, post-intervention and six months post-intervention. There was a significant improvement in sun benefit attitudes, sun risk attitudes and sun protection intentions in both groups, although there was no significant difference between the conditions. At six month follow-up, however, there was a significant difference in sun protection use, with those in the facial-ageing intervention condition using significantly more protection. It is suggested that in the future, interventions that incorporate both health and appearance factors are designed, in order to utilise the strengths of both interventions.

Key Words: Men; UV Exposure; Sun Protection; Intervention; Facial-ageing; Health literature

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The World Health Organization (WHO) reports that exposure to ultraviolet (UV) radiation, including exposure to the sun and sunbeds and a history of sunburn, is the primary cause of all melanoma and non-melanoma skin cancers (WHO, 2012). Cancer Research UK (2012) found that although more women are diagnosed with melanoma each year, more men die from the disease. In the UK in the late 1970s, fewer than 400 men died from melanoma each year, but that figure had risen to over 1,100 in 2010 (Cancer Research UK, 2012). In the US, approximately 39,000 new cases occur in men each year, compared to 29,000 in women, with approximately 5,700 deaths from melanoma, and 3,000 in women (American Cancer Society, 2010).

As we age, the condition of our skin deteriorates due to a variety of intrinsic and extrinsic factors, determined not only by genetics and physiological health but also by behaviour and lifestyle choice. Every part of the body ages as a result of the passage of time: this process is called chronologic or intrinsic ageing (Situm et al., 2010). However, the skin is also exposed to external factors which can cause ageing, known as extrinisic ageing (Situm et al., 2010). Cumulative, repeated exposure to solar ultraviolet radiation (UVR) is linked to the induction of specific types of skin cancer and the expression of cutaneous damage markers responsible for the majority of the visible signs of skin ageing (Matts & Fink, 2010).

Clarke and Griffin (2008) suggest that there is a social obsession with youthfulness, and gaining control over ageing has been a human ambition for many years, some suggest since early civilisation (Gruman, 2003; Muise & Desmarais, 2010). Young and healthy-looking skin is a feature that is universally admired and considered attractive among humans (Matts & Fink, 2010). It is a widespread notion that flawless skin is one of the most

universally desired human features (Morris, 1976), and research has found that people attach great importance to attractive, healthy and youthful looking skin (Etcoff, 1999; Jablonski, 2006). Choma et al. (2010) and Morry and Staska (2001) suggest that males are just as vulnerable to appearance concerns as females. For example, Strelan and Hargreaves (2005) researched male opinions towards appearance concerns related to exercising. A total of 153 participants aged 18-35 years completed questionnaires that assessed exercise habits, reason for exercise, self-objectification, body esteem and self-esteem. Findings showed that men were just as concerned with aspects of their appearance as women were, and were just as likely to exercise for appearance reasons as women. Appearance-enhancement was the second most common reason for exercising in both men and women (after health and fitness).

Objectification theory (Fredrickson & Roberts, 1997) is a model related to the internalisation of cultural standards of attractiveness, body surveillance for adherence to those standards, and body shame for failing to meet those standards, and proposes that these may be correlates of mental health problems and unhealthy body modification strategies. In terms of UV exposure, it may be possible that men are carrying out unhealthy behaviours such as unprotected UV exposure and sunbed use, in order to gain more tanned skin, which they feel is more attractive. Coupland (2007) has suggested that there has been a change in media pressure on men in recent years, that men's bodies have moved into the public spotlight alongside women's, and that men are now targeted with facial wrinkling advertisements. Coupland (2004, as cited in Coupland, 2011) uses the example of the Rolling Stones, suggesting that they are a familiar target for British media, with close up facial photos displaying wrinkled, weathered skin captioned with expressions like 'Repaying the debts of yesteryear'. Thus research does indicate that there is a social pressure to maintain a youthful appearance in adulthood.

The majority of previous UV exposure and sun protection research has mainly focussed on female participants. For example, a systematic review of appearance-focussed sun protection interventions carried out by the authors (Authors, 2013) found that of twenty-two studies published, the number of women included was more than twice the number of men, with 4373 women compared to 1797 men (and 174 participants where no gender information was available). Appearance-focussed interventions are interventions that contain a component that is designed to manipulate appearance concerns (Grogan & Masterson, 2012); for example in the case of UV exposure research, an appearance-focussed intervention could inform participants about the impact that exposure to the sun could have on their appearance.

Two previous studies (Girgis et al, 1994; Stock et al., 2009) have carried out appearance-focussed UV exposure interventions which used only male participants, with both using outdoor workers as their participants. Stock et al. (2009) showed participants in Iowa in America, a UV photo of their face and watched either a general photoaging or skin cancer educational video. They found that participants in the UV photography and cancer information interventions reported higher levels of sun protection cognitions, which were significant partial mediators of increases in sun protection behaviours and decreases in skin colour.

In terms of health-focussed interventions aimed specifically at men, Azizi et al. (2000) carried out a graded work site intervention program to improve sun protection and skin cancer awareness in outdoor workers in Israel. A total of 37 male outdoor workers were allocated to undergo the full health-focussed intervention, which included an educational session that covered issues such as the risk of skin cancer and eye lesions associated with UV exposure (with 72 completing a partial intervention, and 35 completing minimal intervention). They found that taking part in the intervention led to a significant improvement in sun protection usage and skin cancer awareness.

The authors have carried out qualitative work with men using the appearance-focused intervention (Authors, 2013). We found that the majority of men expressed shock about the impact of ageing on their faces, and particularly the added impact of UV exposure, with a smaller subgroup of men expressing lack of concern about the impact of ageing on their skin. A number of the men suggested that they would be more concerned about the effects of UV exposure on their health rather than their appearance. We therefore felt it would be interesting to extend this research, and examine quantitatively whether the intervention had an impact on participants' intentions and behaviours, and whether a health-focussed intervention would have more or less of an impact than the appearance-focussed intervention.

The current study was designed to investigate quantitatively whether there was a difference in sun protection and UV exposure attitudes between men who had taken part in a facial-ageing intervention and men who had taken part in a health literature intervention. We have previously carried out a study with a similar design in women (Authors, 2013) and found that participants in the facial-ageing intervention condition had significantly higher sun protection intentions, significantly more negative attitudes and significantly higher perceived sun damage susceptibility attitudes after taking part in the intervention, compared to those in the health-literature condition. With the current study, at baseline, the authors did not hypothesise which intervention would be the most effective, but were interested to see whether both would have an effect, and whether one would be more effective than the other. We investigated the impact of the interventions on sun benefit and risk attitudes, sun protection intentions, and perceived sun damage susceptibility. These constructs were chosen as they have been used previously in UV exposure interventions (e.g., Authors, 2013; Mahler et al., 2008), and have been found to be appropriate factors for measuring sun protection and UV exposure behaviours and intentions.

Method

Design

The study used a two (conditions: health literature intervention and facial-ageing intervention) by three (time-points: baseline, immediately post-intervention and six months post-intervention) mixed measures design. The health-literature intervention group read literature about the health damage caused by UV exposure and ways to protect oneself from the sun, and the facial-ageing intervention group were exposed to the APRIL® (2011) facial morphing programme. Outcome measures were sun benefit attitudes, sun risk attitudes, sun protection intentions, and perceived sun damage susceptibility. See Figure 1 for flow chart indicating the experimental design.

Participants

The authors based the number of participants on previous research using the APRIL software (Grogan et al., 2011), who based their sample size on finding a medium effect (η^2 = .10; Copeland et al., 2006), with a power of .80 and α = .05. It was necessary to have 35 participants in each condition. The men were between 18-34 years old and were recruited using the process of opportunity sampling. The average age of the participants was 25.03 (SD *5.59*). The participants' Skin Type (Fitzpatrick, 1975: See Table 1) was predominantly Skin Type III (42.9%) with the other participants having Skin Type I (1.4%), II (14.3%), IV (31.4%), V (7.1%) and VI (2.9%). All men were students at a British University, and were able to speak English. The intervention took place from May to August 2011. Seventy-four men were approached to take part; however four of the men who were approached declined to take part, bringing the sample size down to 70 (this high participation rate was put down to the method of recruitment: approaching the men in the university buildings and asking them to take part in a fairly short study. Additionally, some of the participants were psychology students, and were offered research participation vouchers for their time). The research facilitator organised allocation to the conditions, with the first 35 men taking part in the

facial-ageing intervention, and the second 35 taking part in the health-literature intervention. Scores on key variables were checked at baseline to ensure that the two groups were matched.

Procedure

Apparatus utilised for the facial-ageing intervention were a laptop installed with the APRIL® Age Progression Software and a camera, and health literature was used for the health literature intervention. Additionally, an outline protocol and a list of questions were also used. The list of questions was prepared prior to the sessions, and was derived from prior reading and discussions within the research team, (e.g. whether the men could see a difference between the UV-aged and non UV-aged photographs).

APRIL® Age Progression Software was used in the facial-ageing condition. APRIL® is a unique computer program that creates a series of images of a person's face as it changes with age. It has been used for other health and lifestyle factors such as smoking (Grogan et al., 2010) and obesity (Roockley, 2010). The software is based on the results of a five-year study of the faces of over seven thousand people of different ethnicities, ages and lifestyle habits (APRIL®, 2011), and displays the progression of facial ageing up to 72 years with and without damage from UV exposure.

The health-based literature came from one eight-page bilingual leaflet (four pages with the information written in English, four pages with the information written in Welsh) and one flyer in English from the NHS and Cancer Research UK (NHS Health Information Leaflet Service, 2010). The leaflet detailed the dangers of UV exposure, and challenged common "Tanning Myths", for example "Being tanned is a sign of health". It also showed four photographs of moles, gave advice on what to do if you have any abnormal skin changes and gave facts about skin cancer, for example "Every day, six people die from skin cancer in the UK". The leaflet included a photograph on the front of a white female with blonde hair and blue eyes. The flyer was postcard sized, and had written in large font, "WARNING: Sunburn

can double your risk of skin cancer", and on the back gave the Cancer Research UK SunSmart tips (e.g. Make sure you never burn).

The intervention took place at a British University. Prior to the commencement of the study, ethical approval was granted by the University Ethics Committee, and the British Psychological Society ethical guidelines were followed throughout the study. Potential participants were asked whether they were willing to take part in a study regarding their UV exposure and sun protection behaviours. Interested participants were given the information sheet and consent form to sign. The facilitator ensured that the participants were still happy to take part, and asked whether they had any questions. Participants were reminded that their attendance was voluntary and they were free to leave at any time. Participants were then given the baseline questionnaire to complete.

Facial-ageing Intervention Condition. After completion of the baseline questionnaire, the researcher took a photograph of the participant's face, and uploaded the photograph onto the APRIL® Age Progression Software. The researcher explained that the photographs on the left hand side of the screen would show their face aged if they had been using sun protection and not using sunbeds, and on the right hand side of the screen they would see their face aged with excessive UV exposure and no sun protection. The researcher then pressed play, and the photographs moved through the ages from the participant's current age, in two year intervals, up to the age of 72, the maximum age. Participants were then asked the following questions: "Do you have any thoughts on these?", "Can you see any differences between the two photographs?", "Can you see any differences from the side?" (related to the 3D setting on the software, which enabled the researcher to rotate the images, to show further wrinkling to the side of the face), "Is there another age that you would like to see?" and "Do you think that viewing these would have an effect on your future sun protection or UV exposure behaviour?" The information from these questions was analysed using inductive thematic

analysis (Authors, 2013). The researcher switched between the UV-aged and non UV-aged photographs to indicate the difference in the ageing process, and put the photographs on the 3D setting which enabled the men to see the photographs from the side view.

After the participants had finished viewing the photographs, they were given the post-intervention questionnaire to complete. Finally participants were given the debrief sheet, and it was reiterated that they could contact the researcher should they have any queries.

Health Literature Intervention Condition. After completing the baseline questionnaire participants were shown the health-focussed literature, and were given five minutes to look through this. They were then asked two questions: "Do you have any thoughts on these?" and "Do you think that viewing these would affect your sun exposure or sun protection behaviours?" and were asked to complete the second questionnaire. The questions were asked to ensure participants had read the literature fully, and had experienced the same procedure as participants in the facial-ageing intervention condition. However, unlike the facial-ageing intervention condition, where we recorded the information to address specific research questions about how men talked about exposure to facial morphing (Authors, 2013) , the answers to these questions were not recorded or analysed. After completion of the second questionnaire, participants were given the debrief sheet.

Six month follow-up

Six months post-intervention, participants were sent the follow-up questionnaire via email. If participants did not reply then they were contacted two further times via email with the questionnaire attached again.

Measure

The questionnaire has been used in a previous study by the authors, carrying out the same interventions but focussing on women (Authors, 2013), and was made up of items from

two previous appearance-based interventions focussed on sun exposure and sun protection (Olson, Gaffney, Starr & Dietrich, 2008; Mahler, Kulik, Butler, Gerrard & Gibbons, 2008). The use of these items in previous questionnaires has been found to have good reliability and validity (See Mahler et al., 2008 and Olson et al., 2008).

The baseline and six-month follow-up questionnaires were made up of thirteen items and two informational questions, and the immediate post-intervention questionnaire was made up of eleven items (with the two informational questions and two of the original items removed: 'I have been using sunscreen with at least sun protection factor (SPF) 15 for the last 12 months' and 'I use sunscreen with at least sun protection factor (SPF) 15 when I am out in the sun for more than 15 minutes'). A five point Likert scale was given next to each of the items, labelled from 'Strongly Disagree' to 'Strongly Agree', and participants were asked to tick the label they agreed most fitted the items.

The questionnaires consisted of items measuring baseline Sun Protection Use, Sun Benefit Attitudes, Sun Risk Attitudes, Sun Protection Intentions and Perceived Sun Damage Susceptibility (with the baseline sun protection use item removed for the immediate follow-up questionnaire).

Baseline Sun Protection Use: Baseline sun protection behaviour was assessed at the first session using the items "I use sunscreen with at least sun protection factor (SPF) 15 when I am out in the sun for more than 15 minutes", "I have been using sunscreen with at least sun protection factor (SPF) 15 for the last 12 months". The items were taken from Olson et al. (2008).

Sun Benefit Attitudes: Participants' attitudes towards the benefits of sun exposure were measured through three items: "Being in the sun is relaxing", "A tan looks good" and "Tanned people look healthy". The items were taken from Olson et al. (2008).

Sun Risk Attitudes: Attitudes towards the risks of sun exposure were measured through three items: "Sun and UV light damage cause wrinkles", "Bad sunburns are unhealthy" and "Too much sun exposure causes skin cancer". The items were taken from Olson et al. (2008).

Future Sun Protection Intentions: Intention to use sunscreen in the future was measured using three items: "I plan to always use a sunscreen with an SPF of at least 15 on my face", "In the future I plan to use sunscreen on all exposed areas of my body on a daily basis" and "I intend to use sunscreen with at least SPF 15 within the next six months". The items were adapted from Mahler et al. (2008). In terms of using intentions measures, Webb and Sheeran (2006) carried out a meta-analysis on 47 experimental tests of intention–behaviour relations, and found that a medium-to-large change in intention ($d = 0.66$) leads to a small-to-medium change in behaviour ($d = 0.36$). In the study that the items were adapted from (Mahler et al., 2008) participants in the intervention conditions reported significantly higher sun protection intentions than those in the control condition, and in the month follow-up measure, 50–62% had increased their frequency of sun protection use on their face and 32–57% had increased the frequency of sun protection use on their body during the month following the intervention, which indicates that the intentions measures do provide a good indication of future behaviour change.

Perceived Sun Damage Susceptibility: Participants beliefs towards perceived susceptibility of sun damage were measured using two items: "I am too young to spend much time thinking that I might get wrinkles and age spots" and "No matter what I do, I don't think it is likely that I am going to have many wrinkles or age spots". The items were taken from Mahler et al. (2008).

Actual UV Exposure Behaviour: Information was gathered about participants' actual UV exposure behaviour using the questions, "How many times in the past month have you used a sunbed?" and "How much time have you spent in the sun with the intention of getting

a tan in the past two months?" These questions were adapted from Stapleton, Turrisi, Hillhouse, Robinson and Abar (2010).

Negatively worded items were reversed before analysis, so that higher scores represented more positive attitudes, behaviours and intentions.

Results

Preliminary Analyses

The final study sample consisted of 70 male university students, aged 18 to 34, with 35 in each group; the health literature intervention condition and the appearance-focused condition. In terms of sun protection use at baseline, 48.6% of all participants reported using sunscreen with at least SPF 15 when out in the sun for more than 15 minutes. However, in addition to this, 51.4% of participants reported that they had not been using sun protection with at least SPF 15 for the past 12 months. In terms of UV exposure, 44.3% of participants reported spending time in the sun with the intention of getting a tan in the past two months, and five of the participants had used a sunbed at least once in the past month. In terms of health, 92.9% of participants agreeing that too much sun exposure can cause skin cancer, and 95.7% of participants agreeing that bad sunburns are unhealthy. A total of 68.6% participants felt that they were too young to be worried about wrinkles or age spots (and a further 20.0% neither agreed or disagreed).

The internal consistency of the Questionnaire subscales was checked, and sun benefit, sun protection use and sun protection intentions all had a Cronbach's Alpha and Guttman's Lambda 2 of over .7, which is adequate (Kline, 2000). However, the perceived sun damage susceptibility measure and the sun risk attitudes measure had levels below Kline's (2000) recommended .7 (the sun risk attitudes measure had a Cronbach's Alpha of .474 and a Guttman's Lambda 2 of .46, and the perceived sun damage susceptibility had a Cronbach's

Alpha and Guttman's Lambda 2 of .547). Nunnally (1967) recommends that minimum Cronbach's Alpha values of between 0.5 and 0.6 are adequate, and the perceived sun damage susceptibility Alpha falls between these values. The sun risk attitudes measure was below this, but Pedhazur and Schmelkin (1991) suggest that the user of the measure has the ability to determine how reliable the test should be depending on the circumstances of the study. It was therefore decided to include these measures in the analysis as the measures were still felt to be important. However, it is important to bear the lower alpha levels in mind when drawing conclusions from the results of these subscales.

To determine the initial equivalence of the conditions, separate one-way analyses of variance (ANOVAs) were performed on the demographic and subscale variables. The results indicated that there were no significant differences between the two groups in terms of age ($F_{(1,69)} = 3.014$, p =. 087, eta-squared = .042), perceived sun damage susceptibility ($F_{(1,69)} = .070$, p = .793, eta-squared = .001), sun risk attitudes ($F_{(1,69)} <.001$, p = 1.00, eta-squared < .001), sun protection use ($F_{(1,69)}= .179$, p = .674, eta-squared = .003), sun benefit attitudes ($F_{(1,69)} <.001$, p = 1.00, eta-squared < .001) and sun protection intentions ($F_{(1,69)} = .070$, p = .793, eta-squared = .001).

Primary Analysis

Within-subjects ANOVAs were carried out to see whether taking part in an intervention, be it health-literature or facial-ageing, had an effect on the participants. The independent variable was whether the men took part in the facial-ageing intervention or health literature intervention, and this was between-subjects. Table 2 shows the results of the within-subjects ANOVAs for each of the four variables, and Table 3 shows the estimated marginal means and confidence intervals. The analysis indicated that in both the facial-ageing and health literature groups there was a significant difference between baseline measures and

immediate follow-up measures in sun benefit attitudes, sun risk attitudes and sun protection intentions, with the scores on the measures significantly increasing post-intervention.

Secondary Analyses

After discovering there was a significant difference in baseline and immediate follow-up measures in sun benefit attitudes, sun risk attitudes and sun protection intentions, analyses were carried out to discover whether there was a difference between the two conditions (details given below). Table 4 shows the means and standard deviations for baseline sun protection use, and the means and standard deviations for the total of the subscales at each of the two time points, at baseline (T1) and at the second time point (T2: after the first intervention: health-based literature for the health literature intervention condition and APRIL intervention for the facial-ageing intervention condition). A higher score indicates more positive attitudes towards safe sun protection and UV exposure behaviours.

A one-way, between-groups analysis of covariance (ANCOVA) was conducted on each of the variables, with the base-line value being treated as the covariate, to assess whether there was a difference in post-intervention subscale scores between the health literature intervention and facial-ageing intervention groups. All of the subscales had homogeneity of regression slopes. Table 5 shows the results of the ANCOVA analyses and the estimated marginal means and confidence intervals for the four variables in each of the conditions. The ANCOVA indicated that there were no significant differences between the facial-ageing intervention and health literature intervention conditions in any of the measures: sun benefit attitude $F(1,67)=2.13$, $p=.15$, $\eta_p^2 = .03$, sun risk attitude $F(1,67) = .34$, $p=.56$, $\eta_p^2 = .01$, sun protection intentions $F(1,67) = .02$, $p=.88$, $\eta_p^2 <.01$ and perceived sun damage susceptibility $F(1,67) = .03$, $p=.88$, $\eta_p^2 <.01$. In addition, the largest effect size was .031, with the remainder being below .01.

Sixth-month follow-up analysis

A total of 33 participants completed the six-month follow-up questionnaire (15 in the facial-ageing intervention condition and 18 in the health literature intervention condition); thus giving an attrition rate of 52.9%. A missing values analysis was carried out on participants in both the facial-ageing intervention and health literature intervention condition (separately), and it was found that there were no significant differences between the participants who did not complete the follow-up questionnaire and those who did, on any of the measures.

A series of ANCOVAs were carried out in order to compare the groups at six-month follow-up data with the baseline data as the covariate. All of the measures had homogeneity of regression slope. There was not a significant difference between the groups at six-month follow up in any of the measures (See Table 6 for the results of the ANCOVA analyses and the estimated marginal means and confidence intervals for the variables in each of the conditions). In terms of sun protection use, when outliers were removed (participants with a Cook's Distance of less than .1 and an Uncentred Leverage Value of less than .15, resulting in the removal of four participants from the analysis), there was a significant difference between baseline and follow up ($F_{(26)} = 5.19$, $p = .03$, partial eta squared = .17), with participants in the facial-ageing intervention condition having significantly higher sun protection use post-intervention in comparison with participants in the health literature intervention.

Discussion

The results of the present study suggest that taking part in an intervention did lead to a significant improvement in men's sun benefit attitudes, sun risk attitudes and sun protection intentions. Interestingly, we found that that there was no significant difference between whether the intervention was a health literature or facial-ageing intervention immediately post-intervention. This suggests that both health and appearance are of importance to men in

terms of assessing their UV exposure attitudes and sun protection intentions, but neither appears to be more effective than the other.

However, in terms of sun protection use at the six-month post-intervention follow-up, when outliers were removed, the men in the facial-ageing intervention condition had significantly higher sun protection use post-intervention in comparison with participants in the health literature intervention, which does suggest that viewing the facial-ageing intervention did have a significant impact on participants' sun protection behaviours in the long-term. We feel that this finding is of great interest and importance, and has interesting implications in terms of the long-term impact of appearance-focussed interventions in this area. Many previous interventions have not included such a long term follow-up (in the systematic review by the authors, most follow-ups were between two weeks and two months), thus suggesting that this may be a vital component when measuring participants' behaviour change post-intervention."

There was no significant difference in perceived sun damage susceptibility in either group immediately post-intervention or at the six month follow-up. This is somewhat surprising, as one would expect that having seen the damage that UV exposure can cause to skin in the facial-ageing intervention group, the men would feel more susceptible to this damage. One explanation for this could be that at baseline, 68.6% of the men felt that they were too young to be worried about wrinkles or age spots (and a further 20.0% reporting a neutral response to feeling worried about this ageing). Thus, because the majority of participants felt they were too young to be worried about this, it may be that they did not feel susceptible to damage such as wrinkling or age spots.

At baseline, the majority of men agreed that UV exposure can cause damage to the skin, with the majority of participants agreeing that too much sun exposure can cause skin cancer, and that bad sunburns are unhealthy. However, the results indicated that just over half

of participants had not been using sun protection with at least SPF 15 for the past 12 months, and just under half of participants had spent time in the sun with the intention of getting a tan in the past two months. At the six month follow-up, over a third of participants had spent time in the sun intending to get a tan within the last two months, which again is a relatively high proportion. These findings indicate that men do understand that UV exposure can be damaging to the skin, but still have positive attitudes towards tanned skin, and does emphasise the need for interventions that encourage men to develop safer UV exposure behaviours.

The results showed that the majority of men had a positive attitude towards tanned skin, for example just under two-thirds of participants at baseline agreed that a tan looked good, and at the six month follow-up, this proportion still agreed that a tan looked good. Beasley and Kittel (1997) suggested that the perception that tanned skin is more attractive than pale skin is a primary motivating factor for people to get a tan. Additionally, Banjeree et al. (2008) suggest that perceived attractiveness is one of the strongest predictors of behaviours associated with getting a tan, such as spending more time sunbathing and using tanning beds.

In terms of links with Objectification Theory (Fredrickson & Roberts, 1997), it is important for us to consider impacts of increasing appearance pressures on the wellbeing and health of men. It could be suggested that the appearance-focussed intervention may contribute to a negative body image, by encouraging participants to focus on their appearance and look at negative issues related to ageing. In the case of this research, it is possible that after viewing the software participants may have felt increased appearance concerns after seeing the photographs and how they may age. Grogan and Masterson (2012) point out that appearance-focussed interventions may reinforce the idea that only certain looks are socially acceptable, i.e. in the case of this research, a smooth, wrinkle-free complexion. However, they also emphasise the need for such interventions to be carried out by people who are fully aware of the possible negative impacts on body image of the intervention, and who employ a careful

debrief post-intervention. Debriefing was carried out with care in this study and we are confident that men were not left feeling concerned about their appearance.

The findings differed from the results we found when carrying out a similar intervention with women (Authors, 2013), in that for women there was a significant difference between the health and facial-ageing intervention interventions immediately post intervention, with the facial-ageing intervention more successful in altering participants' sun protection intentions, attitudes and perceived sun damage susceptibility attitudes. Authors have suggested that men are under less pressure than women to appear youthful (Grogan, 2011), and that concerns about facial ageing are generally not seen as masculine-appropriate (Connell, 2005; Hall, Gough, & Seymour-Smith, 2012), which may partially explain these differences. In the study with females, we did not include a long-term follow-up, so are therefore unable to compare results on long-term effects directly between males and females, though these shorter-term effects suggest interesting gender differences.

Implications for Health Care

In terms of implications for practice and policy, some caution does need to be adopted given the specific nature of the sample. However, the findings suggest that interventions such as the ones discussed in this study can have a significant impact on people's behaviours, thus in terms of practice and policy, it might be useful for government campaigns to design more widespread interventions using these components, that are likely to access a wider number of people. Cancer Research UK (2013) notes that death rates from skin cancer in men have increased by 185 per cent in the last forty years, showing the importance of convincing men to use UV protection. Both ageing software and health information sheets seem to be effective in encouraging men to take seriously the need to protect their skin, and both could be usefully placed in health care settings such as GPs surgeries to ensure general accessibility to men across ages and skin types. Research presented here show that making facial morphing and

UV information sheets available to men more widely could change attitudes and lead to significant behaviour change.

Methodological / Interpretive Issues

Participants in the present study were male students aged 18 to 34. This means that the findings need to be generalised with caution to other groups. Furthermore, the study was conducted at just two sites (only 30km apart) at a British University. Thus it is not possible to determine whether the intervention would have had different effects had it been conducted in different places, for example areas where there is a sunnier climate.

Unfortunately, there was a high attrition rate at the six-month follow-up (52.9%), with over half of participants not completing the follow-up measures. Participants were contacted via email three times to ask them to complete the questionnaire, however no other information was taken from the participants (e.g. telephone numbers) so there was no other way of contacting them if they did not reply. In future, it would be better to collect other forms of communication from participants, for example more than one email address, home address or telephone number. It is, however, important to remember that there is a balance to be made between chasing up participants and coercion, so it is not always possible to get participants to complete follow-ups

One methodological issue with this piece of research was that participants were not randomised to conditions: the first 35 participants were allocated to the facial-ageing intervention condition, and the second 35 participants took part in the health literature intervention condition. It would have been preferable to have randomised participants to the two conditions to increase the internal validity of the study, and would also have eliminated other sources of bias, for example any issues with the weather in terms of outdoor UV exposure dependant on the weather when the interventions took place.

There was a difference in terms of the methods of delivery of the intervention, with participants in the facial-ageing intervention condition looking at a piece of computer software and participants in the health literature intervention condition reading a leaflet. Participants in the facial-ageing condition also spent ten minutes longer in the session (due to the time taken to upload the photographs into the software and ageing the photographs). We felt that by showing participants leaflets (rather than a health-focussed piece of computer software, for example) was more similar to usual care, where participants might have the opportunity to read leaflets while waiting at a doctor's surgery, for example, as well as giving them ten minutes to read the leaflets rather than making them read it for twenty minutes (when it is unlikely that in usual care they would read the leaflet for longer than around ten minutes). A further difference is that participants in the facial-ageing intervention condition were audio-recorded whilst viewing their photographs but those in the health literature intervention condition were not, and it is possible that this impacted upon participants during the sessions.

It would have been useful to include a third "no information" control group that did not receive any intervention. It is possible that the observed changes from pre- to post-test were simply placebo or demand effects, and to compare the intervention groups with a condition that did not receive any UV exposure information would have been a useful addition to the research.

Future Research

Both the facial-ageing intervention and health literature interventions had a significant effect on factors such as sun protection intentions, but there was no significant difference between the two types of intervention immediately post-intervention. Thus in future it may be beneficial to design interventions for men that incorporate both health information and facial-ageing factors, to utilise the strengths of both approaches. It will also be useful to conduct

these kinds of studies outside the UK, to check generalisability and to broaden the scope of what we currently know about responses to these kinds of interventions.

Conclusion

The present study showed that taking part in an intervention designed to increase sun protection intentions and increase safe UV exposure behaviours, had a significant effect on men's sun benefit attitudes, sun risk attitudes and sun protection intentions; however there was no significant difference in effectiveness between whether the focus of the intervention was health or appearance-based immediately post-intervention. Interestingly, however, participants in the facial-ageing intervention group had significantly higher sun protection use scores at six month follow-up, thus suggesting that the appearance-focussed intervention did have a long-term impact on their behaviour. The study has indicated that in future it would be useful to design interventions for men that incorporate both health and appearance factors, which will hopefully encourage both short-term and longer-term changes to their behaviour.

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Figure 1. Participant Flow Chart Showing Randomisation and Study Procedure for Both Groups

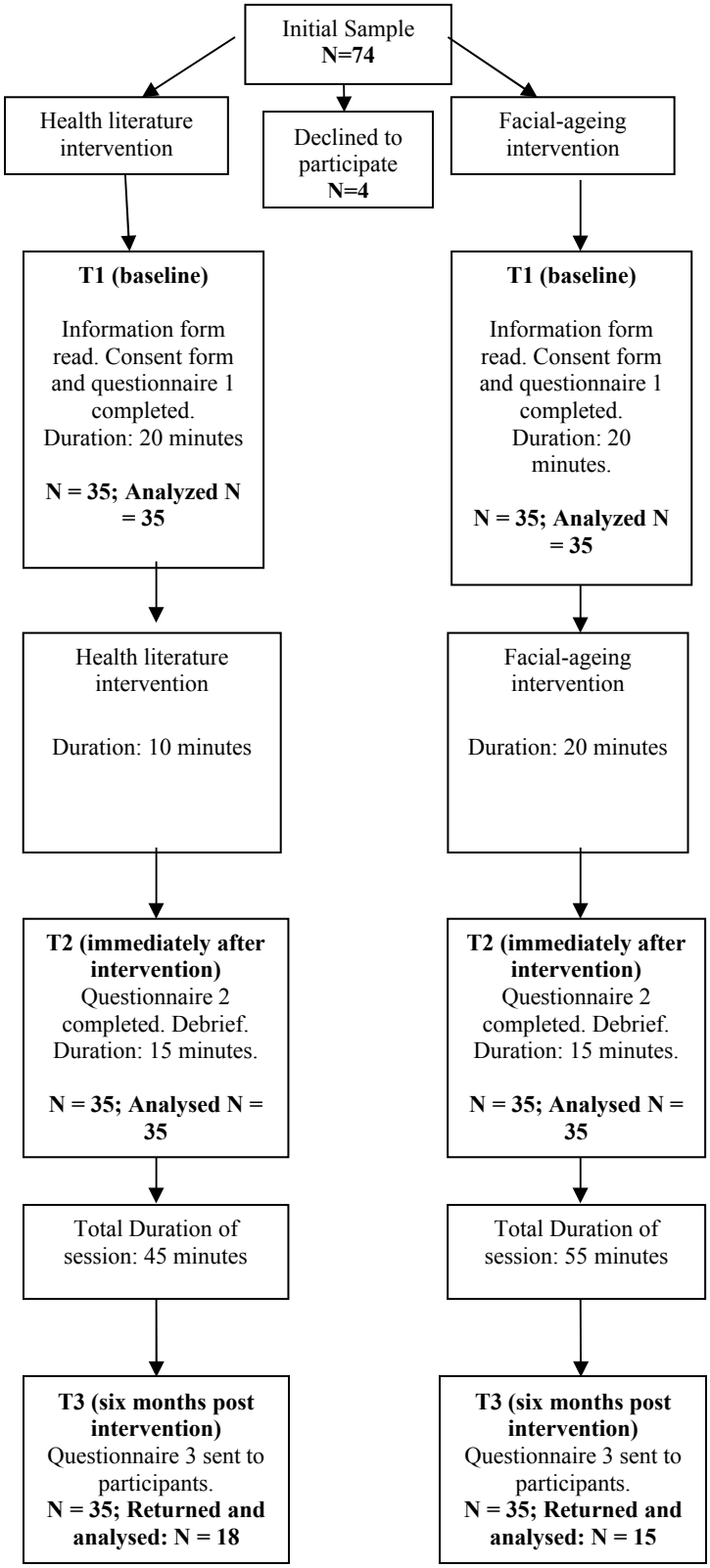

Table 1: Fitzpatrick (1975) Skin Type Information

Skin Type	Skin Colour	Characteristics
I	White; very fair, red or blonde hair; blue eyes; freckles	Always burns, never tans
II	White, fair, red or blonde hair; blue, hazel or green eyes	Usually burns, tans with difficulty
III	Cream white; fair with any eye or hair colour	Sometimes mild burn, gradually tans
IV	Brown; typical Mediterranean Caucasian skin	Rarely burns, tans with ease
V	Dark brown, mid-eastern skin types	Very rarely burns, tans easily
VI	Black	Never burns, tans very easily

Table 2. Table showing results of the within-subjects ANOVAs for each of the four variables immediately post-intervention

Measure	F[1]	p	$\eta_p 2$ (Partial Eta Squared)
Sun Benefit Attitude	7.896	.006	.103
Sun Risk Attitude	9.982	.002	.126
Sun Protection Intentions	27.373	<.001	.284
Perceived Sun Damage Susceptibility	.866	.355	.012

[1]df=1,68

Table 3. Table showing the estimated marginal means and confidence intervals for the four variables immediately post-intervention

Measure	Time Point	Mean *(Standard Error)*	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Sun Benefit Attitude	**T1**	7.143 *(.296)*	6.551	7.734
	T2	7.557 *(.274)*	7.010	8.104
Sun Risk Attitude	**T1**	12.857 *(.173)*	12.512	13.202
	T2	13.471 *(.185)*	13.102	13.841
Sun Protection Intentions	**T1**	9.386 *(.342)*	8.704	10.068
	T2	10.500 *(.386)*	9.729	11.271
Perceived Sun Damage	**T1**	6.686 *(.215)*	6.257	7.114
Susceptibility	**T2**	6.857 *(.215)*	6.429	7.285

Table 4. Table showing the means and standard deviations for the measures at baseline and immediately post intervention

Measure	**Facial-ageing Intervention Condition**			**Health Literature Intervention Condition**		
	T1 Mean (*SD*)	**T2 Mean (*SD*)**	**T3 Mean (*SD*)**	**T1 Mean (*SD*)**	**T2 Mean (*SD*)**	**T3 Mean (*SD*)**
Sun Protection Use	5.71 (*2.38*)	-	7.60 *(2.12)*	5.49 (*2.13*)	-	6.53 *(1.93)*
Sun Benefit Attitude	7.06 (*2.22*)	7.69 (1.88)	6.73 *(2.72)*	7.23 (*2.74*)	7.43 (*2.67*)	6.85 *(2.03)*
Sun Risk Attitude	12.86 (*1.40*)	13.57 (1.42)	13.65 *(1.56)*	12.86 (*1.52*)	13.37 (*1.68*)	13.29 *(1.40)*
Sun Protection Intentions	9.97 (*3.23*)	11.09 (*3.43*)	12.10 *(2.36)*	8.80 (*2.34*)	9.91 (*2.95*)	10.50 *(2.58)*
Perceived Sun Damage Susceptibility	6.74 (*1.58*)	6.54 (*1.75*)	8.00 *(1.65)*	6.63 (*2.02*)	7.17 (*1.81*)	7.79 *(1.17)*

Table 5. Table showing results of the ANCOVA for each of the four variables and the adjusted means, standard errors and confidence intervals for each of the four variables immediately post intervention

[1]df=1,67

Measure	**ANCOVA for each of the variables**			**Facial-ageing Intervention Condition**			**Health Literature Intervention Condition**		
	F	**p**	**$\eta_p 2$[1]**	**Mean *(Standard Error)***	**95% Confidence Interval**		**Mean *(Standard Error)***	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**		**Lower Bound**	**Upper Bound**
Sun Benefit Attitude	2.13	.15	.03	7.76 *(.19)*	7.37	8.14	7.36 *(.19)*	6.98	7.74
Sun Risk Attitude	.34	.56	.01	13.57 *(.24)*	13.09	14.05	13.37 *(.24)*	12.89	13.85
Sun Protection Intentions	.02	.88	<.01	10.53 *(.31)*	9.92	11.15	10.47 *(.31)*	9.85	11.08
Perceived Sun Damage Susceptibility	.03	.88	<.01	6.51 *(.23)*	6.05	6.97	7.21 (.23)	6.75	7.67

Table 6. Table showing results of the ANCOVA with the adjusted means, standard errors and confidence intervals for each of the four variables for the six-month follow-up data

				Facial-ageing Intervention			Health –focussed Intervention		
					95% Confidence			95% Confidence	
				Mean	Interval		Mean	Interval	
				(Standard	Lower	Upper	*(Standard*	Lower	Upper
Measure	**F**	**p**	**$\eta_p 2$**	***Error)***	**Bound**	**Bound**	***Error)***	**Bound**	**Bound**
Sun Protection Use[2]	.68	.42	.02	7.17*(.44)*	6.29	8.06	6.69*(.38)*	5.88	7.50
Sun Protection Use[3]	5.19	.03	.17	7.66 *.32)*	6.99	8.32	6.66 *(.29)*	6.06	7.25
(Outliers removed)									
Sun Benefit	<.01	.99	<.01	7.42*(.40)*	6.61	8.23	7.43*(.36)*	6.69	8.17
Attitude[2]									
Sun Risk Attitude[2]	1.39	.25	.04	13.66*(.28)*	12.64	13.78	13.66*(.26)*	13.14	14.18
Sun Protection	.01	.94	<.01	11.08*(.73)*	9.60	12.56	11.16*(.66)*	9.81	12.50
Intentions[2]									
Perceived Sun	.05	.83	<.01	7.89 *(.28)*	7.32	8.74	7.98 (.26)	7.45	8.50
Damage									
Susceptibility[2]									

[2]treatment df = 1, error df = 30

[3] treatment df = 1, error df = 26