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British adolescents' experiences of an appearance-focussed facial-ageing sun protection intervention: a qualitative study

The World Health Organization (WHO) suggests that recreational exposure to ultraviolet (UV) radiation, including exposure to the sun and a history of sunburn, are the primary causes of all melanomas, leading to skin cancer (WHO, 2012). Research has suggested that regular sun protection use, during the first 18 years of a person's life, can reduce the risk of non-melanoma skin cancer by 78% (Jarrett, Sharp and McLelland, 1993; Severi et al., 2002). Dobbinson et al. (2008) suggest that few studies have targeted adolescents' sun protection behaviours, and that previous interventions have typically used educational strategies which have been shown to have limited effect on sun protection behaviours.

Appearance-related reasons to tan among adolescents are associated with greater intentions to sunbathe and fewer intentions to engage in sun protection behaviours (Asvat, Cafri, Thompson and Jacobsen, 2010). Thus, appearance-based interventions may be particularly useful in this population.

Previous appearance-focussed studies on adolescents have used UV photography to show participants pre-existing damage to their skin (Olson et al., 2007; Olson et al., 2008). These studies have found promising results: for example, Olson et al. (2008) found that after viewing the underlying UV damage to their skin one-third of the adolescent participants, who had not previously intended to use sun protection in the next month, now intended to

use it.

The current study was designed to investigate British adolescents' experiences of engaging in an age-appearance morphing programme. Participants were shown how their own faces would age with and without UV damage, and their experiences were recorded whilst viewing the images. Immediately after viewing the photographs, the participants took part in focus groups, where they were able to discuss their experiences of viewing the photographs. The intervention has been used with adults (Williams, Grogan, Buckley and Clark-Carter, 2012; Williams, Grogan, Buckley and Clark-Carter, 2013; Williams, Grogan, Clark-Carter and Buckley, 2013) with encouraging results, for example in terms of participants expressing intentions to increase their sun protection use in the future.

Method

Design

The study was qualitative, and used group sessions to collect the data. The authors felt that because of the nature of the intervention and the age of the participants, they would feel more comfortable taking part in the intervention in a group rather than individually, and previous research has found that data from groups were likely to be authentic, rich and informative because they mimic natural peer groups (Gough, Fry, Grogan and Conner, 2009).

Software

The intervention used APRIL® Age Progression Software. The software works by taking a photograph of a person's face and then, using point detection for facial features, displays how the person is likely to age over the years from their current age until the age of 72. The images show the person's face on the left of the screen as they may age without damage from UV exposure, if they have been protecting their skin, and on the right of the screen as their face may age with UV damage, if they have not been protecting their skin. This allows the viewer to compare the differences in their appearance for each age.

Materials

Materials utilised were a laptop computer installed with the APRIL® Age Progression Software, a digital camera and an audio recorder. 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 (for example, "Do you have any thoughts on these?")

Participants

Sixty adolescents (30 males and 30 females) took part in the study: in ten groups, each with six participants. Six participants per group has been used previously in focus groups looking at sun protection behaviours with adolescents (for example, Potente, Coppa, Williams and Engels, 2010).

It was decided to use adolescents between the ages of 11 and 14 years, as this is approximately the age when responsibility for sun protection use may be shifting from parents/caregivers to the adolescents themselves. For example, Berneburg and Surber (2009) suggest that whereas the extent to which parents protect their child is more likely to be the priority with infants, as children move into adolescence it becomes more important that they want to do this themselves.

Participants came from ten classes from one school in Wales, UK. Five classes were school year 7 (aged 11 and 12), and five classes were school year 9 (aged 13 and 14). The mean age of participants was 12.58 (1.20), and 100% of the participants were Caucasian.

Procedure

The following procedure was carried out for each of the ten separate classes. Two months prior to the intervention taking place, the adolescents were given consent letters to take home. Parents/carers were asked to return the form if they did not consent to their child participating in the study (one parent/carer returned the form).

For each focus group, simple randomisation was used to decide which participants took part in the session, with six participants being chosen at random (using random number sampling) from the school class register to take part, separating girls and boys in order to get equal numbers of each.

The facilitator was a 24-year-old female PhD student. At the beginning of each session, the facilitator introduced herself to the group, and gave some background information about herself and the study. The facilitator then asked participants if they had any questions, and gave all participants a consent form to sign.

The facilitator then carried out the intervention on each participant, by taking a photograph of each participant's face, and uploading the photograph onto the software. The audio recorder was turned on, and the participants viewed the software, with their reactions and answers to the facilitator's questions recorded. After each of the participants had been through this process, and seen themselves aged, the participants took part in a focus group to discuss their thoughts on the software and intervention.

At the end of the sessions participants were given the debrief sheet, and it was reiterated that they could contact the facilitator should they have any queries or concerns.

Data Analysis

The audio-taped sessions were transcribed verbatim and analysed using thematic analysis, a method for identifying, analysing and reporting patterns within data (Braun and Clarke, 2006). All resulting data were analysed by both the first and second author. The authors chose to use inductive thematic analysis, due to its flexibility and theoretical freedom, along with its ability to create a rich and detailed account of data (Braun and Clarke, 2006). Analysis of the individual sessions and focus

groups followed the six-phase process outlined in Braun and Clarke (2006).

Results

Three key themes arose from the transcripts:

1. The Effects of UV Exposure on Facial Appearance
2. Comparing the Aged Photographs to Other Images
3. Inspired to Change Sun Protective Behaviours in the Future

Figure 1 (below) shows the key themes and interlinking sub-themes.

In the quotes below, (.) is used to indicate a pause of less than one second. After each quote, the participant's pseudonym and age are included.

The Effects of UV Exposure on Facial Appearance

All of the participants (n = 60) were shocked at the visible effects of ageing on the skin on their face, using words such as "urgh" (n = 37) and "oh my God" or "oh God" (n = 35). The shock was directed at both the UV-aged and non UV-aged photographs; however, once the participants had looked at both photographs in more detail, they were shocked at the difference that UV exposure had on their ageing.

Participants reported that the photographs enabled them to see clearly the likely impact of UV exposure on the skin. All participants could see a difference between the UV-aged photograph and non UV-aged photograph, with the majority of participants feeling that the UV-aged photograph looked more negative than the non-UV-aged photograph (n = 57).

Many of the participants used negative words, for example 'horrible' (n = 26) and 'disgusting' (n = 20), to describe how they felt their faces looked with UV-ageing. By using negative words to describe the UV-aged photographs, the participants were again emphasising that they did not like these images, and were concerned about the effect that UV exposure could have on their skin.

Participants could see a difference in terms of number and depth of wrinkles, the amount of age spots, and the colour of the skin, between the two photographs:

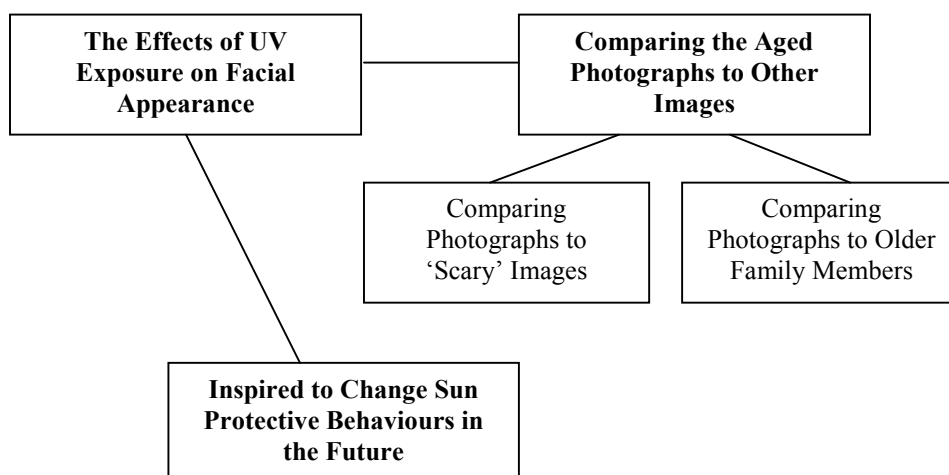
"When you don't wear it [sun protection] it gives you a lot more /erm/ spots, your skin goes darker and you get a lot more wrinkles (.) it makes you look older" (Mason, age 14)

Comparing the Aged Photographs to Other Images

Participants compared themselves and each other to other images when looking at the aged photographs. This encompassed two subthemes: 'Comparing Photographs to "Scary" Images' and 'Comparing Photographs to Older Family Members'.

Comparing Photographs to 'Scary' Images - On viewing the photographs, many of the participants compared both their own photographs, and the other participants' photographs, to socially agreed images of ugliness (n = 31), including zombies (n = 6) and witches (n = 5). The negative comparisons were directed towards the UV-aged photographs. The comparison to the negative images was linked with behaviour change, for example when discussing whether they thought that seeing the photographs would lead to them

Figure 1. The key themes that arose from the sessions, and the interlinking sub-themes



using more sun protection, Chris said:

"Definitely (.) I don't wanna look like the man on the "Up" movie [a 78-year old computer-animated man] like the old man (.) all wrinkly"
(Chris, age 14)

Comparing Photographs to Older Family Members -
On viewing the photographs, a number of participants expressed shock at their perceptions of resembling older family members in the aged images. This indicated that the participants were taking a personal view of the photographs. For example:

"Urgh I look like my dad!" (Hugo, age 14)

These comparisons also link to the self-relevance of the photographs, showing that the participants experienced the images as similar to family members. This indicated that participants were not simply looking at the photographs and viewing them as unrealistic or invalid, but were viewing them as realistic projections of what they may look like.

Inspired to Change Sun Protective Behaviours in the Future

Some participants talked about wanting to change their UV exposure and/or sun protective behaviours after viewing the photographs, and seeing the difference in ageing between UV-exposure and non UV-exposure. For example:

"It's made me want to use more sun tan lotion...yeah like plaster it on you before you go to school!" (Bruce, age 11)

The difference between the photographs was the reason for participants wanting to practice safer sun behaviours, for example:

"You don't wanna look like the other person [UV-aged photograph] with all like spots all over you (.) and horrible skin" (Adam, age 14)

Discussion

When looking at the benefits of safe UV exposure behaviours and sun protection use during a person's early life, it is vitally important to develop effective interventions and strategies that encourage adolescents to develop safe UV exposure and sun protection behaviours which then develop into habits which stay with them throughout their adult life. The results of the present study suggest that appearance-based interventions hold some promise in this regard, at least with British adolescents, to encourage them to think about

the benefits of safe sun protection and UV exposure behaviours.

Participants were shocked at the difference in their faces when they were UV-aged compared to non-UV-aged, with all of the participants expressing shock when viewing the aged photographs. The majority of participants preferred their faces aged without UV damage. Hevy et al. (2010) found that participants felt more vulnerable to developing wrinkles and age spots than to developing cancer. Interventions such as this may therefore be more effective than educational, health-focussed interventions for adolescents, because the damage caused by sun exposure is more self-relevant and personal.

The majority of participants reported that they felt motivated to change either their sun protection and/or their UV exposure behaviours after viewing the photographs. This is positive as it suggests that simply viewing the difference between the UV-aged and non UV-aged photographs may have encouraged participants to think about making changes to their sun protection and/or UV exposure behaviours.

The themes discussed applied to participants irrespective of their gender. Both the males and females were concerned about the effect of UV-ageing on their skin, and there were no differences in their reactions and concerns. Olson et al. (2007) found that the intervention effect was greater for girls, and work with adults has shown that women tend to be more concerned about ageing than men (Grogan, 2011), so it is interesting to note the results of the current study.

Participants compared the photographs to older family members, which indicates that they felt that the images were self-relevant, as they were able to look at their aged faces and see that it was likely that as they got older they would start to look like older family members. This supports previous research, for example, Grogan et al. (2010) who found that seeing their own face convinced women that they were personally at risk of skin ageing through smoking. Additionally, research by the authors using the software on adults found that participants reported that seeing the effect of UV exposure on their own faces was useful, and some participants mentioned specifically that seeing

other interventions with other people's faces would not have the same effect on their sun protection or UV exposure intentions as seeing their own faces (Williams et al., 2012).

Methodological / Interpretive Issues

Participants in the present study were Caucasian British secondary school students aged 11 to 14, from the same school. This means that the findings can be generalised to other groups only with caution.

Future Research

It would be interesting to look at the effect of the intervention on participants with non-Caucasian skin types. Among non-Caucasians, melanoma is a higher risk for children than adults, and 6.5 percent of paediatric melanomas occur in non-Caucasians (Strouse et al., 2005).

Implications for health promotion

This intervention could be used in a school, for example during Personal, Social and Health Education lessons. It could also be used in a number of healthcare settings, for example, in a doctor's waiting room whilst participants are waiting to be seen, or, in pharmacies, where adolescents could participate in the intervention while out shopping with their parents/carers.

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