Examining young recreational sportswomen’s intentions to engage in sun-protective behavior: The role of group and image norms.

Keywords: sun-protective behavior; recreational sportswomen; group norms; image norms; intentions
Abstract

We examined the sun-protective intentions and behavior of young Caucasian Australian sportswomen aged between 17 and 35 years ($N = 100$). The study adopted a 2 x 2 experimental design, comparing group norms (supportive vs. non-supportive) and image norms (tanned vs. pale) related to sun-protection, and taking into account group identification with friends and peers in the sport. While no significant findings emerged involving image norms, regression analyses revealed a significant 2-way interaction for group norm x identification on recreational sportswomen’s intentions to engage in sun-protection in the next fortnight. Participants identifying strongly with their group had stronger intentions to engage in sun-protection when exposed to a norm reflecting fellow recreational sportswomen engaging in sun-protective actions in comparison to those exposed to a non-supportive group. In addition, while prior intentions to engage in sun protection were not significantly related to sun-protection behavior, post-manipulation intentions after exposure to the sun-protective information that was provided were significantly related to follow-up behavior. Overall, the findings supported the importance of group-based social influences, rather than tanned media images, on sun-protective decisions among young recreational sportswomen and provided a targeted source for intervention strategies encouraging sun safety among this at-risk group for repeated sun exposure.
Skin cancer remains one of the most prevalent form of cancer in Australia, with melanoma of the skin currently indicated as the third most diagnosed cancer in Australia (Australian Institute of Health and Welfare, 2012), with the state of Queensland in Australia having the highest rate of skin cancer in the world (Queensland Cancer Registry, 2011). Current etiological evidence has established exposure of the skin to ultraviolet (UV) radiation from sunlight as the most consistently implicated factor causing skin cancer, and it remains the most dangerous risk factor associated with melanoma in Australia (Australian Institute of Health and Welfare, 2012). Despite the risk of sun exposure without protection, sun protection behavior in adults remains low, with only 37% of adults reporting using sunscreen when outdoors in peak UV radiation hours on the weekend (Cancer Council of Australia, 2007).

Individuals participating in outdoor sports, in particular, represent a high-risk group for excessive sun exposure due to the timing requirements of training and competition commitments, which is often in peak UVR hours (Berndt et al., 2011). Additionally, women tend to have positive attitudes toward and engage in deliberate sun-tanning (Kasparian, McLoone, & Meiser, 2009). As such, recreational sportswomen are potentially an at-risk group for skin cancer. Further, Caucasians, in comparison to darker skinned people, represent a group at greater risk for the harmful effects of UV radiation due to having lower epidermal melanin levels which provides less inherent skin protective factor (SPF) (Narayanan, Saladi, & Fox 2010). In addition, young adults are less likely to protect themselves from the sun than older adults (Kasparian et al., 2009). Therefore we chose young, Caucasian, outdoor recreational sportswomen as participants for the current research as they represent an at-risk population for developing skin cancer.

Positive attitudes to sun protection and high levels of knowledge of the risk of skin cancer and sun exposure without adequate protection do not necessarily translate into sun protection behavior (Harrison, Saunders, & Nowak 2007). The lack of correspondence
between attitudes and behavior has long been a focus for social psychology, with researchers arguing that a focus solely on behavioral outcomes may not account for the range of influences that potentially guide people’s attitudes, intentions and, hence, subsequent behavior (Eagly & Chaiken, 1993). Thus, other processes, such as group norms or the images portrayed in popular media (image norms), may influence women’s decisions to protect themselves from the sun.

**The Role of Group Norms**

Group norms involve a consideration of behavioral norms (i.e., whether important group members perform the behavior) and group attitude (i.e., evaluation of the behavior by the group). The influence of group norms on behavioral decision-making is explained through social identity theory (SIT; Hogg & Abrams, 1988) and self-categorization theory (SCT: Turner et al., 1987) perspectives. According to these theories, when social identity is salient, the individual constructs context-specific group norms based on shared intra-group information and assimilates themselves to these group norms (Turner et al., 1987). According to referent informational influence, when the salience of a particular identity is heightened, attitudes, motivations and behaviors tend to correspond more closely with the group norm (Norman, Clark & Walker, 2005). Thus, when a social identity becomes salient, a group member will strive to regulate their behavior to observe the norms and codes of conduct for the group to which they wish to belong.

Accordingly, group norms influence behavioral performance as the individual, based on their observations of group members, seeks to act in a manner similar to the group to which they belong, thereby achieving categorization as a group member (Turner et al., 1987). Thus, people categorize themselves and others by making a comparison with predefined ‘prototypic features’ of a typical member for that category (e.g., Do I fit the prototype of a young woman who tans?). In the context of sun protection, White et al. (2008) found that group norms were related to young Australians’ sun protection intentions and behavior. From
a SIT/SCT perspective, group norms also take into account the level of identification with the group, and it is the strength of identification with the group that influences the role of group norms in determining people’s behavioral motivations (i.e., the stronger the identification with the group the stronger the influence of group norms on people’s decision making) (e.g., Norman et al., 2005).

In the case of sun protection among recreational sportswomen, then, the motivations of these women to protect themselves from the sun may be more likely if they believe that it is a usual and valued behavior performed by other group members (e.g., friends and peers in their sport), especially for those women who identify strongly with the group.

The Role of Image Norms

Image norms are cognitive representations of stereotypical members of particular groups perpetuated by the media (Jackson & Aiken, 2006). An image norm is a similar construct to prototype in its broad conceptualization of social influence; however, image norms refer specifically to the influence of media, fashion and entertainment industries. Like prototypes, image norms are more distant from the individual than immediate referent norms and are a more general representation of the values of society as a whole (Jackson & Aiken, 2006).

In contrast to the image norms of the past, present image norms for sun-protective behavior promote both extremes of paleness and tanness as fashionable ideals (Dixon et al., 2008). Implicit messages about sun protection in popular Australian media which contradict public health messages concerning skin cancer prevention (Dixon et al., 2008), and current perceptions of sun-tanned skin as physically attractive but white un-tanned skin having negative associations (Polente et al., 2011), highlight the need to continue to study the role of image norms in this important preventive health behavior. This need is especially crucial given that, despite high knowledge levels about the risks of tanning, many young women
deliberately expose themselves to the sun with the sole purpose of developing a tan (Kasparian et al., 2009).

An intervention study by Jackson and Aiken (2006) found support for the role of image norms which revealed significant relations with image norms that approved of paleness in young women. Other research has shown image norms not to be a significant determinant of people’s sun-protective intentions (e.g., White et al., 2008). Based on the mixed research findings thus far, then, we deemed it worthwhile to examine if exposure to pale or tanned media images was related to recreational sportswomen’s decisions about whether to protect themselves from the sun.

The Current Study

The current study investigated the relation of normative constructs (group norms and image norms) to sun-protective intentions among recreational sportswomen, given that they are a group at risk for repeated sun exposure. The relation of group norms and identification to women’s intentions to engage in sun-protective behavior was approached from a SIT/SCT perspective (e.g., Norman et al., 2005) and incorporated the findings of earlier sun safety research (e.g., Jackson & Aiken, 2006), by investigating the relation of image norms to the sun-protective intentions of these women. The study was a prospective design with participants re-contacted two weeks after assessing intentions for a follow-up measure of sun-protective behavior to gauge the relationship between people’s intention and their subsequent behavior, given that intentions are often conceptualized as a proxy measure for behavior (Ajzen, 1991).

In contrast to most of the previous research in the area of the role of norms on sun-protective decisions, which employed standard survey methodology to investigate the determinants of people’s decision making (e.g., White et al., 2008), the current research introduced an experimental approach comprising the manipulation of group norms and image norms for sun protection as a potentially more rigorous means of testing the two sources of
social influence. Given that people are more open to persuasion if they believe that other people believe it is good to be persuaded to engage in the behavior (e.g., White et al., 2008), the group norm construct involved a supportive vs. non-supportive manipulation. Given that people with tanned skin are often perceived more positively than those with pale skin (Potente, Coppa, Williams & Engels, 2011), the image norm construct involved a tan vs. pale skin manipulation.

We hypothesized that: Hypothesis 1 (H1): a supportive normative climate would result in stronger intentions to engage in sun-protective behavior than those exposed to a non-supportive normative climate. Hypothesis 2 (H2): a positive image norm for sportswomen (pale model) in relation to sun-protective behavior would result in stronger intentions to engage in sun-protective behavior than those exposed to a negative image norm for sportswomen (tanned model). Hypothesis 3 (H3): For the interactive relations between group norms and identification, women exposed to a supportive normative climate who identified strongly with the referent group (recreational sportswomen) would exhibit stronger intentions to engage in sun-protective behavior than those exposed to a non-supportive normative climate who were weak identifiers with their group. Hypothesis 4 (H4): For the interactive relations between image norm and group norm, women exposed to both a positive image norm and a supportive group norm for sportswomen would have stronger intentions to engage in sun-protective behavior than those participants exposed to a non-supportive group norm. Hypothesis 5 (H5): After taking into account participants, pre-manipulation intentions, post-manipulation intentions would be related to sun-protective behavior at the 2-week follow-up.

Method

Participants

Participants were 100 sportswomen recruited from local netball associations at three locations in Brisbane, Australia. Netball is the leading female sport for Australian women (Netball Australia, 2011) and is primarily played outdoors in Autumn and Winter months
when the ultraviolet (UV) index can range in Brisbane from moderate to high (Bureau of Meteorology, 2012). Inclusion criteria were Caucasian background, English language proficiency, and age between 17 and 35 years. After seeking guidance from venue and Club managers about appropriate recruitment strategies for this cohort, we approached all uniformed players prior to games on game days and at netball tournaments and invited them to participate in the study by completing the study survey on the court sidelines and at the venue clubhouses. Eligibility and participation rates could not be determined due to the limited time constraints to disseminate the questionnaires based on game start times and the use of multiple data collectors (up to four at any one time) approaching potential participants, which did not enable individual recording of response rates. After determining verbally their eligibility, we obtained written informed consent and advised the 100 participants who provided their consent to take part in the study to return their completed questionnaires to deposit boxes left at the venue canteens and clubhouses.

**Design**

Given that manipulations were designed on the assumption of respondents’ positive attitudes toward sun protection, the data for three participants who did not report initial positive attitudes toward sun-protection (below the scale mid-point of a set of five 7-point semantic differential screening items) were removed from the data set (final \( N = 97 \)). Participants took part in the study in return for the chance to win a $AUD200 gift voucher from a sports store. Participants were randomly assigned to conditions of the 2 x 2 manipulation of group norm (supportive, non-supportive) and image norm (tanned, pale). Thus, participants were randomly assigned to one of the four experimental conditions (non-supportive group norm, tanned image norm condition; supportive group norm, tanned image norm condition; non-supportive group norm, pale image norm condition; or supportive group norm, pale image norm condition). Group identification was also measured. The dependent variable was post-manipulation behavioral intentions. Further analyses assessed the relation of
pre- and post-manipulation intentions to self-reported behavior at a 2-week follow-up for those participants who provided data at Time 2 ($n = 49$, comprising $n = 13$ in the non-supportive group norm, tanned image norm condition; $n = 11$ in the supportive group norm, tanned image norm condition; $n = 12$ non-supportive group norm, pale image norm condition; and $n = 13$ in the supportive group norm, pale image norm condition).

**Measures and Procedure**

Ethical clearance for the study protocol was obtained from the University Human Research Ethics Committee prior to the commencement of the study. Permissions to recruit participants via a number of netball associations were obtained and written, signed informed consent was obtained from all study participants. Participants were provided with a questionnaire booklet. Standard procedures with previous success (e.g., White et al., 2002) were used to heighten the salience of their identity as a recreational sportswoman, in accordance with an SIT/SCT approach, such that participants were requested to answer the questions ‘keeping in mind their feelings and opinions as a woman in sport’. They were told that the experimenter was interested in their ‘opinions on sun-protection as a recreational sportswoman’ and that they should ‘answer the questions keeping in mind their sportswoman view-point’. The questionnaire included a group norm manipulation task and group norm manipulation check (as per White et al., 2002) and an image norm manipulation task and check devised by the researchers for the purposes of the current study. The intention and behaviour questions were formulated based on Ajzen’s (1991) standard wording for these constructs and the group identification measure was based on Brown, Condor, Mathews, Wade, and Williams (1986) which has been used in numerous studies examining group identification (e.g., White et al., 2002). For the ordering of questions, after requesting basic demographics, we assessed pre-manipulation intention and behavior prior to exposing the participants to both the group and image norm manipulations. After we exposed participants to the norm manipulations and they completed the manipulation checks, participants
responded to items assessing group identification and post-manipulation intention. Participants were re-contacted 2 weeks later (via telephone or email) to complete a follow-up questionnaire on their sun-protective behaviors.

**Pilot study.** A pilot study of 21 recreational sportswomen (\(M_{age} = 24.3\) years, \(SD = 4.71\)) was conducted for the sole purpose of determining a relevant reference group for the sample population of the main study in relation to performing sun-protective behaviors. Participants were recruited via snowballing techniques (friends and contacts of the researchers) using the same inclusion criteria as the main study (current netball players of Caucasian background, English language proficiency, and age between 17 and 35 years). Based on previous SIT/SCT studies (e.g., White et al., 2002), the reference group endorsed by participants in the pilot study was then used in the wording of the group norm manipulation task in the main study. The results of the pilot study determined ‘friends and peers in your sport’ as the most relevant referent group.

**Group norm manipulation.** As in previous research examining the role of norms from a SIT/SCT approach (e.g., White et al., 2002), to manipulate group normative support, participants studied bar graphs and testimonial statements ostensibly from a previous study which depicted recreational sportswomen as being either highly engaged in sun-protective behaviors, or not, in comparison to non-sporting women. The bar graphs in the supportive group norm condition indicated that recreational sportswomen engaged in a high level of sun-protective behavior, whereas non-sporting women engaged in low levels of sun-protective behavior. Opposite trends were presented in the non-supportive group norm condition. Participants answered two multiple-choice questions related to the direction of the group norm manipulation data presented and indicated whether they perceived recreational sportswomen or non-sporting women engaging in more sun-protective behavior.

To manipulate group normative support further, participants summarized a series of representative testimonial statements (sentence excerpts from sporting and non-sporting
members who had ostensibly taken part in past studies) on attitudes toward engaging in sun-protective behavior. The group normative support condition had four supporting statements (e.g., depicting recreational sportswomen as highly motivated and engaged in sun-protection) and one negative statement from the fictional recreational sportswomen, and four negative statements and one supportive statement from the fictional non-sporting women. Opposite trends in testimonial statements were presented for the non-supportive group norm condition. To provide a rationale for the inclusion of the sporting norm manipulation in the study, participants were asked to state which format (i.e., bar graphs or statements) they believed was more effective at conveying sun-protective information to recreational sportswomen.

**Image norm manipulation.** To manipulate image norm, the researchers devised a task whereby participants examined one of two color pictures of a recreational sportswoman which had been manipulated via a computer imaging program (Photoshop 6.0) to make the model sportswoman appear either tanned or pale. Participants were told that sport was a major part of Australian life and that the media had placed increased emphasis on sport. The image was described as a typical media representation in women’s sports. Participants then described the image on a series of six 7-point bipolar scales (e.g., fit/unfit, healthy/unhealthy) including a measure of tannedness scored [1] not tanned to [7] tanned, which served as a manipulation check for the perception of tannedness.

**Target behavior.** Based on the guidelines by Ajzen (1991) to assess self-report behavior, sun-protective behavior was defined as: “using SPF 30+ sunscreen, wearing protective clothing such as a hat, long-sleeved shirt, and sunglasses, and seeking shade at peak hours of the day” (Cancer Council Queensland, 2011). The target behavior was measured prior to manipulations and again in the 2-week follow-up study using a single self-report item, “In the past fortnight how often did you engage in sun-protective behavior every time you went in the sun for more than 10 minutes?”, scored [1] never to [7] always. Self-report
measures of solar UV radiation exposure have been shown to be valid against objectively measured (polysulfone film badge UV radiation dosimeters) exposure (Glanz et al., 2010).

**Identification with group.** Group identification was assessed on six items based on Brown et al. (1986) (e.g., “How much do you identify with your friends and peers in your sport?”), scored [1] not very much to [7] very much). The scale scores were internally consistent ($\alpha = .82$).

**Intentions to engage in sun-protective behavior.** Based on standard measures developed by Ajzen (1991), intention to engage in sun-protective behavior was measured prior to manipulations and immediately post manipulations using a single item, “I intend to engage in sun-protective behavior every time I go out in the sun for more than 10 minutes during the next fortnight”, scored strongly disagree [1] to strongly agree [7]).

**Statistical Analysis**

Data screening and descriptive analyses were conducted using SPSS V19.0. Descriptive analyses (means, standard deviations and frequencies) were used to describe sample characteristics and summarize the study’s data. As stated above, given that manipulations were designed on the assumption of respondents’ positive attitudes toward sun protection, the data for three participants who did not report initial positive attitudes toward sun-protection (below the scale mid-point of a set of five 7-point semantic differential screening items) were removed from the data set. Bivariate correlational analyses were used to identify any potentially confounding relationships (overly high inter-correlations) between all of the study’s variables; none were identified. For the manipulation checks, multivariate analyses of variance (MANOVA) and analysis of variance (ANOVA) were performed to assess the effectiveness of the group norm and image norm manipulations, respectively. A manipulation was considered to be effective if the $F$ statistics reached a significance level of $p < .05$ and the means of each group were in the expected direction. To assess the relation of the study manipulations and their interactive relations to post-manipulation sun-protective
intentions, a hierarchical linear regression was performed controlling for intentions prior to manipulations. Scores for the non-dichotomous, continuous independent measures were centered (calculated as deviations from the mean). The overall relation to intentions of the independent variables as a set was considered to be significant if the multivariate $F$ statistic reached a significance level of $p < .05$. An individual construct was considered to be significant if a beta weight was significant at $p < .05$. Any significant beta weights for interactive terms were further analyzed via simple slopes analysis whereby significant simple main effects were identified by a $t$-test analysis of the significance of the slope of the regression line. To assess the relation of post-manipulation intentions to follow up sun-protective behavior, a hierarchical linear regression was performed controlling for intentions prior to manipulations. The overall relation to such behavior of the independent variables as a set was considered to be significant if the $F$ statistic reached a significance level of $p < .05$. An individual construct was considered to be significant if the beta weight was significant at $p < .05$ significance level. Given that some previous sun safety research (e.g., Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999) has identified a predictive role for risk perceptions, analyses were also conducted with objective (skin tone, hair color) and subjective (perceptions of self risk) measures of risk for skin cancer entered on the first step of the intention and behavior regression analyses. The patterns of results were the same as reported and without any significant associations for the risk measures.

**Results**

The participants were aged between 17 and 35 years ($Mean = 24.10$ years, $SD = 4.98$ years) and, on average, self-rated their skin tone as fairer in color ($Mean = 3.54$ on a scale from [1] *very fair* to [7] *very dark*).

**Group Norm Manipulation Check**

Based on White et al. (2002), participants were asked to rate, on a scale from [1] *strongly oppose* to [7] *strongly support*, how much, in general, they thought (a) recreational
sportswomen, and (b) non-sporting women engaged in sun-protective behaviors. The relation of normative support (supportive/non-supportive) to perceptions of how much recreational sportswomen and non-sporting women engaged in sun protective behavior was tested using MANOVA. A significant multivariate effect for normative support was revealed, $F(2, 93) = 131.30$, $p < .001$, $\eta^2 = .74$. As expected, sportswomen were perceived to engage in more sun-protective behaviors by those in the supportive norm condition than those in the non-supportive norm condition ($M = 6.04$ and $3.15$, respectively), $F(1, 94) = 171.64$, $p < .001$, $\eta^2 = .65$). In addition, non-sporting women were perceived to engage in more sun-protective behaviors by those in the non-supportive condition than those in the supportive condition ($M = 5.57$ and $2.84$, respectively), $F(1, 94) = 156.23$, $p < .001$, $\eta^2 = .62$). No other results were statistically significant.

**Image Norm Manipulation Check**

In items devised by the researchers for the purposes of the current study, participants were asked to rate a color image of a recreational sportswoman which had been manipulated via a computer imaging program to make the model sportswoman appear either tanned or pale on six 7-point bipolar scales (e.g., healthy-unhealthy, fit-unfit, negative-positive). Embedded amongst the bipolar pairs, was a measure of tannedness on a scale from [1] not tanned to [7] tanned. The relation of image norm (tanned, pale) to perceptions of how tanned the model appeared in the media representation of a recreational sportswoman was tested using ANOVA. A significant effect for image norm was revealed $F(1, 95) = 51.83$, $p < .001$, $\eta^2 = .35$. As expected, participants in the tanned image norm condition perceived the model as being more tanned than participants in the pale image norm condition ($M = 5.26$ and $3.10$, respectively).

**Descriptive Statistics**

The average amount of sun-protective behavior in which participants engaged, as reported at the Time 2 survey follow-up, was $5.10$ ($SD = 1.45$), reflecting a moderate level of
sun-protection among the recreational sportswomen during the previous 2 week time-period (Table 1).

The Relation of Group Norm, Image Norm and Identification to Intentions to Engage in Sun-protective Behavior Within the Next Fortnight

Controlling for intentions prior to manipulations, a hierarchical linear regression was performed on participants’ intentions to engage in sun-protective behaviors. Intention to engage in sun-protective behavior in the next fortnight at post-manipulation was the dependent variable and group norm, image norm, and identification with group were the independent variables. To avoid multicollinearity, scores for pre-manipulation intentions and group identification were centred (calculated as deviations from the mean). Group norm was assigned values of 0 for non-supportive and 1 for supportive, and image norm was assigned values of 0 for tanned and 1 for pale. These scores were then multiplied to form the two 2-way interactions. Intentions prior to manipulations were entered in Step 1. Group norm, identification, and image norm were entered in Step 2. The 2-way interactions for group norm x identification and group norm x image norm were entered in Step 3 (see Table 2).

Step 1 was significantly related to intentions and accounted for 19% of the variance in intentions to engage in sun-protective behaviors, $R^2 = .19$, $F(1,92) = 21.73$, $p < .001$. The introduction of group norms, identification, and image norms on Step 2 did not significantly improve the model, $\Delta R^2 = .03$, $\Delta F(3,89) = 1.14$, $p = .39$. The entry of the interactive variables on Step 3 significantly improved the model, accounting for an additional 6% of the variance in intentions to engage in sun-protective behaviors, $\Delta R^2 = .06$, $\Delta F(2, 87) = 3.30$, $p = .04$. After all variables were entered into the model, prior intentions were significantly related to intentions to engage in sun-protective behaviors (Table 2). Group norm, identification, and image norm were not significantly related to intentions. The 2-way interaction for group norm
x image norm was not significant; however, the 2-way interaction for group norm x identification was significant.

[INSERT TABLE 2 ABOUT HERE]

A simple slopes analysis revealed that participants who were high identifiers had stronger intentions to engage in sun-protective behavior in the next fortnight when exposed to a supportive group norm than those exposed to a non-supportive group norm, $b = 1.37$, $t(87) = 2.47$, $p = .02$. No significant difference was observed in intentions to engage in sun-protective behavior in the next fortnight between participants exposed to a supportive or non supportive norm for low identifiers, $b = -.17$, $t(87) = -.35$, $p = .73$ (see Figure 2).

[INSERT FIGURE 1 ABOUT HERE]

The Relation of Intentions to Sun-protective Behavior at 2-week Follow-up

A linear regression was performed on behavior at the 2-week follow-up in which intentions prior to manipulations were entered on Step 1, and intentions post-manipulations were entered on Step 2. Step 1 was not significantly associated with behavior, $R^2 = .02$, $F(1, 45) = .75$, $p = .39$. Prior intentions were not significantly related to behavior ($\beta = .13$, $p = .39$). Step 2 significantly improved the model, $\Delta R^2 = .11$, $\Delta F(1, 44) = 5.34$, $p = .03$. Prior intentions remained non-significantly related to behavior, $\beta = -.05$, $p = .74$; however, post-manipulation intentions were significantly associated with follow-up behavior, $\beta = .37$, $p = .03$. Overall, the variables explained 12% of the variance in follow-up behavior, which approached a significant amount accounted for in behavior, $F(2, 44) = 3.08$, $p = .056$.

Discussion

We investigated the relation of group norms and image norms to the sun-protective intentions of recreational sportswomen, a group at risk for repeated sun exposure. We found mixed support for the study’s hypotheses. Effects (including interactive associations) involving image norms (tanned vs. pale) related to participant intentions (H2 and H4) were not supported. The manipulation of group norms to provide a supportive normative climate
also did not induce stronger intentions to engage in sun-protective behavior (H1); however, the interactive relation between group norms and identification on intentions to engage in sun protection (H3) was supported. Further, in support of H5, post-manipulation sun-protective intentions were significantly associated with follow-up behavior.

Contrary to expectations, in this study, providing a pale image norm was not related to recreational sportswomen’s intentions to engage in sun-protective behavior. The current findings were not completely incongruent with previous research in which image norms were not related to intentions to engage in sun protection (White et al., 2008). The findings in relation to image norm may also be indicative of society’s current position regarding how much of a tan is acceptable, in which the societal representation promotes both extremes of being tanned and paleness as fashionable ideals (Dixon et al., 2008). Another possibility is that the manipulation for image norms was insufficiently strong to produce an effect for participants.

Although main effects for group norms did not emerge, a significant two-way interaction was observed between group norm and identification for sportswomen’s intentions to engage in sun-protective behavior. Participants exposed to a supportive normative climate who identified strongly with the referent group (friends and peers in their sport) exhibited stronger intentions to engage in sun-protective behavior. Thus, the effect of group norms on female’s intentions to engage in sun-protective behavior was evident for high identifiers with the group. In accordance with a SIT/SCT approach, group norms of a referent group are more cognitively accessible to people who strongly identify with a relevant referent group and, thus, is proposed to exhibit a moderating effect on people’s behavioral intentions. These results are consistent with other research investigating the interactive relations between group norms and identification (e.g., Norman et al., 2005). Participants exposed to a positive image norm (pale) and a supportive group norm did not have stronger intentions to engage in sun-protective behavior than participants exposed to a negative image norm (tan) and a non-
supportive group norm; these results suggest that the relation of group norms is dependent on identification with one’s group rather than the broader societal norms perpetuated by media images. In general, these findings suggest that it may be important to consider more localized (e.g., group norms) than broad (e.g., image norms) normative influences when examining the sun-protective intentions of recreational sportswomen, especially for those who value their membership of the group. It should be noted, however, that this analysis was conducted with only approximately half of the original sample (although spread relatively evenly across the experimental conditions), which could have resulted in participation bias and thus comprised generalizability; consequently, this finding should be viewed with some caution.

Finally, in this study, intentions prior to group and image norm manipulations were found not to be related to sun-protective behavior at the 2 week follow-up, while post-manipulation intentions were significantly related to sun-protective behavior. In accordance with attitude-behavior models such as the theory of planned behavior (Ajzen, 1991), intentions to engage in sun-protective behaviors should be strongly associated with actual behavior. The finding in this study that post-intentions only were associated with behavior suggests that a shift in intentions occurred following the experimental manipulations, which was reflected in associated behavior at the 2-week follow-up. Based on the significant findings for intentions, these results suggest that, overall, supportive group norms, for those sportswomen who identify more strongly with their friends and peers in sport, strengthen their intentions to protect themselves from the sun which, in turn, leads to a greater adherence to sun-safe behavior.

From an applied perspective, the results of the present study point to the benefit of fostering a supportive sun-protective group norm among female sporting peers in conjunction with a heightened sense of belonging as a sports player in efforts to encourage sun-safe behaviors. At least in relation to the findings of the present study, efforts to address the emphasis on tanned images in the media may prove less fruitful than cultivating a supportive
culture of sun safety within women’s sporting organizations. These efforts could be harnessed by encouraging messages and slogans on players’ clothing and/or equipment reinforcing the sun safe message such as “Our team’s netball players are sun safe players” and by governing associations rewarding individual clubs with demonstrated records of sun safety (e.g., numbers of players wearing hats, using sunscreen etc). To heighten group identification, strategies to encourage a sense of belongingness within clubs/teams, if not already present, should cultivate a sense of pride with one’s club via highlighting criteria on which the club is considered productive or successful. The current findings suggest that efforts to encourage women’s sun safe intentions within these sporting communities, through targeting supportive norms, may then be linked to an associated greater incidence of performing more sun safe actions.

Although this study provides a unique perspective to examining the role of two previously identified sources of normative influence within the sun safety context via experimental manipulation for a group of women exposed to repeated sun exposure in a high risk skin cancer location, the study had some limitations. First, it is possible that the manipulation of image norms via a modified photo was not strong enough to overcome the already preconceived notions that sportwomen have about media depictions of the relative occurrence of tanned, rather than pale images, despite the significant differences found between experimental conditions. It might have been useful to provide a series of photos with a predominance of pale (or tanned) images, depending on the assigned experimental condition, as a potentially more persuasive means of manipulating image norms. Thus, it may be of more use to show slightly tanned and highly tanned athletes, with the latter images exaggerated for effect. Second, given the absence of any previously validated methods, the manipulation task and manipulation check for image norm were constructed for the purposes of the present study and were not based on established, valid methods and, thus, require further scrutiny in future studies to assess their psychometrics and efficacy.
Other limitations include the relatively small sample size, which could have provided inadequate statistical power to detect some meaningful differences as statistically significant, and the relatively short follow-up time. Further, the nature of the sampling method used may have reduced the representativeness of the sample and, thus, the generalizability of the results. In addition, the inability to measure the eligibility and participation rates made it impossible to assess the potential for selection and participation biases which could, in turn, affect the accuracy and generalizability of the results. Also affecting the generalizability of the results is the potential for social acceptability and selection and participation biases which can affect the accuracy of responses. Further, an appropriate control group was not included so that it is not possible to determine the relations of these changes to no intervention.

In addition, the results of the present study generalize only to women from those types of sporting organizations approached (i.e., netball); the role of social influences for sportswomen in a wider variety of sporting activities with high levels of sun exposure (e.g., daytime running, hockey, swimming) should be investigated, and an appropriate comparison group should be incorporated using randomization to a non-manipulation arm. Finally, the Time 2 regression analysis was conducted using only half of the original sample (i.e., those who agreed to be re-contacted) which may not have been a representative group who were retained, thus bringing into question the confidence we have in these results.

Future research should continue to explore the range of social influences that may play a role in sportswomen’s decisions, including sources of influence not included in the present research. For instance, to tap social images, it may be useful to consider the role of prototypes from the Prototype/Willingness model (Gibbon et al., 1998) whereby prototypes are the image of the typical person who performs or does not perform a given behavior (e.g., tanning or sun protection) and people evaluate both the favorability of the prototypical image and how similar they are to it. Finally, the social influences on recreational sportswomen in different age brackets (e.g., older sportswomen in walking clubs, and golf and bowls players) should be
considered also given the propensity to develop skin cancer later in life. It may be interesting, too, to explore the social influence determinants of the sun-safe practices of professional sportswomen (including semi-professional and elite athletes), especially as they often serve as role models to other women in the sporting arena.

Overall, the results of the current study provided some support for the interactive associations between group norm and identification for sportswomen’s intentions to engage in sun-protective behaviors. These findings suggest that group norms, as conceptualized from a SIT/SCT perspective, may be more influential than image norms as disseminated by the media, in the sun-protective decision-making of recreational sportswomen for those women who value their sportswoman identity. Further research should explore the manner in which media portrayals, potentially via social constructions of prototypical images of ‘tanned’ and ‘pale’ women influence decision making in this context. It is essential that investigations examining the key determinants of decision making continue among sportswomen in this context whereby women are achieving the health-promoting goal of physical activity but simultaneously encountering the health risk of repeated sun exposure.
References


Table 1

*Means, Standard Deviations, and Bivariate Correlations For the Study’s Variables (N = 97)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>1. Pre-manip intentions</td>
<td>4.41</td>
<td>1.78</td>
<td>-</td>
<td>-.14</td>
<td>.08</td>
<td>-.07</td>
<td>.44***</td>
<td>.13</td>
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<tr>
<td>2. Group norm</td>
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<td>.50</td>
<td>.03</td>
<td>.17</td>
<td>.09</td>
<td>.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Image norm</td>
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<td>.50</td>
<td>.11</td>
<td>.07</td>
<td>-.22</td>
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<td></td>
<td></td>
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<tr>
<td>4. Group identification</td>
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<td>.93</td>
<td></td>
<td>- .03</td>
<td>.04</td>
<td></td>
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<tr>
<td>5. Post-manip intentions</td>
<td>4.84</td>
<td>1.54</td>
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<td></td>
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<td>.34*</td>
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<tr>
<td>6. Follow-up behavior</td>
<td>5.10</td>
<td>1.45</td>
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</table>

Note. For Follow-up Behavior, N = 49. Group norm and Image norm are dichotomous, manipulated variables.

*p < .05, ***p < .001
Table 2

*Hierarchical Regression Analysis of Factors Related to Recreational Sportswomen’s Intentions to Engage in Sun-protective Behavior in the Next Fortnight (N = 94)*

<table>
<thead>
<tr>
<th>Variable</th>
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<th>$B$</th>
<th>$R^2$</th>
<th>$R^2$ change</th>
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<td>.19***</td>
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<td>Step 2</td>
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<tr>
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<tr>
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<tr>
<td>Identification</td>
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<td>-.29</td>
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<td>.36*</td>
<td>.27***</td>
<td>.06*</td>
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<td>Group norm x image norm</td>
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* $p < .05$, ** $p < .01$, *** $p < .001$

*Note:* Weights provided are those found in the final step of the analysis.
Figure 1. Simple effects of the interaction between group norm and identification on intentions to engage in sun-protective behavior in the next fortnight.