Relationship factors and couples’ engagement in sun protection

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Abstract

Individuals may be more motivated to adopt health practices if they consider the benefits of these behaviors for their close relationships. The goal of this study was to examine couple concordance with sun protection and use the interdependence and communal coping theory to evaluate the role of relationship factors in sun protection. One hundred and eighty-four married couples aged 50 years and older completed measures of objective skin cancer risk, perceived risk, sun protection benefits, relationship-centered motivations for sun protection, discussions about sun protection, and sun protection. A mediational model was evaluated. Results indicated a high level of couple concordance. Partners who adopted a relationship-centered motivation for sun protection were more likely to discuss sun protection with one another, and partners who discussed sun protection together were more likely to engage in sun protection. One partner’s attitude about personal risk and sun protection benefits was associated with the other partner’s sun protection. Wives had higher relationship-centered motivation and discussed sun protection more with their husbands. Behavioral interventions may benefit from encouraging couples to discuss sun protection and encouraging married individuals to consider the benefits of sun protection for their relationship and for their spouse’s health.

Skin cancer and sun protection

Basal cell carcinoma and squamous cell carcinoma, the two most common types of non-melanoma skin cancer, are the most commonly diagnosed cancers in the United States and a large number of countries worldwide [1–3]. The incidence of both melanoma and non-melanoma skin cancer is increasing in the United States, mainland Europe and Australia [4–7]. As outlined in the US Surgeon General’s 2014 Call to Action to Prevent Skin Cancer [8], skin cancer is a serious and unaddressed public health concern. A key strategic goal outlined by the ‘Call to Action’ is to strengthen research, surveillance and evaluation related to skin cancer prevention [8].

The primary risk factor for skin cancer is excess exposure to ultraviolet light. Most skin cancers could be prevented if people consistently used sun protection measures such as applying sunscreen, wearing clothing that covers exposed areas of the skin, and staying in the shade [9–11]. Engagement in recommended sun protection practices is relatively low in the United States. Approximately 58% of US adults engage in one to three of the recommended regular sun protection practices (using sunscreen, wearing sun protective clothing and seeking shade) [12]. In order to understand why individuals do not engage in sun protection, most studies have evaluated individual factors such as demographic variables, objective risk factors, and relevant attitudes and beliefs. For example, fewer perceived benefits of sun protection, more barriers to sun
protection (e.g. wearing a hat is unattractive), and appearance benefits of having tanned skin predict lower levels of sun protection [13–16].

The marital relationship and sun protection

Among the many factors that have been examined as possible motivators for sun protection, the influence of the marital relationship is a little-studied, but possibly important, factor. There are four lines of research that suggest the marital relationship may influence engagement in health practices such as sun protection. First, being married is associated with better health [17], and higher quality relationships predict better health outcomes and practices [18]. Second, individuals tend to engage in similar health behaviors as their spouses. Concordance within couples has been documented for a large range of positive and negative health-related practices, including physical activity [19, 20], dietary intake [21], smoking [22–24], alcohol consumption [20, 25], skin cancer surveillance [26] and colorectal cancer screening [27]. Although concordance may be due to assortative mating (e.g. individuals marrying persons with similar characteristics) [28], concordance can also be attributed to marital influence on health practices.

Third, individuals are more likely to engage in a health behavior change if their partner engages in it. For example, people are less likely to quit smoking if their partner also smokes [23, 29]. The few studies that have evaluated the mechanisms of spouse influence with regard to sun protection have examined general family influence in persons at risk due to a family history of melanoma. These studies suggest that greater family support for sun protection is associated with higher levels of sun protection [27] and that communication about skin cancer occurs within families, particularly between patients and their children [30, 31]. Fourth, spouse- or family-focused behavioral interventions have shown efficacy in promoting health-related behaviors, including physical activity, diet, and sun protection habits [32–34].

The Interdependence and Communal Coping Model of Health Behavior Change

Given the importance of the marital relationship in health practices, studying relationship attitudes and communication about health behaviors can facilitate a better understanding of how the marital relationship influences behavior. Lewis and colleagues’ [35–37] have proposed an integrative model based on an interdependence theory and communal coping framework to explain how couples’ interactions may influence engagement in a risk-reducing health behavior. The model proposes that the strong interdependence inherent in long-term, successful close relationships (i.e. partners’ influence on one another’s preferences, behaviors, and even their health outcomes) transforms their motivations from doing what is in their self-interest (self-centered) to doing what is in the best interest of their relationship (relationship-centered). The transformation from self- to relationship-centered motivation occurs when partners ascribe health threats and subsequent health changes as having meaning for the relationship and/or their spouse. Lewis et al. [37] have proposed a mediational model that outlines four variables leading to behavioral change. The model proposes that predisposing factors of the couple, which can include each partner’s perceptions of the health threat, the degree to which partners agree that health changes should be made as a dyad (not alone), partners’ commitment to the relationship, and demographic factors (such as gender) can lead to this transformation. After a relationship-centered motivation develops, communal coping begins. Communal coping efforts consist of joint decision making and planning regarding how to make the change [37]. Finally, the communal coping efforts lead to engagement in health behavior change.

Study aims

This study had two aims. The first aim was to evaluate the level of couple concordance with regard to sun protection. The degree to which couples’ health
practices correspond is an indicator of marital influence. Based on prior research, we proposed that correspondence would be high. The second aim was to evaluate components of Lewis et al.’s [37] interdependence and communal coping and health behavior change model. The proposed model is shown in Figure 1. In terms of predisposing factors, we focused on three types of variables: (i) each partner’s perceptions of the health threat, in this case, perceived risk for skin cancer and attitudes about sun protection; (ii) each partner’s objective cancer risk; and (iii) gender. We did not assess additional predisposing factors that are included in the Lewis et al.’s model [37], including relationship commitment, due to the complexity of the model we were already examining. We proposed that the association between predisposing factors and sun protection habits would be primarily mediated by relationship-centered motivation as well as discussions about sun protection, as shown in Figure 1. Specifically, we predicted that greater perceived risk and greater sun protection benefits would be associated with higher relationship-centered motivations for engaging in sun protection, which would then be associated with communal coping (measured as the degree to which couples reported discussing sun protection with their partner), and finally, sun protection practices. Gender was hypothesized as a pre-disposing factor. Based on prior work [e.g. 38, 39], we proposed that wives would be more likely to report relationship-centered motivations for sun protection and report more discussions with their husbands.

Consistent with Lewis’ model [30, 31] focusing on partners’ impact on each other, both actor effects and partner effects were hypothesized for all associations. That is, one’s own attitudes and relationship-centered motivations and discussion about SSE would be associated with both one’s own sun protection (actor effects) as well as one’s partner’s sun protection (partner effects). We also hypothesized that individuals with greater objective skin cancer risk would perceive greater skin cancer risk [40] and report higher perceived benefits of sun protection. However, we did not make any predictions about the associations between objective risk, relationship-centered motivations, and discussions about sun protection.

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**Methods**

**Sample**

Participants were recruited from GfK Knowledge Networks. GfK holds the first online research panel that is representative of the entire US population.
Eligible participants were: (i) panel member and spouse between 50 and 89 years of age; (ii) married and living with the spouse; (iii) panel member willing to pass the screening survey to their spouse. We focused on people aged 50 years and older because they are at higher risk for developing skin cancer than younger individuals [3], and because these data were collected as part of a larger study focusing on skin self-examination in older couples. Of the 519 panel members approached for participation, 312 completed the eligibility screening (60.2%), 221 of whom were eligible (70.8%). Reasons for ineligibility were: 4 panelists did not meet the age eligibility; 8 were not married; 78 panelists did not agree to pass the survey to their spouse, and one spouse did not meet the age eligibility. Thus, the acceptance rate among interested and eligible couples was 74%. There was missing data on key study variables for 18 couples, and due to gender differences in the study results, the 19 same-sex couples were excluded from the analyses. Thus, of the 221 couples, 184 were included in the final sample.

**Measures**

**Demographic information**

Age, gender, race/ethnicity and education were assessed.

**Objective skin cancer risk**

Eight items from the brief skin cancer risk assessment tool (e.g. number of moles, skin color, hair color, ability to tan and sunburn history) were used to calculate objective skin cancer risk [41], with higher scores indicating greater risk.

**Perceived skin cancer risk**

Two items assessed conditional affective perceived risk [42, 43], which is an assessment of susceptibility of a health outcome if one took action or does not take action against the risk [43] and others [44, 45] have found that conditional measures are more predictive of behavior than unconditional measures. The items were rated on a five-point Likert scale (‘strongly disagree’ to ‘strongly agree’) [46]. The items were: ‘If I don’t protect my skin from the sun, I would feel very vulnerable to getting skin cancer in my lifetime’, and ‘If I don’t protect my skin from the sun, I feel that my chances of getting skin cancer in my lifetime are high’. Scores were summed for the two items. Coefficient alphas were 0.88 for husbands and 0.84 for wives.

**Sun protection benefits**

A nine-item scale [46] assessed benefits of sun protection. Items included: ‘Wearing a wide-brimmed hat when in the sun will reduce my risk of getting sunburned’ and ‘Staying in the shade when I am outdoors will reduce my risk of getting skin cancer’. Items were rated on a five-point Likert scale (‘strongly disagree’ to ‘strongly agree’), and a sum was used in the analyses. Coefficient alphas were 0.94 for husbands and 0.92 for wives.

**Relationship-centered motivation for sun protection**

Six items were adapted from prior work on colorectal cancer screening [27]. Items included: ‘Using...
regular sun protection is important for both my spouse and I', and 'I can see some reasons it would be beneficial for my relationship for my spouse to use sun protection’. Items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), and a sum was used in the analyses. Coefficient alphas were 0.92 for husbands and 0.94 for wives.

Discussions with spouse about sun protection
Participants were asked whether they discussed sun protection with their partner in the past 6 months (yes/no) and to what degree they endorsed the item 'I talk to my spouse about using sun protection’ (1 = ’strongly disagree’ to 5 = ’strongly agree’). Because the husband and wife discussion scores were very strongly related (r = 0.72), the couples’ scores were averaged into one variable.

Sun protection practices
A five-item scale measured protection practices when outside on a summer day (using sunscreen, wearing a hat, seeking shade, wearing a shirt with sleeves, and wearing sunglasses) on a five-point Likert scale (1 = ‘never’, 5 = ‘always’) [47]. Scores were summed across the five items. Coefficient alphas were 0.74 for husbands and 0.68 for wives.

Analytic plan
Couple correspondence for sun protection practices was calculated as a Pearson correlation. Next, the hypothesized model was analysed using the statistical analysis program IBM SPSS Amos version 21 [48]. The dyadic nature of the data is reflected in the use of the Actor-Partner Interdependence Model (APIM; [49]) to account for the interpersonal influence close relationship partners have on one another. The analysis model included all direct and indirect effects, and statistical significance tests of the indirect effects used a bootstrapping approach (5000 samples). Bootstrapping involves random sampling with replacement, and each random sample is used to estimate the indirect effects, allowing researchers to estimate standard errors for each indirect effect. The bootstrapping approach has been shown to be a more powerful method for testing indirect effects in mediation models than the regression approach using a Sobel test [50].

Results

Sample characteristics
The majority of participants (82% of men, 81% of women) were Caucasian. Approximately one-third of both husbands and wives completed a college degree or higher level education. Participants ranged in age from 50 to 86 years of age (M = 64 years for husbands and 62 years for wives). Median annual family income was between $60 000 and $74 999.

Couples’ concordance with regard to sun protection
The correlation between partners’ sun protection practices, r = 0.494, P < 0.0001, indicates a high level of concordance and is in the “strong” range in terms of effect size using Cohen’s benchmarks [51].

Model fit
Means, SDs and correlations for the variables included in the model are presented in Table I. As can be seen in the bottom panel, wives had significantly higher levels of sun protection, higher relationship-centered motivations for sun protection, higher sun protection benefits, and reported more discussions about sun protection with husbands.

Because the mediational model that included all possible direct effects is too complex to present, the model depicted in Figure 2 includes only those direct effects that attained statistical significance (P < 0.05). The model fit was acceptable χ² (27) = 50.86, P = 0.004, RMSEA = 0.069, CFI = 0.970. Estimates and tests of the direct and indirect effects are included in Tables II–IV. Unstandardized path coefficients as well as 95% confidence intervals for the parameter estimates are available upon request. We present effects of objective skin cancer risk on all study variables, followed by the proposed mediation effects of relationship-centered motivation for sun protection.
and couple’s discussions about sun protection on sun protection practices.

**Associations between objective skin cancer risk and other variables included the model**

Table II reports effects of objective risk on perceived risk, sun protection benefits, relationship-centered motivation for sun protection, couples’ discussion about sun protection and sun protection behaviors. As shown in the table, although both partners’ objective risk was associated with their own perceived risk and sun protection benefits, only the husband’s objective risk showed evidence of partner effects. Wives whose husbands who had higher objective skin cancer risk factors reported both greater perceived risk and higher sun protection benefits. The only other statistically significant direct effect involving objective risk was that husbands’ objective risk was directly associated with husbands’ discussion about sun protection with their wives.
Table II. Direct and indirect effects of objective skin cancer risk on perceived risk, sun protection benefits, relationship-centered motivation, sun protection discussions and sun protection practices

<table>
<thead>
<tr>
<th>Effect</th>
<th>Predicting perceived risk</th>
<th>Predicting sun protection benefits</th>
<th>Predicting relationship-centered motivation</th>
<th>Predicting sun protection discussions (a couple-level variable)</th>
<th>Predicting sun protection practices</th>
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<tbody>
<tr>
<td></td>
<td>Direct effects $\beta$</td>
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<td>Direct effect $\beta$</td>
<td>Direct effect $\beta$</td>
<td>Direct effect $\beta$</td>
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<tr>
<td>Actor</td>
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<td>Indirect effect $\beta$</td>
<td>% med</td>
<td>Indirect effect $\beta$</td>
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<td>$%$ med</td>
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<td>$%$ med</td>
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<tr>
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<td>0.53**</td>
<td>0.24**</td>
<td>$-0.03$</td>
<td>0.25** n/a</td>
<td>0.14*</td>
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<td></td>
<td></td>
<td></td>
<td>$0.10$</td>
<td></td>
<td>0.13*</td>
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<td></td>
<td>$-0.09$</td>
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<td>48.1</td>
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<td>$-0.00$</td>
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<td>0.21**</td>
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<td>0.09</td>
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<td>$0.12*$</td>
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<td></td>
<td></td>
<td>$0.01$</td>
<td></td>
<td>n/a</td>
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<tr>
<td>Partner</td>
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<tr>
<td>Husband</td>
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<td>$-0.02$</td>
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<td>$0.08$</td>
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<td>$-0.06$</td>
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<td></td>
<td>$0.18^*$</td>
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<td>$75.0$</td>
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<tr>
<td>Wife</td>
<td>0.15*</td>
<td>0.16*$+$</td>
<td></td>
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<td>0.09</td>
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<td>$47.0$</td>
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</tbody>
</table>

Note. *$P<0.05$, **$P<0.01$, $+P<0.10$. $\%$ med, percent of the total effect of objective skin cancer risk that is mediated by perceived risk and sun protection benefits. The partner effect for husband is the effect of the wife’s perceived risk on the husband’s criterion variable (e.g. perceived risk, sun protection benefits) and the partner effect for wife is the effect of the husband’s objective risk on the wife’s criterion. n/a is used to denote cases in which percent mediation cannot be computed because the direct and indirect effects are in the opposite direction.

Table III. Direct and indirect effects of perceived risk and sun protection benefits on relationship-centered motivations, sun protection discussions and sun protection practices

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>Predicting Rel-centered motivation</th>
<th>Predicting sun protection benefits (a couple-level variable)</th>
<th>Predicting sun protection practices</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Direct effects $\beta$</td>
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<td>$%$ med</td>
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<tr>
<td>Perceived cancer risk</td>
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<tr>
<td>Actor</td>
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</tr>
<tr>
<td>Husband</td>
<td>0.17*$+$</td>
<td>$-0.10$</td>
<td>0.16*I</td>
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<tr>
<td>Wives</td>
<td>0.25**</td>
<td>$0.15$</td>
<td>0.00</td>
</tr>
<tr>
<td>Partner</td>
<td></td>
<td></td>
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<tr>
<td>Husband</td>
<td>0.17*$+$</td>
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<tr>
<td>Wives</td>
<td>0.08</td>
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<tr>
<td>Sun protection benefits</td>
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<tr>
<td>Actor</td>
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</tr>
<tr>
<td>Husband</td>
<td>0.39**</td>
<td>$0.14$</td>
<td>0.36**</td>
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<td>Wives</td>
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<td>0.19*</td>
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<tr>
<td>Husband</td>
<td>0.26**</td>
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</tr>
<tr>
<td>Wives</td>
<td>0.18*$+$</td>
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</table>

Note. *$P<0.05$, **$P<0.01$, $+P<0.10$. $\%$ med, percent of the total effect of either perceived risk or sun protection benefits that is mediated by relationship-centered motivation. The partner effect for husband is the effect of the wife’s input (e.g. perceived risk) on the husband’s relationship-centered motivation, sun protection discussions, or sun protection practices, and the partner effect for wife is the effect of the husband’s input on the wife’s relationship-centered motivation, sun protection discussions, or sun protection practices. n/a is used to denote cases in which percent mediation cannot be computed because the direct and indirect effects are in the opposite direction.
As hypothesized, the associations between objective risk and relationship-centered motivations for sun protection were largely mediated by the combination of perceived risk and sun protection benefits, such that individuals with higher objective risk tended to perceive greater risk and reported greater sun protection benefits, and they also reported adopting more of a relationship-centered motivation. There was also evidence that the husband’s objective risk had positive indirect effects on whether the couple discussed sun protection as well as whether the husband engaged in sun protection.

Mediating effects of relationship-centered motivation and couples’ discussion about sun protection on sun protection practices

Table III moves to the next level of the mediational model, and presents the direct and indirect effects of perceived risk and sun protection benefits on relationship-centered motivation, discussions about sun protection, and sun protection practices. As reflected in Figure 2, the husband’s perceived risk ‘was associated with’ his own adoption of a relationship-centered motivation, but not his wife’s. In contrast, the wife’s perceived risk showed both actor and partner effects in that it was associated with her own and her husband’s relationship-centered motivation. The partner effect shows that wives who perceived greater risk had husbands who reported higher relationship-centered motivation for sun protection. Sun protection benefits showed significant direct actor and partner effects on relationship-centered motivations for both partners, reflecting a couple-level pattern [52] in which couples who generally perceive greater benefits tend to adopt a greater relationship-centered motivation. Husbands’ sun protection benefits also had a direct association with sun protection. Wives’ sun protection benefits had a surprising negative direct effect on discussions with husbands. Given that the corresponding indirect effect was equal in size and opposite in sign, this may reflect a suppression effect as can occur in mediation models when the total effect is close to zero [53].

Table IV. Direct and indirect effects of relationship–centered motivations for sun protection on sun protection discussions and sun protection practices

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>Predicting sun protection discussions</th>
<th>Predicting sun protection practices</th>
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<tbody>
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<td>Indirect effect</td>
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<td>( \beta )</td>
<td>( \beta )</td>
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<tr>
<td>Relationship-centered motivation</td>
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</tr>
<tr>
<td>Actor</td>
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</tr>
<tr>
<td>Husbands</td>
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<td>-0.04</td>
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<td>Wives</td>
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<td>Partner</td>
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<tr>
<td>Husbands</td>
<td>—</td>
<td>0.01</td>
</tr>
<tr>
<td>Wives</td>
<td>—</td>
<td>-0.04</td>
</tr>
</tbody>
</table>

Note. *P < 0.05, **P < 0.01. The partner effect for husband (male) is the effect of the wife’s (female’s) input on the husband’s sun protection and the partner effect for wife is the effect of the husband’s input on the wife’s sun protection. n/a is used to denote cases in which percent mediation cannot be computed because the direct and indirect effects are in the opposite direction.

As hypothesized, the associations between objective risk and relationship-centered motivations for sun protection were largely mediated by the combination of perceived risk and sun protection benefits, such that individuals with higher objective risk tended to perceive greater risk and reported greater sun protection benefits, and they also reported adopting more of a relationship-centered motivation. There was also evidence that the husband’s objective risk had positive indirect effects on whether the couple discussed sun protection as well as whether the husband engaged in sun protection.
However, as discussed, the association for wives was ambiguous. Finally, the indirect effects of perceived risk and sun protection benefits on engaging in sun protection were somewhat inconsistent across partners. Virtually all of the association between perceived risk and sun protection occurred through indirect effects for wives, but there was no such evidence of indirect effects for husbands. For sun protection benefits, the only significant indirect effect was for the effect of the husband’s sun protection benefits on the wife’s sun protection behavior via adoption of a relationship-centered motivation and discussions.

The direct and indirect effects of reporting a relationship-centered motivation on sun protection are presented in Table IV. Husbands and wives who reported adopting more of a relationship-centered motivation also reported talking more with their partner about sun protection. In addition, although there were no significant direct effects of relationship-centered motivations on engaging in sun protection, there were significant indirect effects for both partners. Husbands and wives who adopted more of a relationship-centered motivation were more likely to discuss sun protection with one another, and they reported engaging in more sun protection. The final step in the model involves the direct effects of discussion about sun protection on engaging in sun protection. These paths were positive and statistically significant for both husbands ($\beta = 0.287$, $P = 0.005$) and wives ($\beta = .297$, $p = .001$).

**Discussion**

Our primary goal was to examine the role of the marital relationship in sun protection. The first aim was to examine couple correspondence with regard to sun protection, and our results suggest a high level of agreement between couples’ sun protection practices. These findings add to the large body of work suggesting that couples’ health practices are strongly concordant [22, 54] and extend the existing research suggesting that couples’ cancer prevention and screening practices also correspond with one another [26, 27].

The second aim was to evaluate components of Lewis and colleagues’ interdependence and communal coping model of health behavior [35, 36] as applied to sun protection. Due to the complexity of our findings, we will discuss aspects of the results separately and then integrate the findings into general conclusions. First, we found that relationship-centered motivation for sun protection was associated with couples’ reports that they discuss sun protection together, which was the indicator of communal coping used in this study. Since there is little research on the role of transformation of motivation to a relationship-centered motivation, it is difficult to compare our results with previous research. A prior study showed that relationship-centered motivations about colorectal cancer screening were associated with discussions with one’s spouse about colorectal cancer screening [27]. Second, couples’ discussion about sun protection was associated with a greater likelihood that both partners engaged in sun protection. This finding is similar to a study suggesting that discussions about colorectal cancer screening with one’s spouse are associated with colorectal cancer screening intentions [27], and extends the research by suggesting that discussions are also associated with health practices. Although there is little research on couples’ communication about sun protection, behavioral interventions that target family communication about skin cancer risk and sun protection have been shown to result in increases in sun protection among family members of melanoma patients [28]. Thus, this study adds to the body of work indicating that discussion between family members is associated with engagement in skin cancer risk reduction practices. A third finding consistent with the proposed model was the fact that couples’ discussion about sun protection mediated the association between ‘both’ partners’ relationship-centered motivation and ‘both’ partners’ sun protection practices, suggesting a ‘joint effect’ for relationship-centered motivations and couples’ discussions on sun protection practices. These findings are consistent with the dyadic-level influences proposed by Lewis and colleagues’ model [38, 36].

The role of predisposing factors in the model was more complex. As hypothesized, relationship-centered
motivation and couples’ discussions mediated the associations between individual perceptions and sun protection practices, but only for wives. There were associations between one partner’s individual perceptions about sun protection and the other partner’s sun protection. Two findings were not consistent with the role of predisposing factors: First, wives’ perceived sun protection benefits were negatively (rather than positively) associated with the likelihood that couples discussed sun protection together. Second, husbands’ perceived risk was not associated with their own or their wives’ sun protection via mediation effects for relationship-centered motivation and couples’ discussions about sun protection. Both findings were surprising and difficult to interpret, and the presence of suppression effects complicated the picture. Longitudinal studies with large sample sizes may help unravel this complex picture.

A novel addition to the interdependence and communal coping model of health behavior was the examination of objective risk as a predisposing factor that was associated with attitudinal factors such as perceived risk. Consistent with prior work [55], individuals with higher objective risk reported greater perceived risk and reported more sun protection benefits. As hypothesized, the associations between objective risk and relationship-centered motivations for sun protection were largely mediated by both perceived risk and sun protection benefits; individuals with higher objective risk tended to perceive greater risk and reported greater sun protection benefits, and they also reported adopting more of a relationship-centered motivation. Our findings suggest possible gender differences in that husbands who had more objective risk engaged in more sun protection, in part due to the fact that they adopted a relationship-centered motivation and discussed sun protection as a couple. It is possible that husbands are more motivated to discuss skin cancer with their wives and more influenced by these discussions when they have more objective risk factors themselves (perhaps because their wives may bring up husbands’ hair color/skin color in discussions). Future research will help untangle these complex gender differences in the role of sun protection attitudes within the marital relationship.

With regard to the last predisposing factor, gender differences, results were consistent with the prediction that wives would report more discussion about sun protection with their husbands and greater relationship-centered motivations for sun protection than husbands. Our findings also suggested that wives engaged in higher levels of sun protection and perceived more benefits of engaging in sun protection. Prior studies have also found higher levels of sun protection among women [56–59].

There are a number of study limitations. Most importantly, this is a cross-sectional study. We cannot rule out the possibility that couples’ discussions about sun protection lead each person to perceive more personal benefits of sun protection or more benefits to engaging in sun protection for their marital relationship. One partner’s engagement in sun protection may spur conversations about the benefits of sun protection with the other partner. We did not evaluate specific influence strategies or the communication that couples engaged in during their conversations. Because this study was part of a larger examination of skin surveillance among older couples, the sample was aged 50 years and older and the results may not extrapolate to younger couples. Future studies would benefit from including younger couples. In addition, we studied only married couples, and thus conclusions cannot be generalized to couples who are not married. Future research should include non-married, cohabitating couples. The sample was primarily white, which biased our results towards persons with more objective risk for skin cancer (Caucasian race). Finally, we did not assess attitudes of protecting one’s children or grandchildren. Because these couples may be providing care to children or grandchildren, family-centered motivation for sun protection may be important to assess in future studies. In sum, future research should consider a longitudinal design, assess couple influence strategies, evaluate actual couple discussions about sun protection, include younger and unmarried couples, and assess family centered motivations for a more fine-grained analysis.
In conclusion, this study demonstrated that couples who report higher relationship-centered motivation for sun protection discuss sun protection with each other and are more likely to engage in sun protection practices. Couples who perceive greater sun protection benefits are more likely to adopt a relationship-centered motivation for sun protection. Individual attitudes about sun protection, including perceived risk and perceived sun protection benefits, are associated with relationship-centered motivation for engaging in sun protection. Taken together, targeting perceived sun protection benefits, helping individuals form realistic perceptions of their skin cancer risk, helping partners perceive benefits to their relationship for adopting sun protection, and facilitating partners’ discussion about sun protection may all improve both couples’ sun protection practices. If couples’ beneficial influence on each other can be better understood, more effective couple-based behavioral interventions can be developed and evaluated. Based on these results, couple-based interventions may have greater impact if they encouraged couples to consider possible benefits for their spouse and their relationship if each partner improved sun protection practices, facilitated open discussion between partners about improving their sun protection habits as a team, and encouraged couples to support better sun protection for one other. Our results also suggest that such interventions should focus on facilitating more positive attitudes about sun protection, including fostering realistic assessments of each partner’s objective and perceived skin cancer risks, and increasing perceived benefits of sun protection.

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Conflict of interest statement

None declared.

References

Couples’ sun protection practices


