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Abstract

Two experiments explored the possibility that specific health risks observed among young women may be influenced by attractiveness-enhancement goals associated with mating. Study 1 ($n = 257$) demonstrated that priming women with intersexual courtship and intrasexual competition increased their willingness to go tanning and take dangerous diet pills. Study 2 ($n = 148$) conceptually replicated these results and revealed that increased willingness to take these risks is mediated by diminished feelings of vulnerability to the negative health effects associated with these behaviors when mating goals are salient. Findings provide evidence that mating goals play a role in the continued popularity of these dangerous behaviors in women. Furthermore, the current results bridge the existing gap between health belief and self-presentational models of risk behaviors to yield novel insights into the psychology of risk taking.

Keywords

mate competition, mating, attractiveness, risk, risk taking, self-presentation, health behaviors

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Efforts to educate young women about the potentially deleterious health consequences associated with attractiveness-enhancement practices such as going tanning and taking diet pills have increased significantly in recent years. However, despite these efforts, the frequency with which women willingly participate in these behaviors continues to rise. Tanning and diet pill use are fairly common behavioral practices among women, particularly among those in late adolescence and young adulthood (see, e.g., Nasser, 1988; Olson, Gaffney, Starr, & Dietrich, 2008). That health education programs have largely failed in their efforts to elicit the desired changes in women's health behaviors raises an important question: Why do women willingly compromise their health for beauty despite being regularly reminded that they may be putting their lives on the line? In the current research, we apply a function-based evolutionary social psychological framework to address the question of women's risk taking in the pursuit of beauty. Specifically, we investigate whether women's willingness to take attractiveness-enhancement risks may be motivated by self-presentation goals associated with mate competition and attraction. Moreover, our goal-based approach integrates social psychological perspectives on risk taking with existing health belief models to explore whether such behaviors may be mediated by diminished feelings of

vulnerability to women's negative health effects when mating goals are salient.

Self-Presentation and Health Risks

Until recently, efforts to understand risky behavioral practices such as tanning and diet pill use have focused on the roles attitudes and health beliefs play in promoting or preventing their occurrence (e.g., Ajzen, 1985; DiClemente, 1986; Janz & Becker, 1984). For instance, according to the health belief model (Rosenstock, 1974) and protection motivation theory (Rogers, 1983), a woman's decision to go tanning depends largely on her understanding of the likelihood that she will get skin cancer from doing so and her understanding of the severity of the disease should she become afflicted. There is empirical support for this perspective. Perceived susceptibility to skin cancer, for instance, has been found to

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mediate the relationship between people's actual disease risk (based on skin type and family history) and their sunbathing intentions and behaviors (Cafri, Thompson, Jacobsen, & Hillhouse, 2009; Jackson & Aiken, 2000).

Health belief models such as protection motivation theory have yielded important insights into the relation between people's feelings of vulnerability to the negative consequences of health risk behaviors and their willingness to take them. These models have fallen short, however, when it comes to making predictions about behavior change in the face of changing information about the risks and rewards associated with the behaviors in question. Health belief models—by virtue of positing health beliefs as being causally related to health behaviors—predict that as people become more aware of the dangers associated with unhealthy behaviors, the behaviors in question should become less prevalent. However, these predictions are not generally supported by existing patterns of behavior. Changes in women's awareness of the health consequences associated with risky dieting and tanning practices have not resulted in corresponding changes in these behaviors. Despite people being more aware than ever about the risks of ultraviolet (UV) exposure, researchers continue to find steady declines in the use of sun protection and increases in tanning bed usage among women during adolescence and young adulthood (Olson et al., 2008). Not surprisingly, instead of decreasing or reaching a plateau, the incidence of skin cancer has actually increased in the past 30 years (Fears & Scotto, 1982). Similar trends have been found for unhealthy weight management behaviors. Although public awareness of the risks associated with dangerous dieting practices are at an all-time high, the prevalence of anorexia and bulimia have both increased in recent years (Nasser, 1988), growing alongside the numbers of normal and underweight women who report regularly using diet pills and nonprescription weight loss supplements (Bish et al., 2005).

The failure of traditional health belief models to explain the continued popularity of these dangerous behaviors has prompted a number of researchers to propose that these behaviors may be motivated by social factors not accounted for in largely cognitive, health-belief-based theories. Such researchers have hypothesized that individuals may choose to take health risks such as tanning and diet pill use—despite being well aware of their potentially lethal consequences—in the service of meeting self-presentation goals (Ginis & Leary, 2004; Leary & Kowalski, 1990; Leary, Tchividjian, & Kraxberger, 1994; Martin & Leary, 1999). According to this view, individuals' concerns with appearing physically attractive to others may trump their concerns about the long-term health effects of risky behaviors. Although a woman may be aware, for instance, of the likelihood of getting skin cancer from going tanning, she may choose this behavior nonetheless if she perceives the immediate impression-management benefits are sufficiently large to outweigh her concerns about her long-term health (Leary & Jones, 1993).

This hypothesis is consistent with much research into the factors that motivate women's health risk behaviors in these domains. Women's tanning behavior is positively related to concerns with physical appearance (Jones & Leary, 1994; Leary & Jones, 1993; A. G. Miller, Ashton, McHoskey, & Gimbel, 1990; Prentice-Dunn, Jones, & Floyd, 1997; Saad & Peng, 2006) and beliefs about potential romantic partners' desires for partners with a tanned appearance (Mosher & Danoff-Burg, 2005). A similar pattern of results is found with respect to women's dangerous dieting behaviors. Because thin women are seen as more attractive than heavier women in Western culture (Swami, 2006; Weeden & Sabini, 2005; J. M. B. Wilson, Tripp, & Boland, 2005), women's dieting behaviors are most typically motivated by the desire to increase physical attractiveness (Croll, Neumark-Sztainer, Story, & Ireland, 2002; Mintz & Betz, 1988) and to appear more attractive to men (Mooney, Farley, & Strugnell, 2004). Findings such as these suggest that self-presentation goals may play an important role in motivating women's willingness to go tanning and use diet pills.

Do Mating Goals Facilitate Risky Self-Presentation Strategies?

Existing research into the proximal motivations guiding women's tanning and dieting behaviors are consistent with the view that women engage in these behaviors, largely because of their potential appearance-enhancement benefits. However, although experimental evidence exists demonstrating the success of appearance-based sun tanning interventions (e.g., Jones & Leary, 1994; Mahler, Kulik, Gerrard, & Gibbons, 2007; Mahler, Kulik, Gibbons, Gerrard, & Harrell, 2003), as of this writing, no experimental evidence exists demonstrating a causal link between self-presentation goals and willingness to take attractiveness-enhancement risks.

Here, we explore whether experimentally activating specific self-presentational goals related to mating increases women's willingness to take attractiveness-enhancement risks. Emerging research in evolutionary psychology suggests that activating motivational states related to mating (e.g., through priming; see Bargh & Chartrand, 1999) can elicit a cascade of perceptions, cognitions, and behaviors consistent with solving adaptive problems in this domain (see, e.g., Griskevicius, Cialdini, & Kenrick, 2006; Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006; Maner et al., 2005; Maner, Gailliot, Rouby, & Miller, 2007; Roney, 2003).

Accordingly, it is possible that activating mate attraction goals may heighten women's willingness to do whatever it takes to enhance their appearance regardless of the consequences to their long-term health. Because men value attractiveness in their romantic partners, women often compete for mates by trying to make themselves more attractive than their mating competitors (Buss, 1988, 1989; Buss & Schmitt, 1996;

Campbell, 2005). These behaviors have been found to be especially pronounced when women are most fertile (Durante, Li, & Haselton, 2008; Grammer, Renninger, & Fischer, 2004; Haselton, Mortezaie, Pillsworth, Bleske-Rechek, & Frederick, 2007; Hill & Durante, 2009) and when mate competition motives are active (Durante, Griskevicius, Hill, Perilloux, & Li, in press). Here, we predict that activating mating goals may similarly increase women's willingness to tan and take dangerous diet pills. These behaviors represent two major categories of risk-taking behavior frequently observed among young women in the hopes of increasing their desirability to romantic partners (tanning: Prentice-Dunn et al., 1997; diet pills: Mintz & Betz, 1988; Mooney et al., 2004; Mosher & Danoff-Burg, 2005).

Mating Goals, Risks, and Health Beliefs

The prediction that women will be more willing to take attractiveness-enhancement risks in the face of mating goals—although consistent with self-presentation accounts of health risk behaviors—is seemingly inconsistent with evidence supporting health belief models. Tanning and diet pill use are associated with well-known health risks such as cancer (tanning) and heart problems (diet pills). Accordingly, if women choose to participate in these behaviors despite awareness of these risks, it suggests that women's self-presentation goals may simply override long-term health goals when mating goals are active (e.g., "I know this might kill me, but I will do it anyway"). However, as described above, this account is not consistent with evidence that health beliefs *are* often predictive of actual health behaviors (e.g., Ajzen & Fishbein, 1980; Jackson & Aiken, 2000).

One possible solution to this paradox is the possibility that health beliefs themselves may change in response to mating goal salience. That is, individuals' beliefs about their own susceptibility to the ill effects of risky behavioral practices such as tanning and diet pill use may wax and wane, in part, based on changes in adaptive goals. Evolutionary theories of social cognition suggest that cognitive processing is functionally tuned, with our perceptions and beliefs being biased in ways that would have promoted reproductive success over evolutionary time (see, e.g., Haselton & Buss, 2000; Hill, 2007; Maner, Miller, Rouby, & Gailliot, 2009). Accordingly, it is possible that women's beliefs about the likelihood they will suffer ill health effects from engaging in risky attractiveness-enhancement practices may not reflect women's true understanding of the dangers associated with them. Instead, these beliefs may change as a function of the adaptive benefits potentially available from the behaviors such that women are able to rationalize these behaviors when the benefits from engaging in them are sufficiently large. Over the course of evolutionary time, individuals who felt less vulnerable to the negative outcomes associated with risky behaviors at times when the potential fitness payoffs

were high would likely have outperformed their more conservative counterparts. Here, we explore the possibility that activating mating goals will make women feel less vulnerable to the negative health effects associated with tanning and diet pill use.

In the following two studies, we report on two experiments in which we investigate the effects of mating goal salience on women's willingness to take attractiveness-enhancement risks. In our first experiment, we tested whether activating mating goals causes women to report being more interested in going tanning and using diet pills but not in a control risky behavior. In our second study, we sought to conceptually replicate these results and test whether these changes are mediated by changes in women's health beliefs. Specifically, we predicted that these effects would be mediated by a diminished belief in the likelihood of suffering the ill health effects associated with the behaviors (e.g., skin cancer) in the face of mating goal salience.

Study I

In our first study, we examined the influence of mating goals on women's willingness to take two attractiveness-enhancement risks: going tanning and taking dangerous diet pills. As a control, we also asked women about their willingness to paint in an unventilated room. Our experiment used an established priming methodology whereby women were shown targets that subliminally activate (a) intrasexual courtship or (b) intersexual competition goals (e.g., Durante et al., in press; Griskevicius et al., 2007; Roney, 2003; M. Wilson & Daly, 2004). Although both domains of motivation ultimately function to enhance reproduction (Andersson, 1994; Darwin, 1871), teasing apart these separate motivations offers a better understanding of the proximate-level cues that motivate these undesirable behaviors. Specifically it allowed us to explore whether women's willingness to take attractiveness-enhancement risks changes in response to their perceptions of (a) the quality of the potential mates available in their current mating pool (i.e., a courtship motivation), (b) the attractiveness of the same-sex peers against whom they must compete for mates (i.e., a competition motivation), or (c) both.

To explore these issues, women in the experimental conditions first viewed and rated photographs of either highly desirable "local" men or highly desirable "local" women and then reported on their desire to engage in the target risk behaviors. Using this kind of priming methodology, as opposed to, for example, instructing participants to imagine that they are competing for or trying to attract a mate, provides several key advantages. First, because people are generally unaware of how such primes influence their behavior (e.g., Bargh & Chartrand, 1999), this method decreases the likelihood that demand characteristics will influence responses. Second, this method allows us to derive novel predictions about the way a key individual difference variable—relationship

status—will moderate the influence that specific types of contextual cues have on women's willingness to take these specific health risks.

For single women, the potential benefits available from engaging in attractiveness-enhancement risks depend on both the attractiveness of same-sex competitors against whom they must compete for mates *and* the quality of potential mates themselves. Accordingly, for single women, exposure to attractive women *or* attractive men should activate mating goals and increase willingness to take desirability-enhancement risks. For women in existing romantic relationships, however, we expected a somewhat different pattern of results. Research indicates that people in committed relationships pay less attention to attractive alternative mates (Maner, Rouby, & Gonzaga, 2008; R. J. Miller, 1997) and rate them lower in attractiveness than do their single counterparts (Lydon, Meana, Sepinwall, Richards, & Mayman, 1999; Simpson, Gangestad, & Lerma, 1990). Exposure to attractive opposite-sex others is thus less likely to activate mating goals in mated compared to single women. However, exposure to attractive same-sex competitors should still activate intrasexual competition goals in mated women to guard against losing a current partner to a mating rival (Buss & Shackelford, 1997; Maner et al., 2009; Sabini & Silver, 2005). Thus, we predicted that mated women would increase their willingness to take desirability-enhancement risks in response to the same- but not opposite-sex primes.

Method

Participants. Participants were 257 women from a large state university (158 viewed the same-sex competition prime; 99 viewed the opposite-sex courtship prime). Participants' ages ranged from 18 to 27 years ($M = 19.30$, $SD = 1.73$), and participation partially fulfilled a course requirement. Participants were prescreened for sexual orientation at an earlier point in the semester, and only heterosexual students were allowed to participate. As a precautionary measure, participants were also asked about their sexual orientation at the beginning of the study so that data collected from any homosexual respondents could be removed from the final analysis. No participants needed to be removed for this reason.

Design and procedure. The overall design of the study was a 2 (test session: control vs. experimental; within subjects) \times 3 (risk type: tanning vs. diet pills vs. control risk; within subjects) \times 2 (photo prime: attractive men vs. attractive women; between subjects) \times 2 (relationship status: single vs. mated; between subjects) mixed factorial design. Each participant completed two testing sessions: one experimental session and one control session. The two testing sessions took place, on average, 35.62 days apart, and the order of sessions was counterbalanced such that 58% of participants completed experimental testing first and 42% of participants completed control testing first. The order of sessions

(whether participants completed the experimental or control condition first) was assigned sequentially based on the day of the week participants came in for the first session. Participants coming in on Mondays and Wednesdays took part in the control condition first, and those coming in on Tuesdays and Thursdays took part in the experimental condition first. This was done to prevent condition (experimental vs. control) from being confounded with testing session order. All participants were contacted 3 weeks after their first session and told that the researcher accidentally deleted their data and informed them that they could receive another experimental credit if they came back to the lab to fill out the questionnaires a second time for double the experimental credit. Of those contacted, all but 20 agreed to return.

In each session, participants came into a research laboratory in groups of 4 to 6 and were situated at individual computer terminals running MediaLab experimental software. The experiment was described as being two separate studies, one on social decision making and another to determine the suitability of photographs submitted by classmates for use in a later study. Participants were told that the computer would randomize the order of the studies. In both conditions, participants began the study by answering a short series of questions about themselves, including a question about their relationship status. Specifically, participants were asked to indicate whether they were in a committed romantic relationship (response choices: yes, no). One hundred and fifty participants indicated that they were single, whereas 107 reported that they were in committed relationships. The experimental and control testing sessions differed from each other only in the order in which the primes were presented. Participants in the experimental testing session were first exposed to one of two mating primes: one designed to manipulate perceptions of the attractiveness of opposite-sex others in their current mating pool (activating courtship motivations) or one designed to manipulate perceptions of the attractiveness of the same-sex peers they must compete against for mates (activating competition motivations). Participants were then asked to rate the likelihood that they would engage in the two attractiveness-enhancement risks plus one control item. The order was reversed in the control condition (i.e., they answered the risk questions first, followed by the photo rating task).

Priming task. Participants viewed and rated 10 photographs of attractive men or women. Participants rated the 10 individuals on attractiveness, friendliness, and extraversion. These ratings were not used for any part of the study except to make the attractiveness of the primes more salient without drawing attention to the true purpose of the task. In the experimental condition, this task took place *before* making the risk ratings, and in the control condition the photo rating task took place *after* the risk ratings.

Photographs were chosen from a photo-sharing website based on the criterion of being facial photographs of individuals

high in attractiveness. Competition and courtship goals have been shown to be more strongly activated when potential mates and local same-sex competitors are thought to be highly attractive (Durante et al., in press; Roney, 2003; M. Wilson & Daly, 2004). Thus, we only used photographs of individuals high in attractiveness to prime these states. To ensure the photographs were above average in attractiveness, 41 undergraduate women rated the attractiveness of each of the 20 photographs (10 of each sex) to be used in the study using a 7-point scale (1 = *not at all attractive*, 7 = *extremely attractive*). Both male and female targets were rated significantly above average: female photos ($M = 4.70$, $SD = .57$), $t(40) = 7.84$, $p < .001$, and male photos ($M = 4.40$, $SD = .82$) $t(40) = 3.11$, $p = .003$.

Dependent measures. To test the effect of our prime on willingness to take attractiveness-enhancement risks, participants rated the following at each session: the weekly frequency with which they would expect to use a free tanning membership, their interest in taking a diet pill known to cause heart problems later in life, and their willingness to paint in a room that is not properly ventilated to avoid outside noise and inclement weather (control item). The control item was included because it is not presumed to influence desirability to romantic partners. Participants responded on 7-point scales, where 1 indicated no interest (*not at all interested*) or zero frequency (*never*) of the target behavior and 7 indicated high interest (*very interested*) or frequency (*very frequently*).

Results

Risk rating analyses. To explore the effects of the mating primes on willingness to take attractiveness-enhancement risks, differences on each measure based on condition were examined using a mixed-model repeated measures ANOVA (general linear model, SPSS 16.0). Prime type (same- vs. opposite-sex prime) and relationship status (in a relationship, $n = 107$ vs. single, $n = 150$) were between-subjects factors, and condition (experimental vs. control) and risk behavior were repeated factors. Order of session was also included in this model as a between-subjects factor. Neither a main effect nor an interaction with any of the other independent variables was found for this variable (all $ps > .35$); thus, it was dropped from subsequent analyses. The results of the initial analysis revealed a significant four-way interaction among condition, prime type, relationship status, and risk type, $F(2, 252) = 6.50$, $p = .002$, partial $\eta^2 = .05$. To probe the four-way interaction, we explored the effects of each prime on women's risk taking in each of the three risk domains separately.

Tanning. Women rated themselves as more likely to use a free tanning membership after exposure to the mating primes compared to the control condition (control: $M = 1.98$, $SD = 1.82$; experimental: $M = 2.31$, $SD = 1.81$),

Table 1. Summary of Results: Effect of Mating Prime on Risk Taking for Single Women

Risk type	Control		Competition		Control		Courtship		F
	M	SD	M	SD	M	SD	M	SD	
Tanning	1.80	1.81	2.17	1.60	1.56	1.18	2.66	1.95	12.22**
Diet pills	1.82	1.45	2.38	1.62	1.67	1.20	2.56	1.70	8.06**
Control	2.12	1.49	2.04	1.33	2.05	1.39	1.84	1.17	1.23

The F value corresponds to the difference between the experimental and the control across prime types noting no interaction between these variables.

** $p < .01$.

$F(1, 252) = 21.41$, $p < .001$, partial $\eta^2 = .08$. Moreover, there was a significant three-way interaction among condition, prime type, and relationship status on this variable, $F(1, 252) = 13.55$, $p < .001$, partial $\eta^2 = .05$.

Planned contrasts were next performed within each category of relationship status (single vs. in a relationship). As predicted, for single women, there was no interaction between condition and prime type, but there was a main effect of condition such that single women reported being more likely to use a free tanning membership after exposure to both mating primes compared to in the control condition (without prime: $M = 1.71$, $SD = 1.61$; with prime: $M = 2.35$, $SD = 1.75$), $F(1, 148) = 12.22$, $p = .001$, partial $\eta^2 = .08$ (see Table 1). For women in relationships, however, there was a significant interaction between prime type and condition on this measure, $F(1, 104) = 8.17$, $p = .005$, $\eta^2 = .07$. Women in relationships were more likely to use a free tanning membership in response to the competition prime (without prime: $M = 1.89$, $SD = 1.67$; with prime: $M = 2.35$, $SD = 2.06$), $F(1, 61) = 12.77$, $p = .001$, partial $\eta^2 = .17$, but not in response to the courtship prime (see Table 2).

Diet pills. Women also rated greater interest in taking dangerous diet pills after exposure to the mating primes than they did in the control conditions (without prime: $M = 1.76$, $SD = 1.34$; with prime: $M = 2.55$, $SD = 1.63$), $F(1, 252) = 22.08$, $p < .001$, partial $\eta^2 = .08$. Additionally, a significant three-way interaction was found among condition, prime type, and relationship status on this measure, $F(1, 252) = 9.45$, $p = .002$, partial $\eta^2 = .04$.

Planned contrasts were performed within each category of relationship status (single vs. in a relationship). As predicted, for single women, there was no interaction between condition and prime type, but there was a main effect of condition such that exposure to both mating primes significantly increased their interest in the diet pills (without prime: $M = 1.77$, $SD = 1.36$; with prime: $M = 2.45$, $SD = 1.64$), $F(1, 147) = 8.06$, $p = .005$, partial $\eta^2 = .05$ (see Table 1). For women in relationships, however, there was a significant interaction between prime type and condition on this measure, $F(1, 104) = 7.42$, $p = .008$, partial $\eta^2 = .07$. Probing this interaction revealed that women in relationships were significantly more interested

Table 2. Summary of Results: Effect of Mating Prime on Risk Taking for Women in Relationships

Risk type	Control		Competition		F	Control		Courtship		F
	M	SD	M	SD		M	SD	M	SD	
Tanning	1.89	1.67	2.35	2.06	15.47***	3.02	2.33	2.14	1.71	0.29
Diet pills	1.56	1.15	2.81	1.73	15.09***	2.02	1.49	2.55	1.42	2.41
Control	2.16	1.43	1.97	1.19	0.53	2.34	1.75	2.27	1.47	0.53

For the control risk, the *F* value corresponds to the difference between the experimental and the control across prime types noting no interaction between these variables.

****p* < .001.

in taking such pills after exposure to the competition prime (without prime: $M = 1.56$, $SD = 1.15$; with prime: $M = 2.81$, $SD = 1.73$), $F(1, 61) = 15.09$, $p < .001$, partial $\eta^2 = .20$), but not in response to the courtship prime (see Table 2).

Painting without ventilation (control). There was no difference in women's interest in painting in an improperly ventilated room after exposure to either the same- or opposite-sex prime (without prime: $M = 2.15$, $SD = 1.50$; with prime: $M = 2.02$, $SD = 1.29$), $F(1, 253) = 1.62$, *ns*. Furthermore, there were no interactions with prime type (opposite vs. same-sex prime) or relationship status on this measure (see Tables 1 and 2).

Discussion

In Study 1, we demonstrated that women reported greater willingness to take specific attractiveness-enhancement risks after exposure to attractive same- and opposite-sex targets than when not first exposed to these primes. We also demonstrated that the type of prime interacted with relationship status such that both single and mated women increased willingness to go tanning and take diet pills in response to the competition prime, whereas single women were also willing to take these risks in response to the courtship prime. These findings suggest that activating self-presentation goals associated with mating may play a role in women's willingness to take mating-specific health risks.

Study 2

In Study 2, we sought to conceptually replicate the results from Study 1 using a different priming method and to test the possibility that activating mating goals would induce women to suppress their beliefs about the likelihood that they will incur a negative health outcome from engaging in the desirability-enhancement risks measured in Study 1. Specifically, we predicted that activating these goals would lead women to suppress their estimated likelihood of incurring a negative health outcome from engaging in tanning and diet pill usage, an effect that would mediate women's increased interest in taking these risks.

In addition to testing the hypothesis that strategic risk suppression may mediate women's increased willingness to

take attractiveness enhancement risks, Study 2 was conducted to address two methodological weaknesses in Study 1. First, Study 1 used attractive same- and opposite-sex photographs to prime goal states related to intersexual courtship and intrasexual competition. However, the use of these primes leaves open the possibility that our results reflect changes in perceived norms regarding expectations for attractiveness rather than in mating motives, per se. Second, other researchers have found that women tend to be more romantically interested in men exhibiting traits associated with status rather than attractiveness (e.g., Buss, 1989; Gutierrez, Kenrick, & Partch, 1999). Accordingly, it is possible that the photographs used in Study 1 may not have primed mating goals as strongly as a prime more directly derived from women's mate preferences. Study 2 addressed both of these issues through the use of a different priming procedure similar to that used in other studies to prime similar states (e.g., Griskevicius et al., 2006a; Griskevicius et al., 2007; Maner et al., 2009).

Method

Participants. Participants were 148 women from a medium-sized private university (77 viewed the mating prime; 71 viewed the control prime). Participation partially fulfilled a course requirement for all participants. Participants ages ranged from 18 to 24 years ($M = 19.64$, $SD = 1.34$). The recruitment procedure for this study specified that participants must be heterosexual to participate. As a precautionary measure, participants were also asked about their sexual orientation at the beginning of the study so that data collected from any homosexual respondents could be removed from the final analysis. No participants needed to be removed for this reason.

Design and procedure. The overall design of the study was a 2 (writing prime: mating vs. neutral) \times 2 (relationship status: single vs. in a relationship) between-subjects design. Participants in the study were randomly assigned to either the mating or the neutral prime through the randomization feature in Qualtrics experimental software (Qualtrics, Inc., Salt Lake City, UT). Participants were told they would be participating in two ostensibly unrelated studies: one on sex differences in

writing style and the other on decision making in undergraduate students. Participants were told that the order in which they would participate in each of these studies would be randomly assigned by the computer, although all participants viewed the writing prime first (mating or neutral), followed by the dependent measures. After making these ratings and completing some additional unrelated decision-making questions (e.g., their estimation of the cost of a bottle of aspirin), participants were asked about the likelihood of engaging in each of the target risk behaviors. Finally, all participants answered a series of questions about themselves, including their relationship status. Ninety-three participants indicated that they were single and 55 indicated that they had romantic partners.

Priming task. We activated mating goals among those in the experimental condition by having them write about a time when they were competing for a romantic partner. Specifically, they were asked to recall a time when they were romantically interested in someone who was simultaneously being pursued by another woman. If they had never been in this situation, they were told to imagine how it would feel to be in this situation. Participants were told to vividly remember this situation for 1 min before the computer advanced them to the next screen. After the minute had passed, the computer prompted them to describe the situation, how it made them feel, and what they did to try to capture the romantic interest of the man they were interested in. The neutral prime was presented the same way, except participants were asked to remember and describe the last time they did their laundry. As a manipulation check, 53 undergraduate women read either the mating or the neutral prime, wrote about their experience, and rated their motivation to attract a romantic partner (courtship) and to compete with other women for a romantic partner (competition). Ratings were made on 7-point scales (1 = *strongly disagree*, 7 = *strongly agree*). Results indicated that there were no differences in responses to either measure based on the participant's relationship status ($ps > .24$). However, women who read the mating scenario reported being significantly more motivated to attract a romantic partner (mating: $M = 5.08$, $SD = 1.71$; neutral: $M = 2.18$, $SD = 1.25$), $F(1, 49) = 55.47$, $p < .001$, and significantly more motivated to compete with other women for a romantic partner (mating: $M = 5.20$, $SD = 1.73$; neutral: $M = 1.93$, $SD = .98$), $F(1, 49) = 76.31$, $p < .001$, than they did in the control condition.

Risk measures. We tested the hypothesis (a) that activating mating goals would lead to suppressed beliefs about the likelihood of incurring negative side-effects from the target health risk behaviors and (b) that such risk suppression would mediate the relation between mating motives and increased willingness to take attractiveness-enhancement risks. Accordingly, participants filled out two types of measures for each of the target risk behaviors. First, they were asked to estimate the likelihood of experiencing negative health side-effects from the two attractiveness-enhancement

Table 3. Likelihood of Engaging in Risky Behaviors Depending on Prime

	Control		Mating		F
	M	SD	M	SD	
Tanning	2.77	1.62	3.29	1.60	4.27*
Diet pills	2.73	1.12	3.23	1.40	6.47**
Cough syrup	2.54	2.05	2.13	1.53	1.76
Painting	1.63	1.28	1.22	0.68	6.19**

* $p < .05$. ** $p < .01$.

risks—going tanning and using diet pills—and two control risks—using cough syrup as a sleep aid (an off-label use) and painting in a nonventilated room to avoid outside noise. Participants made their ratings on 7-point scales (1 = *very unlikely*, 7 = *very likely*). Later, participants were asked to rate the likelihood that they would engage in each of the target risk behaviors. Ratings were made on 7-point scales (1 = *definitely will not*, 7 = *definitely will*). It is predicted that exposure to the mating prime will correspond to increased willingness to take attractiveness-enhancement risks (a conceptual replication of Study 1) and that exposure to the prime will correspond to lowered estimates of the likelihood of incurring negative health effects from these risks, a result we predict will mediate the increased willingness to engage in these behaviors.

Results

Does exposure to the mating prime increase women's willingness to take attractiveness-enhancement risks? The results of our analysis revealed a significant main effect of prime on three of the four risky behaviors explored (see Table 3 for descriptive statistics). Replicating the results of Study 1, exposure to the mating prime increased the likelihood that women would use a free tanning membership, $F(1, 144) = 4.27$, $p = .04$, partial $\eta^2 = .03$, and take diet pills, $F(1, 144) = 6.47$, $p = .01$, partial $\eta^2 = .04$. In contrast, exposure to the prime decreased the likelihood that women would paint in an unventilated room, $F(1, 144) = 6.19$, $p = .01$, partial $\eta^2 = .04$, and had no effect of women's likelihood of using cough syrup as a sleep aid, $F(1, 144) = 1.76$, ns (see Figure 1). There was no main effect of relationship status on any of these risk preferences nor did relationship status interact with the prime for any of the dependent measures (all $ps > .27$).

Risk suppression analyses. The results of our analysis revealed a significant main effect of prime on women's beliefs about the probability of suffering a negative health outcome from taking the target attractiveness-enhancement risks (see Table 4 for descriptive statistics). After exposure to the prime, women rated themselves as being significantly less likely to get skin cancer from using a tanning bed, $F(1, 142) = 11.61$, $p < .001$,

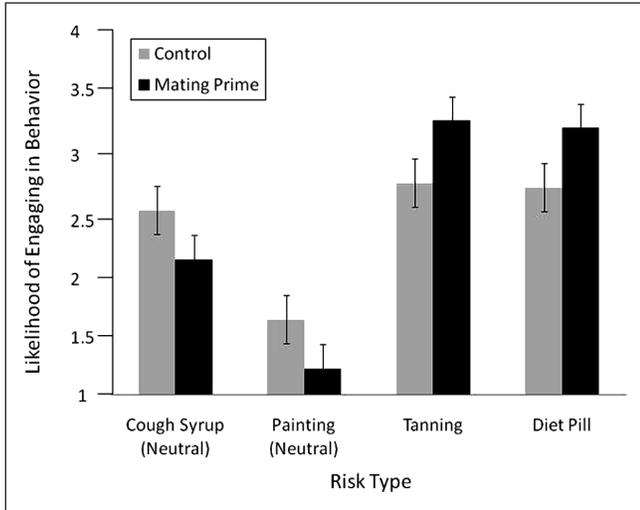


Figure 1. Likelihood of engaging in risky behaviors depending on prime

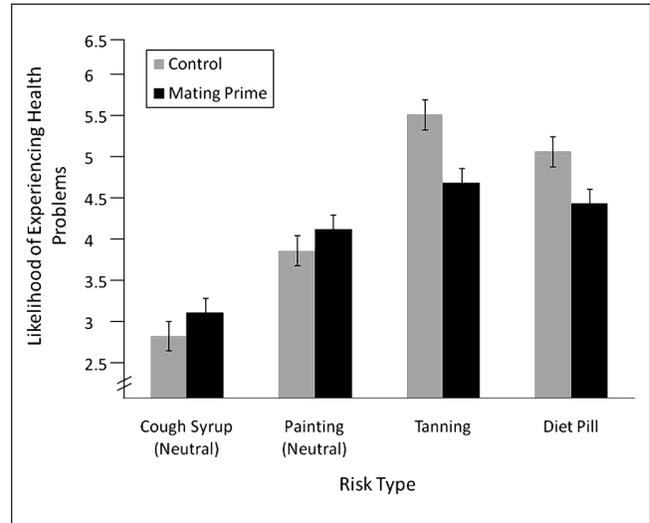


Figure 2. Estimated likelihood of experiencing health problems from risky behaviors

Table 4. Estimated Likelihood of Suffering Health Problems From Risky Behaviors

	Control		Mating		F
	M	SD	M	SD	
Tanning	5.84	1.33	4.91	1.93	11.61***
Diet pills	5.34	1.17	4.63	1.62	9.82**
Cough syrup	2.84	1.22	3.16	1.49	1.75
Painting	4.00	1.42	4.28	1.39	1.42

** $p < .01$. *** $p < .001$.

partial $\eta^2 = .08$, and to experience negative health side-effects from taking diet pills, $F(1, 142) = 9.82, p = .002$, partial $\eta^2 = .07$. In contrast, exposure to the prime did not influence women’s beliefs about the probability of experiencing negative health effects from painting in an unventilated room, $F(1, 142) = 1.42, p = .24$, partial $\eta^2 = .01$ or using cough syrup as a sleep aid, $F(1, 142) = 1.75, ns$ (see Figure 2). There was no main effect of relationship status on any of these measures nor did relationship status interact with the prime for any of the dependent measures (all $ps > .25$).

Does risk suppression in response to the prime mediate women’s willingness to take attractiveness-enhancement risks? To test the possibility that risk suppression in response to the mating prime mediates the relation between mating motivations and women’s increased willingness to engage in attractiveness-enhancement risks, we performed a mediation analysis on each attractiveness-enhancement risk (tanning, diet pills). Our results revealed that, after controlling for prime type, as women’s perceptions about the likelihood of getting cancer from tanning decreased, their willingness to take these risks increased, $\beta = -.18, p = .03$. Furthermore,

the results of our follow-up univariate ANCOVA revealed that exposure to the mating prime no longer yielded increased willingness to go tanning when beliefs about the likelihood of getting cancer from tanning were controlled for, $F(1, 143) = 2.09, ns$. A follow-up Sobel test (two-tailed) revealed that suppressed risk perception in response to the mating prime significantly mediated the relation between exposure to the mating prime and increased willingness to tan, $z = 2.10, p = .04$. We found a similar effect with respect to women’s increased willingness to take dangerous diet pills. Our analysis revealed that, after controlling for prime type, as women’s perceptions about the likelihood of experiencing negative side-effects from taking diet pills decreased, their willingness to take these risks increased, $\beta = -.43, p < .001$. Furthermore, the results of our follow-up ANCOVA revealed that exposure to the mating prime no longer yielded increased willingness to take diet pills when beliefs about the likelihood of experiencing negative health side-effects were controlled for, $F(1, 143) = 2.13, ns$. A follow-up Sobel test (two-tailed) revealed that suppressed risk perception in response to the mating prime significantly mediated the relation between exposure to the mating prime and increased interest in taking diet pills, $z = 2.76, p = .006$.

Discussion

Study 2 replicated the pattern of results found in Study 1 and demonstrated that activating mating goals led to a corresponding decrease in women’s estimates that they would suffer health consequences from the target risk behaviors. Women rated themselves significantly less likely to get skin cancer from going tanning and to incur deleterious health

side-effects from taking diet pills when mating motivations were salient. No such effects were found for women's estimated probability of experiencing negative health effects from painting in an improperly ventilated room or using cough syrup as a sleeping aid, lending support for these effects being specific to risks associated with attractiveness enhancement. Moreover, the results of Study 2 demonstrated that suppressed beliefs about the likelihood of incurring negative side-effects in response to the mating prime mediated women's increased willingness to take these risks. These results provide novel insight into the proximate-level cognitive shifts that may facilitate risky behavioral practices that likely meet fundamental fitness goals.

General Discussion

The current research examined whether activating mating goals increases women's willingness to take risks to make themselves more attractive to romantic partners. Furthermore, we explored whether changes in these behavioral intentions are mediated by changes in beliefs about the likelihood of incurring negative health effects from these behaviors. Drawing on an evolutionary theoretical framework, as well as theory and research on health beliefs and self-presentation theory, we tested our hypotheses using two established priming methodologies. In Study 1, women were primed to want to gain the attention of potential mates (viewing photographs of attractive "local" men to activate courtship goals) or outdo rival women (viewing photographs of attractive "local" women to activate competition goals). The results of Study 1 demonstrated that activating motivational states associated with intersexual courtship and intrasexual competition elicited increased willingness to take risks specific to attractiveness enhancement. Women reported being more likely to go tanning and take a dangerous diet pill in response to these goals, but not to take a health risk not associated with attractiveness.

Study 2 conceptually replicated these results using a writing prime and demonstrated that women's increased willingness to tan and take diet pills is mediated by diminished feelings of vulnerability to the negative health effects related to these behaviors when mating goals are salient. The results of Study 2 bridge cognitive-based theories of risk taking such as the health belief model (Becker, 1974; Rosenstock, 1974) and the theory of planned behavior (Ajzen, 1985; Ajzen & Fishbein, 1980) with self-presentation-based theories of risk taking (e.g., Ginis & Leary, 2004; Leary & Kowalski, 1990; Leary et al., 1994; Martin & Leary, 1999). Our findings demonstrated that women's beliefs about the likelihood they will incur negative health outcomes from taking attractiveness-enhancement risks change in response to mating goals. Women believe they are less likely to get cancer from tanning and suffer heart problems from diet pills when mating goals are salient

compared to when they are not. These shifts in beliefs were then found to mediate increased willingness to take these risks. It appears that women are not choosing these risky behaviors *despite* awareness of the consequences associated with each; instead, they choose to participate in these risky behaviors because they actually perceive them as being less dangerous when mating goals are salient. This finding is important in terms of both its current application (i.e., understanding women's attractiveness-enhancement risks) and its application to future research. The results of the current research suggest that the proximal perceptions, attitudes, and beliefs about risky behavioral practices—although often assumed to be "trait" based, varying primarily across individuals—may themselves be "states," shifting in response to one's current adaptive goals.

The current research is among the first to experimentally investigate the role that specific self-presentation motivations—those related to intersexual courtship and intrasexual competition—play in women's willingness to take frequently observed desirability-enhancement risks. The results of our studies provide evidence that activating mating goals (a) increases women's willingness to participate in specific types of potentially lethal health risks and (b) corresponds to changes in personal estimates of the dangers associated with them. Although a number of correlational studies have found support for impression-management motives being positively related to willingness to go tanning and participate in dangerous dieting behaviors (see Leary et al., 1994, for an overview), to our knowledge there are no experimental results bearing on this hypothesis. Furthermore, the current research provides the first evidence that changes in self-presentation motivations correspond to important changes in health-related cognitions, bridging these two approaches to health risk research. More generally, the current studies add to the growing body of research demonstrating that many behaviors may be elicited by activating motivational states related to self-presentation in the service of meeting fundamental social goals (see, e.g., Bugental, 2000; Griskevicius et al., 2007; Kenrick et al., 2002; Maner et al., 2007; Schaller & Conway, 1999).

Proximal Motivations for Appearance-Enhancement Risks

The prime used in Study 2 (a written description of previous mate competition) was designed to activate mating motivations in both mated and unmated women (i.e., mating motivation was primed explicitly), and thus, no moderating effect of relationship status on women's willingness to go tanning or take diet pills was expected or found. However, the implicit mating prime used in Study 1 (photographs of attractive men and women) provided novel insight into the proximal targets of women's attractiveness-enhancement motivations. Single women in our first study were found to be increasingly

interested in going tanning and taking diet pills in response to both the courtship (pictures of attractive men) and competition (pictures of attractive women) primes. Women in relationships, on the other hand, increased willingness to take these risks only in response to the competition prime (pictures of attractive women). These findings suggest that the target of women's attractiveness-enhancement behaviors—risky and perhaps otherwise—may differ between women depending on their relationship status. The primary benefits available to single women from attractiveness enhancement depend on both the quality of same-sex competitors against whom they must compete for mates *and* the quality of potential mates themselves. Accordingly, women may calibrate their attractiveness-enhancement efforts in response to the attractiveness of both local men and women. For women in committed relationships, these behaviors are likely to be calibrated to the attractiveness of local women to guard against losing a current partner to a mating rival (Buss & Shackelford, 1997; Maner et al., 2009; Sabini & Silver, 2005).

Limitations, Future Directions, and Conclusion

Although the current research provides important new insights into the role that mating motivations play in women's willingness to take attractiveness-enhancement risks, our studies contain a number of important limitations. One key limitation is that our experiments tested the influence of activating mating goals on women's *self-reported willingness* to take desirability-enhancement risks. Research is needed to verify whether these goals influence actual overt health risk behaviors. Furthermore, although the women in our experiments rated themselves as being more interested in engaging in the desirability enhancement risks after exposure to the mating primes, women in Study 1 did not rate themselves as being particularly likely to engage in any of the behaviors in question across conditions (all behaviors were rated less than 3 on a 7-point scale). Accordingly, the effect sizes, particularly in that study, were generally low, suggesting the results should be interpreted with a degree of caution.

Study 2 demonstrated that suppressed belief about the likelihood of suffering ill health effects from tanning and diet pill use in response to mating goals mediated women's increased willingness to take these risks. It is important to emphasize, however, that it is still possible that other perceptual shifts in response to mating goal salience may play a role in women's increased willingness to tan and take diet pills. For instance, one untested possibility is that mating goal salience also leads women to perceive tanning and diet pill use as themselves being more likely to increase attractiveness or that *not* engaging in these behaviors would be more likely to make them unattractive. The current results are but a first step in understanding the perceptual and cognitive shifts individuals experience in response to mating goals that may facilitate risky behavioral practices.

Future research would also benefit from examining the impact of mating goals on additional behaviors frequently observed in young women that do not—at least on the surface—appear to increase attractiveness (e.g., smoking, drinking alcohol). Research might also benefit from exploring how one's existing beliefs about the degree to which risky health-related behaviors increase attractiveness (e.g., tanning, dangerous dieting, smoking) interact with mating goal activation to influence willingness to engage in the behaviors. Despite these limitations, we are hopeful that the current research will lead to a better understanding of the role played by proximate-level self-presentation motivations on women's willingness to take specific types of health risks and their beliefs about the detrimental consequences associated with the behaviors. Furthermore, these findings may inform new directions in the prevention of these behaviors.

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