



Original Article

Risk-taking as a situationally sensitive male mating strategy

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Initial receipt 7 May 2008; final revision 9 June 2008

Abstract

Evolutionary theorists suggest that men engage in risk-taking more than women do in part because, throughout human evolutionary history, men have faced greater sexual selection pressures. We build on this idea by testing the hypothesis that risk-taking reflects a male mating strategy that is sensitive to characteristics of a potential mate. Consistent with this hypothesis, the current experiment demonstrated a positive relationship between mating motivation and risk-taking, but only in men who had been exposed to images of highly attractive females. Moreover, risk-taking in men was associated with enhanced memory for attractive female faces, indicating enhanced processing of their attractive facial characteristics. No relationship between mating motivation and risk-taking was observed in men exposed to images of unattractive women, nor was any such relationship observed in women. This experiment provides evidence that psychological states associated with mating may promote risk-taking, and that these effects are sex specific and are sensitive to situational context.

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Keywords: Decision making; Sex differences; Emotion; Signaling

1. Introduction

When faced with potentially risky decisions, what factors guide people's choices? A growing body of evidence suggests that decision making under uncertainty is profoundly shaped by people's emotions and goals. Although studies have provided a psychologically proximate account of the relationship between affect and decision making, many have fallen short of specifying the more ultimate adaptive functions that risk-taking may be designed to serve. An evolutionary perspective provides an overarching theoretical framework that links affective influences on decision making to the more ultimate adaptive functions potentially associated with risk-taking (cf. Wilson & Daly, 1985). In the current paper, we report on an experiment that adopts an evolutionary framework to better understand when, and in whom, risky decision making is likely to occur.

An evolutionary perspective suggests that emotions and goals motivate specific cognitive and behavioral tendencies

designed ultimately to increase reproductive success (e.g., Ackerman et al., 2006; Griskevicius et al., 2007). This perspective has important implications for understanding affective influences on decision making. Fessler, Pillsworth, and Flanson (2004), for example, showed that the experience of anger led men (but not women) to make riskier choices. In contrast, disgust led women (but not men) to make less risky choices. Fessler et al. emphasized that anger may lead men to risk harm by aggressing against rivals and enemies, an adaptive challenge faced primarily by men throughout evolutionary history (Wilson & Daly, 1985; Van Vugt, De Cremer, & Janssen, 2007). Conversely, disgust may help women avoid risks associated with exposure to contagion, an especially pernicious adaptive problem for women because of potential infection of offspring (Fessler & Navarrete, 2003). These findings therefore highlight some of the underlying adaptive functions served by risk-taking and risk-aversion.

A large body of evidence suggests that men are more inclined to take risks than women (e.g., Byrnes, Miller, & Schaffer, 1999). Daly and Wilson hypothesized that this sex difference is rooted in the fact that men have faced greater intrasexual competition than women have (e.g., Daly & Wilson, 1994; Wilson, Daly, Gordon, Pratt, 1996). Indeed,

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parental investment theory (Trivers, 1972) implies that men compete with one another over mating opportunities to a greater extent than women do. Among men, risky behaviors have potential for displaying to potential mates characteristics such as social dominance, confidence, ambition, skill and mental acuity, all of which are highly desired by women seeking a romantic partner (Buss, 1989; Li, Bailey, Kenrick, & Linsenmeier, 2002). In addition, risk-taking can signal to other men one's value as an ally or formidability as an adversary, and thus help men compete with one another over potential mates. Whether the intended audience is women or other men, risk-taking can signal positive traits and, in turn, increase a man's access to mating opportunities. Because male risk-taking is thought to be derived ultimately from intrasexual competition over potential mating opportunities, we predict that interest in procuring a mate will be associated with increased risk-taking among men.

In contrast, interest in mating is not expected to promote risk-taking among women to the same extent. Compared with men, women have not faced the same level of intrasexual competition and, therefore, should not have evolved the same propensity for taking risks to gain access to mating opportunities. Furthermore, men tend to desire women with characteristics that signal high reproductive capacity (e.g., youth), rather than characteristics that might be signaled by risk-taking (Li et al., 2002). Therefore, the link between mating motivation and risk-taking is not expected to be as strong in women as it is in men. This expectation is consistent with research suggesting that men, but not women, increase their propensity for risk-taking when in the presence of an audience (Daly & Wilson, 2001).

In sum, mating motives are expected to promote risk-taking in men to a greater extent than in women. However, because male courtship displays involving risk can result in significant costs, interest in mating may promote risk-taking selectively — that is, primarily when factors in the immediate social situation indicate that risk-taking is likely to result in a reproductively beneficial mating opportunity. Because high levels of physical attractiveness in women signal strong reproductive potential (Kenrick & Keefe, 1992; Singh, 1993; Symons, 1979), mating motives are expected to promote risk-taking when men are exposed to attractive women more strongly than when they are exposed to women who lack attractive features.

This hypothesized pattern is consistent with one recent study examining the effects of exposure to attractive opposite-sex faces on future discounting (Wilson & Daly, 2004). Future discounting occurs when people assign greater value to resources that will be available immediately, compared to resources that will be available in the future. Wilson and Daly found that exposure to attractive opposite sex faces (as compared to unattractive faces) induced higher levels of future discounting in men, but not in women. Although future discounting is related to risk-taking, insofar as focusing primarily on the present can be

associated with risky choices, the study by Wilson and Daly did not examine risk-taking per se. We therefore build on their work by examining the link between mating motives, exposure to attractive members of the opposite sex, and risk-taking behavior.

The current research tested the hypothesis that desire to procure a mate is associated with risky decision making, but only in men, and primarily when a man is exposed to cues indicating a desirable mating opportunity. Participants viewed a set of either attractive or unattractive opposite sex faces prior to performing a risk-taking task. After viewing these faces, participants provided a measure of mating motivation and then played a game of blackjack, which provided a behavioral measure of risk-taking. We predicted an interaction such that desire to procure a mate would be positively associated with risk-taking in men (but not in women), and only when men were primed with attractive female faces.

Moreover, to assess whether the hypothesized relationship between mating motivation and risk-taking is associated with enhanced processing of the attractive faces, participants also completed a recognition memory task for the faces. Because enhanced processing of the attractive faces was expected to increase risk-taking, we predicted that men who showed better memory for the attractive female faces would also take more risks.

2. Method

2.1. Participants

One hundred thirty-nine undergraduate general psychology students (78 women and 61 men) participated. Participants received course credit as compensation.

2.2. Design and procedure

Participants were greeted by a female experimenter and were randomly assigned to view either 10 attractive or 10 unattractive opposite sex faces. All of the facial images were pre-rated on attractiveness by an independent sample of undergraduates (using a nine-point scale) and matched across sex (attractive, mean=7.08; unattractive, mean=3.72). Each image was presented for 5 s, and the order was randomized across participants. To ensure that participants attended to the faces, they were told that their memory for the faces would be assessed later in the session.

After viewing the images, participants completed a measure of mating motivation, by responding to the question: "How currently motivated are you to pursue your romantic/sexual interests?" using a seven-point Likert-type scale. This question was embedded among a set of irrelevant distracter items (e.g., "How currently motivated are you to pursue your academic interests?"). This measure provides a face valid assessment of mating motivation and has been shown to predict mating-related cognitive biases (e.g., Maner, Gailliot, Rouby, & Miller, 2007b).

Participants then completed a blackjack task, which served as the dependent measure. This task was adapted from a similar task used by Galinsky, Gruenfeld, and Magee (2003). The task consisted of 11 hands, with the opportunity to take a risk and “hit” (take another card and risk going over a total of 21) or avoid the risk and “stay” (do not take another card). Of these 11 hands, three were designed to be “clear hit” rounds and three were designed to be “clear stay” rounds — the best choice was clearly to take another card or not to take another card. In the remaining five rounds, the best choice was unclear, and decisions on these rounds constituted the dependent variable. In these rounds, the sum of the participant’s cards was 16, and both a hit and a stay were reasonable choices. The dependent measure of risk-taking was the number of times participants chose to take another card on these five trials.

Following the risk-taking task, participants completed a facial recognition memory test. Participants were presented with all of the faces they had seen earlier, along with an equal number of foils that were matched on attractiveness. Participants were instructed to indicate whether or not they had seen each of the faces earlier in the experiment.

3. Results

Five participants were excluded because they revealed during debriefing that they were aware of the specific hypothesis of the experiment. Mean levels of risk taking were 3.04 (S.D.=1.68) for men who viewed attractive faces; 3.09 (S.D.=1.63) for men who viewed unattractive faces; 3.50 (S.D.=1.88) for women who viewed attractive faces; and 3.32 (S.D.=1.74) for women who viewed unattractive faces. We performed a 2×2 ANCOVA (participant sex×condition) with mating motivation included as a continuous predictor. As predicted, results indicated a significant three-way interaction ($F(1,126)=5.32, p<.05, \eta^2=.04$). No main effects or two-way interactions were found.

In order to interpret this interaction, we examined the relationship between desire to pursue romantic/sexual relationships and risk-taking within participant sex and experimental condition. This analysis revealed that the three-way interaction was driven by males who viewed

attractive female faces prior to playing blackjack (see Table 1). In this condition, there was a strong positive correlation between desire to pursue romantic/sexual relationships and risky decisions ($r(24)=.55, p<.01$). No significant relationships of this nature were observed in the other conditions (see Table 1). A Fisher r -to- z transformation confirmed that the correlation for men in the attractive faces condition was significantly larger than in the other conditions combined ($z=2.36, p<.05$).

Next, we tested the relationship between recognition memory for faces and risk-taking. We assessed recognition memory by calculating d' (a measure of sensitivity), which incorporates both the number of correctly identified faces and the number of false alarms in response to foils. This measure (along with participant sex and experimental condition) was then used to predict risk-taking. We observed a three-way interaction between participant sex, experimental condition and recognition memory for faces ($F(1,126)=9.63, p<.01, \eta^2=.07$). Similar to the pattern found in the previous analysis, this interaction was driven by males who viewed attractive female faces (see Table 1). In this condition, there was a strong positive correlation between memory for attractive opposite sex faces and risky decisions ($r(24)=.62, p<.01$). No significant relationships of this nature were observed in the other conditions (see Table 1) and the correlation for men in the attractive faces condition was significantly larger than in the other conditions combined ($z=2.54, p<.05$).

4. Discussion

As predicted, findings suggest that desire to procure a mate was positively associated with risky decision making, but only in men, and only when physical attractiveness cues indicated a desirable mating opportunity. Moreover, among men who viewed attractive faces, those who showed better memory for the attractive faces also took more risks, providing direct evidence that risk-taking was associated with heightened processing of attractive female faces. No relationships between mating motivation, memory for faces, and risk-taking were found in men who viewed unattractive female faces. This is consistent with the hypothesis that male

Table 1
Correlations between risk-taking, mating motivation and memory for faces by sex and experimental condition

	Men				Women			
	Motivation to pursue sexual interests		Memory for faces		Motivation to pursue sexual interests		Memory for faces	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
<i>Attractive faces condition</i>								
Risk-taking	.55	<.01	.62	<.01	.19	.24	–.24	.14
<i>Unattractive faces condition</i>								
Risk-taking	–.24	.19	.15	.43	.16	.34	.29	.08

Significant correlations are in italic text.

risk-taking is associated with sexual motivation primarily when situational factors (e.g., physical attractiveness cues) indicate the presence of a desirable mating opportunity. Notably, no relationships between mating motivation, memory for faces, and risk-taking were observed in women under any conditions.

Although we observed an interaction between the manipulation and men's level of mating motivation, no significant main effects of exposure to attractive faces were found. Simply viewing attractive females did not increase risk-taking among men. This suggests that the relationship between attractiveness cues and risk-taking in men is sensitive to a man's current motivational state. Exposure to cues signaling a desired mating opportunity led to risk-taking only when coupled with a strong proximate interest in pursuing one's romantic and sexual interests.

These findings are consistent with the notion that decision making is influenced by mating-related motives designed ultimately to serve reproductive success. Moreover, the findings reflect differences in the reproductive constraints of men vs. women. That effects were observed in men, but not in women, is consistent with a large body of previous research suggesting that sex differences in risk-taking may be rooted in men's higher degree of intrasexual competition (see Wilson & Daly, 1985). Our findings are consistent with the general hypothesis that male intrasexual competition may manifest itself in patterns of risk-taking. Wilson and Daly (2004) observed a pattern of effects similar to that in the current work but noted that they had "not elucidated the psychological mechanisms" mediating risk-taking. The current work takes a step forward in this regard, by directly identifying mating motivation and heightened processing of attractive faces as important factors associated with risk-taking among men.

Risk-taking among men can signal particular traits to women and to other men, and either of these signaling functions could explain the pattern of results we observed. It is possible that exposure to attractive female faces increased male risk-taking because the female faces were construed as an audience to which men could signal their desirability as a mate. It is also possible that the female faces were construed as a resource over which men might compete with one another, and thus risk-taking could have been designed to signal one's formidability to other men. For male participants, there were no other men present in the experimental context (all experimenters and stimuli were female), which seems somewhat more consistent with the view of risk-taking as signaling to potential mates (rather than intrasexual competitors). Still, the findings are hardly definitive in this regard, and the two possible explanations are not mutually exclusive. Thus, future research would benefit from discerning more carefully the specific signaling functions served by risk-taking.

Future research would also benefit from examining the extent to which situational variables related to mating or competition might interact with individual differences in

mating strategies. For example, situational variables indicating a possible mating opportunity might be expected to promote risk-taking most strongly among people who are chronically interested in seeking new mates (e.g., socio-sexually unrestricted individuals; see Simpson & Gangestad, 1991) and who therefore may have a lower threshold for having those desires activated.

Another goal for future research is to address the role of domain specificity in the link between mating motivation and risk-taking. Importantly, domain specificity refers to the function of a behavior, not to its overt characteristics (e.g., Barrett & Kurzban, 2006). Any risk-taking behavior, be it a risky gamble or a dangerous stunt, can serve mating-related functions if it helps an individual to acquire or retain a mate. The manipulation used in the current study was designed to create just this sort of mating-related mindset. Future research might benefit from exploring further the extent to which the current results might generalize to some types of decision-making contexts more than others.

5. Limitations of the current research

Limitations of the current research should be considered. First, the stimuli in this experiment consisted of static pictures on a computer screen. Although this allowed us to manipulate mating-related variables in a carefully controlled way, additional research is needed to evaluate the extent to which the current results generalize to real-world mating contexts.

A second limitation is that our participant samples consisted exclusively of relatively young, university-aged individuals. Evolutionary theorists have pointed out that young men, in particular, seem especially inclined to compete with one another and to engage in risky, violent behaviors; Wilson and Daly (1985) have even termed this tendency the "young male syndrome." Although studying risk-taking tendencies in university students constitutes a strong test of our main hypotheses, it remains for future research to examine the extent to which the current findings would generalize to older populations.

Third, although our measure of mating motivation specifically asked about participants' "current" level of motivation, it is possible that the resulting measure captured variability from both state and trait components. In the interest of arriving at a clearer understanding of the effects of mating motivation on decision making, we suggest that future research incorporate alternative measures of mating motivation that more clearly address this distinction.

6. Conclusion

Risk-taking is an important form of decision making with broad implications across a wide variety of behavioral domains. Our work adds to a body of literature highlighting

the important role of motivation in decision making and joins forces with other recent studies incorporating adaptationist logic into models of judgment and choice (e.g., Clore & Ketelaar, 1997; Ketelaar & Au, 2003; Maner, Gailliot, Butz, & Peruche, 2007a; Overskeid, 2000; Toda, 1980). Our research shows that specific adaptive motives can influence decision-making processes in ultimate service of reproductive success. This research also demonstrates that these decision-making processes are shaped by mating-related variables within the immediate situation, thus providing a picture of risk-taking as a situationally sensitive male mating strategy.

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