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Judging a book by its cover: Jealousy after subliminal priming with attractive and unattractive faces

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ABSTRACT

The present paper focuses on the effect a rival's facial attractiveness has on female jealousy. A parafoveal subliminal priming paradigm was employed to expose participants to rivals outside their conscious awareness. Female participants were exposed to either an attractive woman or an unattractive woman for 60 ms. They subsequently read a jealousy-evoking scenario which introduced a rival, but a description of her appearance was withheld. Our results suggest that participants have unconsciously linked the subliminally presented photograph to the rival. Women exposed to the attractive woman reported significantly more jealousy than women exposed to the unattractive rival. Moreover, they reported feeling significantly more worried, hurt, angry, and sad.

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1. Introduction

Retaining a mate who will enhance one's genetic survival by reproducing successfully, is a major challenge most humans face. For humans, an enduring pairbond not only increases the survival chances of individuals, but also of their offspring (Fortunato & Archetti, 2010). It is therefore important to guard one's mate from interlopers. Evolutionary psychologists hypothesize that jealousy has evolved to alert the individual to take action to guard one's mate against intrasexual competitors and prevent them from abandoning the relationship. Because those individuals who experienced and acted on their jealous feelings were most likely to prevent the dissolution of their pairbond, it is thought jealousy has evolved as an inherited tendency (Buss, Shackelford, Choe, Buunk, & Dijkstra, 2000; Sabini & Silver, 2005).

Jealousy arises when individuals perceive a threat to their relationship because of an actual or imagined rival (DeSteno & Salovey, 1996; Dijkstra & Buunk, 2002). Because the presence of a rival is a defining and necessary condition for jealousy to arise, feelings of jealousy are assumed to be competitive in nature. The person who notices that her or his partner is attracted to a third person is likely to see this person as a rival and will experience a sense of competition. These feelings of competition instigate a social

comparison process, whereby one's traits and qualities are compared with those of the rival (DeSteno & Salovey, 1996; Dijkstra & Buunk, 2002). Relevant to the current study, research has shown that social comparisons can take place subliminally (e.g., Stapel & Blanton, 2004), and in the current study, we assume that exposing participants to a rival on an unconscious level should evoke these competitive feelings and comparison processes as well.

Comparisons with rivals will be made in particular on dimensions contributing to mate-value, that is, characteristics that make the rival an attractive potential partner for one's mate. Rivals with a high mate-value are particularly threatening (Buss et al., 2000). Because the characteristics that would make one a desirable partner are also the characteristics that make one a threatening rival, when confronted with a rival woman should be most jealous when this rival is physically attractive, and men should be most jealous when the rival possesses status-related characteristics such as social dominance. Indeed, research has repeatedly found precisely these sex differences in the rival characteristics that evoke jealousy (Dijkstra & Buunk, 2002; Yarab & Allgeier, 1999). Moreover, in recent research it was shown that even subliminally presented rival characteristics evoke this sex-specific jealousy (Massar & Buunk, 2009; Massar, Buunk, & Dechesne, 2009).

An evolutionary view on human mating and reproduction holds that when members of a species discriminate between potential mates on the basis of their physical appearance, as humans do, it is reasonable to assume that this discrimination reflects certain adaptations that were responsive to cues that indicated mate-value in human evolutionary history (Thornhill & Gangestad, 1999).

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Thus, choosing a physically attractive mate over a physically unattractive mate is assumed to provide reproductive benefits. Both within and across cultures, common standards of (female) facial attractiveness are shared by both men and women from different social classes (for a review see *Langlois et al., 2000*). This high consensus in attractiveness ratings would suggest that there are biologically based standards of beauty. Indeed, early on in human development, before cultural standards of beauty are likely to have developed, a preference for attractive faces over unattractive faces emerges (*Rubenstein, Kalakanis, & Langlois, 1999; Slater, Quinn, Hayes, & Brown, 2000*). In addition, facial attractiveness has also been found to be positively related to intelligence, performance and adjustment in children (*Langlois et al., 2000*), and women with attractive faces have more long-term mating success and become sexually active earlier in life than women with unattractive faces (*Rhodes, Simmons, & Peters, 2005*).

Assuming that facial attractiveness is indeed indicative of an individual's health and reproductive fitness, an evolutionary view on mating would suggest that being attractive is especially relevant to women, because these are the characteristics men value in a mate (*Buss, 1989*). Because mate selection is thought to drive intrasexual selection in the opposite direction (*Darwin, 1871*) and because facial attractiveness is one of the main criteria men use to select a mate, it is probable that women compete with each other on this dimension. Indeed, women derogate each other's attractiveness (*Fisher, 2004*), and, as mentioned before, physically attractive rivals evoke more jealousy in women than in men (*Dijkstra & Buunk, 2002; Massar et al., 2009*). Given these research results, and the fact that facial attractiveness is of less importance to male intrasexual competition in the present study only women are used as participants.

In view of the centrality of facial attractiveness in women's rival evaluation and the importance of rival evaluation for one's reproductive success, in the present research we assume that during the course of human evolution, facial attractiveness may have evolved to become perceived even outside conscious awareness. To test this assumption, in the present paper we will expose female participants subliminally to photographs of attractive or unattractive rivals. Numerous studies in social cognition suggest that people are able to evaluate subliminally presented objects or persons, and subsequently be influenced in their person judgments and attitudes by these primes (e.g., *Dijksterhuis, 2004; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Olson & Marshuetz, 2005*).

Moreover, in our own research we have found that subliminally presented physically attractive rivals evoked more jealousy than physically unattractive rivals (*Massar & Buunk, 2009*). In this study, participants were subliminally exposed to line drawings depicting either a woman with an 'ideal' waist-to-hip ratio of 0.7, or a woman with a less attractive waist-to-hip ratio of 0.9. After the subliminal priming, they read a jealousy-evoking vignette and indicated how jealous they would be. The results showed that women exposed to the attractive rival reported significantly more jealousy than women exposed to the unattractive rival. Similar results were found in a study in which we used words as subliminal primes (*Massar et al., 2009*) and which otherwise followed the same procedure. However, it is debatable whether words and line drawings are ecologically valid – do they represent 'real' rivals? Therefore, in the current study we have chosen to use photographs of attractive and unattractive women as stimuli.

Given these previous results, in the present paper we predict that women will report more jealousy after subliminal exposure to a photograph of an attractive woman than after exposure to an unattractive woman. After exposure to the rival, participants are asked to imagine a jealousy-evoking situation concerning their partner and a rival. We use a jealousy slider which was developed for the previous research (*Massar & Buunk, 2009; Massar et al., 2009*) to gauge participants' jealous feelings after imagining a jeal-

ousy-evoking scenario. In addition to measuring jealousy this way, a number of jealousy-related emotions were included (*DeSteno & Salovey, 1996*) as dependent variables.

2. Method

2.1. Participants and design

All stimuli and procedures were approved by the Ethical Committee of Psychology of the University of Groningen. Forty women (mean age = 20.78, *SD* = 4.26) took part in this study and received course credit for their participation. Only participants who were at the time of the experiment in a relationship were invited to participate. They were randomly assigned to either the attractive (*N* = 19) or the unattractive (*N* = 21) condition. None of the participants was aware of the purpose of the study and none had seen the stimulus material prior to the experiment, and all had normal, or corrected to normal, vision.

2.2. Materials and procedure

After signing an informed consent form, participants were taken to individual cubicles and were informed by the female experimenter that the study they took part in would consist of two unrelated studies. They would take part in a reaction times task – which consisted of the parafoveal priming procedure – and a study about intimate relationships and emotions, which consisted of our jealousy scenario and the dependent variables.

2.3. Parafoveal priming procedure

The cubicles only contained a computer screen and a keyboard. Participants were instructed to read and follow the instructions and questionnaires, which were all presented on the screen, carefully. After answering some demographic questions participants started the parafoveal priming task (adapted from *Chartrand & Bargh, 1996*; see also *Stapel, Koomen, & Ruys, 2002*), which was programmed in E-Prime 2.0 (Psychology Software Tools, Pittsburgh, PA). They were told they were going to make a reaction time task and that very short flashes would appear on the screen at unpredictable places and times and that they would have to indicate as quickly as possible whether a flash would appear on the left or the right side of the screen. No actual reaction times were recorded.

Participants were instructed to be seated 80–100 cm from the computer screen and sit erect on their chair to ensure exposure to the stimuli in the parafoveal visual field, i.e., in the periphery of the attended region. Two keys on the keyboard were labeled *L* and *R*, and participants were instructed to press the *L* key whenever they saw a flash on the left side of the screen, and the *R* key whenever they saw a flash on the right side of the computer screen. A fixation point consisting of an asterisk (*) remained in the center of the screen and participants were told to focus on this fixation point throughout the task because of the unpredictable location and timing of the stimuli on the screen.

As priming stimuli, pre-rated photographs of an attractive and an unattractive female were used¹. These priming stimuli were flashed in 15 of the 60 experimental trials. In the practice trials and in the remainder of the 45 experimental trials participants were exposed to geometrical shapes (circles, triangles and squares), which also were presented for 60 ms. The geometrical shapes were of the same size as the priming stimuli and consisted of black line drawings

¹ In a pilot study conducted among 19 men and 10 women the attractive female was rated significantly more attractive ($t(29) = 9.31, p < .001, d = 2.51$), sexy ($t(29) = 11.19, p < .001, d = 3.69$), and threatening to other women's relationships ($t(29) = 10.89, p < .001, d = 3.16$). There were no sex differences in these ratings.

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