

# I Want What She's Having

## Evidence of Human Mate Copying

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**Abstract** A variety of non-human females do not select male partners independently. Instead they favor males having previous associations with other females, a phenomenon known as mate copying. This paper investigates whether humans also exhibit mate copying and whether consistent positive information about a man's mate value, and a woman's age and self-perceived mate value (SPMV), influence her tendency to copy the mate choices of others. Female university students ( $N=123$ ) rated the desirability of photographed men pictured alone or with one, two, or five women represented by silhouettes. In accordance with the visual arrays, men were described as currently in a romantic relationship; having previously been in one, two, or five relationships; or not having had a romantic relationship in the past 4 years. Women generally rated men pictured with one or two previous partners as more desirable than those with none. Men depicted with five previous partners, however, were found to be less desirable. Younger, presumably less experienced women had a greater tendency to mate copy compared with older women, but high SPMV did not predict greater levels of mate copying. The findings reaffirmed and expanded those suggesting that women do not make mate choices independently.

**Keywords** Mate copying · Women · Mate selection · Mate value · Experience

Mate copying is a means by which individuals gain information about potential partners without incurring the substantial costs of selecting a mate. The direct costs of selecting a mate include time and energy expended, risk of predation and other environmental dangers, and missed opportunities with additional mates during the assessment process (Dugatkin and Godin 1993; Magnhagen 1991; Pruett-Jones 1992; Real 1990). Rather than engaging in an expensive trial-and-error process, mate-relevant information is obtained by observing the mate preferences of same-sex individuals. The very fact that an individual has been previously selected as a mate attests to their quality as a reproductive partner.

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## Mate Copying in Non-Humans and Sexual Asymmetries

In analyzing the decision making of animals, behavioral ecologists traditionally assumed that individuals assess quality and take action independently of one another (Dugatkin and Godin 1993), but findings over the past 20 years suggest that this may not always be the case. Studies generally demonstrate that after observing the behavior of conspecifics, females prefer males that have been previously chosen by other females to those that have not. The typical mate copying paradigm involves placing a female in visual contact with a male who is either observed alone or with a female in a courtship sequence. The relative amount of time that the female later spends in proximity to each type of male is used as a gauge of her preference for him. Preference for males previously observed with another female indicates mate copying.

Mate copying, thus defined, appears to be prevalent in a range of zoological taxa (for reviews see Brown and Fawcett 2005; Galef and Laland 2005). The phenomenon has been observed in marine isopods, *Paracerceis sculpta* (Gibson and Hoglund 1992); sailfin molly, *Poecilia latipinna* (Witte and Ryan 2002); river bullhead, *Cottus gobio* (Marconato and Bisazza 1986); fathead minnow, *Pimephales promelas* (Unger and Sargent 1988); fantail darter, *Etheostoma flabellare* (Knapp and Sargent 1989); zebra finches, *Taeniopygia guttata* (Drullion and Dubois 2008); sage grouse, *Centrocercus urophasianus* (Gibson et al. 1991); black grouse, *Tetrao tetrix* (Hoglund et al. 1990); birds of paradise, *Parotia lawesii* (Pruett-Jones and Pruett-Jones 1990); and fallow deer, *Dama dama* (Clutton-Brock et al. 1989). Additionally, a number of authors have shown that the preference for previously chosen males generalizes to morphologically similar males (Godin et al. 2005; Swaddle et al. 2005; White and Galef 2000).

Investigations of mate copying, including the current one, have thus far largely focused on females copying the choices of other females. This is because in many species females are the primary choosers and in some species, such as our own, generally the mate value of a female is more immediately observable than that of a male. This has the effect of reducing the value of copying for males (Darwin 1871; Kenrick and Keefe 1992; Singh 1993; Volland and Engel 1990). Because male and female investment in offspring differs qualitatively and quantitatively, they attend to different qualities in a potential mate (Feingold 1992). Whereas males invest indirectly with resources such as food and protection, females invest more directly, with resources such as their own bodily nutrients (Buss and Shackelford 2008; Buunk et al. 2002; Clutton-Brock 1991; Trivers 1972). A female's physical condition is more intimately tied to her ability to reproduce and her mate value than a male's is (Buss 1992; Symons 1979), and it is readily visible (Schulman and Hoskins 1986). Male abilities or willingness to secure food, protect, and invest in offspring are not immediately revealed in brief observations. However, everything else being equal, a male who has already successfully attracted a partner may be inferred to possess some of the unseen qualities females typically seek, and thus may be more attractive to them.

### Possibility and Utility of Mate Copying in Humans

Mate copying has been widely established among non-human zoological taxa, and there is preliminary evidence of its occurrence in humans. Waynforth (2007) reported mate copying after women rated the attractiveness of photographs of men with a female

partner higher than men pictured alone. However, the extent to which mate copying was elicited depended upon the physical attractiveness of the female consort. More attractive consorts resulted in greater copying. Place et al. (2010) reported robust mate copying effects after participants observed video footage of actual speed-dating interactions. Employing a mixed design that controlled for target individuals' characteristics, participants exhibited heightened relationship interest in individuals perceived as involved in successful versus unsuccessful speed-dating interactions. As in the study by Waynforth (2007), the attractiveness of the dates of the target individuals mediated the level of mate copying. In addition, Hill and Buss (2008) asked women to rate the desirability of men depicted in photographs alone or surrounded by women and found the latter were rated more desirable. Although the focus of their study was not mate copying, this is an example of indirect evidence of human mate copying that adds weight to the small number of formal studies.

As in non-human taxa, human mate copying appears to be more likely among females than males. By simply observing an unknown woman, a man's assessment of her mate value is likely to be somewhat accurate because by itself a visual assessment of her provides him with much of the information he requires (Hill and Buss 2008). The additional mate-relevant information that can be gained from observing a woman in the company of another man is less significant. However, by observing a potential mate with other men, inferences about the degree of intrasexual competition required to secure her reproductive resources can be drawn (Hill and Buss 2008). Women who are currently partnered or pursued will be more difficult to acquire as a mate. Observing a potential mate in the presence of other men may actually deter a man from pursuing her, ruling out mate copying. In support of this Place et al. (2010) reviewed instances of male competition and found that observer male interest in a target female decreased when other males expressed interest in her.

Whereas men obtain a reasonable amount of mate-relevant information from simply observing the physical characteristics of a potential partner, women seek information that cannot be gained at such a low cost. Although information about the physical quality of a man is important, complex characteristics such as parenting ability, ability to accrue resources, and problem-solving capabilities cannot be adequately assessed through a brief observation of facial and body traits (Waynforth 2007). Decades of research have shown that human females especially choose men based on numerous personality and behavior traits that signify qualities important to offspring survival and female reproductive success (Buss 1989; Feingold 1992). Thus the search for additional information beyond the immediately observable typifies women's mate choices. Based on parental investment theory (Trivers 1972); Regan (1998) argues that because women have fewer opportunities than men to produce offspring and invest more in them, errors in choosing an appropriate romantic partner are more costly for women. For this reason women are more attentive to additional sources of mate-relevant information. One possible (inexpensive) source is the preferences of same-sex individuals seeking similar mate-relevant information (Place et al. 2010). By incorporating information about how often a man has been chosen by other women, a woman may reduce selection errors when sampling potential mates (Agrawal 2001). Copying the mate preferences of other women can be thought of as purchasing a product after having seen someone else use it.

Although mate copying may reduce selection errors, under some conditions it may not be the best strategy. For example, desiring men that are simultaneously desired by

other women lowers the chances of successfully procuring them (Hill and Buss 2008). Uller and Johansson (2003) asked women to interact with married or single men and answer a series of questions about them. Contrary to their expectations, women did not show a romantic preference for married men. They propose that this may be due to the perceived difficulty of gaining a relationship with a permanently partnered man. They also suggest that in monogamous societies it may be the *quality* of a partner that is important, and not simply whether or not they have been previously chosen. Waynforth (2007) found that mate copying only occurred when the target man's female consort was relatively attractive. This suggests that a man's inferred quality, thus desirability, is affected by the beauty or quality of the women with whom he associates. Moreover, if men have had relationships with many women they may be considered less, rather than more, desirable, if this indicates an inability to maintain a relationship or commitment. Hence, considering some of the conditions under which mate copying may be more likely to occur was one underlying objective of the present investigation.

### The Current Study

Although mate copying appears well instantiated in non-humans, relatively few detailed investigations of the phenomenon have been undertaken in human samples. A preliminary goal of the current study was to reconfirm the occurrence of mate copying in women. The second aim was to begin the investigation of circumstances that may be expected to influence its employment, including the consistency and valence of information about a potential mate, and a woman's age and self-perceived mate value. In addition, methods were employed to distinguish mate poaching from mate copying.

### The Role of Consistent Information versus Potentially Negative Information

The importance of consistent information in decision making has been widely documented (Berman and Cutler 1996; Fischer et al. 2008; Heine et al. 2004). If mate copying occurs as a result of informational constraints, it would be reasonable to assume that more reliable, repeated, or *consistent* information would influence its occurrence. Because humans are a serially monogamous species (Taylor et al. 2010), with a high degree of social information sharing, it is predicted that being provided with consistent positive information about a potential mate's value will increase the tendency to copy. As a result, male desirability should be increased by a higher frequency of being selected in the past, but this relationship should be non-monotonic. Whereas men previously chosen for romantic relationships should be considered more desirable, having too many previous relationships may indicate promiscuity or an unwillingness to commit and thus be undesirable.

### The Role of a Woman's Age in Selecting a Mate

Expertise is an important factor in eliciting imitation across a range of informational domains (Grundmann 2009; Hollenbeck et al. 1995; Roberts 2008). Expertise and judgment accuracy increase over time with continued acquaintance with a task (Biesanz et al. 2007; Funder and Colvin 1988), as those with many opportunities to practise a task become more skilled. Place et al. (2010); Gibson and Hoglund (1992) suggest that

copying the choices of more experienced individuals who make more accurate decisions provides informational benefits. Therefore we expected younger individuals would benefit more from emulating the mate choices of others whereas older individuals would have less to gain from mate copying. Such age effects on mate copying have been demonstrated in non-human species (Dugatkin and Godin 1993) but have yet to be adequately explored in humans. Waynforth (2007) found age was not a significant predictor of copying but employed a rather restricted age range (19–23 years) of college-aged women. The current study sought to incorporate a greater age range to better test the prediction of a negative association between age and copying.

### The Role of Self-Perceived Mate Value in Mate Copying

According to social exchange models of relationship development, heterosexual mate selection resembles a social marketplace where players exchange their own assets for attributes they find desirable in a romantic partner (Regan 1998). It follows that the mate value of a given individual will influence the quality of the partner they obtain, resulting in the pairing of individuals of roughly equal mate value (positive assortative mating). In addition, Lenton et al. (1999) argued that the behavior of one's same-sex competitors toward mates impacts one's own judgments of those potential mates. In particular, observing or having knowledge that female competitors find a man attractive may suggest he has a high mate value. If the inferred mate value of a potential partner is raised by virtue of his romantic association with other women, under a social exchange framework, women with high self-perceived mate value (SPMV) should find him more attractive. Although other factors may come into play, the prediction of a positive association between a woman's (SPMV) and her desire for men previously chosen as romantic partners was examined as a first step in unravelling what being chosen by other women may reveal about a potential male partner or the selectivity of the chooser.

### Mate Copying versus Mate Poaching

Some studies reporting human mate copying may have unintentionally confounded copying with the related phenomenon of mate poaching. Schmitt and Buss (2001) define mate poaching as “behavior intended to attract someone who is *already in* a romantic relationship.” Copying the preferences of someone else does not necessarily involve taking their mate from them, or mate poaching. Therefore, it is important to distinguish between mate poaching and mate copying.

Experimental paradigms employed to investigate human mate copying usually involve a man pictured together with one or more women, but the nature of their relationship (friendship, romantic, married) is not always explicit. Women assessing the attractiveness of a man as a romantic prospect may do well to take his romantic availability into account. As mentioned earlier, Uller and Johansson (2003) found women did not find currently married or engaged men more attractive than single men. Although having a current romantic association attests somewhat to a man's suitability as a partner, it may also increase the difficulty of securing his commitment. Furthermore, the negative social stigma attached to being seen as a “homewrecker” may be a sufficient deterrent for many women. Because of this, women may find men signaling permanent unavailability less attractive, and they will be less likely to mate

copy under these circumstances. In a report of mate copying, Waynforth (2007) found women rated men pictured with a female consort as moderately more attractive than the same men pictured alone. Participants were explicitly told that the pictured couple was currently in a romantic relationship, although the degree of commitment between the pairs was not given. Moreover, a comparison of the attractiveness of men currently in a relationship with those previously chosen as a romantic partner was not included, making it difficult to distinguish whether mate poaching or copying had been elicited.

In the current study, to ascertain which conditions increase a man's desirability and the tendency to mate poach versus copy, female participants viewed men pictured alone or alongside one, two, or five female silhouettes representing current or past romantic partners. To correspond with the visual arrays, men were described as either in or not in a relationship currently, and as having had none, one, two, or five relationships in the past 4 years. If mate copying, not poaching, was tapped, it was expected that men would be more desirable when pictured with a woman and described as currently single but having had a past relationship, compared with those currently in a relationship. On the other hand, mate poaching would be indicated if women preferred men pictured with a woman described as a current partner, versus a previous partner.

## Method

### Participants and Procedure

One hundred twenty-three female students of James Cook University, ranging in age from 17 to 40 years (mean age=20.96, SD=4.36), were recruited via an online survey or through university accommodation. They comprised 42 undergraduate psychology students (mean age=21.02, SD=5.43) and 81 students from other disciplines (mean age=20.92, SD=3.73) who received course credit or an entry into a prize draw for participation. Participants were predominately of European heritage (78.9%) and indicated that English was their primary language (88.6%). Average socioeconomic status based on parents' education was 6.12 out of a maximum 10 points, with a majority of participants indicating one or both of their parents had completed at least part of a university degree. Participants indicating they were homosexual were not included in the sample. Sixty-four participants indicated they were currently in a relationship.

### Measures

*Mate Copying Stimuli/Visual Arrays* Participants completed a survey containing pictorial stimuli analogous to those in previous mate copying studies. The survey consisted of 10 visual arrays presented on separate pages: 5 target arrays and 5 distractor arrays. Each array consisted of a photograph of a man alone or in the presence of other people or objects. Above the man's photograph was a brief description of him. At the bottom of the page, below the visual array, were five questions assessing the man's desirability (adapted from Hill and Buss 2008). In the target arrays men were pictured alone or accompanied by identical female silhouettes corresponding to how many relationships they were in currently or had been in the past 4 years, as indicated in the brief description. The survey was designed so that the visual arrays were the most salient

feature on each page, whereas the written descriptions indicating the man's relationship to the people or objects in the pictures were less prominent.

The five photographs of men employed in the target arrays were provided by Martin Gruendl from the University of Regensburg, Germany (Braun et al. 2001). As one means of control for attractiveness across conditions each had been pre-rated by a large German sample as average in attractiveness. They were rated 3.77, 3.47, 3.68, 3.72, and 3.81, respectively, out of a total possible score of seven. The five photographs of men in the distractor arrays were from Matsumoto and Ekman (1988). Although not pre-rated for physical attractiveness, they were selected because of their likeness to those in the target arrays. To increase similarity and parity further, image characteristics such as picture background and brightness were edited in Photoshop (version 6.0), and each was cropped at the neck to minimize extraneous influences (e.g., clothing, background). All photographs were presented in a black and white format to further decrease differences. Black and white silhouettes of women or other people or objects employed in the arrays were chosen from online sources to best represent generic versions of each type of individual or object. Multiple copies of the same silhouette were used for arrays where more than one person or object was included alongside the men's photos. The same generic silhouette of a woman was employed for the target arrays, instead of photos of actual women, in order to control for factors such as attractiveness, age, and hairstyle. The silhouette chosen depicted a woman of similar age (e.g., in her twenties) to the target men.

The photographed men were briefly described in three short sentences of similar content and length across all conditions. The first sentence provided a first name, and the second sentence indicated the man's relationship status (currently in a relationship or not). The third sentence related to the other pictures in the array. For example, in correspondence with four of the target arrays men were described as having been in 0, 1, 2, or 5 romantic relationships in the past 4 years. Additionally each man was described as "not currently in a relationship" so as to increase their perceived availability and rule out mate poaching. To assess participants' tendency to mate poach, a fifth target array was included in which the photographed man was pictured with a woman and described as currently being in a relationship. To eliminate cross associations and further control for attractiveness, a computer program was employed to randomly match photographs and descriptions for each survey. In addition, to reduce the possibility of order effects the order with which the visual arrays were presented was randomized.

The distractor arrays were identical to the target arrays in format and content type except the men were pictured with varying numbers of other objects or people in silhouette, including TVs, dogs, or individuals representing male siblings or cousins. For example, to correspond to the visual arrays, men were described as having one TV, two cousins, etc. The contents of the distractor displays and descriptors were chosen to be reasonably neutral and not provide participants with especially positive or negative information relating to the mate value of the photographed men. Distractor arrays were interspersed among the target arrays to reduce participants' awareness of the manipulations and insight regarding the goals of the study.

*Male Desirability* After women viewed each man in each array they were asked to rate his desirability employing five questions adapted from Hill and Buss (2008): (1) How

desirable is this person to you as a prospective sexual partner? (2) How desirable is this person to you as a prospective romantic partner? (3) If this person asked you on a date, how likely is it that you would say yes? (4) How physically attractive do you find this person? and (5) In general, how desirable do you find this person? Participants responded via a 7-point scale with high values indicating the greatest desirability. To reduce contamination by current relationship status, women were asked to imagine they were single when responding.

*Self-Perceived Mate Value* Women's self-perceived mate value was measured using the 10-item Self-Perceived Mate Value (SPMV) scale (Surbey and Brice 2007) composed of the self-perceived mating success scale developed by Landolt et al. (1995) (items 1–8) and the relative standing scale developed by Lalumiere et al. (1995) (items 9 & 10). The scale included items such as (1) Members of the opposite sex notice me and (2) Members of the opposite sex are attracted to me. Lalumiere et al. (1996) conducted a factor analysis and found that the majority of the items load heavily on a factor labeled “attractiveness.” Lalumiere and Quinsey (1996) found the scale to have adequate reliability ( $\alpha=0.87$ ). Participants responded to each item by indicating to what extent they agreed with each statement on a 7-point Likert scale, with higher self-assessment scores indicating a relatively high mate value.

## Procedure

Surveys were distributed to students in residence accommodations as well as being made available for online completion. Participants who agreed to take part in the research completed demographic items and the SPMV before viewing the 10 visual arrays and rating male desirability. Although the design employed did not enable a direct assessment of in vivo mate copying, it was assumed that women would have a greater tendency to engage in a romantic relationship with men they rated as highly desirable and, hence, mate copy.

## Results

### Preliminary Analyses and Primary Descriptive Statistics

Prior to hypothesis testing intercorrelations between each of the demographic variables and desirability ratings were examined. Associations were generally not significant and controls for demographic effects were not necessary, except in a few analyses as indicated. Further testing did not reveal a significant difference between online and offline responses regarding age ( $p=0.92$ ), education level ( $p=0.12$ ), or any of the five dependent measures (all  $p$  values  $>0.05$ ); hence the responses were combined. Similarly, participants currently in, versus not in, relationships were combined for analyses because they did not significantly differ in age ( $p=0.49$ ), education level ( $p=0.80$ ), or any of the five dependent measures (all  $p$  values  $>0.05$ ). In the combined sample participants had an average SPMV score of 45.17 ( $SD=11.10$ ) out of a possible 70, and had been in an average of 2.7 romantic relationships previously ( $SD=2.52$ ). For



all tests,  $\alpha=0.05$ , but adjustments were made for multiple planned comparisons to control for family-wise error and the adjusted alpha per test given. The assumption of homogeneity of variance was met (Mauchly's  $W=0.89$ ,  $p=0.18$ ) across all dependent measures.

The relative equivalence of the previously rated target male photos (Braun et al. 2001) was reconfirmed by comparing participant ratings for the question assessing physical attractiveness. The mean (SD) attractiveness rating of the target photographs was 3.21 (1.20) out of 7, with the five photographs receiving ratings of 3.30 (1.74), 3.42 (1.7), 3.49 (1.67), 3.42 (1.66), and 2.38 (1.58) out of 7, respectively. A one-way repeated measures ANOVA revealed a significant main effect,  $F_{4, 115}=14.55$ ,  $p=0.001$ . However, post-hoc (Bonferroni) comparisons indicated four photos did not differ significantly, but one was significantly less attractive than the others. Because the ratings were in the average range, generally did not differ between most pairs, and the photograph-description associations were randomized within the set of target scenarios, it was unlikely that the physical attractiveness of the targets played a role in desirability ratings and was therefore successfully controlled.

Intercorrelations between the five items measuring the desirability of the photographed men were examined and all  $r$  values were found to be between 0.81 and 0.95, with all  $p$  values  $<0.05$ . Thus it seemed appropriate to construct an overall desirability rating by averaging the participant's desirability scores across the five items for men pictured with 0, 1, 2, or 5 previous partners as well as those currently in a relationship (Table 1).

### Tests of Predictions

*Replication of the Mate-Copying Phenomenon* In order to assess the expectation that mate copying would occur, a paired-samples  $t$ -test was conducted comparing the mean overall desirability of men pictured alone (described as not having had a partner in the past 4 years) with men pictured with a single partner (described as having been in one relationship previously). In accordance with the phenomenon of mate copying, men pictured alone were rated as significantly less desirable than those pictured with one previous partner,  $t_{121}=2.35$ ,  $p=0.02$  (one-tailed),  $\eta^2=0.04$  (see Table 1).

**Table 1** Mean ( $\pm$ SD) Overall Desirability Ratings for the Five Target Men According to Their Number of Previous and Current Partners

Description of Target	$n$	$M$ (SD)
Men with 0 previous partners	123	3.04 (1.55)
Men with 1 previous partner	122	3.35 (1.59)
Men with 2 previous partners	122	3.43 (1.62)
Men with 5 previous partners	121	2.54 (1.43)
Men with 1 current partner	123	3.03 (1.51)

Descriptions of men refer to their relationship status/history for the past 4 years; e.g., a man described as "having had two partners" had two romantic partners in the past 4 years and was not currently in a relationship

*The Role of Consistent Positive Information versus Potentially Negative Information* A series of paired-samples *t*-tests (adjusting for family-wise error,  $\alpha=0.017$ ) was performed to compare the desirability of men depicted with one, two, and five previous partners. Although the results were in the expected direction, men with two previous partners were not rated as significantly more desirable than those with only one,  $t_{120}=0.75$ ,  $p=0.23$  (one-tailed),  $\eta^2=0.005$ . However, as expected men shown with five previous partners were significantly less desirable than those with one,  $t_{119}=4.78$ ,  $p=0.001$  (one-tailed),  $\eta^2=0.16$ , or two previous partners,  $t_{119}=6.07$ ,  $p=0.001$  (one-tailed),  $\eta^2=0.23$ .

*Women's Age and Mate Copying Propensity* A new variable indicating copying propensity was created to determine whether age negatively contributed to the tendency to copy. This variable (Copying) was calculated by subtracting the overall desirability of men pictured alone and described as without previous partners from the average desirability ratings of those pictured with one and two previous partners. A small but significant negative zero-order correlation was found between age and Copying,  $r=-0.19$ ,  $n=121$ ,  $p=0.03$  (one-tailed), with younger participants demonstrating a greater tendency to copy. Because participant age also correlated significantly with their education level ( $r=0.50$ ,  $n=123$ ,  $p=0.001$ , two-tailed), their number of previous romantic relationships ( $r=0.31$ ,  $n=122$ ,  $p=0.001$ , two-tailed), and SPMV ( $r=-0.22$ ,  $n=122$ ,  $p=0.0017$ , two-tailed), a partial correlation was performed to statistically control for these variables. The partial correlation revealed a stronger negative association between age and Copying,  $r=-0.29$ ,  $n=115$ ,  $p=0.002$  (one-tailed); thus age alone predicted copying behavior, regardless of a woman's past number of relationships or SPMV.

*Women's Self-Perceived Mate Value and Mate Copying* A Pearson's product-moment correlation was conducted to determine if higher SPMV scores predicted higher propensity to copy, employing the same difference score as above. A weak non-significant positive zero-order correlation between SPMV and Copying,  $r=0.06$ ,  $n=122$ ,  $p=0.27$  (one-tailed) was found. Because participant SPMV correlated significantly with age ( $r=-0.22$ ,  $n=122$ ), and mother's education level ( $r=0.24$ ,  $n=116$ ,  $p=0.009$ , two-tailed), a partial correlation was performed to statistically control for these variables. The partial correlation revealed a weaker non-significant positive association between SPMV and Copying,  $r=0.03$ ,  $n=113$ ,  $p=0.386$  (one-tailed).

*Mate Copying Versus Mate Poaching* In order to differentiate mate copying from mate poaching and examine whether women desired men depicted in a current relationship more than those without a current partner but pictured with previous partners, two planned comparisons (adjusting for family-wise error,  $\alpha=0.025$ ) were conducted. As a contraindication of mate poaching, women found men pictured with a woman and described as currently in a romantic relationship marginally significantly less desirable than those not currently in a relationship but pictured with a woman and described as having had one relationship in the past 4 years,  $t_{121}=1.97$ ,  $p=0.026$  (one-tailed),  $\eta^2=0.016$ . In addition, men currently in romantic relationships were significantly less desirable than men who were not but who were pictured with two women and described as having been in two previous relationships,  $t_{121}=2.38$ ,  $p=0.01$  (one-tailed),  $\eta^2=0.05$ .

## Discussion

Mate copying has been widely observed in nonhuman species (for reviews see Brown and Fawcett 2005; Galef and Laland 2005) but only a few previous investigations have indicated its occurrence in humans. Employing an original design that included both visual images of men alongside those of women and corresponding details about the nature of their relationships, we found that men were rated more desirable when pictured with one or two women representing previous partners than if they were pictured alone. These results are generally consistent with previous findings providing tentative evidence of human mate copying (Eva and Wood 2006; Jones et al. 2007; Place et al. 2010; Waynforth 2007). However, providing additional confirmatory information by describing some men as having been chosen twice did not significantly enhance their desirability beyond that gained by virtue of having been chosen once. This result departs from Drullion and Dubois's (2008) finding that female zebra finches only engaged in mate copying when consistent information about a potential mate (being chosen repeatedly) was provided or when two other females were observed interacting with a male, not just one.

A more robust finding was the significantly reduced desirability of men pictured with five silhouettes and described as having been in five romantic relationships in the previous 4 years. Men having had that number of relationships were likely seen by participants as uncommitted or promiscuous, rather than desirable. As promiscuity is strategically inconsistent with exclusive investment (Buss and Schmitt 1993), women seeking men able and willing to provide for them and their offspring would do well to avoid men exhibiting this tendency. When choosing men previously chosen by other women may reduce the level of parental investment available to subsequent children and lower female fitness, women may engage in avoidance rather than copying. Further manipulations of the number of times a man has been previously chosen may reveal the tipping point (presumably somewhere between 2 and 5 previous partners) where mate copying ends and mate avoidance begins.

Although age effects have been reported in the literature on nonhumans (Dugatkin and Godin 1993), the relationship between age and tendency to mate copy has not been adequately explored in humans. Waynforth (2007) did not find a relationship between age and copying, but his sample included only relatively young women and he operationalized mate copying as an increase in attractiveness ratings of target men pictured with women with whom they were currently involved. His lack of age effects may have been the result of employing a sample with a restricted age range and a measure of mate copying possibly confounded by poaching tendencies. Although a full range of ages in typical populations was not included, our sample had a wider age range (17–40 years), with women of peak reproductive age largely constituting the sample. Women in this age range would be expected to be most involved in the mate selection process and therefore an appropriate group for the present study.

Age was expected to be relevant because older individuals have presumably accumulated more experience and knowledge than younger individuals. As such, they have likely developed a keener ability to discriminate (Valone 2007) and need to rely less on external information. By contrast, younger individuals are more likely to seek information in the form of others' opinions (Bertrandias and Goldsmith 2006). If, by virtue of his previously being chosen by another woman, a man has been effectively

“approved,” in the absence of any other information a younger woman should weight this approval more heavily than an older woman. Consistent with this reasoning we found that older women were less predisposed to mate copy than younger women. Although additionally correlated with a woman’s number of past relationships and SPMV, age independently predicted copying propensity.

Contrary to expectations based on the phenomenon of positive assortative mating, women with high SPMV did not exhibit a greater tendency to mate copy. Humans tend to choose mates similar to themselves, with those with high mate value generally seeking partners with high mate value (Botwin et al. 1997; Godoy et al. 2008; Regan 1998; Thiessen and Gregg 1980). Everything else being equal, if men already chosen by women are presumed to have heightened mate value, then women with high mate value should particularly desire them. However, it is likely that other factors mediate a potential relationship between SPMV and mate copying. For example, women with high SPMV tend to be more discriminating, and it is possible that being in a previous romantic relationship by itself did not raise a man’s inferred mate value adequately to promote mate copying in this subset of women. Furthermore, women with high mate value may be less likely to copy the choices of other women if those women have lower mate value than themselves, and thus lower standards. In addition, women with high mate value may also have greater reservations about men who have had multiple partners previously, as this may indicate a lack of commitment. Moreover, Clark (2004) reported a significant positive correlation between women’s self-perceived attractiveness and their willingness to engage in casual (uncommitted) sex. Surbey and Brice (2007) reported findings in the same direction employing the SPMV scale. Related to this, Waynforth (2007) suggested mate copying may be a more prevalent sexual strategy among long-term versus short-term relationship seekers (Waynforth 2007). Those looking for brief sexual encounters may be able to get the information they need from a simple observation of their potential mate. Therefore, our examination of the simple relationship between women’s SPMV and mate copying could serve as a first step in investigating potentially more complex relationships. Further examinations of relationships between mate copying and SPMV in women seeking short- versus long-term partners where the mate value of men’s previous partners is varied may provide further insight into the dynamics of mate copying.

Because these processes have been confounded in earlier studies, an attempt to differentiate mate copying from mate poaching was undertaken. We found the desirability of men pictured in a current romantic relationship was significantly less than those without a current partner but pictured with women and described as having had one or two relationships in the past 4 years. Therefore, mate poaching did not seem to drive mate copying and is likely a separate phenomenon. Men currently in a romantic relationship may be simultaneously seen as desirable, because of the approval they have been given by at least one female partner (mate copying), and undesirable because of, among other things, the difficulty of securing them as a partner (Uller and Johansson 2003). The latter effect could negate the former and contribute to the absence of mate poaching. Teasing these effects apart would be an interesting subject of future explorations.

A number of alternative explanations have been advanced for results traditionally interpreted as demonstrating mate copying in non-humans. Dugatkin (1992) suggested three possibilities: First, the behavior and/or self-assessment of a male may change after

a mating interaction with a female. A male may be chosen more often afterward if he receives a confidence dividend or subsequently alters his behavior in ways that increase his desirability. Second, it is possible that a female observer is “sexually primed” by observing a romantic interaction and subsequently regards *any* male more favorably, regardless of their current or previous mating status. Last, it may be the case that females prefer males with previous relationships because they have had greater opportunities to care for offspring. The females of several fish species preferentially mate with males that had broods from previous matings (Constanz 1985; Marconato and Bisazza 1986; Ridley and Rechten 1981). Similarly, in our species, women highly value the capacity of a man to provide for them and their offspring (Buss and Barnes 1986; Quinlan and Quinlan 2007; Thornhill and Gangestad 1996; Waynforth 2000).

This initial attempt to develop a reasonable survey-based method for studying conditions eliciting mate copying lends itself to further, more sophisticated applications, including the investigation of alternative explanations. For example, as suggested above, women may choose men pictured with female associates because their past relationship experience may result in them being better partners now. Therefore our findings may not indicate mate copying based on visual association, as classically operationalized in the non-human literature, but rather women’s preference for experienced romantic partners. (This preference, nonetheless, could serve to promote mate copying through a non-visual route.) However, a simple preference for men with romantic experience does not seem to account for our findings. Women found the men described as having the most relationship experience the least desirable. Additionally they did not find men currently in relationships, and with some experience, more desirable than those described as not having had a relationship in the past 4 years (or perhaps ever, as this was largely a young university sample). Nonetheless, alterations could be readily made to the methodology to compare the findings with responses when only written information about a man’s past relationships is supplied in order to disentangle mate copying involving visual information from that based solely on preferences for men with known relationship experience. Experience with previous romantic partners, however, may only increase a male’s desirability if it indicates a man’s ability to successfully maintain a relationship and not if it is the result of failures to do so. Our methodology could be tailored to provide some indication of a man’s role in the success or demise of previous relationships to further assess this factor in men’s desirability or women’s propensity to mate copying.

We examined mate copying propensity rather than actual behavior, and the stimuli employed were necessarily minimalistic compared to the rich environments of typical human lives. Nevertheless, attitudes are generally, although not consistently, reliable indicators of a person’s actual behavior (Digelidis et al. 2003; Muir and Ogden 2001; Gilovich, Keltner, and Nisbett 2006; Spence and Townsend 2007). Moreover, advances in digital photography could facilitate the transfer of the visual arrays and methodology we employed to analogous, but more realistic, video footage to allow comparisons with results gathered in more naturalistic, yet controlled, circumstances.

In summary, our results suggest that women do not always make mate choices independent of one another. There appears to be a significant desirability advantage for men who have been previously selected as a romantic partner. However, the relationship between desirability and frequency of previous selection was non-monotonic, with men pictured with five previous partners seen as less desirable than those with one or two. Both

men and women have been found to be somewhat reluctant to discuss their sexual histories with potential romantic partners (Lucchetti 1999). That men with higher numbers of previous partners were rated as less desirable provides a rationale as to why men may conceal their relationship history entirely, or misrepresent its magnitude. Mate copying seemed to be more prevalent in younger women than older women, as this group has presumably more to gain from imitation. In conjunction with the parsing of mate poaching from copying, these findings together provide a useful stepping stone for future additions to the presently sparse literature concerning mate copying in humans.

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