

Is friendship akin to kinship?

Joshua M. Ackerman^{a,*}, Douglas T. Kenrick^a, Mark Schaller^b

^aDepartment of Psychology, Arizona State University, Tempe, AZ 85287-1104, USA

^bDepartment of Psychology, University of British Columbia, Vancouver BC V6T 1Z4, Canada

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Abstract

Although unrelated friends are genetically equivalent to strangers, several lines of reasoning suggest that close friendship may sometimes activate processes more relevant to kinship and that this may be especially true for women. We compared responses to strangers, friends, and kin in two studies designed to address distinct domains for which kinship is known to have functional significance: incest avoidance and nepotism. Study 1 examined emotional responses to imagined sexual contact with kin, friends, and strangers. Results revealed that women, compared to men, treated friends more like kin. Study 2 examined benevolent attributions to actual kin, friends, and strangers. Results revealed that women treated friends very much like kin, whereas men treated friends very much like strangers. The current findings support a domain-specific over a domain-general approach to understanding intimate relationships and raise a number of interesting questions about the modular structure of cognitive and affective processes involved in these relationships.

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1. Introduction

A decade ago, [Daly, Salmon and Wilson \(1997\)](#) identified a “conceptual hole” in the psychological literature—the absence of substantive inquiry into kinship and its implications for social cognition and behavior. Although there are now programs of research on kinship, kin recognition processes, and their psychological consequences (e.g., [Daly & Wilson, 1998](#); [DeBruine, 2005](#); [Laham, Gonsalkorale, & von Hippel, 2005](#); [Lieberman, Tooby, & Cosmides, 2003, 2007](#); [Park & Schaller, 2005](#)), the psychological study of kin relations remains largely invisible compared to the enormous literatures on relationships between genetically unrelated individuals (e.g., [Berscheid & Reis, 1998](#); [Rusbult & Van Lange, 2003](#)).

Objectively, kinships and friendships are very different. Kin share a sizeable proportion of genes through descent. Friends do not. With many kin, a large chunk of childhood is spent living in the same household. This is rarely the case for friends. Moreover, throughout human evolutionary history,

interactions with friends and with kin have often had very different functional consequences. Sexual intercourse with a close friend, for instance, has none of the genetic fitness costs inherent to sexual intercourse with a close relative. And whereas the allocation of resources to a friend may produce fitness benefits that depend on reciprocity, the allocation of resources to a kin member may produce fitness benefits irrespective of reciprocity. To the extent that psychological responses are informed by these factual differences, responses to friends and to kin would be expected to be truly distinct.

But is it the case that the objective differences between kinships and friendships translate into equivalent psychological differences? Not necessarily. Lurking within many psychological theories is the implication that friendships may be subjectively similar to kinships. Balance theory ([Heider, 1946](#)) and reinforcement-affect theory ([Clore & Byrne, 1974](#)) presume that positive or negative associations for a person develop independently of genetic relatedness. The same is true for many conceptualizations of communal relationships (e.g., [Clark, Mills, & Powell, 1986](#); [Fiske, 1992](#)). Drawing on the functional logic of evolutionary biology, [Brown and Brown \(2006\)](#) noted that there are conceptually distinct evolutionary roots for cooperation

* Corresponding author. Tel.: +1 480 965 3326; fax: +1 480 965 8544.
E-mail address: joshua.ackerman@asu.edu (J.M. Ackerman).

between kin and cooperation between nonkin but proposed that whenever a person shares any form of “fitness interdependence,” responses to that person may be based on a similar set of underlying psychological mechanisms.

Several lines of thought support the notion that the psychology of friendship might mimic that of kinship. Humans are coalitional animals, readily forming cohesive social alliances, often on the basis of superficial or transitory commonalities (e.g., Tajfel, 1971). Both friends and kin are highly likely to be coalitional ingroup members and, thus (at least compared to outgroup members), may be perceived as functionally similar. Indeed, within the small coalitional groups that historically comprised a fundamental part of individuals’ ecological context, meaningful support (both instrumental and emotional) is likely to have been offered to both kin and nonkin (e.g., friends). This commonality is evident in contemporary social groups as well (Agneessens, Weage, & Lievens, 2006). Another line of reasoning emerges from research on the fallible mechanisms of kin recognition. There is abundant evidence that many animal species infer kinship on the basis of superficial—and fallible—cues (Hepper, 1991; Rendall, 2004). This applies to people too. We infer kinship, at least implicitly, from cues such as coresidence, phenotypic similarity, and feelings of emotional closeness (DeBruine, 2002; Korchmaros & Kenny, 2001; Lieberman et al., 2003; Park & Schaller, 2005). One result is that people sometimes make false-positive errors—treating nonkin (even those that are known to be genetically unrelated) as though they were kin: Attitudinally, similar nonkin are implicitly associated with kinship concepts (Park & Schaller, 2005); people with whom we share a superficial facial resemblance tend to inspire increased trust but decreased sexual attraction (DeBruine, 2005); and we are more likely to help strangers who we perceive as overlapping with ourselves (Maner et al., 2002). Given that many of these heuristic kin-connoting cues (e.g., attitude similarity, feelings of self-other overlap) describe friends as well as kin, it may be that the processing of friendship sometimes involves mechanisms more relevant to kinship. If so, at least to some extent, friendship relations may subjectively feel like kin relations. Bailey (1988) has labeled this familial treatment of unrelated others “psychological kinship.”

1.1. Sex differences in psychological kinship

There are also several conceptually independent reasons to believe that the tendency to experience friendship as akin to kinship may be more pronounced for women than for men. First, consider sex differences in the functional consequences of social status: compared to female reproductive fitness, male reproductive fitness has been more highly dependent on social status (e.g., position in a dominance hierarchy; Buss, 1989). Consequently, male relationships are likely to be more competitive, whereas female friendships are likely to be comparatively cooperative, mirroring the nepotistic cooperativeness that occurs

between kin. This line of reasoning applies primarily to same-sex friendships. A second line of reasoning applies more clearly to cross-sex friendships and draws on the logic of differential parental investment which suggests that, compared to men, women are likely to be more cautious and risk-averse in their approach to mating (Trivers, 1972). One consequence is that women may be much more sensitive than men to superficial signals that heuristically connote a poor mate choice. Thus, while men and women both respond negatively to the prospect of sexual intercourse with individuals who are explicitly known to be close kin (although even here women respond more negatively; Fessler & Navarrete, 2004; Lieberman et al., 2003), women may be much more likely than men to also respond negatively to the prospect of sexual relations with any individuals who are associated with superficial kinship cues of the sort that characterize many friendships (e.g., perceived phenotypic similarity, feelings of self-other overlap).

Consistent with these speculations are empirical results documenting sex differences in friendships. Women and men take somewhat different approaches to social bonding (Geary & Flinn, 2002; Kashima et al., 1995; Taylor et al., 2000). Whereas male coalitions tend to be transitory, hierarchical, and task-oriented, female coalitions are more tightly interconnected and focused on socioemotional bonds (Barth & Kinder, 1988; Baumeister & Sommer, 1997; Cross & Madson, 1997). Compared to male friendships, female friendships are marked by higher levels of smiling, emotional sharing, and self-disclosure (Baumeister & Sommer, 1997; Caldwell & Peplau, 1982). Attraction patterns between opposite-sex friends are also consistent with the notion of sex differences. Relative to men, women are less sexually attracted to their opposite-sex friends and less likely to consider potential sexual contact an important precursor to initiation of these friendships (Bleske-Rechek & Buss, 2001). Thus, whereas women generally show higher levels of intimacy within friendships, they explicitly desire less sexual intimacy with opposite-sex friends—a pattern entirely consistent with the conjecture that women, more than men, perceive friendships as akin to kinships.

While previous studies have documented many predictable sex differences in the nature of friendship relations, no prior research has attempted to make the explicit comparisons necessary to more directly test whether there is a sex difference in the extent to which friendships are experienced as akin to kinships. To do so, we conducted two studies that compared behavioral and affective responses to kin, friends, and strangers—and did so in two contexts that are directly relevant to the evolved psychology of kinship.

1.2. Overview of current research

It can be argued that any psychological indicators of kinship should feed into at least two different downstream mechanisms: (a) a “sexual value estimator” that inhibits incestuous mating (Lieberman et al., 2003) and (b) an

estimator of “welfare–tradeoff ratio” that regulates the extent to which individuals will forego rewards in order to benefit another (Tooby, Cosmides, & Price, 2006). Our two studies followed from this conceptualization (also see Lieberman et al., 2007) and assume that, if friendships are akin to kinships, pertinent evidence should emerge in social contexts relevant to sexual intercourse and interpersonal generosity.

Study 1 focused on emotional responses to imagined sexual contact with opposite-sex kin, friends, or strangers. Previous research indicates that, within sexual situations, perceived kinship is associated with a strong disgust response (Fessler & Navarrete, 2004; Lieberman et al., 2003). Consequently, it is informative to examine disgust reactions specifically, as well as approach-oriented positive emotions (e.g., romantic love) that are functionally inconsistent with disgust. If women are more likely than men to treat friendships as kinships, then—compared to men—women would be expected to experience relatively greater disgust, and relatively lower levels of positive emotion, when imagining sexual contact with a friend.

Study 2 examined a particular form of attributional benevolence (i.e., the giving of credit) toward actual kin, friends, and strangers. The logic of nepotism implies greater favoritism towards kin than towards strangers. If women are more likely than men to treat friendships as kinships, then women would be expected to express greater attributional benevolence toward friends as well.

2. Study 1

2.1. Methods

Study 1 employed a 2 (Participant Sex)×3 (Partner Relationship) between-subjects design. A total of 241 self-reported heterosexual undergraduate students (172 female, 69 male) were recruited in classes and participated in exchange for course credit.

Participants received a guided visualization task asking them to imagine interacting with an opposite-sex person of similar age identified as a sibling, a close friend of at least 1 year (with whom participants had never been romantically involved), or a newly met stranger. After this, participants spent one full minute contemplating the following scenario: “Imagine having a sexual relationship with this person. Concentrate on what it would be like to have sex with this person for the first time.” Questionnaire items then assessed emotional responses recorded on 8-point rating scales (*not at all* to *very much*). These included ratings of Disgust, as well as six additional negative affective states (Anger, Fear, Sadness, Shame, Confusion, Guilt), and three positive approach-oriented affective states (Happiness, Romantic love, Excitement).

2.2. Results

Given the conceptual importance of disgust as a kinship cue, one set of analyses focused specifically on ratings of

disgust. Two additional emotion composite indices were created. A negative affect index was created by averaging ratings on the six negative emotions excluding Disgust (Cronbach’s alpha=.90). A positive affect index was created by averaging ratings on the three positive emotions (Cronbach’s alpha=.94). Separate 2×3 analyses of variance (ANOVAs) were conducted on Disgust ratings and the two composite indices. Additional simple-effect analyses were conducted using Bonferroni corrections (see Table 1 for means).

On Disgust ratings, there emerged main effects for Relationship Type [$F(2,235)=141.53, p<.001, \eta_p^2=.55$] and Sex [$F(1,235)=6.44, p=.01, \eta_p^2=.03$]. The sex difference was strongest in the Friend condition; indeed, it was only in the Friend condition that there emerged a statistically significant simple effect, whereby women expressed greater disgust than men [$F(1,235)=8.83, p<.01, \eta_p^2=.04$].

These effects were less pronounced on other negative emotions. Although there did emerge the same two main effects on the negative affect composite (for Relationship Type, $F(2,235)=36.24, p<.001, \eta_p^2=.24$; for Sex, $F(1,235)=4.25, p<.05, \eta_p^2=.02$) these effects were weaker, and the sex difference specific to the friend condition was only marginally significant [$F(1,235)=3.31, p=.07, \eta_p^2=.01$]. In order to further distinguish the role of the incest-relevant emotion (Disgust) from general negative affect, two analyses of covariance were performed. When the negative affect composite was entered as a covariate into an ANOVA on Disgust, the sex difference in the Friend condition persisted [$F(1,234)=5.62, p<.02, \eta_p^2=.02$]. But when Disgust was covaried from an ANOVA on the negative affect composite, no sex difference emerged ($F<1$). These results suggest a sex difference specific to disgust rather than to other negative emotions.

The arousal of disgust inhibits approach-oriented positive emotions. Consequently, it was anticipated that there should also emerge predictable sex differences on the positive affect composite. Results on the positive affect index indicated main effects of both Relationship Type [$F(2,235)=117.18, p<.001, \eta_p^2=.50$] and Sex [$F(1,235)=14.13, p<.001, \eta_p^2=.06$], as well as a significant interaction [$F(2,235)=4.18, p<.02$,

Table 1
Emotional reactions to imagined sexual contact (Study 1)

| | Relationship type | | |
|-----------------|--------------------------|--------------------------|--------------------------|
| | Kin | Friend | Stranger |
| Disgust | | | |
| Women | 6.88 (0.47) _a | 3.09 (2.41) _b | 1.77 (2.21) _c |
| Men | 6.90 (0.31) _a | 1.73 (2.63) _c | 1.00 (1.98) _c |
| Negative affect | | | |
| Women | 4.48 (2.16) _a | 2.65 (1.54) _b | 2.32 (2.00) _b |
| Men | 4.53 (1.74) _a | 1.85 (1.65) _b | 1.43 (1.68) _b |
| Positive affect | | | |
| Women | .17 (0.44) _a | 2.52 (2.11) _b | 4.26 (1.89) _c |
| Men | .28 (0.60) _a | 4.29 (2.40) _c | 5.04 (1.14) _c |

Within each emotion set, means not sharing a common subscript differ by at least $p<.05$.

$n_p^2=.03$]. The interaction attests to an especially strong sex difference within the Friend condition: only in the Friend condition was there a statistically significant simple effect whereby women expressed less positive affect than men [$F(1,235)=20.56, p<.001, n_p^2=.08$].

2.3. Discussion

Thoughts of incest typically arouse disgust and the inhibition of approach-oriented positive emotions. This was clearly evident in our results: Men and women both expressed high levels of disgust and low levels of positive affect when imagining sexual contact with a sibling. Sex differences on these emotional responses did emerge when imagining sexual contact with nonkin but only when imagining sexual contact with a close friend and not a stranger. Women showed a more aversive emotional response to the thought of sex with a friend. For men, there was no significant difference between the Stranger and the Friend conditions, but for women, the difference between Strangers and Friends was more substantial—indicating that, for women, more than for men, sex with a familiar friend is more disgusting and less alluring than sex with an imagined stranger. The overall profile of results indicates that while neither men nor women respond to close friends exactly as they respond to kin, there is a clear tendency for women, more than men, to respond to close friends in a more kin-like way.

Although these results are consistent with the hypothesis that women are more likely than men to perceive friends as psychologically akin to kin, the results might also be seen as consistent with an alternative explanation that has nothing to do with kinship, *per se*. This alternative explanation draws on previous research indicating that men often seek to form cross-sex friendships as a strategic means for gaining access to potential mates (Bleske-Rechek & Buss, 2001). It could be argued that the key sex difference—in the Friend condition—reflects not so much a tendency for friendship to connote kinship (for women more than for men) but, rather, a tendency for friendship to connote a preliminary stage in a desired mating relationship (for men more than for women). Of course, this alternative explanation is specific to the mating domain. In contrast, if friendship really does implicitly connote kinship for women more than men, this sex difference should be observed in other (mating-irrelevant) contexts within which kinship is functionally important—such as the domain of interpersonal generosity. Study 2 focused on this domain and tested the hypothesis that, compared to men, women respond to friends in a more benevolent manner mimicking nepotistic responses to actual kin.

3. Study 2

3.1. Methods

Study 2 employed a 2 (Participant Sex)×3 (Relationship Type) between-subjects design. Participants included 166

undergraduate students recruited from a psychology subject pool. Participants in the Stranger condition were paired with another unfamiliar participant. Participants in the Friend and Kin conditions (blind to all experiment details) were asked to recruit either a close friend (with whom participants had never been romantically involved) or a kin member to participate with them. This resulted in the recruitment of 78 additional participants for a total of 244 participants (134 female, 110 male), who were paired in condition-specific dyads. All students received course credit for their participation.

Preliminary measures assessed participants' perceptions of dyad partners along three dimensions bearing on interpersonal intimacy: feelings of closeness, perceptions of similarity, and liking. For all three measures, ratings were recorded on 9-point scales.

Procedures for the main task were adapted from Campbell, Sedikides, Reeder and Elliot (2000). Dyad partners, seated at separate computers, each completed an online exam that was ostensibly used by major corporations to predict future professional success (items were adapted from the analytical portion of the Graduate Record Examination). Following the exam, participants were informed that because the researchers were interested in group processes, only an average dyad score would be reported. They were informed that their dyad score was in the 93rd percentile, and they were given explicit feedback that their dyad had done well.

The dependent variables consisted of responses made on 9-point rating scales to two questions assessing attributions about the source of their joint success: (1) "Who was most responsible for the outcome of this test?" and (2) "Who made the greatest *positive* contribution to this test?"

3.2. Results

Preliminary analyses tested for differences between same-sex and cross-sex dyads. None were observed ($F_s<1$) [there also was no difference between male and female participants in their likelihood of being paired with a male or female partner, $\chi^2(1)=1.25$, nonsignificant]. All analyses reported below collapse across this variable.

Potential statistical dependency between dyad members' attribution ratings was tested by means of intraclass correlation coefficient. Values ranged from .02–.06, indicating that dyad partner responses were independent. Analyses were therefore conducted at the level of the individual. The two attribution ratings were averaged to form a composite index (Cronbach's $\alpha=.91$). Lower values on this index indicate more self-serving attributions; higher values indicate more benevolent attributions.

Fig. 1 portrays mean responses on the attribution index. This pattern of means indicates that: (a) within the Stranger condition, both men and women were relatively self-serving in their attributions; (b) within the Kin condition, both men and women were relatively benevolent in their attributions; and (c) within the Friend condition, men were relatively self-serving, while women were relatively benevolent.

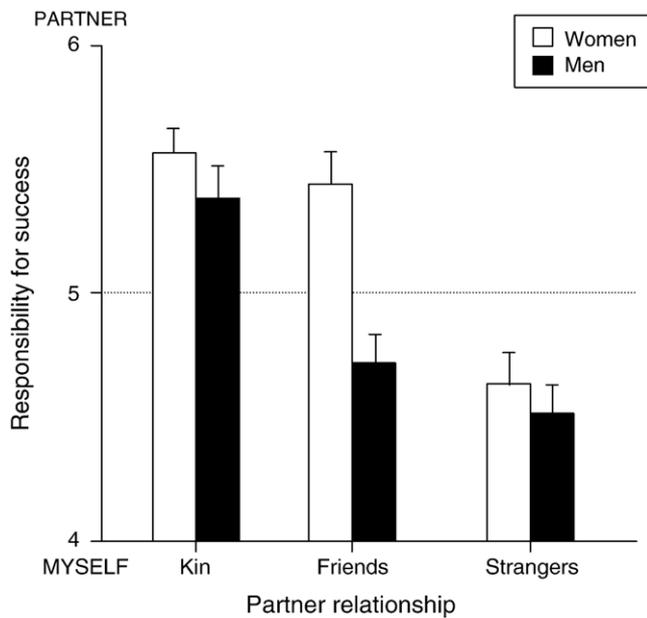


Fig. 1. Mean attributions of responsibility (and standard errors) for successful dyadic performance in Study 2. The dotted line represents an equal attribution of credit within a dyad. Ratings greater than 5 indicate relatively benevolent attributions, while ratings less than 5 indicate relatively self-serving attributions.

Inferential analyses were accomplished through a contrast analysis for predicted pattern testing; this analysis is Type-1 error-responsive but more precise and parsimonious than an omnibus ANOVA (Levin & Neumann, 1999). Three cells received contrast weights of -1 (Kin–Female, Kin–Male, Friend–Female), and another three cells received contrast weights of 1 (Friend–Male, Stranger–Female, Stranger–Male). This contrast was significant [$F(1,229)=14.15, p<.001, \eta_p^2=.06$]. The test of the residual contrast was not significant [$F_{\text{residual}}(4,229)=.048, \text{nonsignificant}$], indicating that departures from the predicted pattern were statistically negligible.

Additional analyses focused on sex differences within each relationship type. No sex differences were found in the Stranger ($p>.66$) or Kin ($p>.39$) conditions, but there was a significant sex difference within the Friend condition [$F(1,229)=4.14, p<.05, \eta_p^2=.02$].

Comparisons within Sex are also informative. Men made somewhat more benevolent attributions to kin than to friends, although this difference was nonsignificant [$F(1,229)=2.09, p=.14$] while responding in an equally self-serving way toward both strangers and friends ($F<1$). Women made more benevolent attributions to friends than to strangers [$F(1,229)=4.74, p<.05, \eta_p^2=.02$] and responded in an equally benevolent way toward both friends and kin ($F<1$).

Ancillary analyses examined the ratings of interpersonal closeness, similarity, and liking. A 2×3 (Participant Sex \times Relationship Type) multivariate ANOVA on these three variables revealed a main effect for Relationship

Type [$F(6,456)=105.86, p<.001, \eta_p^2=.58$] as well as an interaction [$F(6,456)=2.58, p<.02, \eta_p^2=.03$]. Decreasing partner relationship was associated with less perceived intimacy, and this decline was especially strong with male participants. Multivariate contrasts indicated that significant sex differences emerged only in the Friend condition [$F(3,228)=3.94, p<.02, \eta_p^2=.05$]. Given these results, it is important to know whether the sex difference in attributional benevolence toward friends resulted specifically from sex differences in perceived closeness, similarity, and liking. We addressed this question with a series of regression analyses designed to test whether these three intimacy variables mediated the relationship between sex and attributional benevolence (in the Friend condition). Results showed no evidence of significant mediation [$ps>.12$].

3.3. Discussion

The logic of nepotism implies that people should make more benevolent attributions to kin than to unrelated strangers. This was clearly the case. If friends are viewed as somewhat akin to kin, psychologically, it also follows that people should make more benevolent attributions to friends than to strangers. This occurred only for women. Men responded to friends as though they were strangers, not kin. In contrast, women responded to friends in a much more benevolent way—so benevolent, in fact, that these responses were not statistically distinguishable from their responses to kin.

Also, compared to men, women reported greater feelings of closeness, similarity to, and liking for their friends. These feelings of intimacy did not, however, mediate the relationship between sex and benevolent attributions. This lack of mediation is important: it argues against an interpretation based on the plausible, but conceptually uninteresting, possibility that women responded more generously than men toward their friends simply because women were more likely than men to perceive their friends as truly intimate friends (rather than more distant acquaintances). Women did show a greater tendency toward perceptions of intimacy, but this difference was insufficient to account for the finding that women, but not men, responded to their friends in a manner that mimicked exactly their responses to kin. Interestingly, true kinship also produces unique effects on nepotistic behavior over and above indices of intimacy like empathic concern and felt oneness (Korchmaros & Kenny, 2001; Kruger, 2003). Our findings suggest that (consistent with the workings of actual kinship in which genetic relatedness precedes felt intimacy) certain mechanisms elicit psychological kinship, which, in turn, may produce interpersonal intimacy.

So, exactly, what underlying psychological mechanism or mechanisms account for the greater tendency for women to treat their friends as akin to kin? We discuss several possibilities below.

4. General discussion

Social psychological considerations of close relationships traditionally failed to distinguish between kin and friends. Instead, these models generally presumed common domain-general processes underlying all categories of intimacy (e.g., Clark et al., 1986; Clore & Byrne, 1974; Thibaut & Kelley, 1959). An immense literature in social psychology was devoted to asking which domain-general mechanism (e.g., reward, equity, cognitive consistency) could best explain intimate relationships, without distinguishing one type of relationship from another. Given the traditional domain-general presumption, it is perhaps unsurprising that those models were silent on possible sex differences in responses

to intimate others. From an evolutionary perspective, the problems and opportunities provided by kin and friends and the likely decision rules governing interactions with people in these categories are partly overlapping but also different in important ways (Fiske, 1992; Kenrick, 2006). At the simplest level, the current findings provide further evidence supporting the call of Daly et al. (1997) for more research distinguishing kinship from other categories of intimate relationships.

How are friends akin to kinship? Across two studies—each of which directly compared responses to strangers, friends, and kin—men treated friends and kin very differently from one another. Yet, women were more likely than men to respond to friends as they would to kin. This is

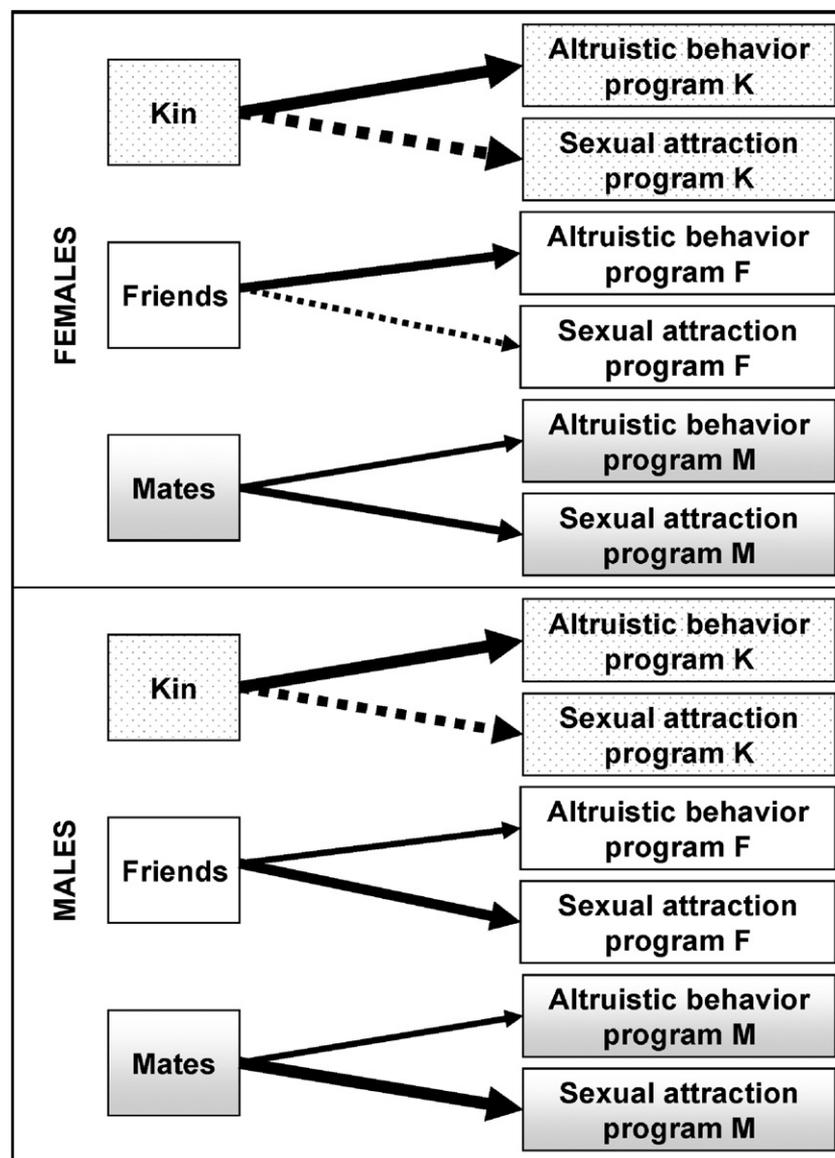


Fig. 2. A model of close relationships involving discrete mechanisms. This model conceptualizes close others as processed by distinct relationship modules, which, in turn, regulate distinct sets of programs related to altruistic behavior and sexual attraction for kin, friends, or mates. Positive associations are indicated by solid paths and negative associations by dotted paths, with the thickness of path lines indicating relative strength of association.

not to say that women necessarily treated friends exactly as though they were kin. In Study 1 (which focused on emotional responses to imagined sexual contact), there was a clear distinction between responses to kin and to friends, and this difference existed for both men and women. But the difference was significantly smaller for women. In Study 2 (which focused on a form of attributional benevolence), men treated friends very much like strangers, whereas women treated friends very much like kin. This pattern persisted even though responses to kin were quite negative in Study 1 but positive in Study 2.

Traditional domain-general models do not explain why the same intimate relationship (e.g., a sibling) can elicit both strong approach and avoidance responses. If one rejects domain-general explanations of intimate relationships, how are we to explain these results? There are several ways to think about relationships in domain-specific (or modular) terms. One possibility is that responses to kin, friends, strangers and even mates rely on entirely separate mechanisms (see Fig. 2). In line with the immense literature on differential parental investment (Trivers, 1972), it also makes sense that these modules would operate somewhat differently for males and females. Thus, the results of Study 1 might plausibly result from some combination of psychological phenomena specific to the mating domain—such as the

tendency for men to opportunistically perceive cross-sex friendships as preludes to mating relationships (Bleske-Rechek, & Buss, 2001), coupled with the tendency for women to respond in an especially risk-averse way to sexually opportunistic men (Haselton & Buss, 2000). Meanwhile, the results of Study 2 could reflect an entirely different set of processes that pertain more specifically to interpersonal exchange and cooperation. Indeed, even in the domains of mating and altruism, women (but not men) may treat friends in a kin-like way, not because they use the same cognitive decision rules for people in the two categories, but as a result of mechanisms that are psychologically independent of those mechanisms that lead both men and women to treat actual kin in kin-like ways. Fig. 2 depicts such a model, in which kin are processed using separate downstream programs than those recruited for processing friends and mates.

On the other hand, and consistent with more modern flexible views of modularity (e.g., Barrett & Kurzban, 2006), it is possible that these results may reflect the operation of shared mechanisms (see Fig. 3). Our finding that women (but not men) respond to friends in a relatively kin-like way—both in the domain of mating and in that of interpersonal generosity—may reflect a sex difference in the implicit psychological response to imperfect cues connoting kinship.

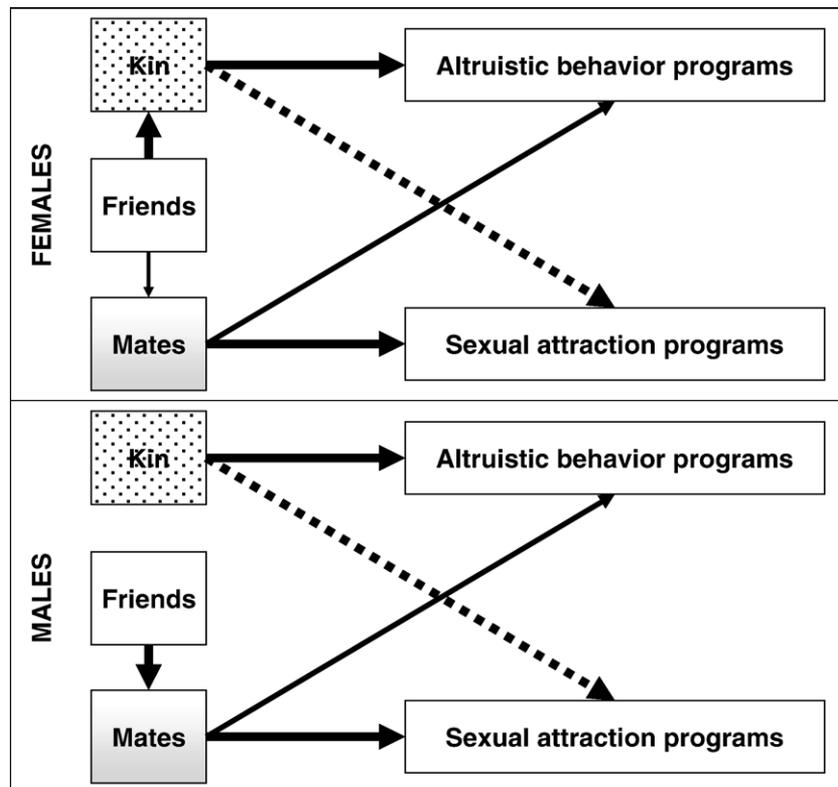


Fig. 3. A model of close relationships involving shared mechanisms. This model conceptualizes women’s interactions with friends as activating other close relationship modules (kinship most strongly), which, in turn, regulate general programs related to altruistic behavior and sexual attraction. For men, the process is similar, though interactions with friends are not presumed to activate a kin module. Positive associations are again indicated by solid paths and negative associations by dotted paths, with the thickness of path lines indicating relative strength of association.

Lieberman and colleagues (2007) have theorized that kin recognition mechanisms regulate downstream programs for both altruism and sexual aversion. It may be that when women process friends, some activation of a kinship module also occurs (along with lesser activation of other relationship modules, such as one for mates). In sum, women's responses to friends in the domains of altruism and sexual attraction would resemble those to kin. Men, on the other hand, may be less likely to recruit a kinship module when processing friends (while still maintaining activation of other modules). Fig. 3 depicts such a sex-specific model.

Research suggests that people do respond in a highly automatized (and therefore often fallible) way to crude heuristic cues connoting kinship (DeBruine, 2005; Park & Schaller, 2005). We know also that, when faced with these sorts of signal detection problems, people tend to respond adaptively—systematically avoiding the more costly errors by exhibiting reactions biased in the opposite direction, even though this inevitably increases their chances of making the less costly error (Haselton & Nettle, 2006; Nesse, 2005). It could be argued that the costs of false-negative kin recognition errors (erroneously perceiving kin as nonkin) may have been greater for women than for men, with the result that women are especially likely to systematically err on the side of false-positive errors—treating nonkin as though they were kin. This sex difference in overinclusiveness bias is perhaps most apparent in the context of sexual relations (because the fitness costs associated with incest are greater for women than for men; Walter, 1990). A female propensity for overinclusive kin recognition also may have served other fitness-relevant functions that extend beyond the mating domain. For instance, assuming ancestral patrilocality (cf., Pasternak, Ember, & Ember, 1997), the establishment of supportive social alliances with nonkin may have been especially beneficial to women, and this could be facilitated by a psychological inclination to perceive nonkin as kin (Geary, 1998, 2002). Conversely, selection pressures for male overinclusiveness would have been less likely. Men who misprovisioned unrelated others without expectation of reciprocity (a form of altruism typically occurring between kin) and men who misperceived a familial relationship with viable romantic partners (and thus refrained from romantic overtures) might have suffered fitness losses.

Thinking about relationships in domain-specific terms raises a number of interesting empirical questions. A number of studies have shown that activation of certain fundamental goal states triggers qualitatively different cognitive processing of the same social stimuli (e.g., Griskevicius, Cialdini et al., 2006a, Griskevicius, Goldstein et al., 2006b; Maner et al., 2005). It seems plausible that by activating specific goal states, the sex difference found in the current studies might disappear or even reverse. Consider that certain kinds of male coalitions—including sports teams, military units, and criminal gangs—explicitly employ kin-connoting linguistic terms (e.g., “blood brothers”) and interaction patterns (e.g., Dyer, 2003; Hoshino, 1973). A common theme unites

these kinds of coalitions: intergroup conflict. Male communal bonds do tend to be strengthened under conditions of group-level competition (Geary & Flinn, 2002; Taylor et al., 2000). It may be that, under high-level intergroup conflict, men may be equally or even more likely than women to implicitly perceive friendships—at least same-sex friendships—as akin to kinships.

In conclusion, the two studies presented here suggest, at the most general level, important problems for traditional models, which failed to distinguish between kinds of relationships, and failed to explicitly consider sex differences. At the same time, our results (and the conceptual considerations that underlie them) suggest that it is misleading to assume that simply because friendships and kinships are objectively different, they are always psychologically different as well. It will be useful for future work to take a more nuanced approach to close relationships (e.g., Archer & Latham, 2004; Burnstein, Crandall, & Kitayama, 1994) and to articulate more precisely the psychological mechanisms that are specific to different kinds of relationships as well as those that are universal across relationships. For instance, communal sharing may be more common among kin relationships, but contingent reciprocity, more common among friend relationships (though our results suggest that women might often process their friends communally and not contingently). In some cases, of course, mechanisms that are functionally specific to one kind of relationship may still have important implications for our understanding of other kinds of relationships. We have speculated that cue-based kin recognition mechanisms offer one such example: the fallible operation of these implicit mechanisms provides one explanation for why friendships are somewhat akin to kinships and why this is especially so for women. Consequently, rigorous attempts to fill the “conceptual hole” of kinship research may not only produce a true psychological understanding of kin relations; they may yield a better understanding of other kinds of close relationships as well.

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