

Original Article

Helping Others to Find Long-Term and Short-Term Mates: A Test of Inclusive Fitness, Reciprocal Altruism, and Parental Investment Theories

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Abstract: Individuals prefer helping some people more than others when it comes to finding a mate, and these preferences depend on whether long- or short-term mates are considered. Study 1 ($N = 108$) examined three theoretical frameworks (inclusive fitness, reciprocal altruism, and parental investment) for understanding why individuals would be more willing to help some individuals find mates instead of others. College participants reported how willing they were to help different types of individuals (e.g., sister, stranger) find a mate. When considering willingness to help others find a long-term mate, people preferred kin over nonkin, supporting an inclusive fitness model. However, when considering willingness to help others find short-term mates, people preferred helping people their own age, supporting a reciprocal altruism model. Study 2 ($N = 143$) replicated this age-cohort effect. Although rates of willingness to help others find mates were generally low, people were more likely to help others find a long-term mate than a short-term one.

Keywords: Helping; long-term mates; short-term mates; parental investment; inclusive fitness; reciprocal altruism.

Introduction

Picture yourself in the position to play matchmaker. You know a myriad of individuals whom you could match. You have family members and non-family members; you have those who are similar in age as you and those who are not; and you have the choice between male and female relatives. How then do you decide who to help and who not to help?

Helping behavior has been an area of major theoretical discussions in evolutionary biology (Brown and Pimm, 1985) and social psychology (Berscheid and Reis, 1998). One theory that has emerged to explain helping behavior is inclusive fitness theory or kin-selection theory (Hamilton, 1964; Oli, 2003; Van den berghe and Barash, 1977). In this study we will specifically be addressing willingness to help not altruism. While both are similar phenomenon they are not identical. Altruism is defined in terms of fitness and requires a cost to the altruist, whereas helping behavior deals with observable features and typically does not address fitness (Brown and Pimm, 1985). While altruism and helping behavior are hallmarks of evolutionary psychology so is mating research. To date few researchers have attempted to link these two.

Inclusive fitness as a theory of helping behavior

Inclusive fitness theory predicts, and numerous authors have found, that closer genetic relatedness increases willingness to help (Burnstein, Crandall, and Kitayama, 1994; Stewart-Williams, 2007) and helping (Essock-Vitale and McGuire, 1985; Korchmaros and Kenny, 2006). By helping those relatives who are genetically close to them, individuals increase their fitness both in terms of survival but also in terms of reproduction (Rushton, Russell, and Wells, 1984). For instance, a grandparent is likely to share genes with her/his grandchild and is thus more likely to help the grandchild to increase her/his own inclusive fitness (Mace and Sear, 2005). This is especially the case for maternal grandmothers helping granddaughters as compared to grandmothers helping grandsons or grandfathers helping grandchildren (Euler and Weitzel, 1996; Michalski and Shackelford, 2005). It is assumed that people are not consciously aware of mechanisms of inclusive fitness. Genes “encourage” their hosts to make copies of themselves via reproduction and helping those who share other copies of those genes (Dawkins, 1976).

Most evolutionary research has supported an inclusive fitness approach to helping behavior. Research on resource allocation within families has found that people share more of their wealth with closer genetic relatives than more distant genetic relatives or non-kin using both probated wills (Judge and Hrdy, 1992; Smith, Kish, and Crawford, 1987; Webster, Bryan, Crawford, McCarthy, and Cohen, in press) and classroom experiments (Webster, 2003, 2004). Other research has found that in emergency situations individuals act more nepotistically than in less dire situations (Shavit, Fischer, and Koresh, 1994). Other evidence shows that individuals are more likely to help kin with poor health over nonkin (Burnstein, Crandall, and Kitayama, 1994).

Little research, however, has been done on helping others find mates. In terms of aiding conspecifics in their mating success, research has addressed how humans are cooperative breeders. Cooperative breeding refers to the tendency to help others rear offspring (Mace and Sear, 2005). Whereas cooperative breeding appears to be referring to helping others breed, it is more accurately described as alloparenting or cooperative parenting. In fact, when dealing with actual mating, researchers have focused on the suppression of reproduction of daughters by mothers (Voland, 1998, for a review of parent-offspring conflict see Trivers, 1974) not on reproduction itself. Voland (1998) noted that human strategies, including helping, depend on different circumstances or domains. One of these domains is helping others find long-term mates and short-term mates (LTMs and STMs, respectively; see Li and Kenrick, 2006, for a review). Unlike cooperative breeding and reproductive suppression, helping others find LTMs and STMs has been rarely

addressed. Helping others find LTMs and STMs likely entails acts such as formally setting individuals up on dates but also initiating more impromptu introductions.

When the costs are high, individuals tend to favor kin over nonkin; when costs are low the individuals may help nonkin more (Burnstein, Crandall, and Kitayama, 1994; Shavit, Fischer, and Koresh, 1994; Stewart-Williams, 2007). The pattern of helping according to evolutionary psychologists is that when there is high risk involved in a given course of action individuals act more nepotistically; act more in favor of their own genes over the genes of others. Thus the question of helping others relates to the balancing of costs and benefits of that act of helping.

When helping others find mates, individuals are investing effort and potentially losing their own reproductive opportunities to help kin and nonkin find mates, which are examples of costs involved in helping others (Stewart-Williams, 2007). The benefit of helping others to find long-term mates is that pairbond formation increases group cohesion and decreases intragroup sexual conflict. As such, we predict that individuals should be more willing to help others find LTMs over STMs.

However, an added benefit may exist for helping kin over nonkin because the arranger may also reproductively benefit from the act of helping. This is similar to the sexy-sons hypothesis (Gangestad and Simpson, 2000) in that when a mother helps her son mate, by increasing his level of attractiveness, she also reproductively benefits. In fact, similar sentiments have been expressed by Ackerman, Kenrick, and Schaller (2007), when they stated that interactions among kin and nonkin had different functional consequences. Those differences lie in the lack of shared genetic material among friends, thus helping among them is not about genes but about ingroup functions. While short-term mating opportunities may increase reproductive success it comes with the cost of decreased social reputation. Individuals are more likely to adopt the sexual double standard for relatives over non-relatives (Sprecher, 1989), suggesting that individuals are attuned to the sexual acts of their kin and may actually be concerned more with the sexual acts of kin over nonkin. All in all, arranging long-term relationships is more beneficial to the arranger than arranging short-term relationship because the formation of bonds and probably the sharing of responsibilities in child rearing lead to higher levels of reproductive success. Thus, we predict that individuals will be more willing to help kin find LTMs over STMs.

Reciprocal altruism as a theory of helping behavior

A second and related theory of helping behavior is reciprocal altruism (Trivers, 1971, 1985). From an evolutionary perspective, reciprocal altruism may help explain why people help nonkin in addition to kin (Fehr and Henrich, 2003; Gintis, 2000; Richerson, Boyd, and Henrich, 2003). Over evolutionary time, natural selection may have favored altruistic acts directed towards nonkin so long as such acts were likely to be reciprocated in the future (Brown and Brown, 2006; Stewart-Williams, 2007). This theory rests on the assumption that there is a system of mutual social contracts between individuals. Social contracts facilitate helping behavior because they can promote feelings of indebtedness among those who have been helped; indebtedness in turn facilitates the return of the favor. Reciprocity and equity are important in friendships, both of which can create a system of reciprocation (Robert, 2005; Silk, 2003; Tooby and Cosmides, 1996).

If a reciprocal altruism model of helping behavior explains why individuals help others find LTMs and STMs, then one would expect that individuals should be more

willing to help those of a similar age-cohort than those of a different age-cohort, because those of the similar age-cohort are best suited to help because they have access to potential others of the same age-cohort to arrange pairings.¹ Those who are of different age-cohorts are likely to not have access to numerous others to arrange such pairings. Alternatively, it may be that individuals choose friends who are genetically similar (perhaps based on a genetically assortative preference in friends) and thus are more likely to commit altruistic acts towards them (Rushton, Russell, and Wells, 1984). However, Maner et al. (2002) argued that we are more likely to help strangers who we perceive as genetically close to us: often calling these people friends. It may also be that those in an age-cohort may have fitness interdependence (Brown and Brown, 2006; Roberts, 2005). By fitness interdependence, it is meant that individuals are tied together; their reproductive futures are linked. For example, two individuals may benefit reproductively or socially by going out to a nightclub together as opposed to going solo.

Helping others of an age-cohort find an LTM or an STM also comes with risks just as it does for kin. Costs involved in helping others find a mate can be the loss of mating opportunities themselves. By arranging a pairing between two others, the person is neglecting their own reproduction and perhaps other more tangential facets of their lives. Reciprocal altruism would predict that individuals play matchmaker because they are hoping, to some degree, that the favor will be reciprocated. In fact, there is some evidence that demonstrates that reciprocity is more likely among friends than kin (Essock-Vitale and McGuire, 1985). We predict that individuals will be more willing to help those of a similar age-cohort than those who are of a different age-cohort.

Parental investment as a theory of helping behavior

Lastly, parental investment theory (Trivers, 1972) predicts that, as a result of different levels of obligatory investment in a sexual encounter, males and females should differ in their mating behavior. For instance, since men can invest less in their offspring than women, they are more likely to employ a short-term mating style as compared to women (Schmitt, Shackelford, and Buss, 2001). The parental investment hypothesis would predict that male relatives should be helped more than female relatives to find an STM. Conversely, parental investment would predict that individuals should be more willing to help their female relatives find LTMs over male relatives because the reproductive success of females is increased more than males by the creation of pairbonds. Individuals may help those who can benefit the most from their help in different mating domains. Males would benefit more than females from help finding an STM, where females would benefit more than males from help finding an LTM. In addition, the social costs of arranging a short-term pairbond for women may be more costly for women than men and thus this pattern would also emerge. We predict that individuals will be more willing to help their male relatives than their female relatives to find STMs. We also predict that individuals will be more willing to help their female relatives than their male relatives to find an LTM.

¹ This is in contrast to common usage of the term matchmaker that evokes images of a well-connected older woman who arranges pairings. While it is true that older people may have played a role in the formation of long-term pairbonds, it is the contention of the authors that most of the matchmaking that actually occurs is among those of a similar age-cohort because they exist in similar if not the same peer groups.

The current studies

Ironically, little attention has been paid to long-term relationships such as family and friends in the context of helping behavior and instead has focused on short-term or even non-existent relationships using college-student samples (Daly, Salmon, and Wilson, 1997). The irony lies in the fact that few studies addressing inclusive fitness have actually used pre-existing long-term relationships like kin or friends and instead focus on experimental methodologies to induce or reduce helping. Research on mating and helping are hallmarks of evolutionary psychology, yet few have attempted to integrate these domains.

The present studies test three evolutionary theories of helping behavior and how they relate to individuals' willingness to help others find both LTMs and STMs: inclusive fitness, reciprocal altruism, and parental investment. Individuals may help others who share their genes (inclusive fitness). Individuals may help those who they feel would be best suited to return the favor (reciprocal altruism). Or individuals may be more inclined to help males find STMs and females find LTMs (parental investment). This study will attempt to test and differentiate between those theories in predicting willingness to help others find LTMs and STMs.

Method

Study 1

Sample

One hundred eight participants (31% male) participated in this study for extra credit in a psychology class. The mean age of the participants was 24 years ($SD = 7.15$; $Range = 17 - 53$). The sample consisted of single (25%), dating (55%), and married (20%) participants.

Measures

Participants were asked how much (1 = *not at all*; 5 = *very much*) they were willing to help a number of others (sister, brother, father, mother, friend, relative, cousin, parent, neighbor, stranger, and acquaintance) find either short-term (casual sex) or long-term mates (serious romantic relationship). Helping across each category of mating was calculated by averaging all the relationship types (LTM Cronbach's $\alpha = .88$; STM $\alpha = .85$).

To test for inclusive fitness effects, averaging items into indexes created six scales. The helping of kin was composed of the items for willingness to help all those related to the participant (brother, sister, father, mother, parents, relatives, and cousins) find an LTM ($\alpha = .91$) and an STM ($\alpha = .88$). The willingness to help first-order kin was composed of the items for those who were directly related to the participant (brother, sister, father, mother, and parents) find an LTM ($\alpha = .87$) and an STM ($\alpha = .83$). The willingness to help nonkin was composed of all items for those not related to the participants (friends, strangers, neighbor, and acquaintance) find an LTM ($\alpha = .75$) and an STM ($\alpha = .83$). Two single-item measures were used to measure willingness to help second-order relatives (i.e., cousins).

To test for reciprocal altruism effects, averaging items into indexes created four scales. The age-cohort group was composed of all of those who were *most likely* to be of a

similar age as the participant (friend, brother, sister, cousin, and acquaintance) on willingness to help find an LTM ($\alpha = .76$) and an STM ($\alpha = .82$). The non-age-cohort group (which is essentially a parent group due to limitations in the different relationship types assessed) was created by averaging the items parents, mother, and father together (LTM $\alpha = .95$; STM $\alpha = .94$).

To test for parental investment effects, averaging items into indexes created four groups. Items for brother and father were averaged to create indexes for willingness to help a male relative (LTM $\alpha = .68$; STM $\alpha = .71$). Items for mother and sister were averaged to create indexes for willingness to help a female relative (LTM $\alpha = .71$; STM $\alpha = .67$).

Procedure

Participants received a packet that contained the materials. Participants first completed an informed consent form. Participants were instructed to assume the individuals who they will answer questions about are single (not involved in a romantic or sexual relationship). They then completed the items regarding helping others find a long-term dating partner. In efforts to reduce any carry-over effects a distractor task that involved the participant counting backwards in threes from 35 was done next. Then participants completed the items for willingness to help others find a short-term casual sex partner. Lastly, they completed a brief demographics questionnaire and were debriefed.

Results

There were no main effects or interactions for sex of participant or dating status (single, married, or dating) on the willingness to help anyone find an LTM or an STM. Younger participants were less willing to help others find LTMs ($r(102) = -.21, p < .05$) or STMs ($r(102) = -.20, p < .05$). Regardless of their relationship, participants were more willing to help others find an LTM over an STM ($t(101) = 5.85, p < .01, d = .45; M_{LTM} = 2.59, SD_{LTM} = .80, M_{STM} = 2.08, SD_{STM} = .81$). This relationship generally held across all relationship types as can be seen in Table 1. In addition, a correlation matrix is reported in Table 2 that addresses bivariate correlations for willingness to help different individuals find LTMs or STMs.

Testing inclusive fitness

Differing levels of relatedness may predict willingness to help others find both LTMs and STMs. Degree of relatedness and mating type significantly interacted to predict willingness to help ($F(1, 101) = 40.50, p < .01, \eta^2 = .29$). This interaction can be seen in Figure 1. Participants were more willing to help kin find an LTM over nonkin ($t(103) = -3.41, p < .01, d = .38; M_{Nonkin} = 2.38, SD_{Nonkin} = .74, M_{Kin} = 2.73, SD_{Kin} = 1.07$). Participants were less willing to help kin find an STM compared to nonkin ($t(103) = 2.53, p < .05, d = .25; M_{Nonkin} = 2.21, SD_{Nonkin} = .95, M_{Kin} = 1.98, SD_{Kin} = .90$).

Because second-order relative was only a single-item measure, it was excluded from the interaction test and is reported here as a t test. Participants were more willing to help their first-order relatives find an LTM than their cousins ($t(103) = -1.87, p < .10, d = .18; M_{First} = 2.84, SD_{First} = 1.18, M_{Cousin} = 2.63, SD_{Cousin} = 1.18$) and nonkin ($t(103) = -3.86, p < .01, d = .47; M_{First} = 2.84, SD_{First} = 1.18, M_{Nonkin} = 2.38, SD_{Nonkin} = .74$). Participants were less willing to help their first order relatives find an STM than their cousins ($t(103) = 4.60, p < .01, d = .45; M_{First} = 1.89, SD_{First} = .96, M_{Cousin} = 2.39, SD_{Cousin} = 1.23$).

Evolutionary matchmaking

Participants were more willing to help their cousin over nonkin find an LTM ($t(106) = 2.72, p < .01, d = .18; M_{Cousin} = 2.64, SD_{Cousin} = 1.17, M_{Nonkin} = 2.39, SD_{Nonkin} = .73$) and an STM ($t(104) = 1.98, p = .05, d = .12; M_{Cousin} = 2.41, SD_{Cousin} = 1.23, M_{Nonkin} = 2.22, SD_{Nonkin} = .95$).

Table 1. Descriptive and paired-sample *t*-test for willingness to help others find an LTM and an STM.

Relationship	STM Mean (SD)	LTM Mean (SD)	<i>t</i>	<i>d</i>
Individuals				
Relative	2.14 (1.21)	2.66 (1.12)	2.60*	0.45
Parent	1.60 (0.99)	2.39 (1.41)	5.71**	0.65
Mother	1.49 (1.01)	2.55 (1.48)	7.19**	0.84
Father	1.59 (1.12)	2.30 (1.45)	5.12**	0.55
Sister	2.09 (1.23)	3.25 (1.33)	7.35**	0.91
Brother	2.41 (1.31)	3.17 (1.25)	5.71**	0.59
Cousin	2.41 (1.23)	2.63 (1.15)	1.71	0.18
Friend	3.20 (1.27)	3.67 (1.08)	3.52**	0.40
Acquaintance	2.02 (1.14)	2.21 (1.04)	1.68	0.17
Neighbor	1.94 (1.50)	2.14 (0.93)	1.66	0.16
Stranger	1.72 (1.11)	1.49 (0.76)	-2.14*	-0.24
Inclusive fitness groups				
First-order	1.90 (0.96)	2.83 (1.16)	8.00**	0.87
All kin	2.00 (0.90)	2.71 (1.05)	6.85**	0.73
Non-kin	2.22 (0.95)	2.38 (0.72)	1.64	0.19
Reciprocal altruism groups				
Age-cohort	2.97 (0.84)	2.42 (0.95)	5.55**	0.61
Different-age	1.56 (0.99)	2.41 (1.38)	6.60**	0.70
Parental investment groups				
Male relatives	2.00 (1.07)	2.75 (1.19)	8.41**	0.66
Female relatives	1.80 (1.00)	2.90 (1.22)	6.41**	0.99

Note. $N = 103 - 107, d =$ Cohen's $d, STM =$ Short-term mate. LTM = Long-term mate.

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

No other comparisons were significant. Results supported an inclusive fitness model for willingness to help find an LTM. The story for willingness to help others find STMs seems to be more complicated than an inclusive fitness model would predict.

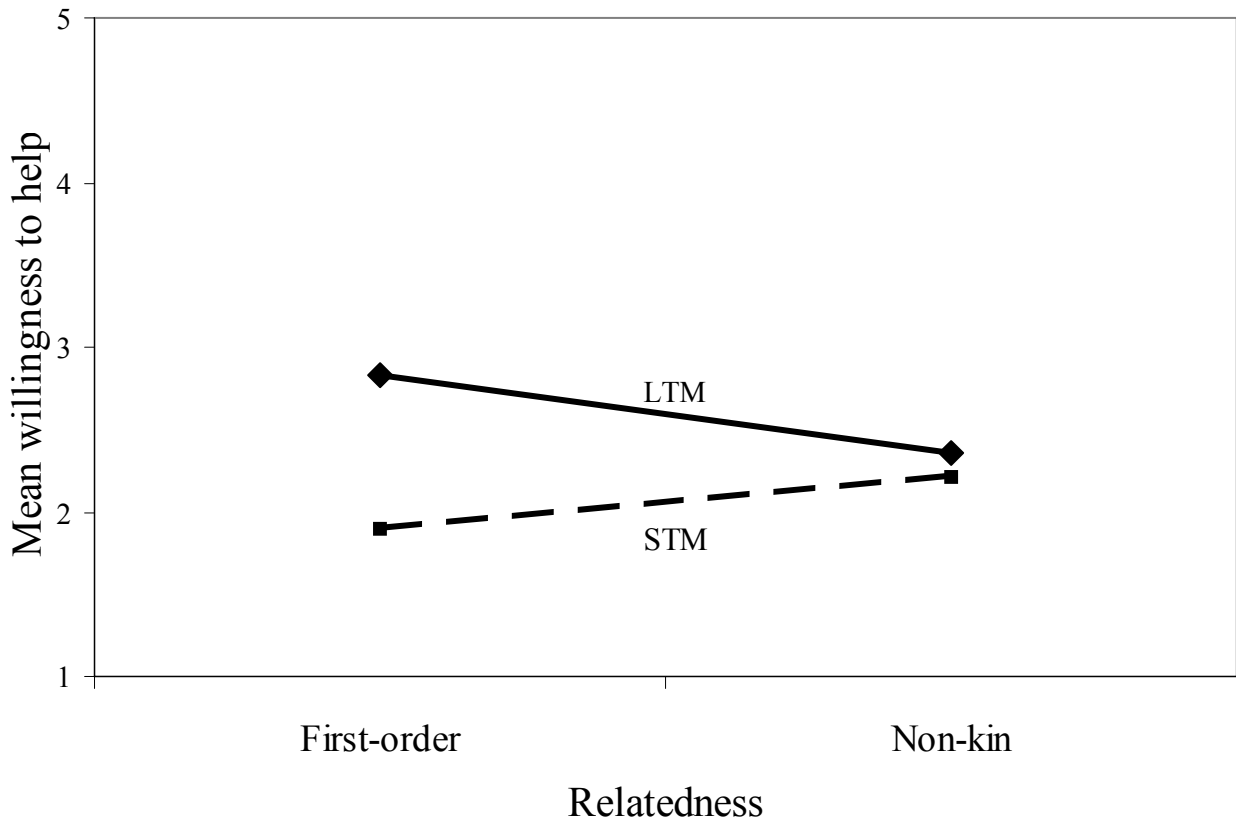
Evolutionary matchmaking

Table 2. Willingness to help correlation matrix.

	Sister	Brother	Mother	Father	Friend	Stranger	Cousin	Relative	Parent	Neighbor	Acquaintance
Sister	--	0.64**	0.56**	0.40**	0.41**	0.22*	0.49**	0.48**	0.51**	0.15	0.22*
Brother	0.68**	--	0.42**	0.52**	0.60**	0.24*	0.59**	0.61**	0.55**	0.18	0.22*
Mother	0.51**	0.58**	--	0.82**	0.21*	0.21*	0.23*	0.35**	0.83**	0.08	0.04
Father	0.53**	0.56**	0.84**	--	0.27**	0.24*	0.25*	0.35**	0.89**	0.13	0.11
Friend	0.37**	0.33**	0.10	0.06	--	0.40**	0.60**	0.65**	0.23*	0.42**	0.44**
Stranger	0.19	0.13	0.27*	0.25*	0.23*	--	0.45**	0.56**	0.19	0.73**	0.66**
Cousin	0.54**	0.54**	0.44**	0.35**	0.44**	0.45**	--	0.84**	0.30*	0.46**	0.53**
Relative	0.53**	0.60**	0.44**	0.45**	0.45**	0.43**	0.85**	--	0.37**	0.57**	0.55**
Parent	0.47**	0.60**	0.91**	0.82**	0.16	0.28*	0.45**	0.51**	--	0.13	0.09
Neighbor	0.24*	0.15	0.16	0.15	0.39**	0.41**	0.46**	0.51**	0.18	--	0.70**
Acquaintance	0.09	0.10	0.07	-0.05	0.42**	0.49**	0.39**	0.42**	0.08	0.65**	--

Note. Those below the diagonal refer to willingness to help find a long-term mate. Those above the diagonal refer to willingness to help find a short-term mate.
* $p < .05$, ** $p < .01$

Figure 1. Mean willingness to help others find long-term and short-term mates by relatedness.



Note. Interaction was significant ($F(1, 101) = 15.69, p < .01, \eta^2 = .27$).

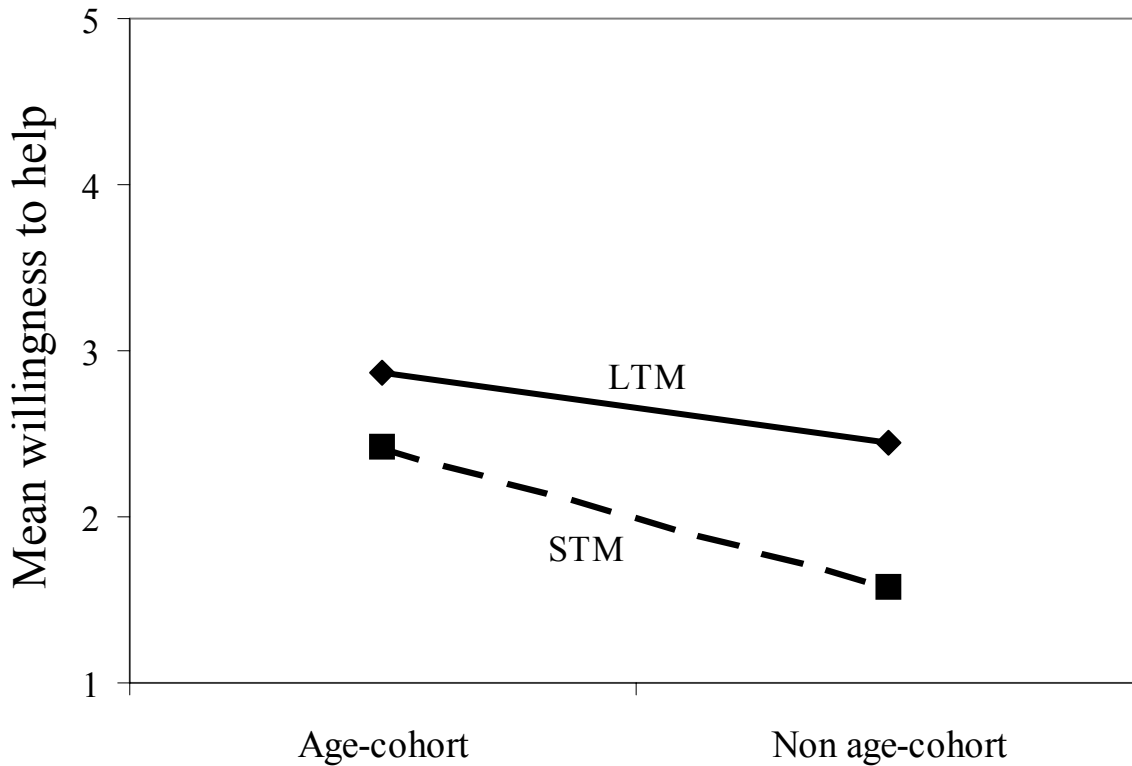
Note. LTM = long-term mate, STM = short-term mate

Testing reciprocal altruism

It may be an age-cohort effect and not a relatedness effect that drives willingness to help others find an STM and an LTM. To test this, those of the same cohort (sister, brother, friend, cousin, and acquaintance) were compared to non-cohorts (parents, father, and mother). Age-cohort and mating type significantly interacted to predict willingness to help ($F(1, 101) = 6.11, p < .05, \eta^2 = .06$). This interaction can be seen in Figure 2. Participants

were more willing to help their age-cohorts find an LTM ($t(103) = -4.50, p < .01, d = .96; M_{Cohort} = 2.98, SD_{Cohort} = 1.40, M_{Noncohort} = 1.55, SD_{Noncohort} = .85$) and an STM ($t(103) = -8.30, p < .01, d = .79; M_{Cohort} = 2.41, SD_{Cohort} = .94, M_{Noncohort} = 1.56, SD_{Noncohort} = 1.02$) than those of a different age-cohort. Age of participants was negatively associated with willingness to help age-cohorts find an LTM and an STM (both $r_s(101) = -.25, p_s < .01$).

Figure 2. Mean willingness to help others find a long-term or short-term mates by age groups

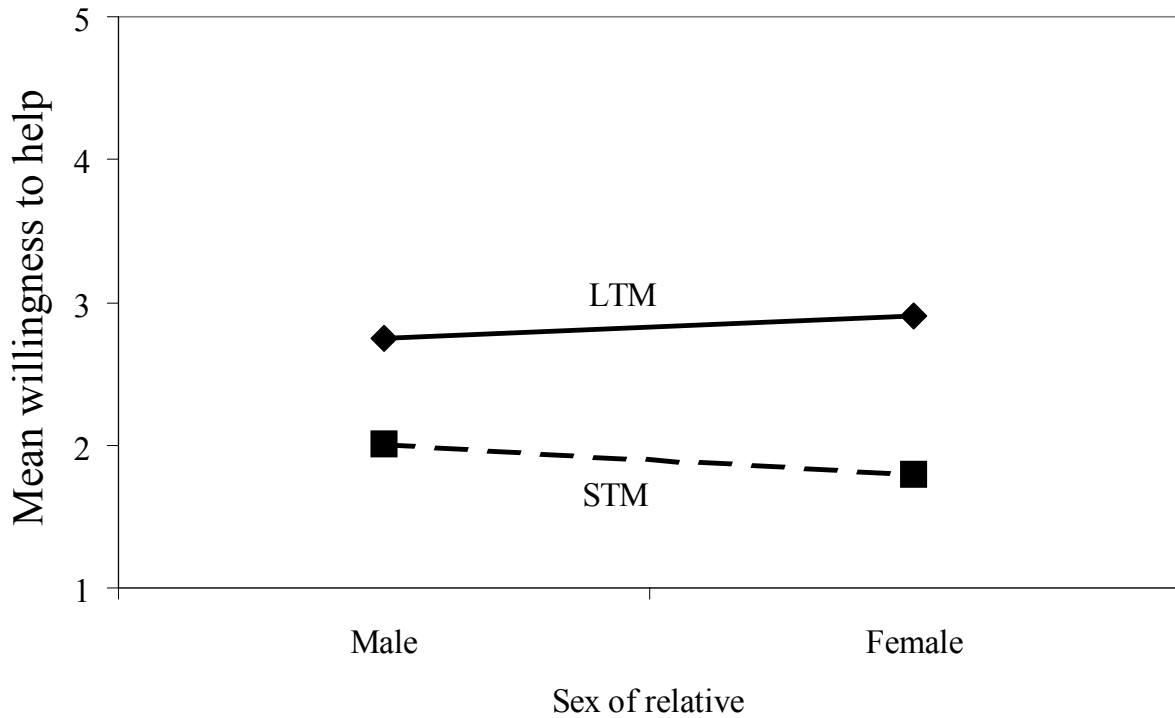


Note. Interaction was significant ($F(1, 101) = 6.11, p < .05, \eta^2 = .06$).
 Note. LTM = long-term mate, STM = short-term mate

Testing parental investment

Sex of relatives and mating pattern interacted to predict willingness to help ($F(1, 101) = 15.21, p < .01, \eta^2 = .13$) and can be seen in Figure 3. Participants were more willing to help female relatives to find LTMs than male relatives and were slightly more willing to help male relatives over female relatives to find STMs. Individuals were more willing to help their male relatives find an STM over their female relatives ($t(103) = 2.82, p < .01, d = .30; M_{Females} = 1.78, SD_{Females} = 1.00, M_{Males} = 2.00, SD_{Males} = .10$). Individuals were more willing to help their female relatives find an LTM over their male relatives ($t(103) = -2.40, p < .05, d = .17; M_{Females} = 2.91, SD_{Females} = 1.23, M_{Males} = 2.76, SD_{Males} = .12$). Results supported a parental investment model. In one case, a significant sex difference emerged: Female participants were more willing to help their female relatives find an STM ($t(103) = -2.55, p < .05, d = .58; M_{Female} = 1.94, SD_{Female} = 1.08, M_{Male} = 1.42, SD_{Male} = .65$).

Figure 3. Mean willingness to help others find long-term and short-term mates by sex of relative.



Note. Interaction was significant ($F(1, 101) = 15.21, p < .01, \eta^2 = .13$).

Note. LTM = long-term mate, STM = short-term mate

Discussion

All three theories appear to explain why individuals help others to find mates. Of these three however, the most convincing were the findings that individuals help kin find LTMs over nonkin and that an age-cohort effect was associated with reciprocal altruism. However, the non-age-cohort group was confounded in that it was simply a group of parents. Individuals may be unwilling to help or think about their parents becoming sexually or romantically involved and this might have affected the results. A further study was conducted next to attempt to address this potential confound.

Study 2

Sample

There were one hundred forty two participants (29% male) in this study who received extra credit in a psychology class. The sample consisted of single (28%), dating (57%), and married (15%) participants. Participants were randomly assigned to an age-

cohort (51%) or non-age-cohort (49%) condition. They were also randomly assigned to an STM (47%) or an LTM (53%) willingness to help condition.

Procedure

A mixed design was used to assess helping those of the same age-cohort and those of a different age-cohort. Participants were instructed to assume the individuals who they will answer questions about are single (not involved in a romantic or sexual relationship). Participants were asked to think of two people (a man and a woman) they knew who were not related to them and who were either no more than five years different than them in age or more than 15 years different. They were instructed to write the initials of that person in a space provided to ensure that the participants actually knew someone from both cohorts. Participants were asked 2 questions regarding how much they would help someone, either a man or a woman (the order of these items was varied), to find either an STM or an LTM (1 = *not at all*; 5 = *very much*) for another person who was of their age-cohort or someone who was not of their age-cohort. These two questions comprised a within-subject factor, while STM or LTM, and age-cohort or non-age-cohort were between-subject factors. After these questions, the participants reported demographic information and were debriefed.

Results

There were no order effects for sex of target on willingness to help. Degree of willingness to help for the first person participants thought of was correlated with the second person they thought of ($r(142) = .50, p < .01$). There were no main effects for dating status (single, married, or dating) on willingness to help. There were no sex differences, though male participants were more willing to help others find mates overall. There was no effect for helping to find an LTM or an STM, though individuals were more willing to help others find an LTM over an STM.

There was an effect for the age-cohort condition. Individuals were more willing to help their age-cohort ($M = 2.70; SD = 1.37$) target to find a mate than a non-age-cohort ($M = 2.15; SD = 1.17$) target ($F(1, 134) = 7.46, p < .01, \eta^2 = .05$). These results support an age-cohort prediction for reciprocal altruism.

General Discussion

To date few researchers have attempted to integrate the domains of helping and mating from an evolutionary perspective. In an attempt to do this, these studies were designed to test three possible explanations of why individuals help others find short- and long-term mates. First, supporting inclusive fitness theory (Hamilton, 1964), we found that individuals were more willing to help their kin, and especially first-order kin, to find an LTM. Second, supporting the theory of reciprocal altruism (Trivers, 1971, 1985), we found that individuals were more willing to help those who were proximally available and likely to reciprocate regardless of kinship. In this case, individuals were most willing to help those of a similar age-cohort. Third, supporting parental investment theory (Trivers, 1972), we found that individuals were more willing to help male relatives find an STM and females to find an LTM. Thus, all three hypotheses were partially supported.

Inclusive fitness theory did not appear to apply to individuals' willingness to help others find STMs. Participants were rather unwilling to help their first-order relatives find STMs. Reciprocal altruism (Trivers, 1971, 1985) appears to be the more useful theory to explain whom individuals help find STMs. Comparisons of age-groups reveal that it is not family members that individuals are willing to help find STMs, but rather those of a similar age group. Those of a similar age-cohort are best suited to be able to reciprocate such an act. Same-age cohorts have the most access to same-aged others to arrange such pairings. It may also be that peers are in some way fitness interdependent (Brown and Brown, 2006), such that the reproductive success of individuals may be dependent, in part, on the composition of their peer groups. This theory predicts, and the data doubly confirms, that individuals should be more willing to help those who are well suited to reciprocate the favor of arranging a pairing. However, since all the relations used in Study 1, except stranger and acquaintance, denotes some level of familiarity, this familiarity may be in some way responsible for the general support from all the predictions being tested.

Although Figure 1 may suggest that individuals do not want to think about their close kin having sex, individuals were generally less willing to help anyone find an STM than an LTM. In fact, people were generally reluctant to help anyone, as can be seen in the means in Table 1, which show that individuals were not particularly willing to help their first-order relatives find an STM. However, this may not be the result of participant's being less willing to think about their first-order relatives having sex because they can clearly think about it in terms of an LTM for first-order relatives. What may actually be happening is that forming long-term pairbonds is more beneficial for not only reproduction, but also for forming alliances and maintaining group cohesion for family groups. This may be less of a concern for those who are not first-order relatives (see Table 1) because the genetic distance between individuals may relate to social costs. So if I help my brother find a short-term mate it may damage my social standing because he is my brother, whereas my genetic distance from a friend lessens the impact of a social faux pa. The STM behavior of my brother may be perceived as a reflection on myself. Thus, it may be more important to find a first-order relative an LTM than an STM as can be seen in the results. Long-term pairbonds aid in the cohesion of large-scale social groups and thus may be damaged by more transient relationships. It may also be more costly to find first-order relatives an STM because of the potential dangers of illegitimate children in addition to the decrease of social bond strength. These costs may be less of a concern when dealing with cousins and nonkin. It may be that the costs of an act moderate the relationship between relatedness and helping (Stewart-Williams, 2007).

Different levels of obligatory investment for males and females lead to differences in their mating styles. Men tend to be more oriented towards short-term mating than women (Schmitt, Shackelford, and Buss, 2001). Individuals may be more willing to help those who can benefit the most from certain types of help. Males would be able to benefit most from help finding an STM. Females, on the other hand, would benefit more from help finding an LTM, and thus, individuals may help female relatives more to find LTMs. Individuals were more willing to help male relatives find STMs and females to find LTMs. However, these results are likely attenuated because the internal consistencies for the scales used to test these predictions were around .70. Results from Study 2 suggest that there may not be a preference for helping males or females find LTMs or STMs.

One sex difference emerged from the analyses of the parental investment predictions in Study 1. Females were more willing to help their sisters find STMs as compared to males. Although this effect was not the focus of this study, we offer four speculative explanations. First, it may be that brothers do not see their sisters as sexual beings or that they adopt a sexual double standard and thus they do not consider helping their sisters find STMs. This explanation, however, seems unlikely because male participants were equally unwilling to help their sisters find LTMs as female participants. Second, females may be involved in the romantic and sexual lives of their sisters more than males; however, no data were able to substantiate this hypothesis. Third, the fact that this difference was detected for female participants, but not males, may be an artifact of differential statistical power, since female participants outnumbered males by more than 2 to 1. Fourthly, it may be chance that this difference emerged and is thus not theoretically interesting.

Another interesting finding that emerged in this study, although not predicted, was that younger participants were less willing to help others find mates than older participants. In some ways this appears counterintuitive in that one would expect such sexual behavior to be localized in a younger generation where casual sex is likely more common. However, it may be that older individuals are more sexually liberal in that they have had more sexual experiences and thus are more accepting of short-term sexual behavior. This acceptance may then lead to a greater willingness to help in this domain. However, this is speculative at best and we feel that the weak correlations found may reflect sampling error more than genuine correlations.

Future work should address the mediator of emotional closeness. Prior work has shown that emotional closeness is part of the psychological mechanisms that generate helping or altruism (Euler and Weitzel, 1996; Korchmaros and Kenny, 2006; Michalski and Shackelford, 2005). Emotional closeness may mediate the relationships between kinship and peer groups to predict willingness to help others find LTMs and STMs. However, results shown in Figure 2 seem to run counter to that argument in that individuals are likely emotionally close with their parents whom they were rather unwilling to help find mates. This is an empirical question that deserves further attention, but is beyond the scope of this study. Relatedly, there may be other mediators that will allow for better tests to differentiate these three theories in terms of willingness to help find mates that should be considered in future work. Some examples of other potential mediators are: (1) perception of likelihood the help will be returned, (2) familiarity with targets, (3) ease at completing a matchmaking act for a conspecific, and (4) amount the help is needed.

There are a number of limitations in this study that are worthy of note. When addressing second-order relatives, Study 1 only considered cousins; other second-order relatives, such as grandchildren, were irrelevant to our college sample. Willingness to help second-order relatives, such as uncles, aunts, nieces, and nephews has been addressed in the past (Euler and Weitzel, 1996; Jeon and Buss, 2007; Michalski and Shackelford, 2005). Future work should examine willingness to find mates among these subdivisions of kin to perhaps replicate the functions found in work such as Jeon and Buss (2007) that suggest cousin-specific adaptations for helping and altruism. Similarly, male and female second-order relatives should be considered in future research on helping find a mate as well. Ackerman, Kenrick and Schaller (2007) argued that females should be more likely to

perceive nonkin as kin than men, they may also perceive second-order relatives as genetically closer than men do as well.

Methodologically, this study used single-item behavioral intention measures to measure willingness to help. While single-item measures are generally problematic, we feel that the approach that we have taken, using two studies to substantiate our points, mitigates concerns about the limitations of single-item measures. Similarly, we focused on behavioral intentions and not actual helping behavior. Related work (Burnstein, Crandall, and Kitayama, 1994) has used behavioral intentions as opposed to actual behaviors. In the absence of behavioral measures, behavioral intention measures are considered to be adequate proxies for actual behavior (for review see Ajzen and Fishbein, 1980). While the methods used in this study themselves are based on prior methodologies that have been shown successful at predicting behavior and predicting willingness to help, it is worthy of note that these tried and true methods may be inadequate for testing helping behavior in the domain of mating. The domain of mating-help may require new methodologies to investigate the evolutionary theories addressed here as well as addressing some of the other potential explanations and mediators that were discussed above.

Theoretically speaking, there are other potential interpretations of the data. Our goal was to test the aforementioned evolutionary theories of willingness to help others find STMs and LTMs. We feel that these theories may be more powerful than non-evolutionary models of helping behavior in that they are ultimate levels of explanations. While there are other social psychological models (for a review see Berscheid and Reis, 1998) of helping we feel they provide more proximate explanation and can be subsumed under different evolutionary theories. For instance, there may be differences in how individuals perceive threats across relatedness categories: individuals perceiving the same event more threatening for kin over nonkin. So while perceptions of the threat matter (Buck, 1988), the perceptions are themselves colored by relatedness (Shavit, Fischer, and Koresh, 1994).

In conclusion, willingness to help others find LTMs and STMs can be explained by inclusive fitness, reciprocal altruism, and parental investment. When dealing with long-term mating, inclusive fitness may be the appropriate theory; however, when dealing with short-term mating, reciprocal altruism may be a better theory. This study appears to support all three theories. How then can one differentiate which theory was better at explaining helping behavior in reference to mating? In addition to hypothesis tests, which have their limitations (Trafimow, 2003), one can examine effect sizes. The strongest effect sizes can be found in the main effects from the reciprocal altruism tests and the interaction from inclusive fitness results.

We started this article asking why one might play matchmaker for certain individuals in their life and who those individuals might be. We end by saying that if you are looking for help in finding a marital partner; solicit help from your nuclear family. If you want help finding a casual sex partner, solicit help from your friends.

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