CURRENT RESEARCH IN SOCIAL PSYCHOLOGY

Volume 9, Number 15
Submitted: February 19, 2004
First Revision: April 20, 2004
Accepted: April 20, 2004
Publication Date: April 20, 2004

WOULD YOU SAVE AN UNCARING RELATIVE FROM A BURNING BUILDING? CONSIDERATIONS OF RELATEDNESS AND PREVIOUS CARE IN PREDICTIONS OF ALTRUISM

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ABSTRACT

Previous reports of altruistic decisions regarding relatives and nonrelatives have not accounted for the likelihood that potential altruists assume their relatives would have shown them more care than would nonrelatives. We addressed this omission. In keeping with previous research on helping decisions, our participants (N = 350) were presented with biologically significant scenarios and indicated the degree to which endangered persons would likely benefit from their own altruistic intervention. Persons requiring assistance were orthogonally presented as (i) related or unrelated to the participant, and (ii) having previously shown the participant a high, moderate, or low degree of care. ANCOVA revealed that both degree of relationship and previous history of care predicted the intention to enter a burning building to save a threatened person. The level of care previously shown to the potential helper by the person requiring assistance explained more of the variance (eta squared = 28 per cent) in deciding to help than did the relationship of the two people (eta squared = 6 per cent), but, at each level of care, relatives were more likely to be saved than were nonrelatives.

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INTRODUCTION

From Darwin's *Origin of Species* to contemporary genome research, advances in biological knowledge have had implications for advances in psychological knowledge. Biological scientists have demonstrated that individual animals will behave in a manner that is often costly to themselves in order to benefit relatives. For example, birds will tend the nests of close relatives (Stacey & Koenig, 1990), squirrels place themselves in potentially vulnerable situations by standing guard and giving alarm calls in order that their relatives can scamper from danger (Sherman, 1977), and bees will admit selectively bred relatives, and repel selectively bred nonrelatives, from the hive (Greenberg, 1979). Despite some contrary evidence in social insects (e.g., Queller, Hughes, & Strassmann, 1990; Strassmann, Seppa, & Queller, 2002), psychologists (Barrett, Dunbar, & Lycett, 2002; Burnstein, Crandall, & Kitayama, 1994; Buss, 1999; Kenrick, 1991; Kruger, 2001) have largely endorsed Hamilton's (1963; 1964) biological concept of inclusive fitness that states that individuals help those to whom they are related in preference to those with whom they share no genetic ties. Social researchers' field analyses have been used to corroborate the efficacy of the inclusive fitness theory as applied to human behaviour. For example, people are more likely to donate an organ for transplant if the intended recipient is related than if the intended recipient is unrelated (Borgida, Conner, & Manteufal, 1992). Also, during natural disasters, even professional carers and emergency workers preferentially go to the aid of relatives prior to extending their services to the wider community (Form & Nosow, 1958; Kaniasty & Norris, 1995).

Laboratory researchers (Burnstein, Crandall, & Kitayama, 1994; Kruger, 2001) have applied the inclusive fitness model to human's altruistic decisions in experiments by adopting role playing and vignette techniques. These researchers have concluded that humans, like many animals (Fletcher & Michener, 1987), favour relatives over nonrelatives when deciding whom to help, and these differences in helping are especially marked in biologically significant situations (i.e., situations in which the intended recipient would likely die if left unaided). For example, having read a vignette describing a person in danger of dying in a burning building, participants were more likely to indicate they would place themselves at risk by helping a person sharing 50 per cent of their genetic makeup ($r = 0.50$, e.g., a brother), than a person sharing 25 per cent of their genetic makeup ($r = 0.25$, e.g., an uncle). An uncle would, in turn, receive more help than a person sharing 12.5 per cent of participants' genetic makeup ($r = 0.125$, e.g., a cousin), who would receive more help than an unrelated person ($r = 0.00$, e.g., an attractive stranger). These results have been cited widely as strong evidence of the efficacy of the inclusive fitness model (e.g., Barrett, Dunbar, & Lycett, 2002; Burnstein & Branigan, 2003; Kenrick et. al., 1999).

When an individual in need is not related to a potential altruist, Triver's (1971) model of reciprocal altruism has generally been used to explain altruistic behaviour (for an extended critique of reciprocity models see Richerson & Boyd, 2001). Briefly stated, Triver's model indicates that unrelated individuals care for one another to different degrees, and innate psychological mechanisms ensure that individuals provide help to those from whom they have previously benefited. Recently, computer simulations based on the prisoner's dilemma paradigm indicated that cooperation between unrelated individuals increased when there had been a previous, sustained, history of caring (Roberts & Sherratt, 1998). Similarly, those who were perceived to have been neglectful in relationships were less likely to receive future cooperation. An individual's reciprocal actions need not exactly mirror the aid they originally received from another. In fact, in both the animal kingdom (de Waal, 1997), and the human world (Cialdini,

2001; Dickinson, 2000), relatively small-scale acts of care can precipitate much greater returns from the individual to whom the original altruism was directed. Hence, in similar biologically significant situations to those of earlier laboratory vignette studies (Burnstein, Crandall, & Kitayama, 1994; Kruger, 2001) and field studies (Form & Nosow, 1958; Kaniasty & Norris, 1995), a caring nonrelative would be more likely to benefit from another's altruism than would a neglectful nonrelative.

In reality, those who are related also care for each other to different degrees, meaning that relationships are not equally reciprocal among kin (i.e., some individuals are relatively more caring). Therefore, considerations of reciprocity may also play an important role in determining who receives help regardless of whether a potential altruist is related or is unrelated to an individual in need of urgent assistance. It is also likely, however, that people would expect to have received more care from a relative than from a nonrelative (Baumeister & Leary, 1995). To test whether relatives truly are favoured over nonrelatives, we should determine if they are more likely to be saved in biologically significant circumstances when previous of level of care shown to potential altruists is taken into account.

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Tests of inclusive fitness have been conspicuously absent in human research (Barrett, Dunbar, & Lycett, 2002). To that end, this study aims to account for potentially confounding reciprocal interactions that may have influenced peoples' decisions to help related, as well as nonrelated, people in need when responding to scenarios presented in previous laboratory vignette studies. We analysed the fundamental contrast of relative (shared genetic material) versus nonrelative (genetically distinct) and in accounting for previous caring behaviour among both relatives and nonrelatives in humans, we will add to existing research by accounting for the respective contribution of (i) being related (i.e., the rationale underpinning inclusive fitness theory), and (ii) having been cared for (i.e., the rationale underpinning reciprocity theories), in explaining peoples' altruistic decisions.

Vignette scenarios hold alternative potential confounds that conceivably may affect how participants interpret the target dilemma they are presented with. Therefore, we also account for the possibility that participants' decisions are influenced by an availability bias in that those elected most likely to be saved could conceivably be those who are most readily imagined by participants to be in a biologically significant situation (Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, & Simmons, 1991; Tversky & Kahneman, 1973, 1974). That is, perhaps participants find it easier to imagine a relative in need of help than they do a nonrelative. Indeed, participants may also find it easier to imagine a caring person in need of help than an uncaring person. Moreover, we account for individual risk taking behaviour (see Yates 1992) in altruistic scenarios by determining whether people heroically decide to enter the burning building regardless of the persons requiring assistance (e.g., potential heroic altruists who embrace risk may report that they would dive into a burning building regardless of whether the trapped persons were uncaring nonrelatives or caring relatives).

METHOD

Participants and design

Participants were 350 (276 females and 74 males) university students who were enrolled in first year introductory psychology courses. Participants received a vignette depicting two people who were trapped in a burning building (i.e., a biologically significant situation that would pose a substantial risk to potential helpers and would likely lead to the demise of those who were trapped if left unaided). Descriptions were presented orthogonally to represent the first person (Person X) and the second person (Person Y) as either (i) related or nonrelated to the participant, and (ii) having previously shown the participant a high, moderate, or low degree of care. Participants were randomly assigned to receive one of these descriptions and informed that they were to place themselves in the position of passing the blazing building with the knowledge that each of the previously described people was trapped inside.

Materials and procedure

Participants received the materials in large groups of 50 to 100, but each read their vignette and completed the questionnaire individually. Participants sat at least 8 seats away from the nearest person with the same scenario as their own to mitigate against nonindependence of participant responses. The experimenter reminded participants of the voluntary nature of research and emphasized the importance of reading the vignette carefully before completing the questionnaire. The experimenter also explained that data would be collated and analysed as a group in order that individuals could not assume their personal reputation would be benefited or harmed as a consequence of their reported decision to help or not to help the persons in the burning building. In order to reinforce the impact of the vignette, a vivid colour slide of a building engulfed in flames was projected onto a screen while participants completed the questionnaires. All participants read the following basic vignette and information (specific details of Person X and Person Y altered according to the vignette the participant had been assigned):

As you make your way through the city you walk past a building that is blazing with flames. You realize that the building has been housing a meeting attended by two people you know. You have known each person for the same amount of time. Person X is a nonrelative who has consistently shown a high level of care for you, and Person Y is a relative who has consistently shown a low level of care for you.

Attempting to enter the building to save either person would risk considerable harm to you.

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In order to accommodate different descriptions of Person X and Person Y, multiple versions of the vignette were written, conforming to a 2 (related vs. not related) x 3 (high, moderate, or low level of care) presentation of Person X and Person Y. Vignettes were presented such that, overall, both Person X and Person Y represented all possible levels of relationship and all possible levels of care. Dyads were arranged such that all possible combinations of Person X (i.e., high or moderate or low caring people who were related or unrelated) would be contrasted with all possible combinations of Person Y (also high or moderate or low caring people who

were related or unrelated). The order of each possible dyad was alternated between Person X and Person Y in order to eliminate any potential primacy effect. For example, when a moderately caring relative was described in the vignettes as being trapped with a highly caring nonrelative, half of the scenarios would present Person X as the moderately caring relative and Person Y as the highly caring nonrelative. The other half of the scenarios would present Person X as the highly caring nonrelative and Person Y as the moderately caring relative. Having read the vignette, participants completed the questionnaire items. The first item required participants to indicate the likelihood that they would even enter the burning building. The next items (e.g., likelihood of saving each person) required participants to assume that they were, in fact, standing immediately inside the burning building prior to indicating how likely they would be to save each person described in the vignette scenario. At the completion of the session, participants were thanked for their help and fully debriefed about the actual nature of the hypotheses.

Measures

Participants were required to rate the overall likelihood of entering the burning building (on a 9 point scale where, 1 = extremely unlikely; 9 = extremely likely). They also indicated how likely (1 = extremely unlikely; 9 = extremely likely) they would be to attempt to rescue each person (i.e., Person X and Person Y) and rated the ease with which they could think of likely candidates to be Person X and Person Y (1 = extremely difficult; 9 = extremely easy). As a manipulation check, participants indicated on separate 9 point scales the degree to which they perceived Person X and Person Y to be caring (1 = extremely low; 9 = extremely high). Also as a manipulation check, participants indicated the person they imagined Person X to represent and the person they imagined Person Y to represent (e.g., Brother, Sister, Cousin, Friend, Stranger). These descriptors were then converted to numbers that represented the genetic relationship between the participant and each person in the vignette (e.g., brother was coded as 0.50 as the genetic relationship is $r = 0.50$. Similarly, friend was coded as 0.00 as the genetic relationship would approach $r = 0.00$).

RESULTS

Manipulation Checks

One way analysis of variance (ANOVA) yielded a significant effect for participants' perceptions of how caring the persons in the scenarios had been previously, $F(2, 347) = 513.74$, $p < .001$. Specific contrasts revealed that those described in the scenarios as having shown a low level of care were indeed perceived to have shown a lower level of care ($M = 2.49$, $SD = 1.48$) than those described in the scenarios as having shown a moderate level of care ($M = 5.50$, $SD = 1.57$), $t(347) = 15.79$, $p < .001$. Those described as having shown a moderate level of care were, in turn, perceived to have shown significantly lower levels of care than those described in the scenarios as having shown a high level of care ($M = 8.21$, $SD = 1.20$), $t(347) = 14.56$, $p < .001$.

One-way ANOVA also indicated that our Relationship manipulation was effective, $F(1, 348) = 204.96$, $p < .001$. Persons described as relative in the scenarios were perceived to have a closer genetic relationship ($M = 0.25$, $SD = 0.22$) than those described as nonrelative ($M = 0.01$, $SD =$

0.05). No participant reported that they had imagined a grandparent or great uncle or great aunt as the trapped person.

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Self-Reported Likelihood of Saving Persons From A Biologically Significant Situation

The dyadic presentation of Person X and Person Y in the vignettes resulted in interdependence of participant responses. Therefore, analysis of covariance (ANCOVA) were performed on the Person X data only (as a note, exploratory analyses revealed consistent findings for Person Y data). A (2 Relationship: relative, nonrelative x 3 Care: high, medium, low) ANCOVA on the ratings of likelihood of saving Person X revealed statistically significant main effects for both Relationship and Care factors, but no significant interactions. Along with gender, participants' ratings of the likelihood that they would enter the burning building (i.e., risk taking) and the ease with which participants could think of likely candidates for the person in danger (i.e., availability bias) were entered as covariates to control for individual differences in risk taking behaviour and the salience of the situation.

In terms of predicting the likelihood of saving Person X, Care ($F (2, 341) = 65.60$; $p < .001$) had a stronger effect than Relationship ($F (1, 341) = 20.86$; $p < .001$). The Care factor explained 28 per cent of the variance in participants' reported altruistic intervention, compared to 6 per cent being explained by the Relationship factor. The Care x Relationship interaction was not statistically significant, ($F (1, 341) = 0.58$, $p = 0.56$). Table 1 shows the estimated marginal means of participants' ratings, and also the results of specific contrasts (controlling for family-wise error rates) for relative vs. nonrelative at each level of care.

Table 1. Likelihood of Relatives and Nonrelatives Being Saved at High, Moderate, and Low, Levels of Previous Care

Variable Level of Care	Relative Mean (SD)	Nonrelative Mean (SD)	Contrast Significance Level
High	7.71 (1.37)	6.98 (1.39)	$p = .20$
Moderate	6.31 (1.95)	5.30 (1.91)	$p = .05$
Low	4.78 (2.45)	3.57 (1.99)	$p = .01$

Covariate Analyses: Gender, Availability Heuristics and Choosing to Enter the Burning Building

Men and women did not differ in the extent to which they reported they were likely to save people of differing levels of relation and care vis a vis themselves ($F < 0.27$, ns). However, men were more likely to report that they would enter the burning building in the first place ($M = 6.81$, $SD = 2.18$) than were women ($M = 6.07$, $SD = 1.91$), $F (1, 348) = 8.21$, $p < .005$.

Participants reported finding it equally easy to imagine the person being in need of help regardless of whether that person had been a relative or nonrelative, and regardless of whether that person was described as having previously shown the participant a high, moderate, or low, level of care ($F(1, 341) = 1.89$, $p = .17$). Participants' likelihood of entering the building was significantly associated with saving the person ($F(1, 341) = 9.78$, $p = .01$).

DISCUSSION

Compared to similar previous research, this study elaborated on potential contributing factors to individuals' altruistic decisions and also improved the vignette method. The self-reported likelihood of attempting to rescue an individual trapped in a burning building was high if the trapped person had previously shown the potential altruist a high level of care (See Table 1). This was true irrespective of the degree of relationship between the would-be altruist and the threatened individual. When the level of care was perceived to be low the likelihood of attempting a rescue was low. Overall, the differences across the levels of the Care factor (i.e., high, moderate, and low) were greater than the differences across each level of Relationship (i.e., related and non-related). However, at every level of care, relatives were favoured over non-relatives (to a significant degree at both the moderate and low, but not the high, levels of care). Previous research has suggested that considering threatened others as sharing a collective identity with oneself may increase the chances of endangered people being rescued (e.g., Oliner & Oliner, 1988). It is likely that both care and relatedness are important factors in establishing a sense of collective identity. Our data support Hamilton's assertion regarding the superior chances of relatives surviving biologically significant circumstances even when potentially confounding explanations of level of previous care are accounted for (perhaps surprisingly, this has not been accounted for until now).

Our data also support Roberts' and Sherratt's (1998) mathematical models (founded on prisoner's dilemma computer simulations) that suggest that people are more likely to return favours when they have been in a partnership characterized by a history of care. Unlike prisoner's dilemma scenarios, our vignette scenarios prompted participants to consider their actions in biologically significant situations.

Under specific conditions, it seems, caring for another may precipitate quite impressive returns in terms of heroic acts of altruism. Certainly, reporting that one would enter a burning building to save a threatened person may seem a dramatic case of reciprocity given that the threatened individual would likely not have previously had the opportunity to behave similarly toward the potential altruist. However, relatively small initial acts of care establish the necessary conditions for more complex and costly reciprocal interactions. For example, human friendships show increasing escalation of reciprocal behaviours (Halpern, 1997; Roberts & Sherratt, 1998), and this trend is also true of alliances witnessed among monkeys (Seyfarth & Cheney, 1984), chimpanzees (de Waal, 1997), and lions (Heinsohn & Packer, 1995). Moreover, Fehr and Gachter (2002) recently highlighted that people act in a manner that enhances group cooperation in circumstances that offer little or no reputation benefit and will do so even when the situation offers no opportunity for future interaction.

Consistent with Burnstein et al.'s (1994) results, women and men did not differ in their reported likelihood of saving people. However, in our study, we additionally asked whether people would elect to enter a burning building in the first place and women and men did differ in their responses to this item. Our results support meta analyses addressing the manner in which men and women make decisions regarding personal intervention. Eagly and Crowley (1986) indicated that women were less likely than men to give bold direct assistance to those in need. Men were considered to be more likely to comply with role expectations of heroic, chivalrous intervention and women were considered to be more likely to comply with role expectations of long term nurturing forms of helping (Belansky & Boggiano, 1994; McGuire, 1994).

Previous vignette helping research has required participants only to rank order the persons they would save. Ranking does not allow participants to indicate that they would be unlikely to save either person in danger. Moreover, the ranking procedure implicitly suggests that the person ranked first is 100 per cent likely to receive help. We believed that the person most likely to receive assistance would not be absolutely guaranteed to receive help even if they were more likely than the others to be helped (which was shown to be the case). In addition, indicating likelihood on an absolute scale allowed our participants to show how different they perceived the likelihood of saving each person to be.

It is understandable that laboratory researchers have often presented vignette scenarios as stimuli to which participants indicate the likelihood of altruistic intervention (see also Burnstein et al., 1994; Kruger, 2001). In so doing, however, there is a possibility that people report saving those they can envision most easily (i.e., what amounts to an availability heuristic). Our results indicated that an availability heuristic explanation did not account for the experimental effect. In sum, participants gave some thought to whom they would save and did not just elect to intervene on behalf of the first person that popped into their head. Moreover, the risk taking covariate analysis indicated that people do not show heroic, or foolhardy, disregard for personal harm in their decision to save persons in trouble. Rather, their initial decision to even enter the burning building and attempt a rescue is predicated upon their knowledge of whether at least one of the persons inside is worthy of being saved. In addition to showing that people are discriminating in their intervention decisions, these results also suggest that our participants treated the scenarios seriously. If participants had indicated that they would be as likely to enter a burning building when two uncaring people were trapped as they were when two caring, or one caring and one moderately caring, persons were trapped we might question whether the vignette was truly stimulating participants to think sufficiently deeply about the serious nature of the situation.

Vignette and role playing research should attempt to maximize the realism of the scenario being presented. Therefore, in addition to the colourful image of the burning building (and in contrast to Burnstein et al., 1994), we decided not to present the characters in the vignettes as being people who could not possibly exist. As such, participants were not assigned specific relatives to think of in the scenarios (e.g., Person X is your brother who has consistently shown you a low degree of care) for the following reason: not every participant would have had a brother or a sister, which effectively would rule out an r = .50 condition. Moreover, many people who do have a brother or sister would likely not have a sibling that has consistently shown a low level of

care, which would render the Care condition relatively meaningless. Similarly, more participants would likely perceive their mother as caring than as neglectful, so it would make little sense to create a condition that had a fail safe genetic relationship of r = .50 (by designating mother as the r = .50 person in danger) when a third of the vignettes would describe that mother as having shown them a low level of care. For the purposes of our critique we preferred participants to imagine themselves in a position to help people that were real (see also Buskens & Weesie (2000) for similar concerns regarding enhancing the reality of vignettes). We assigned participants to a fundamental Relationship condition (related vs. nonrelated) that would satisfy the requirements for a test of inclusive fitness and then asked participants to indicate which individual relative they had envisioned. Participants' responses revealed that nobody had selected a relative that would suggest they were beyond reproductive age.

Our research has addressed both previous care and relatedness and has accounted for important potential alternative explanations of trends that previously have been presented as strong evidence of inclusive fitness and that have been widely cited in textbooks and also used as the basis for explaining human behaviour in popular science television shows (e.g., The BBC's programme, Human Instinct). In addition, we have examined the affect of mental heuristics that conceivably could influence participant responses to vignette scenarios. By addressing relatedness and previous care, our results strengthen the support for both inclusive fitness theory and reciprocity as they pertain to human helping decisions. In keeping with Hamilton's contention, people are more likely to be helped if a relative is in a position to provide the necessary direct intervention. In addition we have shown that, even in biologically significant situations, the greater predictor of receiving help is the degree of care previously given to the potential altruist.

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APPENDIX A: Stimulus Materials and Scales

All participants read the following basic vignette and information (specific details of Person X and Person Y altered according to the vignette the participant had been assigned):

As you make your way through the city you walk past a building that is blazing with flames. You realize that the building has been housing a meeting attended by two people you know. You have known each person for the same amount of time. Person X is a nonrelative who has consistently shown a high level of care for you, and Person Y is a relative who has consistently shown a low level of care for you.

Attempting to enter the building to save either person would risk considerable harm to you.

1. Please indicate the likelihood that you would enter the building to attempt a rescue (1 = extremely unlikely; 9 = extremely likely).

Assume that you are inside the house.

2. Please indicate the likelihood that you would attempt to rescue Person X (1 = extremely unlikely; 9 = extremely likely).

3. Please indicate the likelihood that you would attempt to rescue Person Y (1 = extremely unlikely; 9 = extremely likely).

Please indicate the degree to which you agree with the following statements

4. It was easy for me to think of a particular person for Person X (1 = extremely difficult; 9 = extremely easy).

5. It was easy for me to think of a particular person for Person Y (1 = extremely difficult; 9 = extremely easy).

6. How caring is Person X (where 1 = extremely low; 9 = extremely high)

7. How caring is Person Y (where 1 = extremely low; 9 = extremely high)

8. Please indicate who you imagined Person X to be:

I imagined Person X to be:

9. Please indicate who you imagined Person Y to be:

I imagined Person Y to be:

APPENDIX B: Descriptive Statistics and Correlations Among the Dependent Variables

Variable	Mean	SD	(2)	(3)
Likelihood of Saving Person (1)	5.82	2.34	.199**	.323**
Likelihood of Entering Building (2)	6.23	1.99		.077
Availability Heuristic (3)	5.85	2.82		

**p < .01

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