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PSYCHOLOGY AND EDUCATION
P. O. Box 7487, SCSU
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Business correspondence to:
(prepayments on orders are appreciated)
Peter S. Kowalski
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ALTRUISTIC BEHAVIOR TOWARD INFANTS IN BIOLOGICALLY SIGNIFICANT SITUATIONS

Cezar Giosan
Department of Psychology
New School University
New York, NY 10003

Natural selection endowed us with the tendency to save, in a biologically significant situation where two relative's lives are at risk, the relative who is closer to engaging in a reproductive career over one who is farther. Previous research has shown that this effect does not hold for infants, however. The present study shows that one of the factors that influences people's preference for saving an infant versus a six-year-old in a biologically significant situation is a tendency of people to maximize the chances of both recipients' genes to be passed on.

A phenomenon that Darwin was not able to address convincingly was the problem of altruism toward kin and nonkin, which could not be explained in his theoretical framework. Although Darwin sensed the answer to the puzzle and touched it marginally in his analysis of self-sacrifice in insects (Darwin, 1859), it took almost a century for a definite answer to emerge when Hamilton (1964) developed the concept of inclusive fitness, which explained why altruistic behavior toward all kin, not only siblings, evolved.

Hamilton's work has been complemented by several attempts to explain altruistic behavior toward nonkin as in the theory of group selection (e.g., Wynne-Edwards, 1962; Wilson & Sober, 1994; Sober & Wilson, 1998), or the theory of reciprocal altruism (e.g., Trivers, 1971; Axelrod & Hamilton, 1981; Williams, 1966).

Research has shown that in a life-or-death situation helping behavior is a function of the degree of genetic relatedness between the donor and recipient. In such situations, as opposed to benign situations where altruism is geared more toward nonkin and the elderly, people tend to help recipients who are genetically closer to them (Burnstein, Crandall, & Kitayama, 1994).

Helping behavior is not only a function of the degree of genetic relatedness. People are also sensitive to the age of the recipients, being more likely to help a relative who is closer to engaging in a reproductive career over one who is farther, because helping the former brings the donor evolutionary benefits more rapidly and with a higher probability. Intriguingly, this effect does not hold for infants. In a hypothetical life-or-death situation, people will choose to save an infant over an older kin, even though the former is more at risk and farther from engaging in a reproductive career (Burnstein et al, 1994).

From an evolutionary perspective, preferentially helping infants is problematic for many reasons. First, in ancestral times, infants were more at risk of contracting illnesses or being killed by predators. Though in our modern societies this is less true than it was only several hundred years ago, the evolutionarily designed mechanisms sensitive to this should still influence behavior. Second, infants require much more nurturance and investment until they return evolutionary meaningful benefits, so they are more costly than the investment in a toddler or adolescent, for example. Helping an adolescent versus an infant is likely to bring the donor benefits more rapidly in that the adolescent may be engaging in a reproductive career in just a few years. Consequently, helping an adolescent will increase donors' chances to pass on his/her genes to a greater extent than helping an infant.

What is then the benefit of helping an infant versus an older kin in a biologically significant situation? The present study explores further the conditions in which, in hypothetical life-or-death situations, people choose to help infants versus older kin.

The argument in the present study is that by choosing to help an infant over a toddler in such situations, people behave evolutionary consistently, because they take into consideration the older child might survive on his/her own. Our hypothesis is that by choosing to save an infant over a toddler from a burning house, for example, people increase the probability of both of them surviving, because they have thoughts that the older one may escape on his/her own. People who behaved this way in the environment of evolutionary adaptiveness should have had an evolutionary advantage over the others and the traits responsible to behavior should have been selected for in the population.

METHOD

Participants

Participants were 48 undergraduate students from the University of Texas at Austin, with no formal training in evolutionary biology, who were asked to fill out a questionnaire to fulfill a course requirement. The mean age was 22.4 years and there were 29 males and 19 females.

Materials and Methodology

Participants were presented with a questionnaire describing a hypothetical situation in which they had to make decisions between saving an infant and a six-year-old child. Two versions of the questionnaire were randomly assigned to the participants. Version one described a situation in which participants had to imagine a mother who has just arrived in front of her burning house, and her two children – an infant and a six-year-old – were in the house in separate rooms. Participants were asked to circle which of the two would the mother try to save first.

The burning house scenario bears a resemblance to a real situation analyzed by Sime (1983) when 50 out of several hundred people died in a fire in a vacation complex. Sime took statements from the individuals who were in the fire and escaped and found that helping behavior was significantly geared to kin. In their studies, Burnstein et al (1994) and Cunningham (1986), used variations of the same scenario. One of the major differences in our setting was that the participants were not told that the recipient who is not helped would not survive. The rationale for this manipulation was that in real life situations people generally have to make decisions in conditions of uncertainty, and they use the "best bet" strategy (Buss, 1999). A simple instruction lacks ecological validity in the sense that it cannot rule out people's tendencies to act as in real life situations.

Version two of the questionnaire described the same situation, with one important modification: in addition, participants learned that the two children were lying unconsciously on the floor, apparently severely burned, and the mother had no clue if they were still alive. This manipulation was meant to rule out people's thoughts that one child had a chance to survive on his/her own. Sex of the recipients in both forms of the questionnaire was randomly varied, but both siblings were given the same sex in any of the questionnaires.

After filling out the questionnaire, participants in both groups were asked to write down an explanation of their choice. Their comments were coded by two independent coders for evidence of the belief that one child might escape on his/her own. After coding, non-agreements were discussed and any inconsistencies were resolved.

Results and Discussion

We first calculated the proportion of people who chose the infant over the six-year-old in the two groups. In group one the results replicated well Burnstein's et al (1994) findings showing that the participants significantly chose to save the infant versus the six-year-old. Only two out of 20 participants chose to save the six-year-old (bin $p = 0.1$, $p<0.001$). In group two, people showed no significant preference for either the infant or the six-year-old. Seventeen participants in the second group opted for the infant whereas 11 opted to save the six-year-old (bin $p = 0.61$, $p<0.345$).

In group two the proportion choosing the six-year-old was significantly higher than the proportion in group one ($x^2_{(1)} = 5.10$, $p<0.01$). Furthermore, the rates of giving the explanation that the older child might escape on his/her own are greatly different between the two groups ($x^2_{(1)} = 27.64$, $p<0.001$). Virtually no participant in the experimental group took into account the probability of survival of the older recipient on his/her own whereas most (77.8%) of the participants in the control group considered this possibility.

These results suggest that in making decisions about helping children in

biologically significant situations, people behave evolutionary consistently, trying to maximize the chances of success in passing on their genes. The strategy of choosing to save an infant over a toddler in a life-or-death situation is evolutionarily adaptive and may maximize the chances for survival of both recipients. This mechanism may have developed in the environment of evolutionary adaptiveness, where our ancestors presumably many times had to face sudden perils, like encountering predators. In such situations, a strategy of saving the least capable of handling the situation alone would have led to a higher reproductive success on the part of the donor and the respective traits would have been selected for in time.

Although these results are promising, several caveats are in order. First and most important, although the proportion of preferences for the older recipient increased significantly in the experimental group, the results did not show a switched preference. If this biological tendency acts alone, their preferences would have been switched. The fact that they were not seems to imply that there is more than one evolved mechanism that influences people's decisions in such situations, or that the mechanism is general, geared to increasing reproductive success in less specific situations. Indeed, Darwinian rules are "if then" procedures and for most mechanisms these decision rules permit at least several possible response options (Buss, 1999, pp. 53).

Another possibility would be that the mechanism that orients people to choosing the infant represents the expression of an attachment system geared at affective preference for babies, which translates in greater nurturance and protectiveness toward the very young. The theory of attachment was developed by Bowlby (1973, 1983) to explain the nature and the biological function of the ties between children and their parents. It may be that people are endowed with an attachment system toward the very young that can override other evolved mechanisms in certain conditions. All these speculations require further research.

Second, one might well argue that people's reactions in real life situations may differ from what they state in a questionnaire where virtually no stress is present and the decision can be made in a lucid state. Our response to this is that our cognitive abilities map evolved mechanisms and consequently there should be no significant differences between the way we make decisions about hypothetical situations and the way we would behave in such situations. This argument is in line with recent developments in evolutionary psychology: Ecological rationality (Cosmides & Tooby, 1996) maintains that the shape and form of our cognitive mechanisms coordinate with the recurring statistical regularities of the ancestral environments in which humans evolved.

The present study is essentially an extension and clarification of Burnstein's et al (1994) study on altriusm toward kin. Further research needs to be done using more representative populations in order to draw general

conclusions. But in spite of these caveats, the present research offers new insights to humans' complex helping behavior and opens new doors for research.

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