
COMMENTS

Response to Rushton and Nicholson

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In this brief commentary on a recent article published in *Ethology and Sociobiology*, the author corrects a misleading reference to her earlier work, and points out some inconsistencies in the arguments of the article in concern. Sociobiology can, and does, make predictions about differential relationships between individuals of differing genetic similarity; a "new," extended theory is not necessary.

I commend Rushton and Nicholson (1988) for citing my earlier (1985) criticism of Rushton's work. Unfortunately, they have cited me in reference to a "fact" that I did not claim and with which I do not desire to be associated, since it is incorrect.

In their paper "Genetic Similarity Theory, Intelligence, and Human Mate Choice," Rushton and Nicholson state that "sociobiological theorizing has emphasized relatives 'identical by descent' where all siblings have a 0.5 coefficient of relationship," and it is at this point that they cite me. There are two reasons why this citation makes me uncomfortable. First, relatives are never "identical by descent" (unless one wants to refer to identical twins, which arise from the division of a single fertilized egg); certain *genes* shared by individuals may be "identical by descent," but not individuals themselves. (I believe that this was just a case of awkward wording, however, it was not my wording.) Second, Rushton and Nicholson's statement implies that all siblings have 0.5 of their genes "identical by descent," which is not true; siblings have an average of 0.5 of their genes identical by descent, but there is a substantial variance; some pairs of siblings are more related than other pairs of siblings.

This variability in the genetic similarity of siblings may prove to be correlated with measures of sibling cooperation or other interactions, but unlike Rushton and Nicholson claim, this result would be consonant with sociobiological theory and does not require another explanation. In a similar fashion, differences in the genetic similarity between grandparents and their grandchildren (which averages, but varies, around 0.25), may also prove to

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be correlated with differential preference or favoritism between pairs. These predictions are yet to be tested, but are consistent with sociobiological theory.

In contrast to the above relationships, which vary around an average, the proportion of genes shared between parents and children because they are identical by descent, is always 0.50, with no variance. That children may resemble their parents more than 0.50 through assortative mating, as Rushton and Nicholson claim, is true, but contrary to their claim, this process cannot make children more related to one parent than to another; thus, parental favoritism, unlike sibling or grandparental favoritism, cannot be explained by differences in the proportion of shared genes. The (incorrect) example that Rushton and Nicholson give suggests that a father may "provide 50% of his genes, 10% of which overlap with the mother's contribution," while the mother "provides 50% of hers, 20% of which overlap with the father's," yielding an offspring that is "60% similar to the mother and 70% similar to the father"; this is impossible. To the extent that the parental contributions overlap, the child will be more than 50% similar to each parent, but will still be equally similar to both. Only in the next generation, when the genes segregate, will there be a differential similarity between individuals of the same coefficient of relatedness; that a child resembles one parent more than another can only be due to dominance relationships among the genes, or to environmentally based similarity.

In closing, I would like to point out that the emphasis of sociobiology on the study of those related through consanguinity rather than affinity (i.e., relatives who share genes that are "identical by descent") by no means precludes studies of differential similarity, the topic that Rushton et al. (1984) tried to claim for their "Genetic Similarity Theory." Relatedness by descent is a key factor for the initial evolution and fixation of altruistic behavior, because of the known statistical regression of genetic similarity between consanguinous relatives. As Hamilton (1975) pointed out, however, consanguinous relationship is not the only factor that can lead to a statistical regression of similarity between individuals. I suggest that interested readers consult Hamilton (1975), Dawkins (1979), and Mealey (1985) for further discussion of these issues.

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