

General Evolutionary Theory

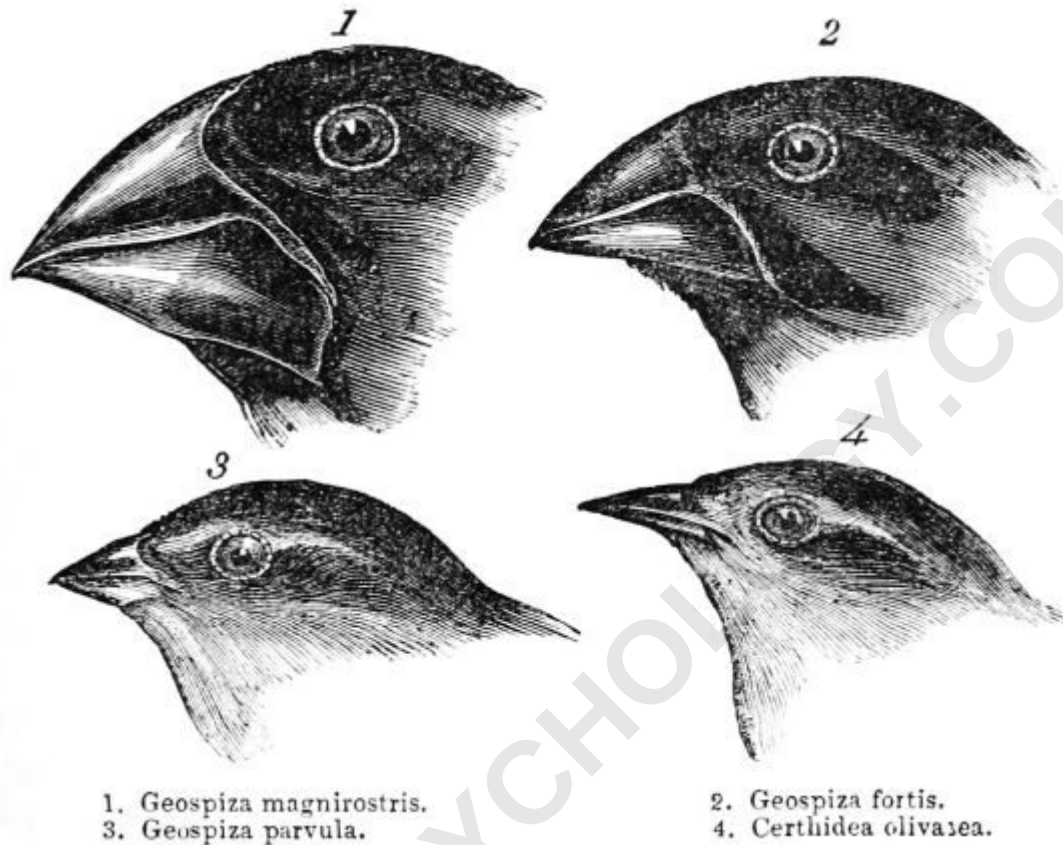
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Evolutionary Psychology is sometimes seen not simply as a subdiscipline of psychology but as a metatheoretical framework in which the entire field of psychology can be examined.



Darwin's illustrations of beak variation in the finches of the Galápagos Islands.

Natural Selection

Evolutionary psychologists consider Charles Darwin's theory of natural selection to be important to an understanding of psychology. Natural selection occurs because individual organisms who are genetically better suited to the current environment leave more descendants, and their genes spread through the population. This process is slow and cumulative, with new traits layered over older traits. The advantages created by natural selection are known as adaptations. Evolutionary psychologists say that animals, just as they evolve physical adaptations, evolve psychological adaptations.

Evolutionary psychologists emphasize that natural selection mostly generates specialized adaptations, which are more efficient than general adaptations. They point out that natural selection operates slowly, and that adaptations are sometimes out of date when the environment

changes rapidly. In the case of humans, evolutionary psychologists say that much of human nature was shaped during the stone age and may not match the contemporary environment.

Sexual Selection

Many traits that are selected for can actually hinder survival of the organism while increasing its reproductive opportunities. Consider the classic example of the peacock's tail. It is metabolically costly, cumbersome, and essentially a "predator magnet." What the peacock's tail does do is attract mates. Thus, the type of selective process that is involved here is what Darwin called "sexual selection". Sexual selection can be divided into two types:

Intersexual selection, which refers to the traits that one sex generally prefers in the other sex, (e.g. the peacock's tail).

Intrasexual competition, which refers to the competition among members of the same sex for mating access to the opposite sex, (e.g. two stags locking antlers).

Inclusive Fitness

Inclusive fitness theory, proposed by William D. Hamilton, emphasized a "gene's-eye" view of evolution. Hamilton noted that what evolution ultimately selects are genes, not groups or species. From this perspective, individuals can increase the replication of their genes into the next generation not only directly via reproduction, by also indirectly helping close relatives with whom they share genes survive and reproduce. General evolutionary theory, in its modern form, is essentially inclusive fitness theory.

Inclusive fitness theory resolved the issue of how "altruism" evolved. The dominant, pre-Hamiltonian view was that altruism evolved via group selection: the notion that altruism evolved for the benefit of the group. The problem with this was that if one organism in a group incurred any fitness costs on itself for the benefit of others in the group, (i.e. acted "altruistically"), then that organism would reduce its own ability to survive and/or reproduce, therefore reducing its chances of passing on its altruistic traits.

Furthermore, the organism that benefited from that altruistic act and only acted on behalf of its own fitness would increase its own chance of survival and/or reproduction, thus increasing its chances of passing on its "selfish" traits. Inclusive fitness resolved "the problem of altruism" by demonstrating that altruism can evolve via kin selection as expressed in Hamilton's rule:

$$\text{cost} < \text{relatedness} \times \text{benefit}$$

In other words, altruism can evolve as long as the fitness cost of the altruistic act on the part of the actor is less than the degree of genetic relatedness of the recipient times the fitness benefit to that

recipient. This perspective reflects what is referred to as the gene-centered view of evolution and demonstrates that group selection is a very weak selective force.

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