



The biological approach: the basics

This activity will help you to...

- Recall biological explanations for psychological and behavioural processes
- Understand the assumptions of the biological approach
- Distinguish between different types of biological explanation

How do biological psychologists see the world?

Bio-psychologists approach human experience and behaviour from the point of view of a biologist. They assume that thinking, feeling and behaviour are caused by activity in the nervous system, especially the brain. They appreciate that a range of processes can influence the development and activity of the brain, including both environmental (e.g. nutrition, variety of stimuli) and innate (e.g. pre & perinatal influences, genetics). Most bio-psychologists take an evolutionary perspective on human behaviour, assuming that it shows some degree of continuity with that of other animals, particularly those with which we share an evolutionary history. As a corollary of this they generally agree that some aspects of human behaviour are influenced by genetics.

How do biological psychologists explain human behaviour?

The range of assumptions that bio-psychologists bring to bear on human behaviour result in a variety of different types of explanation. Depending on the outlook and interests of a particular bio-psychologist they might explain the same behaviour or process in several different but inter-related ways (Kalat, 1998):

- **Physiological explanations** explain behaviour in terms of the structures and processes that produce them. They may relate a particular behaviour to, for example, a specific brain structure or the influence of a particular neurotransmitter or hormone.
- **Ontogenetic explanations** try to capture the development of a particular structure or behaviour, including all the factors that influence this (e.g. genetics, environmental processes).
- **Evolutionary explanations** locate a particular structure or behaviour in an evolutionary context, often focusing on continuities between humans and other species and explaining similarities in terms of shared ancestry.
- **Functional explanations** explain behaviour in terms of the purpose it serves. The presumed purpose is often evolutionary in nature (i.e. a behaviour exists because it increases an individual's chance of survival or successful mating) resulting in many functional evolutionary explanations for human behaviour.

Catchpole & Slater (1995) use the example of birdsong to illustrate the differences between these different types of explanation:

- **Physiological** – birdsong depends on specific key brain areas. Damage or disruption to these areas affects a bird's ability to sing.
- **Ontogenetic** – male songbirds must be exposed to the songs of other adult males within a critical period if they are to sing at all, but they also need the opportunity to practice.
- **Evolutionary** – some species of songbird have very similar songs, suggesting that they evolved from a common ancestor
- **Functional** – male songbirds sing in order to attract mates and to defend territory from other males.

Here are some explanations of phobias from within the biological tradition. Classify each according to what type of explanation it is. Be ready to explain and justify your choices.

Phobias exist because at an earlier point in our evolutionary history they conferred a survival advantage on those individuals that had them. Proto-humans with an inbuilt tendency to avoid certain types of stimulus (e.g. high places, spiders, snakes, dark caves) were more likely to survive to adulthood and reproduce than those who had no such tendency. The inherited tendency to learn easily to avoid potentially dangerous things has persisted even though, in many cases, the environmental features that resulted in the selection pressure have not.

Phobias are caused by abnormal levels of reactivity within the sympathetic branch of the autonomic nervous system, and abnormal activity in parts of the limbic system. Phobic people produce abnormally large fear/alarm reactions when presented with innocuous stimuli that most people ignore.

The tendency to become phobic is inherited but a phobia is only likely to develop if a person who carries the predisposing gene or genes is exposed to particular types of environment. This could include long term exposure to very general classes of stimuli (e.g. chronic stress in childhood) or highly specific learning events. Not all phobias result from the same combination of stimuli: blood-injury phobias seem highly heritable whereas others appear more under the control of the environment.

Phobias are an extreme manifestation of the fight or flight response that is common to all higher animals. In the fight or flight response the sympathetic branch of the autonomic nervous system is activated, causes a number of changes whose purpose is to prepare the body for action. The human fight or flight response has features, such as the hairs on the neck standing up, whose purpose (making an animal appear bigger and more threatening) only becomes clear when it is examined in other animals (e.g. cats, gorillas) that react similarly.

Use your notes and/or textbook to identify other examples of biological explanations you have learned about during your psychology course. Try to identify at least one example of each type of biological explanation. After you have identified a range of biological explanations, prepare responses to the following questions:

- How convincing do you find biological explanations of human behaviour as a whole? What is it about them that you find convincing or unconvincing?
- Where do you think the biological approach stands in relation to the major debates in psychology (free-will vs. determinism; heredity vs. environment; holism vs. reductionism; ideographic vs. nomothetic; the mind-body problem)?
- How is a biological psychologist likely to investigate human behaviour? Why would such methods be preferred? Do you think such methods provide adequate answers to questions about the causes of human experience and action? Why (not)?