

Describe and evaluate assumptions on which the key concepts of the biological perspective are based.

The key concepts in the biological perspective are physiological concepts such as neuronal functioning and its affect on behaviour, localization of function in the brain and lateralization of function in the brain. The assumptions on which these concepts are based include reductionism, that investigations of animal behaviour give insight into human behaviour and that the brain is crucial to behaviour.

The use of reductionism is of central importance to the biological perspective. The discipline of biology as a science uses reductionism to investigate natural processes and organisms. Reductionism is basically the belief that studying the parts of a system or organism facilitates an understanding of the whole. Rose (1997) identified this as one of the four different meanings of the term reductionism. Biological psychology is no different than biology in its acceptance of this.

A fundamental approach in biopsychology is to consider the functioning of an individual neuron or neurotransmitter and derive from this an effect on an organism's behaviour. This overgeneralization from an investigation of part of a system may be problematic, e.g. the dopamine hypothesis that considers that schizophrenia is caused by too much of the neurotransmitter dopamine was based on two reductionist observations. The first was that drugs that seemed to have an impact on positive schizophrenic symptoms functioned by modifying dopamine receptors. The second was that habitual users of amphetamines exhibit similar psychotic episodes to schizophrenia and amphetamines have an effect on dopamine receptors.

More recent evidence has now shown that this view of schizophrenia is overly simplistic. Even focusing on the neurochemical basis of schizophrenia, other neurotransmitters are involved. There is a danger that this oversimplification leads to incorrect conclusions. Additionally, reducing behaviour to purely biochemical explanations neglects holistic explanations of phenomena which have as much value as reductionist explanations.

Reductionism allows the identification of and manipulation of independent and dependent variables. This is essential in order to perform experiments and determine cause effect relationships. Many of the advances in psychological thinking have been dependent on this.

The assumption that an understanding of animal behaviour provides insight into human behaviour gained ground in the middle of the 19th century, when Darwin's *Origin of the Species* was published. Before this the church had dominated science and considered humans to be altogether different from other animals. God had created man in his own image and God was not considered to be animal-like. Once science began to accept that the origin of man was identical to that of his phylogenetic cousins, the study of animal behaviour became an accepted way of studying human behaviour. Of course, there are drawbacks to this approach. Many behaviours are specific to a species. An extreme example is that humans do not eat their mates after sex as a Praying Mantis does. There are indeed limitations to this philosophy and there are exceptions of behaviour that show tremendous differences between primates.

Another drawback of studying animal behaviour as a model of human behaviour is the problem of anthropomorphism. When studying animal behaviour many researchers use human terms to define and explain animal behaviour, inadvertently making the animals human-like. This bias in thinking can lead to fashionable explanations of human behaviour being placed onto observed animals and the data that has been gathered, rather than the data being used to test the explanation.

The basic assumption that the brain is fundamental to behaviour has long been accepted within psychology. Indeed, many texts define psychology as the study of brain and behaviour. However, historically this assumption has not always been made. The ancient Greeks did not consider the brain to have this function and likened the brain to a giant blood cooling system. More recent ideas have begun to investigate the brain-body links. The brain is one organ within the body and responds to both chemical and neuronally transmitted signals within the body.

Related to this assumption has been the assumption that most of the information processing functions of the brain are performed by the neurons. However, this view is rapidly changing. Investigations into other cells within the brain are showing that the glial cells are responsible to some extent for how the brain functions, both in terms of information processing as well as in supporting how the neurons perform their functions.

The assumptions on which the key concepts of this perspective have been based tend to be continually reassessed within psychology. Many of these assumptions are undergoing change or being tempered by considerations of other assumptions and approaches, e.g. holistic approaches to biopsychology and considerations of other perspectives are shaping how this perspective is developing. In particular, the current debates concerning mind and free-will are testing the boundaries and beliefs of biopsychologists.