

Critically consider Piaget's theory of cognitive development

Piaget (1950) was interested in how intelligence changes as children grow (genetic epistemology). Cognitive development occurs through the interaction of innate capacities and environmental events, and children pass through a series of stages. These are hierarchical, invariant, universal and qualitatively different, that is, each stage involves a different type of intelligence. Underlying the stages are functional invariants, most important being assimilation, accommodation and equilibration. Assimilation is the process by which we incorporate new information into existing schemas (the basic building blocks of intelligent behaviour, mental structures which organise past experience). Accommodation involves modifying existing schemas so as to meet the demands of the situation or take in new information. When assimilation is sufficient for the child to deal with most new experiences, it's in a state of equilibrium (produced through equilibration). Otherwise, cognitive disequilibrium results in accommodation. Assimilation and accommodation together constitute adaptation.

The stages of cognitive development are the sensorimotor (0–2), pre-operational (2–7), concrete operational (7–11) and formal operational (11–15). A major development within the sensorimotor stage is object permanence. 'Pre-operational' conveys that the child is largely influenced by how things look, rather than by logical principles or operations. The intuitive sub-stage (4–7) has probably been investigated more than any other aspect of Piaget's theory, in particular egocentrism and conservation. Both are related to centration, which involves focusing on a single feature of an object or situation. For most logical operations, it's necessary to take several – or all – features into account. So, the four-to-seven-year-old is egocentric and is also unable to conserve.

According to Piaget, the egocentric child sees the world from its own perspective and fails to appreciate that other people might see things differently. A classic demonstration of this is Piaget & Inhelder's (1956) Swiss mountain scene experiment. The child walks round and explores a 3-D model comprising three mountains of different colours, each with something different on top. The child then sits on one side, while a doll is placed at a different location. The child is then shown 10 pictures taken from different points around the model and is asked to choose the one that represents how the doll sees it. Four-year-olds always chose a picture which matched their own view, while six-year-olds showed some awareness of alternative perspectives. Only seven- and eight-year-olds consistently chose the correct picture.

The classic conservation of liquid quantity experiment (Piaget, 1952) involved beakers of coloured water. The child is asked if two beakers, A and B, contain the same amount of liquid (the pre-transformation question), which they do. In full view of the child, the liquid from B is poured into a taller, thinner beaker, C. The child is asked the questions again (the post-transformation question). Pre-operational children answered 'No' to the second question, because 'It looks more' or 'It's taller'. This is despite their agreement that none has been spilled or added.

Piaget concluded from the Swiss mountain scene experiment that children under seven are bound by the egocentric illusion. That is, they fail to understand that what they see is relative to their own positions, and believe that what they see is how things 'really' are for everybody. But critics see the tasks as an unusually difficult way of presenting a problem to a young child. When it's presented in a way that makes 'human sense' (Donaldson, 1978) even three-and-a-half-year-olds can appreciate the world from another person's viewpoint (Borke, 1975). Gelman (1979) showed that four-year-olds adjust their explanations of things to make them clearer to a blindfold listener and use simpler forms of speech when talking to two-year-olds. Neither finding is consistent with Piaget's claim that four-year-olds are egocentric.

The methodology of Piaget's conservation experiments has also been questioned. Rose & Blank (1974) and Samuel & Bryant (1984) dropped the pre-transformation question, and in both studies six-year-olds were much more likely to show conservation than when asked both questions. The standard form of the task unwittingly 'forces' children to give the wrong answer. Also, according to Piaget, it should make no difference how the transformation happens – or who does it. But McGarrigle & Donaldson's 'Naughty Teddy' experiment shows that it does matter. Pre-operational children showed conservation when the transformation was 'accidental'.

Piaget's theory has had an enormous impact on our understanding of cognitive development, and it remains a source of influence in both psychology and education. But many fundamental aspects of his theory have been challenged, and fewer and fewer developmental psychologists accept his (or other) stage theories. Cross-cultural support is mixed. Dasen's (1994) research with Aborigines living in remote parts of the Australian desert found the same shift from pre-operational to concrete operational thought on conservation tasks – but this happened between 10 and 13 (rather than five and seven). On spatial tasks, the shift occurred much earlier than for Piaget's Swiss sample. These differences can be explained in terms of the Aborigines' survival needs. But Piaget largely neglected the contextual aspects of children's cognitive development. Underlying Piaget's theory is an image of the child 'as scientist' (Meadows, 1995). Children are largely isolated from other people as they construct their understanding of the physical world. By contrast, the social nature of knowledge and thought is central to Vygotsky's theory of cognitive development. (862 words)

Note: This is an essay where you could draw diagrams to save you having to describe things, such as the Swiss mountain scene experiment and the conservation experiment. '... no behaviour is determined solely by culture or solely by biology. The two major classes of behavioural determinants always operate in such an interactive manner that they are difficult to separate ...' (Segall et al., 1999).