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Module 101

Did Piaget under estimate what children understood about the physical world?

This is an essay into Piaget and how he under estimated what children understood about the physical world. It will look at studies, which illustrate the importance of context and social factors on children's cognitive development.

There have been many studies in to the physical development, communication and language skills of children. Children's perception of the physical world around them, however, had been largely ignored until the late 19th century. Jean Piaget asked the question "How does a child's knowledge of the world develop? (Bee, 2000) The answers to this question played an important part in revolutionising child studies and producing the first complete and detailed analysis of cognition in children. The theory is based on a child's development of cognitive structure. Cognitive structures are mental representations or rules that aid the child with thinking, problem solving and in dealing with the world around them in general. These mental representations can apply to both environmental events and their relationship with other constructs.

Piaget's theory was both a constructionalist and an evolutionary theory. Bee (2000) believed that Piagt's theory was based, not on the individual differences of children, such as how well they can remember a shopping list but on cognitive skills that can be generalised to children as a whole. In order to produce this theory, Piaget studied both his own children and children that were present at his Geneva Centre of Genetic Epistemology. It is a staged theory in which children progress through four stages of development. These are the sensorimotor stage, the pre-operational stage, concrete operations and formal operations. As the child moves through each stage a more

appropriate model of thinking is constructed to enable them to better understand the physical world around them.

Many psychologists have found flaws with the work of Piaget. The main concern is with the language that he used as this may have played a part in the children's miss understanding of the experiments rather than it being due to the lack of developed cognitive skills. Piaget's questioning techniques during the experiments has been under dispute, as he does not ask each child the same question during an experiment. This may provoke different answers in different child. It is this that may have lead Piaget to have a false negative view on a child's understanding of the physical world. The other criticism is that Piaget put too much emphasis on the progression from one stage to the next and under estimated the importance of the smaller steps such as assimilation or deferred imitation. Piagetian theory also states that humans are born with the ability to move through this systematic process and the different children will move through the same stage at the same age. This ignores other issues such as whether the child is blind or has a learning disorder.

The first stage, the sensorimotor stage is evident between the ages of 0-2 years. It is largely characterised by a baby's ability to grasp the theory of object permanence. Piaget illustrated this with a small experiment involving a small object. 2-month-old babies were familiarised with the object and were shown to have an interest in them. A cover was then placed over them that removed the object from the babies' sight. As soon as the object was out of sight the babies lost interest and made no attempt to look for the object. Thus the phrase "out of sight, out of mind" seemed to be applicable here. However when the experiment was repeated with 8 month olds and

again with 18 month olds the findings were different. It was found that older babies had grasped the idea of object permanence and were able to reach for the object when it was out of sight, some were even able to uncover it. However, Piaget's theory of object permanence may not be completely accurate. Bower (cited in Bee) conducted a study using 3 – 4 month old babies, in which a favourite toy was hidden behind a large black screen. When the screen was eventually removed it was found that the babies showed surprise in the fact that the toy was still there. This suggests that object permanence may not be as well developed at this stage as was thought by Piaget. Baillargeon (1987) did another study that suggests that Piaget did under estimate children's understanding of the physical world. Baillargeon used 3,4 and 5-month-old children to investigate their perception of object permanence. Infants were habitulised to a rotating drawbridge that either fully closed or went half way. They were then either shown the same rotating drawbridge that either appeared to pass through a clown's head or carried on rotating as normal. Findings of this study concluded that a child will spend longer looking at an impossible and unfamiliar event than they do looking at a possible and familiar event. This shows that babies have the ability to recognise an impossible event from a very young age.

The next stage in Piaget's theory is the Pre-operational stage and occurs between the ages of 2 and 7. Carlson stated that the main characteristic of this stage is the child's ability to think logically as well as symbolically. This is shown by the way in which young child will arrange their toys in the shape of another object, a car for example. Another important aspect is conservation, which normally develops towards the end of the stage. Piaget claimed that children have problems conserving the volume of something. In one of Piaget's studies he poured equal amounts of water into two

glasses. Once the child had established that there was the same amount in each glass, one was poured into a taller, thinner glass. When the child was asked to say if they had equal amounts of water in the answer was normally no. Piaget found that pre-operational children founder it hard to conserve quantity once it had changed its appearance, than children in the concrete operations stage. However Piaget has been criticised because he ignored the importance of context in his conservation experiments. McGarrigle and Donaldson 1985 (cited in Lindon) carried out the naughty teddy experiment. It was similar to Piaget's experiments into conservation, except it involved a "naughty teddy" which messed up the row of counters. It was found that when the teddy "accidentally" messed up the rows, children were more likely to say that the rows still had equal numbers of counters, even though they weren't in the same shape. This may have been because the teddy gave them a concept in which they could understand why the how the counters were still the same. Thus contradicting Piaget's view that pre-operational children have no perception of conservation as six years olds were used in this study. However, it has been said that the teddy merely distracted the children from the original task and they looked on the newly arranged counters as an entirely new problem.

The third stage of Piaget's theory is concrete operations. This stage is recognised by the decline of egocentrism and the child's understanding of conservation of quantity. Concrete operations is normally found from the ages of 7 to 11 and marks the child's transition into adolescence. During this stage children realise that there is more than one way of looking at the world other than their own and thus become less egocentric. Piaget did a study using pre-operational children and involving a doll and a mountain. The child was asked to say what the doll could see at various places on the mountain.

Piaget found that children would use their own viewpoint as the dolls up until roughly halfway through the concrete operations stage. However Hughes conducted a follow up study in which the children were asked whether the police officer would be able to see what the doll was doing. Hughes found that the majority of children showed no egocentrism and were able to answer correctly. This again contradicts Piaget's work as he believed that egocentrism did not decline until later on in the stage.

The fourth and final stage of Piaget's theory is the formal operations stage. The child will normally enter this stage at 11 and have all the basic views of an adult. Children in this stage have the ability to think logically and reason about hypothetical events or objects as opposed to the symbolic way that was used in earlier stages. However not all children are able to progress to this stage and may remain in the concrete operations stage for the rest of their lives.

So in conclusion Piaget did under estimate children's understanding of the physical world. The main problem with the theory was that Piaget constantly took the false negative view and believed that children had under developed cognitive skills, when in fact they may have just been confused by the experiment. Another reason why he may have under estimated the children is the lack of continuity in his questioning. However he did create the first systematic study into the cognitive development of children. Piaget's theory has encouraged many other psychologists into further studies of development.