

Criticisms of Piaget's "Stage Theory"

There have been a number of criticisms leveled at Piaget's theory. Here are some of the most common ones:

1). Piaget's Terminology and Methodology were Questionable

The scientific method is a relatively straight-forward two-step process. Firstly, the scientist makes an assertion or asks a question (creation of a hypothesis). Secondly, then they develop and conduct experiments to either confirm or falsify (disprove) the hypothesis. While conducting experiments scientists take measurements, record results and observations. Whenever a scientist records their results it is crucial they use clear, unambiguous terminology; that is, they must use terms and concepts and methods which are universally accepted and used by scientists. This reduces the possibility for confusion.

Falsification is a process whereby a hypothesis or theory can be shown to be false by way of practical observation. In this sense, to *falsify* means to *nullify* or not "to commit fraud" but "show to be false".

A hypothesis remains only a hypothesis until the original experiment has been repeated by someone else. Replication is important because science works on the principle of **falsification**; that is, if a second scientist successfully duplicates the results of the first scientist (using the exact same methods, terms, concepts) then the hypothesis moves closer to becoming accepted as a scientific fact. If for whatever reason the second scientist cannot duplicate the results of the first, then the hypothesis has been falsified or "shown to be false." For something to be considered a fact it *must be repeatable*. If the experiment cannot be exactly replicated, this points to one or two conclusions: firstly, that the original experiment was poorly designed; or secondly, there is nothing there to study in the first place.



In 1989 physicists Martin Fleischmann and Stanley Pons claimed they developed a method by which cheap energy could be produced through a process called cold fusion. Following proper procedure Fleischmann and Pons submitted their study for peer review. No other scientist was able to actually reproduce the results of the original study. The vetting process actually revealed the original study was fraught with experimental error (cold fusion turning out to be nothing more than experimental noise in the data). Some critics of science point to the cold fusion incident or situations like it

to illustrate how unreliable science is: if science is always correcting itself why ever trust the process at all? This criticism indicates a fundamental lack of scientific literacy on the part of critic; that is, correcting mistakes instead of persisting in error is actually a good thing. This is because you get better and more accurate results through correction/falsification. So although Fleischmann and Pons initially got it wrong the scientific community nevertheless eventually got it right.

In order to successfully falsify the results of an experiment, researchers must share a set of procedures and terms in common. This ensures that when a hypothesis is being falsified that a second, identical experiment is being conducted. If the second (repeated) experiment is even a little different, you can and will get entirely different results. Accuracy is of the utmost importance and only possible if a shared set of procedures and terms are used from research team to team.

Critics of Piaget point out he was inconsistent in recording the methods by which he arrived at his results. Consequently, it is difficult for other scientists to replicate Piaget's results. For example, consider Piaget's concepts of *accommodation* and *assimilation*. He used these terms to identify changes occurring over several stages. But what changed exactly from stage to stage? What was the mechanism? Was the change psychological or physical or both?

He never offered a specific explanation for what changed from stage to stage. He only says change was observed. If he were to identify some specific mechanism was at work, then scientists could go about testing for this mechanism's existence. In Piaget's defense, he did offer up the following explanation for the existence of his proposed stages of development, i.e. when the child's mind physically changed so too did their psychology. The problem with this explanation though is it is too general to be of much good. What part of the brain changed exactly? Scientists are always striving for greater and greater accuracy. If explanations are too general there is a greater likelihood they are wrong or fallacious.

2). Piaget's Stages are Artificial, Not Real, Categories

A major criticism stems from the very nature of stage theory itself. Piaget claimed there were distinct stages children grew in to and out of and that these stages could not be skipped. The reality is his view of stage development may be overly simplistic. In 1992 a researcher named Wayne Weiten pointed out Piaget may have jumped to too many conclusions about childhood development. Piaget assumed children in the sensorimotor stage did not possess something called object permanence, i.e. if you hid an object from them it would not just be hidden but cease to exist to them altogether. However, Weiten

cites studies conducted by Gordon Bower (1982) and Judith Harris (1983) who found that some children actually develop object-permanence earlier than Piaget thought; moreover, other researchers have established that preoperational children may actually be less egocentric than Piaget assumed. The researcher John Flavell demonstrated, contrary to Piaget's theory, that even a three year old looking at the front of a card could be aware the adult holding it up (looking at the back) had a different point of view.

The fact individual differences exist among children suggests we should not pigeon-hole or explain the cognitive development of *all* children by using neat and tidy categories (or stages). The reality is children of similar ages vary widely across Piaget's stages. (Also, some children/adults never achieve the level of Piaget's fourth stage.) We have clinical evidence establishing children can simultaneously reside in one or more of Piaget's stages.

If Piaget's stages aren't hard and firm as the evidence suggests, what is the point of thinking any longer about cognitive development in terms of stages? In Piaget's defense, his hypothesis children process information differently than adults could be true while his explanation for these differences (appealing to the existence of stages) might be false or overly simplistic. In some respects, it might make more sense to view psychological and cognitive differences as developing along something akin to a spectrum as opposed to discreet stages.

3). Piaget Did Not Provide Enough Corroborating Evidence

According to Piaget's theory the cognitive capacity (brain power) of a child at the pre-operational (2-7 years) stage was qualitatively different than a child residing at the concrete operation (7-11 years) stage. In short, Piaget was arguing a five year old was physically incapable of the level of cognition (thinking) a ten year old was. Critics like Peter Gray (1994) pointed out Piaget provided no conclusive evidence in support of this idea.

The most important aspect of Piaget's theory is each cognitive stage is different, not just as a matter of degree (level), but rather a child's *type* of thinking depends entirely on the stage it is in. Finding evidence in support of Piaget's claim here has not been easy. This criticism has a further implication. If each stage is marked by a new type of thinking, then as a child ages there should be signs indicating the sudden acquisition of certain new abilities. In fact the opposite is true. Children tend to progress rather

slowly and gradually. Peter Gray offers the example of the conservation-of-numbers¹ which most children can understand by about age five, compared to the conservation-of-substance² which normally develops around age eight. While Piaget does admit that some developments can be slow, critics argue that overall, cognitive development is *so slow as to remove the need for a stage theory at all*.

4). Piaget Over-emphasized the Importance of Physical Interactions for Cognitive Development

Another criticism is leveled at Piaget's action-oriented approach. Piaget believed a child had to manipulate physical objects—play with a ball, shake a rattle, etc.—for normal cognitive development to take place. However, this is disproven by virtue of the fact children born with physical challenges are more than capable of normal cognitive development. Also, the physical nature of Piaget's theory fails to explain how children acquire an understanding of abstract words that don't necessarily relate to a physical object. For example, a child could learn the word “ball” from physically interacting with it. The child could further learn that the ball was “hard” or “soft” through that interaction; however, how does a child come to appreciate abstract ideas and use words like “love”, “beautiful”, or “true”?

5). Piaget's Studies were Culturally Biased

Piaget claimed his Stage Theory was universally applicable; that is, it could be trustworthily applied to understand the cognitive development of any child regardless of culture. Lev Vygotsky criticized Piaget for not appreciating how important and formative culturally specific influences were on cognitive development.

If Piaget's theory had universal explanatory power then the comparison of a four year old living on the African Savannah and a four year old living in a Manhattan apartment should reveal fundamental similarities; however, this is not the case: the African child possesses skills the American child does not and *vice-versa*.

Vygotsky pointed out that the children Piaget studied grew up in Geneva, Switzerland. These children were Western-educated and trained to think in corresponding ways; that is, the pressure to learn mathematics in an industrial society shaped the Western child to look at the world slightly different than

¹ To conserve number means that a young student understands a quantity does not change if it is rearranged, covered up or hidden behind a box.

² Conservation refers to a logical thinking ability that allows a person to determine that a certain quantity will remain the same despite the adjustment of the apparent size of a container or shape.

the child from Africa who was pressed to recognize signs of danger, e.g. lion tracks, seasonal changes, and so on. Piaget largely ignored this cultural influence. Later tests have shown that the specific skills Piaget identified with his stages—pre-operational (child doesn't understand concrete logic) or concrete operational (children have difficulty understanding abstract concepts)—were heavily dependent on formal Western schooling. In other words, if a child who grew into an adult did not require advanced numeracy skills they simply would not develop them (not because they were cognitively incapable but because they were culturally irrelevant).

Conclusion

Having said all of this, Piaget's theory is still greatly respected in the psychological community. His theory has encouraged other developmental psychologists to pursue new areas of research. Piaget's influence on the world of education in particular has been unmistakable. While perhaps not entirely accurate, Piaget's theory of cognitive development provides a detailed account of the order in which Western children seem to develop.