

Neo-Piagetian Theory: Evolving Beyond Cognitive Stages

Authored by
mohammad looti

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In the recent years, several scholars attempted to ameliorate the problems of Piaget's theory by developing new theories and models that can accommodate evidence that violates Piagetian predictions and postulates. These models are summarized below.

The neo-Piagetian theories of cognitive development, advanced by Case, Demetriou, Halford, Fischer, and Pascual-Leone, attempted to integrate Piaget's theory with cognitive and differential theories of cognitive organization and development. Their aim was to better account for the cognitive factors of development and for intra-individual and inter-individual differences in cognitive development. They suggested that development along Piaget's stages is due to increasing working memory capacity and processing efficiency. Moreover, Demetriou's theory ascribes an important role to hypercognitive processes of self-recording, self-monitoring, and self-regulation and it recognizes the operation of several relatively autonomous domains of thought (Demetriou, 1998; Demetriou, Mouyi, Spanoudis, 2010).

Postformal stages have been proposed. Kurt Fischer suggested two, Michael Commons presents evidence for four postformal stages: the systematic, metacognitive, paradigmatic and cross paradigmatic. (Commons & Richards, 2003; Oliver, 2004).

A "sentential" stage has been proposed, said to occur before the early preoperational stage. Proposed by Fischer, Biggs and Biggs, Commons, and Richards.

Searching for a micro-physiological basis for human mental capacity, Traill (1978, Section C5.4 ; - 1999, Section 8.4) proposed that there may be "pre-sensorimotor" stages ("M-1L", "M-2L",) -- developed in the womb and/or transmitted genetically.

Postulated physical mechanisms underlying "schemes" and stages

Piaget himself (1967) considered the possibility of RNA molecules as likely embodiments of his still-abstract "schemes" (which he promoted as units of action) -- though he did not come to any firm conclusion. At that time, due to work such as that of Holger Hydén, RNA concentrations had indeed been shown to correlate with learning, so the idea was quite plausible.

However, by the time of Piaget's death in 1980, this notion had lost favour. One main problem was over the protein which (it was assumed) such RNA would necessarily produce, and that did not fit in with observation. It then turned out, surprisingly, that only about 3% of RNA does code for protein (Mattick, 2001, 2003, 2004). Hence most of the remaining 97% (the "ncRNA") could now theoretically be available to serve as Piagetian schemes (or other regulatory roles now under investigation). The issue has not yet been resolved experimentally, but its theoretical aspects have been reviewed; (Traill 2005 / 2008).