

## Social cognitive theories of jean piaget and jerome bruner

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### Abstract

Japanese schools have traditionally used solely behaviorist methods of teaching. Many institutions still use these techniques. With modernization of society, educational methods and techniques must also modernize. Moreover, there is recently much concern about keeping modern Japanese students interested in studying and classroom instruction. With this in mind, we must think about methods of instruction that are theoretically based, but stimulating and even exciting for the students. This paper introduces, compares, and contrasts the theories of two great psychologists and theorists in the area of social cognition : Jean Piaget and Jerome Bruner. Included is a discussion of major influences to their theories. While these theories may seem dated to psychologists who study learning, they are only recently being greatly explored in the fields of educational psychology and instructional design.

Keywords : Behaviorism 行動主義 , Social Cognition 社会的認知 , Constructivism 構成主義

### Introduction

Cognitive theory is a somewhat complex idea and proposes that development in human beings is a function of an interaction with their environment and personal experiences (Meece, 1997). However, cognitive theorists place emphasis on things that are not so tangible. West, Farmer, & Wolff (1991, p. 5), clarify this by saying that "cognitive theorists emphasize internal processes and knowledge representations which are impossible to observe directly, but which are inferred."

Although development is crucially linked with education, it has often been taken for granted (Schunk, 2000). With this in mind, the sciences of cognitive psychology and pedagogy have fielded some great minds that have conducted considerable and worthwhile research in the area of cognitive development. Their collective goal has been to make a solid link between development and learning.

This paper will discuss the theories of two great cognitive theorists : Jean Piaget and Jerome Bruner. It will be important for the reader to understand their theories in the context in which

they developed. This will be tied with a discussion of major influences that they each had and how these influences affected the outcome of their theories. Finally, this author will compare and contrast the theories and point out where they are both similar and different.

Jean Piaget (1896-1980)

Jean Piaget was the son of a university professor of ancient literature at the University of Neuchatel, his hometown in Switzerland. Jean grew up very interested in studying about many things. At the age of 11, he wrote an intellectually stimulating paper about the albino sparrow. This was considered to be the start of a brilliant scientific career made of over sixty books and several hundred articles (Smith, 2000).

His adult research interests moved from natural science at the University of Neuchatel, where he received his Ph.D., to psychoanalysis at the University of Zurich, to studies in intelligence at Ecole de la rue de la Grange-aux-Belles in France. This was a boys' institution created by Alfred Binet (Smith, 2000). This post in France can be seen as the beginning of his studies about intelligence and how children's minds grow. Here Piaget departed from the standard intelligence testing styles and their simple true/false or yes/no pattern. Instead, he interviewed the students and used psychiatric questioning techniques. In other words, he began his research in how children learned and reasoned (Boeree, 1999).

The next step in Piaget's career was to go back to Geneva and the J.-J. Rousseau Institute. But, one cannot deny that the births of his own children were major influences on his studies. According to Dr. Boeree (1999), "They immediately became the focus of intense observation by Piaget and his wife." And from the mid-1920's, Piaget became the Chair for a various university departments and colleges, many of them simultaneously, and focused more and more on his theory of cognitive development.

Piaget theorized that cognitive development depended on four factors : biological maturation, experience with the physical environment, experience with the social environment and equilibration. The first 3 are self-explanatory and the fourth is what brings them all together. Equilibration is the biological drive to produce an optimal state of equilibrium between cognitive structures and the environment (Duncan, 1995).

Piaget further theorized that there are four stages of cognitive development. He claimed that we can also roughly estimate the age at which people pass through these stages. There has been

much written about each of these stages, but this author will simply describe each stage briefly :

The sensorimotor stage usually occurs between the ages of 1.5 to 2 years of age. In this stage of development, "children's actions are spontaneous and represent an attempt to understand the world," according to Schunk (2000). One can note that this stage is usually the quickest to get through. This is because it represents a rapid recognition of basic knowledge that children must acquire in order to simply exist. They make concrete connections with things like : The baby bottle is for food, the rattle is for making noise, and so on.

This leads to the Preoperational stage, usually occurring between the ages of 2 to 7 years old. In this stage, children remain primarily focused on the present, but can begin to perceive the past and the future. They cannot easily think in more than one dimension. So, 10 cookies on the table in front of them might seem like a larger amount than 10 cookies in a box. They also have problems distinguishing between fantasy and real-life. However, they start to realize that some people think differently than they do themselves (Schunk, 2000).

The next stage is the concrete operational stage and occurs usually between the ages of 7 and 11. This term is marked by formal schooling. Children develop socially and linguistically. Reversibility in thinking allows them to develop skills needed to understand mathematics and other complex operations. In this stage, people start to draw on experiences, and not just perception, to gain knowledge (Schunk, 2000).

Piaget's final stage is formal operations and is from around the age of 11 on into adulthood. Thought is no longer simply on tangibles. At this stage, people can think of abstract ideas and compare reality to the ideal. People can make up their minds about something based on their own feelings (Schunk, 2000).

Jerome Bruner (1915-)

Bruner is a modern theorist who was born and raised in the US. He received his undergraduate degree in psychology from Duke University and went on to Harvard to finish his post-graduate work, including his Ph.D. in 1941. Ornaghi & Groppo (1998) outline major influences leading up to the development of his cognitive theories :

Between 1939 and 1945, Bruner studied about public opinion and propaganda. This included service in the US Army Intelligence Corps, where he worked as a propaganda officer.

Between 1946 and 1950, he was exposed to European theories of learning. This includes

Gestalt theory. This is when we start to see his constructivist views taking shape in Bruner's research, according to Ornaghi & Groppo (1998).

Between 1950 and 1966 Bruner participated in what was called the "cognitive revolution." He was influenced by Piaget, Vygotsky and others. It was during this time that Bruner published his well-known book, *The Process of Education*. In the same year, 1960, Bruner co-founded and took the post of Director of the Harvard Center for Cognitive Studies. Most of his major literary works outlining his theory on cognitive development were published by the end of 1966.

Bruner's (1964) theory clearly states, "The development of human intellectual functioning from infancy to such perfection as it may reach is shaped by a series of technological advances in the use of mind" (p. 1). These technological advances depend on increasing language facility and exposure to systematic instruction (Bruner, 1966). Moreover, the cognitive processes that are thoughts and beliefs balance what we get from outside stimuli and give us a sense of balance (Schunk, 2000).

Bruner said that people represent knowledge in three ways and these emerge in developmental sequence : Enactive, iconic and symbolic (Bruner, 1964; Bruner, Olver & Greenfield, 1966). Some people want to call these stages, but Bruner rejects them as stages and simply refers to them as modes of learning (Hevern, 2003).

Enactive representation includes use of motor skills. In this representation, people manipulate objects. They learn to do things like drive a car or use a computer. Babies would learn that a bottle is something that they suck on to get milk.

Iconic representation has to do with images and things that can be altered. For example, we can imagine a bus station that is empty or a station that is crowded with many people. We think about the differences in these two situations separately.

Symbolic representation implies using symbols to change knowledge into a code. For example, math variables or even advanced language skills are typical here. Bruner (1964) used the example of how the word Philadelphia does not look at all like the city, yet we recognize it and associate it with that city.

The term spiral curriculum is also associated with Bruner. This concept suggests that teachers vary their instructional methods based on the developmental level of the students. Bruner is

well-known for his controversial proposition that any content can be taught in a meaningful fashion to learners of almost any age, if the proper technique focusing on the target students' developmental level is used. On top of this, instructors should revisit material that has been previously learned in order to reinforce it and build upon it even more (Schunk, 2000).

#### Similarities

The most striking similarity between these two theories is that they are both constructivist in nature. Bruning Schraw, & Ronning (1999) point out that "Constructivism is a psychological and philosophical perspective contending that individuals form or construct much of what they learn and understand." Clearly, both of these theories require that students be active learners and that they must construct knowledge by themselves.

Piaget's theory is constructivist because it forces children to utilize what they have acquired from their interaction with the world and to then take those concepts and impose them onto the world again in order to make sense of them (Byrnes, 1996). At the same time Bruner's theory would be considered constructivist because it demands that learners assign meaningful stimuli to everything based on the cognitive capabilities and experienced they have culled and gleaned from the world (Schunk, 2000). Within all of this, both theorists expand on the importance of language.

As far as designing instruction for students, both theorists demand that teachers clearly understand what level or stage of learning students are at before they proceed with any designs for instruction. They also both emphasize the importance of interaction with other human beings and the environment. Still further, both theorists believed that instructors should be geared toward letting students attain higher level thinking and actively construct knowledge.

#### Differences

This author found that one of the most striking differences between Piaget and Bruner on their theories of development had to do with progression. Piaget felt, as previously described, that human beings go through a 4-step cycle of change. He gave only approximate ages, but the process itself is set and automatic. Bruner, on the other hand, did not believe in stages. He merely defined different representations or modes of transference of knowledge, and the environment played a supporting role to the internal capabilities of the learner (Driscoll, 2000).

Piaget's concept of Equilibration was unique to his theory. The thought that a human being

would use assimilation and accommodation are Piaget's balancing processes that help children make sense of something from their environment that they could not otherwise understand (Schunk, 2000). On the other hand, Bruner's concept of spiral curriculum was his balancing process, especially the fact that he emphasized revisiting old topics. On top of this, the idea of discovery learning was thought of by Bruner. This concept suggests that sometimes students are not presented subject matter as a whole, but they are allowed to develop and learn from pieces of it on their own (Driscoll, 2000).

In order to clearly understand some of the differences between Piaget and Bruner, a look at examples of how to construct lessons is useful: To begin with, a follower of Piaget's thinking might plan a lesson by including activities that require a core understanding of the concepts for a basic understanding. An instructor would develop activities that would elicit concrete, factual answers as well as true/false or yes/no answers. However, they would go beyond this and also develop activities that would force students to think abstractly and develop ideas on their own (Schunk, 2000).

Conversely, a practitioner of Bruner's theory would first make sure that they knew what students from that grade level had already been required to learn. In the lesson, the instructor would then review what students had previously studied, trying to get the students to declare what they can remember. The next step in the same lesson would be to build on what students already know by adding new material. At the same time, every effort should be made to utilize all of Bruner's modes of knowledge in course of the instruction (Schunk, 2000).

#### Conclusion

Both Piaget and Bruner are historic and monumental figures in the field of cognitive science. They were both trained in psychology, but their theories are widely used in the field of education. Piaget and Bruner, however, came from different times and geographic locations. Therefore, their influences were slightly different. It is also clear that Bruner was influenced by Piaget, who came before him. LaFrancois (2000) states that "much of Bruner's work is linked to Piaget."

It is possible to differentiate between work by Piaget and Bruner and certainly each theorist has his critics. The lasting similarity is that they both defined constructivist approaches to education. This is the part of the root tenets of social cognitive theory. According to Bruning,

Shaw, & Ronning (1999), " In Education, [cognitive psychology] is only now being fully explored. " In other words, expansion on the ideas of theorists like Piaget and Bruner is the future of education as we see it now .

## References

- Boeree, C. G. (1999). *Personality Theories* (chap. Jean Piaget). Retrieved from <http://www.ship.edu/~cgboeree/piaget.html#JEAN%20PIAGET>
- Bruner, J. S. (1964). The course of cognitive growth. *American Psychologist*, 19, 1 - 15.
- Bruner, J. S. (1966). *Toward a theory of instruction*. New York : Norton.
- Bruner, J. S., Olver, R. R., & Greenfield, P. M. (1966). *Studies in cognitive growth*. New York : Wiley.
- Bruning, R. H., Schraw, G. J., & Ronning, R. R. (1999). *Cognitive psychology and instruction* (3rd ed.). Upper Saddle River, NJ : Prentice Hall.
- Byrnes, J. P. (1996). *Cognitive development and learning in instructional contexts*. Boston : Allyn and Bacon.
- Driscoll, M. P. (2000). *Psychology of learning for instruction* (2nd ed.). Boston : Allyn and Bacon.
- Duncan, R. M. (1995). Piaget and Vygotsky revisited : Dialogue or assimilation. *Developmental Review*, 15, 458 - 472.
- Hevern, V. W. (2003, July). *Narrative psychology : Internet and resource guide*. Retrieved October 16, 2003, from [http://web.lemoyne.edu/~hevern/nr-theorists/bruner\\_jerome\\_s.html](http://web.lemoyne.edu/~hevern/nr-theorists/bruner_jerome_s.html)
- LeFrancois, G. R. (1999). *Psychology for teaching* (10th ed.). University of Alberta : Wadsworth Thomson Learning.
- Meece, J. L. (1997). *Child and adolescent development for educators*. New York : McGraw Hill.
- Ornaghi, V., & Groppo, M. (1998). Viaggio attraverso la bibliografia di Jerome Bruner : Dagli anni delle formazione alla psicologia culturale [Journey through the bibliography of Jerome Bruner : From the formative years to cultural psychology]. *Archivio di Psicologia, Neurologia e Psichiatria*, 59(2), 199 - 244.
- Schunk, D. H. (2000). *Learning theories : An educational perspective* (3rd ed.). Upper Saddle River, NJ : Prentice-Hall.
- Smith, L. (2000). *A short biography of Jean Piaget*. Retrieved October 16, 2003, from <http://www.piaget.org/biography/biog.html>
- West, C. K., Farmer, J. A., & Wolff, P. M. (1991). *Instructional design : Implications from cognitive science* (Custom ed.). Upper Saddle River, NJ : Prentice-Hall.

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