

Essay: Comparing Social Cognitive Theory and Radical Constructivism

Dissatisfied with the assumptions and results of behaviorism, psychologists put forth two major theories of learning in the 1950s and 60s (Schunk, 2004): Social Cognitive Theory (SCT) and Radical Constructivism. SCT began with Albert Bandura's neo-behaviorist belief in a causal triadic reciprocity between individuals' behavior, environmental stimuli and internal cognitive factors (Simon, 1999), but later developed into a robust theory that increasingly has focused on the effects of self-efficacy and self-regulation on the acquisition of knowledge and skills (Martin, 2004). In contrast, radical constructivism began with Piaget's wholesale rejection of the behaviorists' approach to studying learning through the paradigm of objectivism and conditioned responses. Piaget took the perspective that the mind is analogous to a biological organism engaged in adaptation processes (Driscoll, 2004), and set about describing how children construct and adapt individualized schemes of the world during normal interactions with their surroundings.

In the essay that follows, I describe how the perspectives of social cognitive theory and radical constructivism on how learning occurs complement one another in the study of cognitive development and observational learning. Then, I contrast the interpretivist epistemology of radical constructivism to the multiple epistemologies influencing social cognitive theorists. Finally, I argue that the tenets of SCT and radical constructivism combine to support a rethinking of traditional approaches to the teaching and learning of mathematics.

While both social cognitivism and radical constructivism reject determinism and objectivism in their views of human learning, social cognitive theory accepts the role of conditioning and reinforcement as processes supporting learning. Despite this apparent agreement regarding the role of the environment in shaping action, SCT soundly rejects the notion that individual behavior is a function solely of environment inputs. Bandura (1997) points out that "reinforcement cannot select what does not exist in a repertoire" (p. 8) and notes that Bach could not possibly have experienced every melody he included in his musical compositions. Instead, SCT suggests that Bach must have learned how to compose music through a combination of both prior experience and generative intellectual creativity that is not reducible to biological or experiential influences. The principle of triadic reciprocity encompasses this view by providing a causal model for individual learning (Bandura, 1997). Triadic reciprocity holds that learners act with agency—i.e., they choose behaviors intentionally—but that their actions are influenced by both internal factors (such as motivation, intelligence, and emotions) and stimuli they experience in their environment. Equally central to the social cognitive view of learning is the contention that genuine learning can take place both *enactively* (through doing) and *vicariously* (by observing models) and does not need to be empirically observed in order to exist (e.g., latent learning) (Schunk, 2004).

Radical constructivism's view of learning is rooted in Piaget's theory of cognitive development (Driscoll, 2004), and was extended by von Glasersfeld in the 1980s to a philosophical paradigm that assumes individuals actively operate on objects to improve the cognitive fit between their unique construction of reality and their ongoing interpretations of their experiences in the world (see e.g., von Glasersfeld, 1996). Piaget's theory of learning holds that learning occurs because of the basic drive of *equilibration*, which is the internal motivation to reach equilibrium between existing mental structures and ongoing perceptions of the environment. In the view of radical constructivists, equilibration manifests itself during learning by causing people to engage in assimilation and accommodation processes. Piaget

also proposed a taxonomy for describing cognitive development of youngsters—listing four stages of increasing cognitive competence: sensorimotor, preoperational, concrete operational, and formal operational (Driscoll, 2004). Children’s thinking can be described in terms of benchmarks associated with the four stages of development.

Those who advocate social cognitive theory or radical constructivism share an epistemological rejection of experiential determinism (Martin, 2004). The epistemologies of the two theories differ, however, in their perspective toward the acquisition of knowledge. Piagetian radical constructivism emphasizes an interpretivist epistemology that treats all knowledge as fallible and reality as an internal construction that is neither logically verifiable nor directly observable (Ernest, 1996). Knowledge structures exist within an active mind, and radical constructivists adopt a rationalist view of reasoning as the primary source of knowledge. This endogenous (mind-centered) perspective on learning starkly contrasts with the empiricist/objectivist traditions in science and has influenced considerable changes in the paradigm of educational research during the past 50 years. The epistemology of social cognitive theory is, however, a little trickier to evaluate.

Bandura’s early work in psychology, while rejecting behaviorism as a theory of learning, existed mainly in the realm of empirical science (Simon, 1999). The theory of triadic reciprocity, for example, postulates *causal* associations between personal and social factors and *behaviors*, especially in the context of observational learning (Schunk, 2004; Bandura, 1997). In the 1980s and 90s, however, the principles of social learning theory were expanded to include a perspective on knowledge that strongly rejected a dualistic view of the individual and society as it was expressed within the debate between radical and social constructivism (Bandura, 1997). In fact, the emphasis that social cognitive theory places on the individual as an agent tightly wrapped-up in a sociocultural context has been described as a compatibilist epistemology (Martin, 2004). “Bandura’s theory of self-regulation promises a possible alternative to Vygotskian socioculturalism and Piagetian constructivism, one that might help to explain how agents can be both socially constructed and agentically constructive.” (Martin, 2004, p. 140) To add a layer of confusion, Bandura and other prominent social cognitive theorists (e.g., Schunk, Zimmerman, and Pajares) have been labeled as behaviorists, neo-behaviorists, cognitive scientists, and social constructivists (Simon, 1999). From my point of view, the epistemology of social cognitive theory has expanded to reflect dramatic shifts in the research program of those adopting SCT over the decades—from empirical studies of observational learning and modeling processes to qualitative studies of affect, self-efficacy and self-regulation—that has broadened the scope of the theory and its epistemology.

The educational implications of SCT and radical constructivism are wide-ranging and combine to suggest that many aspects of traditional mathematics instruction can be improved. For example, one of the major goals of instruction from the radical constructivist perspective is to provide students experiences that produce cognitive conflicts. Material should be difficult enough so that it cannot be easily assimilated, but easy enough so that it can be accommodated into existing schema. Effective teachers should understand individual students’ stages of cognitive development and set-up developmentally appropriate tasks (Driscoll, 2004). Radical constructivists also advocate less teacher-centered approaches to classroom instruction. The theory implies that students naturally seek meaning in their interactions with others, and that working actively and exploring with hands-on activities facilitates students’ active construction and abstraction of mathematical relationships.

There are a number of implications of SCT that relate to mathematical learning and instruction. In particular, principles of observational learning can assist teachers in setting up learning conditions that promote attention, retention, production, and motivation processes in pupils. Students can be taught self-regulatory skills that improve performance through goal setting, monitoring, and evaluation of progress. Through the help of instructors or peers who model appropriate behavior and cognition, students can also develop self-efficacy by accomplishing meaningful tasks, thus raising persistence, outcome expectations and even student achievement.

While both radical constructivism and SCT view the individual as the unit of analysis in learning (as opposed to social constructivism or situated cognition), the two theories also share an emphasis on the impact of the environment on thinking and learning. SCT is an appropriate framework for teachers to use in considering how sociocultural influences impact their students choices in the classroom—from students choosing whether to participate with their peers to their decision to persist or not on a challenging mathematics problem. Radical constructivism also includes the belief that individuals operate within a context that influences their constructions. In fact, the cognitive development of children from egocentric thinking to socially conscious thinking is a major educational goal of early education from the radical constructivist perspective.

References

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