

## **Contributions of Albert Bandura to Education**

### ***Contribuciones de Albert Bandura a la Educación***

### ***Contribuições de Albert Bandura para a educação***

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#### **Abstract**

Albert Bandura ranks as one of the greatest psychologists of all time. His contributions to psychology are too numerous to list in a short article. Notably, he developed social cognitive theory from its forerunner social learning theory that was heavily behaviorally based. By including cognitive and affective variables in social cognitive theory, Bandura greatly expanded the scope and applicability of social cognitive theory. The expanded theory also incorporated self-regulation, and importantly, introduced the construct self-efficacy. In this article we highlight three of Bandura's contributions to education: modeling and observational learning, self-efficacy, and self-regulation. Contributions in these areas are especially noteworthy because they have affected theory development, research, and practice. We initially discuss the conceptual framework of social cognitive theory grounded in reciprocal interactions among personal, behavioral, and environmental influences. We then cover modeling and observational learning, self-efficacy, and self-regulation. For each we discuss theory and supporting research evidence, along with some applications. The article concludes with suggestions for future research.

**Keywords:** Social cognitive theory. Self-efficacy. Observational learning. Self-regulation.

#### **Resumen**

*Albert Bandura se encuentra entre los más grandes psicólogos de todos los tiempos. Sus contribuciones a la psicología son demasiado numerosas para enumerarlas en un artículo breve. Notablemente, desarrolló la teoría social cognitiva a partir de su predecesora, la teoría del aprendizaje social, que estaba fuertemente basada en el conductismo. Al incluir variables cognitivas y afectivas en la teoría social cognitiva, Bandura amplió significativamente el alcance y la aplicabilidad de esta teoría. La teoría ampliada también incorporó la*



*autorregulación y, de manera importante, introdujo el concepto de autoeficacia. En este artículo destacamos tres de las contribuciones de Bandura a la educación: modelado y aprendizaje observacional, autoeficacia y autorregulación. Las contribuciones en estas áreas son especialmente destacables porque han afectado el desarrollo teórico, la investigación y la práctica. Inicialmente, discutimos el marco conceptual de la teoría social cognitiva, fundamentado en interacciones recíprocas entre influencias personales, conductuales y ambientales. Luego abordamos el modelado y aprendizaje observacional, la autoeficacia y la autorregulación. Para cada tema, discutimos la teoría y las evidencias de investigación que la respaldan, junto con algunas aplicaciones. El artículo concluye con sugerencias para investigaciones futuras.*

**Palabras clave:** Teoría social cognitiva. Autoeficacia. Aprendizaje observacional. Autorregulación.

### **Resumo**

*Albert Bandura está entre os maiores psicólogos de todos os tempos. Suas contribuições para a psicologia são numerosas demais para serem listadas em um artigo breve. Notavelmente, ele desenvolveu a teoria social cognitiva a partir de sua predecessora, a teoria da aprendizagem social, que era fortemente baseada no comportamentalismo. Ao incluir variáveis cognitivas e afetivas na teoria social cognitiva, Bandura ampliou significativamente o escopo e a aplicabilidade dessa teoria. A teoria expandida também incorporou a autorregulação e, de forma importante, introduziu o conceito de autoeficácia. Neste artigo, destacamos três das contribuições de Bandura para a educação: modelação e aprendizagem observacional, autoeficácia e autorregulação. As contribuições nessas áreas são especialmente notáveis porque impactaram o desenvolvimento teórico, a pesquisa e a prática. Inicialmente, discutimos o quadro conceitual da teoria social cognitiva, fundamentado em interações recíprocas entre influências pessoais, comportamentais e ambientais. Em seguida, abordamos modelação e aprendizagem observacional, autoeficácia e autorregulação. Para cada tópico, discutimos a teoria e as evidências de pesquisa que a apoiam, juntamente com algumas aplicações. O artigo conclui com sugestões para pesquisas futuras.*

**Palavras-chave:** Teoria social cognitiva. Autoeficácia. Aprendizagem observacional. Autorregulação.

## **1 Contributions of Albert Bandura to Education**

Albert Bandura ranks as one of the greatest psychologists of all time. His contributions to psychology are numerous. Notably, he developed social cognitive theory from social learning theory that was heavily behaviorally based. By including cognitive and affective variables in social cognitive theory, Bandura greatly expanded the scope and applicability of the theory. The expanded theory also incorporated self-regulation and introduced the construct self-efficacy.

In this article we highlight some of Bandura's many contributions to education. We focus on modeling and observational learning, self-efficacy, and self-regulation. Contributions

in these areas have affected theory development, research, and educational practice, and have seen numerous applications.

We initially discuss the conceptual framework of social cognitive theory of reciprocal interactions among personal, behavioral, and environmental influences. We then cover contributions of modeling and observational learning, self-efficacy, and self-regulation. For each of these we discuss theory and supporting evidence, along with some applications. Collectively these processes help to create a sense of agency in learners, or the belief that they can exert a significant amount of control over important events in their lives. The article concludes by discussing some future research directions.

## 2 Conceptual Framework

Bandura's social cognitive theory is grounded in a system of reciprocal interactions among personal, behavioral, and environmental influences (Bandura, 1986), which means that these factors affect one another. Thus, personal influences such as beliefs and values can affect what people do (behaviors) and factors in their environments (e.g., people, events). The latter factors can influence personal variables.

We illustrate this reciprocity with self-efficacy—a personal variable. Self-efficacy refers to personal beliefs about one's capabilities to learn or perform actions at designated levels (Bandura, 1977a, 1977b). Self-efficacy has been shown to affect one's behaviors and environmental influences. Self-efficacious students display more motivation and self-regulation to learn and achieve at higher levels. In turn, these outcomes strengthen motivation to continue to learn. High-efficacy students also tend to set up their learning environments in ways conducive to learning. Self-efficacy is strengthened as students practice their skills and believe they are making learning progress (Schunk, 2012; Schunk; DiBenedetto, 2021). The influences are reciprocal because they affect one another.

## 3 Modeling and Observational Learning

One of Bandura's major contributions to education was in the area of modeling and observational learning. When Bandura moved to Stanford University in the 1950s, the dominant theory of human behavior was behaviorism (Zimmerman; Schunk, 2003). Like most

psychologists at that time, Bandura was well versed in behaviorism. Yet research findings and everyday observations revealed some problem spots for behaviorism.

For one, behavior theories did not differentiate learning from performance of learned behaviors. The critical point is that an action is performed. If it is, then the behavior has been learned. If it is not performed, then there is no guarantee that the action has been learned. This view fails to take into account the possibility that the behavior has been learned but for whatever reasons (e.g., low motivation, illness) the individual does not perform it now, later, or perhaps ever.

For another, behavior theories assumed that reinforcement is needed following a response. Yet as Bandura (1986) accurately surmised, reinforcement is more of a performance variable than a learning one. People routinely learn in the absence of reinforcement. They develop beliefs about the consequences of their actions. They are more apt to perform an action if they believe the consequences will be positive than negative. Reinforcement affects motivation more than learning.

Bandura's early program of research at Stanford focused on elucidating the processes involved in observational learning through modeling (Zimmerman; Schunk, 2003). Observational learning occurs when an individual is able to demonstrate a behavior that the person could not do prior to learning even with motivational inducements in effect. He distinguished observational learning from other forms of modeling (response facilitation, inhibition/disinhibition) that do not involve learning (Schunk, 2020). His and others' research (Bandura; Walters, 1963) also identified processes of observational learning (attention, retention, production, motivation).

The classic experiment—often referred to as the “Bobo doll study”—clearly demonstrated the power of observational learning (Bandura; Ross; Ross, 1961). Prior to this study much of the research on social learning focused on the shaping of new behavior through reinforcements. The Bobo doll study showed that by observing others, young children could learn and imitate aggressive behaviors that previously had a zero probability of occurring.

The Bobo doll was an inflatable figure that had a curved-shape bottom allowing it to flop from side to side or forward and backward and then bounce back up. Because it was filled with air, it bounced back into the upright position.

The participants were girls and boys ranging in age from 37-69 months. Children were divided into eight experimental groups. Half of the experimental groups were exposed to aggressive models and the other half to nonaggressive models. Half of the children in the aggressive and non-aggressive conditions observed same-sex models, while the remaining children viewed models of the opposite sex. The control group consisted of children, none of whom were exposed to the adult models.

The protocol involved the experimenter and one child. Children in the experimental conditions were individually brought to a room and seated at a table that contained attractive stickers of animals, flowers, and western figures that were to be placed in a pasture. After settling the child in their corner, the experimenter escorted the model to the opposite corner that also contained a table and chair, a tinker toy set, mallet, and Bobo doll.

The model in the nonaggressive condition played with the tinker toys in a quiet manner and ignored the Bobo doll. However, the model in the aggressive condition played with the tinker toys for about a minute, then spent the remainder of the time engaging in aggressive behavior. In addition to punching the doll, the aggressive model laid it on its side and sat on it, punched it repeatedly, and hit the Bobo doll on its head with the mallet. The model then picked up the Bobo doll, threw it, and kicked it around the room. While engaging in the aggressive acts, the model made several aggressive verbal responses such as, “Sock him in the nose.... Hit him down...., Pow....” (Bandura; Ross; Ross, 1961, p. 576). The physical and verbal aggressive acts were repeated three times to ensure exposure to the model’s behavior. At the end of 10 minutes, the experimenter entered the room and told the child that they would now go to another game room.

Before testing to see if the children imitated the models, each child in all conditions was individually brought to another room that had attractive toys such as a doll set and doll carriage, baby crib, jet fighter plane, cable car, spinning top, and locomotive. However, as soon as the children became engaged in playing with the toys, they were told the toys needed to be saved for other children and the children were taken to another room. This room contained a variety of toys such as a Bobo doll, mallet and peg board, dart guns, tea set, ball, dolls, bears, cars, trucks and farm animals. Children were given 20 minutes to play in this room. Three measures of imitation were obtained: imitation of the physical aggression, of the verbal aggression, and of nonaggressive verbal responses.

Some of the major findings were as follows. Children in the aggressive condition produced a good deal of physical and verbal aggression that was similar to the model's. The aggressive condition was significantly different from children in the nonaggressive and control conditions. Approximately one third of the children in the aggressive condition also repeated the model's nonaggressive verbal responses while none of the children in either the nonaggressive or control conditions made such remarks. There was also a significant difference of the influence of a male model versus a female model, particularly for the boys who were more influenced by the male models. This groundbreaking experiment showed that what children learned was how to behave aggressively toward the doll—a disinhibiting effect rather than a learning one.

The historical version of social learning theory contended that learning could occur through enactive experiences (by doing) or through vicarious experiences not involving performance at the time of learning. As is often the case in education, both modes may be utilized. For example, a teacher may explain and demonstrate a skill, after which students engage in practice with corrective feedback. Motivation was addressed as an element that could affect both forms of learning. Unlike later forms of the theory, however, motivated learning was not an integral component.

The explanation for observational learning effects is as follows. Learners engage in social comparison. They form a mental representation of the behavior to be learned. Through social comparison they engage in the processes of motivation that inform and motivate them. The social comparison provides a standard of comparison that serves as a goal. Bandura's contribution was to explicate how social comparisons can affect learning and motivation.

Key in this process are characteristics of models because at any point learners may be exposed to numerous models. Researchers have shown that various characteristics may be critical. Tasks that learners believe are important and valued are likely to command attention. Key model characteristics are perceived competence of the model and perceived similarity to the model (Schunk, 1987). Learners are apt to attend to models who they believe are competent and whom they can learn from. Similarity in key areas (e.g., age; gender) may be important. Similar models can elicit the perception of. "If they can do it so, can I," and build self-efficacy among observers (Schunk, 1987).

Another key feature is number of models. Using multiple models often is more effective than a single model because multiple models increase the likelihood that each participant will perceive themselves as similar to at least one model (Schunk, 1987).

Researchers also have compared the effects of coping and mastery models. Mastery models demonstrate faultless performance from the start, whereas coping models initially experience difficulties and express doubts about learning but with persistence and good strategy use their performances improve and eventually they perform as well as mastery models. Among children who have experienced difficulties learning, coping models often produce better learning and higher self-efficacy than do mastery models, perhaps because of enhanced perceived similarity.

#### 4 Self-Efficacy

Theorizing and research by Bandura and others led to a transformation of social learning theory into social cognitive theory. This change paralleled a broader change in psychology with cognitive and affective variables being integrated into psychological explanations of behavior. In social cognitive theory the change was apparent in a pair of publications (Bandura, 1977a, 1977b) that introduced the construct self-efficacy. Self-efficacy refers to perceived capabilities for learning or performing actions at designated levels. A few years later, Bandura (1986) published a book in which the term “social cognitive theory” appeared in the title.

Social cognitive theory and its forerunner social learning theory were concerned primarily with learning, although motivation had been subsumed in the theory. The introduction of self-efficacy and other variables (e.g., beliefs, outcome expectations) clearly gave motivation more priority. Self-efficacy is primarily a motivation variable that affects learning indirectly through its effects on motivation outcomes such as choice of activities, effort, and persistence. Subsequent publications (e.g., Bandura, 1997) showed how self-efficacy can provide individuals with a sense of agency, or the belief that one can exert significant control over important aspects of one’s life. He also situated self-efficacy within the conceptual framework of reciprocal interactions among personal, behavioral, and environmental influences on human actions. This is a dynamic perspective that is well in line with the active nature of motivation.

Self-efficacy is influenced by information from four sources: performance accomplishments, vicarious experiences, forms of social persuasion, and physiological indexes.

Actual performances are the best source since they show what people can do. But we also gain information about our capabilities from what we observe that others can do, especially those similar to ourselves in important ways. We gain some information from what others tell us (encouragement), and symptoms from our bodies (e.g., sweating may imply low self-efficacy).

Schunk's (2012) educational research showed how social and instructional variables conveyed information to learners about their learning progress and helped build self-efficacy. Some important variables are goals and perceptions of goal progress, social comparisons, performance-contingent rewards, attributional and progress feedback, and self-evaluations of progress. Although these variables differ in many ways, they all help convey to learners the progress they are making in attaining their learning goals.

The common mechanism, therefore, is the belief that one is learning and improving one's skills. Schunk (2012) found these effects across learners of different ages and developmental levels, as well as across subject areas (e.g., mathematics, reading, writing.) He also found that effects maintained themselves across time and generalized to different skill areas.

Self-efficacy has been shown to be a key variable influencing learning and motivation in various contexts including athletic performance, health, and business (Bandura, 1997; Schunk; DiBenedetto, 2021). Self-efficacy is often referred to as an individual characteristic, but collective efficacy refers to self-efficacy of what a group believes it can accomplish. This is a very useful measure for individuals in work environments, such as teachers' self-efficacy for influencing student learning. Research has shown that in collectivist cultures collective efficacy is often a better predictor of performance than is individual self-efficacy (start add reference cross cultural).

Research also has explored teacher self-efficacy, or beliefs about how well teachers believe they can influence student learning. Teachers with higher self-efficacy are more apt to persist with their students, expend effort to help them learn, and have students who are higher in motivation and achievement (Schunk; DiBenedetto, 2021).

## 5 Self-Regulation

A third area in which Bandura contributed strongly to education is self-regulation, defined as self-generated behaviors, cognitions, and emotions that are systematically directed

to attainment of one's goals (Zimmerman, 2002). Although self-regulation in education did not originate with Bandura, his views influenced theory development and research.

In Bandura's model, self-regulation comprised three component phases: self-monitoring, self-instruction, and self-reinforcement (Bandura, 1986). Self-monitoring is attending to our actions so we know what we do. Self-instruction means that we arrange for instructional contingencies and we reinforce ourselves (self-reinforcement) for successful actions. Although this model covered the main components, it did not place a large amount of emphasis on teaching so critical for education.

To address this issue. Schunk and Zimmerman (1997) formulated a three-phase model composed of the phases of forethought, performance, and self-reflection. Forethought is what learners do prior to engaging in a task and includes setting goals and deciding on a strategy, deciding on such issues as when, where and with whom the learner will complete the task, and motivating oneself and instilling a sense of self-efficacy for succeeding. During performance learners monitor how they are doing and adjust the strategy if needed. Reflection occurs during pauses and when learners finish a task. At these points they judge how satisfied they are with their performance and make attributions (perceived causes) for task outcomes.

Schunk and Zimmerman (1997) also developed a model of teaching learners to be better self-regulated. This model begins with the learner observing a model perform the task, followed by the learner attempting to emulate the model. In the third self-control phase the learner begins to work independently with model correction as necessary. Finally in the last self-regulation phase the learner performs the task independently and adapts the strategy as necessary.

This model has been employed with learners of various ages and developmental levels. Researchers have found that learners can be taught strategies and generalize them to various tasks (reference). There is also evidence that strategy use maintains itself over time (Schunk, 2012). In the following section we make recommendations for future research.

## 6 Future Research Directions

Applications of Bandura's theory to various contexts continue. One promising direction is greater application to contexts involving technology. The theory was originally developed and refined prior to the explosion of technology in education. Although most applications seem warranted, we need information on how variables such as modeling, self-efficacy, and self-

regulated learning operate in contexts involving technology. Research has begun to explore how social media and mobile apps, for example, can be used to help students self-regulate but additional research is needed to explore the effects of online models and social media on building students' self-efficacy and self-regulatory skills. In addition, research is needed on the ways that can educators incorporate social media and online resources to promote student learning and social learning skills. Who makes for effective models may vary depending on the type of context. Research is needed on the roles of observational learning and self-efficacy in environments that differ in technology resources.

Schools have become increasingly diverse and a second area in which research is needed is on how the increased diversity impacts observational learning and the development of self-efficacy and self-regulation. The characteristics of effective models need to be re-examined in light of the diversity found in learning environments. How important is perceived competence relative to similarity in ethnicity and background variables? What more can be learned about neurodiverse students' and the role of observational learning, self-efficacy, and self-regulated learning in their academic and professional success? This research has implications for teaching and learning environments.

A third area is to explore how variables such as self-efficacy and self-regulation change over time and especially as a result of learning and skill development. Bandura's system of reciprocal interactions posits complexity, and it would be informative to address this complexity in learning contexts. Such work would shed light on theoretical connections and have implications for methods for improving teaching and learning. Related, is the need for additional research exploring the roles of observational learning, self-efficacy, and self-regulated learning among undergraduate and graduate students. Much research to date, has focused on younger learners, however, universities consistently struggle with retention and graduation rates. Research on more mature students can provide insight into how social cognitive theory can help them reach their academic goals.

Lastly, research is needed on the role of artificial intelligence (AI) and social cognitive learning. AI may be used in assessing learners' self-efficacy and generate models for observational learning, provide examples of strategy use in self-regulated learning, and assist in the development of instructional designs that build self-efficacy and promote self-regulated learning.

As research continues to explore the impact of social cognitive theory on learners, Bandura's legacy will grow and thrive and his contributions to psychology and education will continue to impact learners of all ages across the globe.

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