

## Motivation and social cognitive theory

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### ABSTRACT

This article discusses motivation from the perspective of Bandura's social cognitive theory. *Motivation* refers to processes that instigate and sustain goal-directed activities. Motivational processes are personal/internal influences that lead to outcomes such as choice, effort, persistence, achievement, and environmental regulation. Motivation has been a prominent feature of social cognitive theory from the early modeling research to the current conception involving agency. The conceptual framework of reciprocal interactions is discussed, after which research is summarized on behavioral, environmental, and personal influences on motivation. Key internal motivational processes are goals and self-evaluations of progress, self-efficacy, social comparisons, values, outcome expectations, attributions, and self-regulation. Critical issues confronting the theory include diversity and culture, methodology, and long-term effects of interventions. The article concludes with additional recommendations for future research on contexts, conceptual clarity, and technology.

### 1. Introduction

Social cognitive theory is a psychological perspective on human functioning that emphasizes the critical role played by the social environment on motivation, learning, and self-regulation (Schunk & Usher, 2019). Because there are different social cognitive theoretical perspectives, to focus this article the discussion is limited to the social cognitive theory proposed by Bandura (1986, 1997, 2001). This theory has seen wide applicability within psychological disciplines, as well as in other fields such as education, business, and health. The theory's predictions have been tested in many research studies in diverse contexts. Although the terms "social cognitive theory," "Bandura's theory," and "Bandura's social cognitive theory" are used in this article, there are other persons who have helped develop, test, and expand the theory in significant ways including Zimmerman, Schunk, Pajares, and Usher.

This article's discussion centers on the role of motivation. As used herein, *motivation* refers to the processes that instigate and sustain goal-directed activities (Schunk, Meece, & Pintrich, 2014). In this conceptualization, motivation comprises internal (personal) processes that manifest themselves overtly in goal-directed actions.

Earlier views of social cognitive theory, which often were labeled "social learning theories," emphasized the importance of motivation and social variables in human behavior. For example, Rotter (1954) theory included two prominent motivation variables: *expectancy*, defined as an individual's belief about the likelihood that a particular

reinforcement would occur following a specific behavior, and *reinforcement value*, or how much individuals desired a particular outcome relative to other potential outcomes. These two variables bear some similarity to outcome expectancy and value processes in Bandura's theory.

Bandura's earlier social learning theory emphasized the importance of *observational (vicarious) learning*, or learning that occurs in the absence of overt performance by the learner (Bandura & Walters, 1963; Bandura, 1977b). Bandura postulated that for observational learning to occur, individuals must attend to a model, cognitively retain what the model did, be able to produce the modeled behavior, and be motivated to do so. Early studies on modeling identified several model characteristics that can affect observers' motivation such as perceived model competence, model status, and perceived similarity to the model (Bandura & Walters, 1963). Motivated actions depended heavily on expected positive consequences for performing modeled actions. These *outcome expectancies*, which are cognitive beliefs, are developed through social interactions between models and observers.

Two significant developments served to integrate personal influences prominently into Bandura's theory. The first was the initial publication of an article on self-efficacy (Bandura, 1977a; discussed next), in which he defined, theorized, and supported the role of self-efficacy in human behavior. The second was the publication of Bandura (1986) book, where he formulated the conceptual framework of *triadic reciprocity*, or *reciprocal interactions* between three sets of influences:

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behavioral; environmental; and personal. In this dynamic conceptualization, motivational processes are personal influences that are ever changing, affect behaviors and environments, and are affected by them. This model is discussed in greater depth in the following section.

A central premise of Bandura's theory is that individuals strive for a sense of *agency*, or the belief that they can exert a large degree of influence over important events in their lives. They exercise this sense of agency using their cognitive and self-regulative capabilities such as by setting goals and implementing strategies to attain them. They monitor their progress toward their goals and adjust their strategies as they believe is needed. Central to this agentic perspective is individuals' *self-efficacy*, or their perceived capabilities to learn and perform actions at designated levels (Bandura, 1977a, 1997). Self-efficacy, which results from self-reflection that is both evaluative and goal oriented, is a key internal motivational process in social cognitive theory.

The next section describes the reciprocal interactions framework in greater depth and discusses important motivational processes proposed by Bandura's theory to include research evidence. Following this review, the critical areas of diversity and culture, methodology, and long-term effects of interventions are discussed, and recommendations are made for additional future research in the areas of contexts, conceptual clarity, and technology. An important goal of this article is to expand the agenda of Bandura's social cognitive theory in motivation research.

## 2. Social cognitive theory and research on motivation

This section initially describes the *triadic reciprocity* (*reciprocal interactions*) conceptual framework. Examples and descriptions are provided of key processes. Separate sections are devoted to goals, self-efficacy, and self-regulation. The former two are key motivation internal processes that instigate and sustain motivated activities. Self-regulation is covered in more depth because it clearly illustrates the dynamic cyclical nature of the theory and links intimately with motivation.

### 2.1. Reciprocal interactions conceptual framework

The model of *triadic reciprocity* or *reciprocal interactions* (Fig. 1) posits that human functioning depends on three interacting sets of factors or influences: behavioral; environmental; and personal (e.g., cognitions, emotions) (Bandura, 1986). Each set of influences on human functioning affects the others and is in turn affected by them. What people think can affect their actions and environments, actions can alter their thoughts and environments, and environments can influence individuals' thoughts and actions. In this model, motivational processes (e.g., self-efficacy, social comparisons) are types of personal influences (e.g., cognitions, affects). This model is much in line with the interplay of internal (self) and external influences that affect motivational processes described by Hattie, Hodis, and Kang (this volume).

For example, students who feel competent about performing well in mathematics (high self-efficacy—personal) are apt to engage in activities that will help them learn, such as attend to instruction, expend effort, and persist (behavioral; Schunk & Usher, 2019). If a teacher were to remark to them how well they are learning (environmental), this

remark may substantiate their perception of learning progress and raise their self-efficacy (personal) and motivate them to continue to engage in productive behaviors.

Individuals' capabilities to direct their thoughts and actions in intentional ways designed to attain goals are critically important for developing a sense of agency (Usher & Schunk, 2018). People are not simply acted upon by external forces but rather choose to place themselves in environments that they believe are conducive for their learning. Such self-regulative capabilities are a hallmark of Bandura's theory, which emphasizes a dynamic and cyclical aspect to human functioning (Bandura, 1997).

Fig. 2 illustrates some key personal, behavioral, and environmental influences posited by social cognitive theory to impact the development of motivation. This list is not intended to be exhaustive. Rather, it illustrates the types of influences addressed by Bandura's theory.

### 2.2. Personal influences

Personal influences include cognitions, beliefs, perceptions, and emotions (Schunk & Usher, 2019). Personal influences include processes that help instigate and sustain motivational outcomes. This section discusses the personal processes of goals and self-evaluations of progress, self-efficacy, social comparisons, values, outcome expectations, and attributions.

**Goals and self-evaluations of progress.** Social cognitive theory predicts that *goals* can energize and direct motivational outcomes (Bandura, 1986, 1997). A *goal* is a mental representation of what one is attempting to attain; for example, make an A on an exam or beat a certain time in a race. In the model of reciprocal interactions, goals are personal processes that help focus and sustain individuals' efforts directed toward task success. As learners observe and evaluate their goal progress, a discrepancy between the goal and perceived progress can lead learners to expend the necessary effort and persist. The belief that learners are making goal progress can build self-efficacy (Locke, 2018; Schunk, 2012).

Although goals are critical, by themselves they may not affect motivational outcomes much. Rather, the goal properties of specificity, proximity, and difficulty have been shown to be influential (Bandura, 1986; Locke & Latham, 2002, 2015; Locke, 2018). Goals that include specific performance standards are more likely to activate self-evaluations of progress and enhance motivational outcomes than are general goals (e.g., "Do your best"; Zimmerman, Schunk, & DiBenedetto, 2015). Similarly, goals that are short-term and close at hand enhance outcomes better than do distant, long-term goals. Learners are more motivated to strive for goals that they perceive are difficult but attainable than goals they believe are too easy or difficult. Underlying these properties is the learner's commitment to attempt the goal. Especially for difficult goals, a low sense of commitment can negatively affect motivational outcomes (e.g., why many efforts to lose weight do not succeed).

Research findings in various contexts with children, adolescents, and adults, support these benefits of goal properties (Locke & Latham, 2002, 2015; Locke, 2018; Zimmerman et al., 2015). The iterative process (i.e., perceived progress → self-efficacy → goal pursuit) is critical for motivation and learning. As we note later, exploring fine-grained

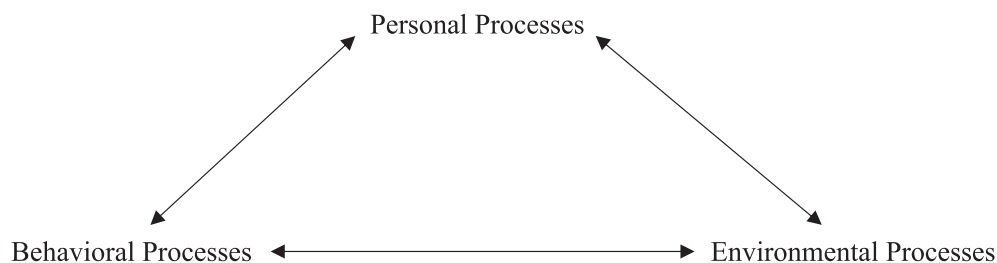


Fig. 1. Model of reciprocal interactions.

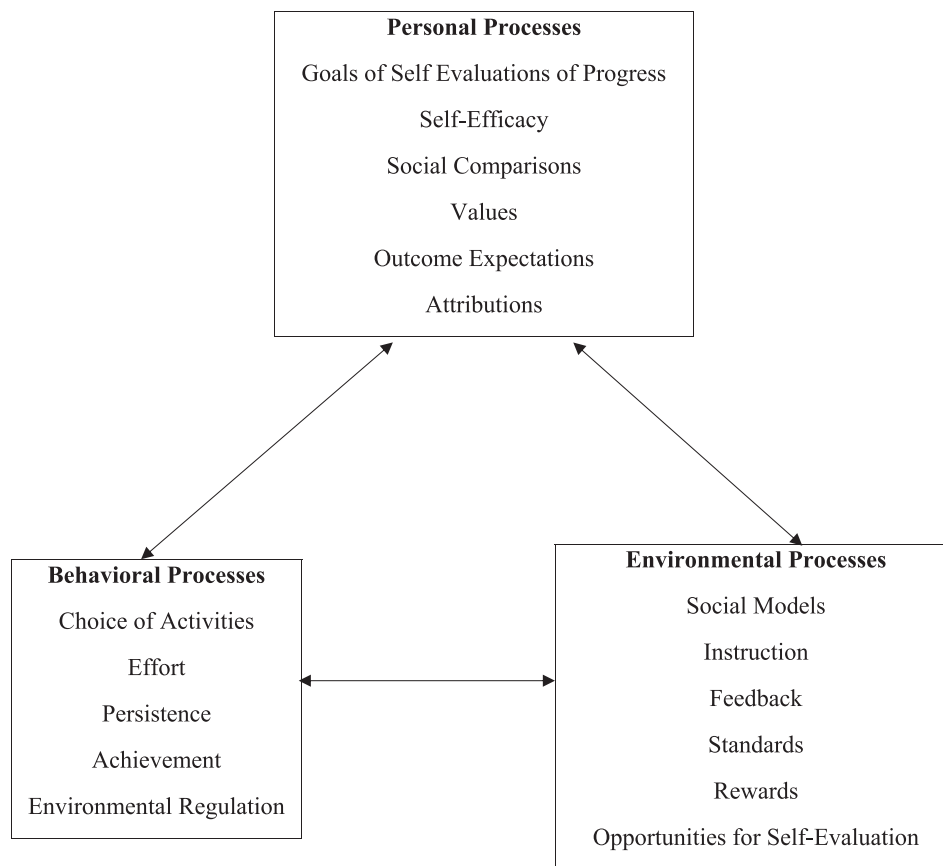


Fig. 2. Key behavioral, environmental, and personal processes.

changes in this process is a research priority and researchers have begun to address it (e.g., Bernacki, Alevin, & Nokes-Malach, 2015).

Social cognitive researchers also have explored motivational effects of types of goals such as learning and performance. These are not the same as *goal orientations*, which are reasons for wanting to attain goals (Urda & Kaplan, this volume). *Learning goals* refer to the knowledge, skills, and strategies students are to acquire (e.g., learn how to divide fractions); *performance goals* indicate what task students are to complete (e.g., read chapter 5). Learning goals focus students' attention on processes and strategies that help them improve their learning, whereas performance goals focus attention on social comparisons and completing tasks. Although performance goals can influence motivational outcomes, research studies support the idea that learning goals lead to better motivational outcomes and achievement, particularly over longer periods of time (Anderman & Wolters, 2006; Schunk & Ertmer, 1999; White & DiBenedetto, 2018). The influential process underlying learning goals may be an increase in self-efficacy for learning (Schunk, 2012).

**Self-efficacy.** *Self-efficacy* is a key personal influence in Bandura (1997) model of reciprocal interactions that can affect motivational outcomes. Learners who feel efficacious about learning are apt to engage in cognitive and behavioral activities that improve their learning such as setting goals, using effective learning strategies, monitoring and evaluating their goal progress, and creating effective physical and social environments for learning (Schunk & DiBenedetto, 2016). In turn, self-efficacy can be affected by the outcomes of actions such as perceived goal progress and achievement, as well as by environmental inputs (e.g., social comparisons with peers, feedback from teachers and coaches). These outcomes influence self-efficacy and continued motivation.

Self-efficacy does not suddenly emerge. Efficacy appraisal is a cognitive process in which individuals use information sources to assess their self-efficacy. These sources are performance accomplishments,

vicarious experiences, forms of social persuasion, and physiological/emotional indexes (Bandura, 1977a; Joët, Usher, & Bressoux, 2011; Schunk & Usher, 2019; Usher, 2009). Performance accomplishments are the most reliable source because they indicate what one can accomplish. But people also appraise their self-efficacy based on their observations of others. Observing a successful performance can raise observers' self-efficacy, whereas observed failures can lower it. Self-efficacy is affected by persuasive verbal statements and feedback from others (e.g., "You can do it!"). Although vicarious and persuasive sources can raise self-efficacy, subsequent successful performance by the individual is necessary for the increase to endure. Physiological/emotional indexes also can affect self-efficacy. Persons who feel less anxious in a situation may interpret that to mean that they are more capable of succeeding, whereas higher anxiety can signal that one is less competent.

The hypothesized mechanism whereby self-efficacy affects motivational outcomes is as follows (Schunk & DiBenedetto, 2016; Schunk & Usher, 2019). As learners work on tasks they acquire self-feedback and feedback from others on their progress. The belief that they are making progress substantiates their self-efficacy, which enhances motivational outcomes. Research evidence shows that students use multiple sources when forming self-efficacy beliefs (Usher, Ford, Li, & Weidner, 2019). Research is needed using the reciprocal interactions model on how learners weigh and combine multiple sources over time and changing conditions.

There is an extensive literature supporting the idea that self-efficacy influences one's choice of activities, effort, persistence, achievement, and self-regulation, and in turn is affected by the results of one's achievement efforts (Bandura, 1997; Honicke & Broadbent, 2016; Klassen & Usher, 2010; Schunk & Usher, 2019). Experimental research has shown that instructional and social processes that convey information to students that they are becoming more competent raise self-

efficacy and achievement (Kitantas & Zimmerman, 2000; Schunk, 2012). Some instructional and social processes that researchers have found to influence self-efficacy and achievement are: exposure to social models; setting proximal and specific goals; receiving social comparative information indicating favorable performance; self-monitoring learning progress; verbalizing aloud while learning; and self-evaluating capabilities (Schunk & DiBenedetto, 2016; Schunk & Usher, 2019).

Self-efficacy also is an important motivational influence for teachers (Morris, Usher, & Chen, 2017; Zee & Koomen, 2016). *Teacher self-efficacy* refers to perceived capabilities to help students learn. Teacher self-efficacy can affect the same motivational outcomes as learner self-efficacy. Teachers with higher self-efficacy are more apt to engage students in challenging learning, expend effort and persist to help students learn, and help students achieve at higher levels. In their review of research, Klassen, Tze, Betts, and Gordon (2011) found a moderate relation of teacher self-efficacy to student outcomes, and Zee and Koomen (2016) found positive relations between teacher self-efficacy and several teacher and student outcomes. Holzberger, Philipp, and Kunter (2013) demonstrated a reciprocal relation between teacher self-efficacy and instructional quality, with the relation of instructional quality to self-efficacy the stronger. Following on the conceptual model, research is needed that explores reciprocal relations among teacher and student influences over time (i.e., how teachers and students influence one another), and especially to determine how teachers develop and maintain their self-efficacy and that of their students' (Morris et al., 2017).

**Social comparisons.** Social comparisons are comparisons of ourselves with others. Social comparisons can affect motivational outcomes (Schunk & Usher, 2019). Learners who observe others perform successfully may believe that they also can be successful. Modeling (discussed earlier) offers a good example. Students who observe successful models may believe that they can emulate the models' performances. Such a belief may raise their self-efficacy and lead them to engage in motivated behaviors.

An important consideration in social comparisons is the degree of perceived similarity between observers and models. Learners who perceive greater similarity to others in key aspects are more likely to be influenced by social comparisons (Schunk & Usher, 2019). Researchers have shown that perceived similarity in age, gender, and ability levels can influence observers' self-efficacy (Bandura, 1986). Of course, perceived similarity also can lower self-efficacy. Learners who observe others fail whom they believe are similar to themselves may experience lower self-efficacy, which is a key personal influence on motivational outcomes.

**Values.** *Values* refer to perceived importance or usefulness of learning. Social cognitive theory postulates that people's actions reflect their values (Bandura, 1986). Students are motivated to achieve when they perceive their goals to be aligned with the outcomes that are important to them.

Researchers in the expectancy-value theoretical tradition have differentiated types of values and shown that values are important motivational processes (Eccles & Wigfield, this volume; Wigfield, Tonks, & Klauda, 2016). In particular, these researchers have found that values are strongly related to students' choices, such as their intentions to take courses and their enrollment in these courses. These researchers also have demonstrated that expectancies for success—which bears some similarity to self-efficacy (discussed later)—predict achievement. Together, expectancies and values predict a range of motivational outcomes including choices, effort, persistence, and achievement (Wigfield et al., 2016).

**Outcome expectations.** *Outcome expectations* are beliefs about the likely consequences of given actions based on prior experiences (Bandura, 1986). People act in ways they believe will lead to desired outcomes and attend to models whom they believe will teach them valued skills. Outcome expectations can sustain motivational outcomes over long periods when people believe their actions eventually will

produce success.

Outcome expectations and self-efficacy are not synonymous in meaning (Bandura, 1997). Self-efficacy is one's belief about what one can do; an outcome expectation is one's belief about what will happen after one performs a given action. Outcome expectations and self-efficacy, however, often are associated with one another. Students who feel efficacious about performing well and believe they eventually will succeed display higher motivational outcomes than do those who doubt their capabilities or whether long-term success is possible. But these beliefs need not be consistent. Efficacious students may display low motivational outcomes if they believe that they can perform well but that their efforts will not be properly recognized (e.g., due to an unresponsive environment).

Relative to other personal processes proposed by Bandura, there has been less educational research emphasis on outcome expectations, although a stronger link exists in the career literature (e.g., Lent, Ireland, Penn, Morris, & Sappington, 2017; Lent et al., 2018). Shell, Murphy, and Bruning (1989) assessed college students' self-efficacy and outcome expectations for reading and writing. Outcome expectations were operationalized as students' beliefs about the importance of reading and writing for achieving life goals. The results showed that self-efficacy and outcome expectations predicted achievement in both domains, but self-efficacy was the stronger predictor.

**Attributions.** *Attributions* are perceived causes of outcomes (Graham, this volume; Weiner, 2010). Unlike other personal processes that occur before and during actions, attributions occur afterwards and address why outcomes occurred. Attribution theory (Graham, this volume) has addressed the role of attributions in motivation in depth. Social cognitive theory (Bandura, 1986) predicts that learners who believe that they are largely responsible for their positive outcomes may experience high self-efficacy and continue their efforts (Schunk & Usher, 2019). When learners believe that causes under their control were responsible for negative outcomes (e.g., poor test performance due to low effort studying), they may attempt to produce better outcomes to maintain their self-efficacy for being successful.

Researchers have explored how attributions relate to self-efficacy and how interventions can lead to positive attributions. In particular, researchers have studied *attributional feedback*, or providing feedback to learners that stresses one or more attributions (e.g., "You did well because you worked hard"). This research has demonstrated that learners' can alter their attributional beliefs in ways that bear a better relation to motivational outcomes. Thus, stressing effort to students as a cause of successful outcomes can enhance self-efficacy and achievement (Maddux & Kleiman, 2018; Schunk, 1982). In one study, high school students who attributed their performance on a test to strategy use and effort scored significantly higher than those who attributed their scores to ability or luck (DiBenedetto & Zimmerman, 2010).

These results are consistent with Dweck (2006) idea that a *growth mindset* (i.e., the belief that one's abilities continue to grow and can improve) can be enhanced with emphasis on effort. Other research, however, shows that as learners become more capable, emphasizing ability more and effort less has benefits on motivational outcomes (Schunk, 1983). The resolution of these two points may depend on the credibility of the attributional feedback. In the early stages of learning, ability is not a credible attribution, but as learners become more capable, they may not need to work as hard to succeed, so ability becomes a more-credible cause of success. The issue of the timing of attributional feedback requires greater empirical investigation using the reciprocal interactions framework.

### 2.3. Behavioral influences

Key behavioral influences on motivational outcomes are choice of activities, effort, persistence, achievement, and environmental regulation. In the model of reciprocal interactions, these are both motivational outcomes and influences on motivation. Compared with learners

with lower motivation, those more motivated to succeed choose to engage in activities, expend effort and persist on difficult tasks, achieve at higher levels, and regulate features of their environments to promote success (Schunk & DiBenedetto, 2016; Usher & Schunk, 2018). There is empirical support for these behavioral influences (Schunk & Usher, 2019). Using self-efficacy as an example, research studies have shown that compared with students with lower self-efficacy, those who feel more efficacious about learning and performing well are more apt to choose to engage in activities, expend effort and persist on difficult tasks, and achieve at higher levels (Schunk & Usher, 2019). In turn, these motivational outcomes can affect learners' self-efficacy positively and help maintain motivational outcomes.

Research on self-regulation has shown similar effects of self-efficacy on indexes of environmental regulation (Zimmerman et al., 2015). Students who feel more efficacious about learning are more likely to establish effective environments for learning to include mechanisms for productive management of time (Usher & Schunk, 2018; Zimmerman, 2000). These behavioral outcomes of motivation help learners sustain their goal-directed activities.

#### 2.4. Environmental influences

Influences in the environment—such as socially modeled influences—can affect learners' motivational processes and outcomes (Schunk, 2012). People are often motivated to attempt to learn those modeled actions that they believe will lead to desirable outcomes and help them attain their goals. People form expectations about the anticipated outcomes of different actions (outcome expectations—discussed later) based on their observations of models and other experiences.

Certain model characteristics are hypothesized to increase motivation (Bandura, 1986). People are likely to attend to models whom they believe are competent. Perceived similarity between model and observer can lead to social comparisons (personal process) and affect motivational outcomes. Similarity in important ways (e.g., age, gender) can serve as a source of information for determining behavioral appropriateness, forming outcome expectations, and assessing one's self-efficacy. Peers can be important models when observers may hold doubts about their capabilities. Observing a similar peer successfully perform a task (environmental influence) can raise observers' self-efficacy (personal process) because they may believe that if the model can learn, they can as well (positive social comparisons; Schunk, 2012). Given the increasing diversity in schools and society, exploring effective model characteristics continues to be an important research direction. We return to this point later.

Modeling research supports these theoretical predictions. Observing successful models—particularly ones with characteristics noted in the previous paragraph—helps students acquire skills and builds self-efficacy for learning (Schunk, 1987, 2012). Greater motivational benefits can result from observing peer models due to perceived similarity and social comparisons. Observing models constitutes a vicarious source of self-efficacy information (discussed in a later section). To endure, this vicarious boost needs to be substantiated by successful performance by observers (Schunk, 1987; Usher & Pajares, 2008), which can raise motivation and achievement (Joët et al., 2011).

Other influences in instructional and social environments also can impact learners' personal processes and motivational outcomes (Schunk & Usher, 2019). The manner in which teachers present instruction can confuse or enlighten learners, which in turn can affect their motivational processes and learning. Feedback that highlights student progress in learning is apt to build self-efficacy. Some additional environmental influences are providing standards/goals for students to attain, linking rewards with students' performance accomplishments, and providing students with opportunities to self-evaluate their learning progress (Schunk, 2012).

#### 2.5. Self-regulation

Social cognitive theory (Bandura, 1986; Zimmerman, 2000) postulates that individuals use their self-regulatory capabilities to promote their wellbeing and sense of agency. *Self-regulation* refers to self-generated thoughts, affects, and behaviors that are systematically oriented toward attainment of one's goals. *Self-regulated learning* occurs when those goals involve learning.

Self-regulation comprises many of the processes shown in Fig. 2. Self-regulation is necessary for attaining goals. In a sense, motivational processes set the stage for goal attainment but self-regulation takes over to help one reach goals.

The development of social cognitive models of self-regulation and self-regulated learning represents an important theoretical advancement and illustrates the dynamic interplay of personal, behavioral, and environmental influences (i.e., model of reciprocal interactions; Usher & Schunk, 2018). For example, Zimmerman (2000) formulated a three-phase cyclical model comprising forethought, performance, and self-reflection phases. Forethought activities are performed prior to working on a task, such as planning, strategy selection, and building motivation. During performance, learners implement their strategies, monitor the results of their efforts, and determine how well they are learning. Periods of reflection (i.e., during pauses and when task is complete) are when learners reflect on their performances, evaluate their success, and make attributions for the outcomes of their actions. Learners then may cycle back to the performance phase if they believe they do not need to change their strategy, or to the forethought phase if new planning is needed. Throughout the phases, learners' cognitions (personal influences) direct their behaviors and self and external feedback (behavioral and environmental influences) can affect their cognitions.

Self-regulation includes motivational processes and, in turn, can influence motivational outcomes. Learners who are motivated to attain goals are apt to engage in effective self-regulatory activities such as implementing strategies, monitoring performances, adapting one's approach as needed, reflecting on one's progress, and sustaining motivation for task completion (i.e., self-regulation of motivation) (Cleary & Kitsantas, 2017; Usher & Schunk, 2018). As learners self-regulate their motivational outcomes (e.g., effort, persistence), heightened self-efficacy should result from the observation of learning progress, which can sustain self-regulatory activities.

An increasing body of research highlights the links between self-regulation and motivation (Efklides, Schwartz, & Brown, 2018; Lee, Lee, & Bong, 2014; Miele & Scholer, 2018; Schunk & Usher, 2019). In particular, self-regulation requires that learners set goals and strategies and metacognitively monitor their cognitive processing during task engagement. Researchers also have shown how learners can self-regulate their emotions to ensure that they stay on track and successfully complete tasks (Efklides et al., 2018; Nett, Goetz, & Daniels, 2010). Tzohar-Rozen and Kramarski (2017) found that fifth grade students who were taught to regulate their emotions when solving mathematical problems performed better than those not receiving this instruction. The interactive influence of self-regulation and motivation is an active research area (Schunk & Greene, 2018).

### 3. Critical issues for theory and research on social cognitive theory

Bandura's social cognitive theory has much to offer to the field of motivation. The theory predicts that motivation is internal comprising such processes as self-efficacy, social comparisons, goals, outcome expectations, values, and attributions. The theory also predicts that motivational processes bear a reciprocal relation to behavioral, environmental, and self-regulatory processes, and researchers have found support for these predictions (Maddux & Kleiman, 2018; Schunk & Usher, 2019; Usher & Schunk, 2018).

Despite this rich history, many questions remain about the

operation of social cognitive processes in motivation. Addressing these issues is necessary for continued theory development and for expanding its generality in diverse contexts. In this section, three critical issues are discussed that often are raised in conjunction with theories that address motivation: diversity and culture, methodology, and long-term effects of interventions. Following this section are additional recommendations for future research. The issues described in the remainder of this article should be viewed as priorities for social cognitive theory.

### 3.1. Diversity and culture

Principles of Bandura's theory are not considered to be context-specific but rather to apply across different settings and populations, albeit with some modifications as needed. But the theory was mainly developed when societies were less diverse than they are today. Thus, the assumption of principle generality—even with some adaptation—may not be entirely warranted. These points strongly suggest that addressing issues of diversity and culture should be a priority (DiBenedetto & Schunk, 2018; Usher & Weidner, 2018).

There is some evidence that principles of Bandura's theory may not be context independent (DiBenedetto & Schunk, 2018). For example, self-efficacy research in different cultures has shown that students in Western cultures (e.g., U. S., Canada) tend to judge self-efficacy higher than do those in non-Western cultures (e.g., Japan, China; Chiu & Klassen, 2010; Klassen, 2004). Furthermore, students in non-Western cultures often show better congruence (agreement) between self-efficacy judgments and performances, whereas those in Western cultures tend to overestimate self-efficacy. Chen and Zimmerman (2007) obtained these significant differences between American and Taiwanese students. These results suggest that the meaning of self-efficacy may be influenced by cultural variables. In cultures that emphasize collectivist principles (i.e., importance of families and groups), *collective self-efficacy* (i.e., self-efficacy of what the group can accomplish) may be a better predictor of individuals' performances than the individual self-efficacy of the people in the group (DiBenedetto & Schunk, 2018).

The same comments may apply to other social cognitive motivational processes. Cultural variables also have been shown to relate differentially to attributions (Graham, this volume; Klassen, 2004; McInerney, 2008). Students in non-Western cultures tend to place greater emphasis on effort as a cause of success, whereas those in Western cultures are more apt to stress ability. Research is needed with students from different cultural backgrounds that tests the influence of various attributions on self-efficacy and motivational outcomes as students are engaged in learning, especially in light of Dweck (2006) contention that an emphasis on ability as fixed may have negative effects on motivation.

Much early social cognitive motivation research was conducted in clinical settings (Bandura, 1977a, 1977b). Since that time, researchers have expanded the scope to other settings including education, health, and business. Research also has expanded internationally such that today there are active researchers globally (e.g., Bassi, Steca, Delle Fave, & Caprara, 2007; Lee et al., 2014). International research has shown support for the reciprocal interactions model using self-efficacy and performance in multiple nations (Williams & Williams, 2010). This trend must continue to test the predictions of the theory in international settings. The preceding discussion of culture suggests that we should not conclude now that social cognitive principles are universally applicable.

Further diversity in research participants is needed. Although some participant groups are well represented in research, others are not. There is, for example, very little motivation research on recent immigrants and persons experiencing homelessness. Research must be expanded to these and other populations. Multiple topics should be addressed, such as whom individuals select as effective models and how self-efficacy develops in conditions that at times undoubtedly are challenging.

Although there is research on sources of self-efficacy information (e.g., Sheu et al., 2018), there is a clear research need for the effectiveness of different social models on self-efficacy. As schools become more diverse, which model characteristics are most influential? Are ethnic and background similarity more important influences on self-efficacy, or is perceived competence a stronger influence?

Within this context, additional research is needed on the process whereby social comparisons affect self-efficacy among students at different capability levels. Some social cognitive research shows that observing coping models (those who initially experience difficulties but through effort and persistence gradually improve their performances) raises self-efficacy better among observers who have experienced learning difficulties than does observing mastery models (those who demonstrate faultless performance from the outset) (Schunk, 2012). Research is needed that explores the conditions under which each type of model is beneficial. It is possible that among capable students, observing coping models might lead to inflated self-efficacy, which could hinder motivation and learning. Future research should help to not only clarify theoretical predictions but also have implications for teaching and learning.

### 3.2. Methodology

A second critical issue that needs attention concerns methodology used in social cognitive research. Motivation is dynamic and ever-changing. Yet often it has been assessed in a static manner, such as by assessments before and after interventions. This type of assessment fails to capture fine-grained changes that occur during task engagement. The motivational processes stressed by Bandura's theory (e.g., goals, perceptions of progress, self-efficacy) are fluid and change during the course of learning, a point made in Nolen (this volume) commentary.

A top-priority goal of social cognitive research is to investigate the process whereby reciprocal interactions occur. This can be done only with methodologies that can explore moment-to-moment changes in personal, behavioral, and environmental influences. Increased research emphasis is recommended using methods of assessment that feature real-time analyses (Schunk & Greene, 2018). For example, micro-analytic methods collect assessments before, during, and after task engagement using self-report measures and interviews (Cleary & Callan, 2018). The Experience Sampling Method also has been used, where participants complete assessments several times during a given period (Bassi et al., 2007). Think-alouds capture participants' thoughts as they engage in learning (Greene, Deekens, Copeland, & Yu, 2018). Case studies follow a few individuals in depth over time (Butler & Cartier, 2018). Diaries ask students to record their thoughts as they work on tasks (Schmitz, Klug, & Schmidt, 2011). Technological traces show students' progress through a learning cycle (Bernacki, 2018). These types of assessments can capture shifts in motivational processes.

Self-efficacy, for example, can change rapidly. It does not remain static from the start of a learning cycle to the end of it. In a learning setting, it may change quickly as teachers move from one activity to the next. At times, individuals may judge themselves highly capable, moderately capable, or not capable of completing a task (Bandura, 2006a, 2006b). By tracking fine-grained changes, researchers can show how motivation varies over the course of learning and to which influences (e.g., instructional, social, personal) it is sensitive.

Methodologies also can assess different types of self-efficacy. Most often, researchers have assessed self-efficacy for performing a task, which assumes that learning already has occurred. In school, however, individuals typically are engaged in learning. *Self-efficacy for learning* refers to one's perceived capabilities for learning to perform a task. Self-efficacy for learning taps the dynamics of learning. Research shows that self-efficacy for learning can be highly predictive of motivation and learning (Schunk & Hanson, 1989). This critical variable should be assessed in any context involving learning.

### 3.3. Long-term effects of interventions

Like much research conducted using other theoretical frameworks, most social cognitive motivation research is short term in duration. Many studies do not include follow-up periods to determine how well changes brought about by interventions endure over time or transfer to contexts outside of the intervention. This is a serious limitation. Given its dynamic nature, motivation should fluctuate over time and sensitive to contextual influences.

There is an impressive amount of research showing that interventions can affect social cognitive processes (e.g., self-efficacy, goals; Lazowski & Hulleman, 2016; Rosenzweig & Wigfield, 2016; Scherrer & Preckel, 2019). At the same time, there is much less research on maintenance and transfer. Although there is no set definition of “long-term,” it would be desirable to know whether changes are still evident a few weeks after conclusion of the intervention. Assuming, for example, that self-efficacy is promoted by an intervention, research is needed showing which personal, environmental, and behavioral influences help to maintain and transfer it.

There are, however, some promising results. Intervention studies on developing mathematical problem-solving skills (Pape, Bell, & Yetkin-Ozdemir, 2013), learning writing strategies (Harris, Graham, & Santangelo, 2013), and conducting authentic scientific research (Hiller & Kitsantas, 2014; Hiller, 2018), have been shown to increase self-efficacy and help maintain it beyond the instructional context.

The effectiveness of interventions has also been found to generalize to other similar situations. Schunk and Swartz (1993) taught children a writing strategy and how to adapt it to different situations. They found that improvements in children’s writing self-efficacy and skill maintained themselves over a 4-week period and generalized to contexts outside of the instructional setting. Studies of this type that examine changes over lengthier periods—such as a semester—will provide valuable information about the generality of motivational processes.

As discussed earlier, using fine-grained measures will show when changes occur and to which types of influences they are sensitive. With respect to self-efficacy, the sources suggest that practice may help maintain it. In support of this point, psychological research shows that regular practice involving retrieval of knowledge from long-term memory leads to better learning than no retrieval practice (Karpicke & Grimaldi, 2012). A point to be examined, therefore is whether scheduling regular review and practice sessions helps maintain students’ self-efficacy for learning better than the absence of these sessions, a point that has implications for teaching and learning.

## 4. Future research directions

The preceding section covered three issues that need to be addressed to advance Bandura’s theory. For each of these, research recommendations were given.

There are other areas where additional research is needed to extend the generality of the theory. This section discusses contexts, conceptual clarity, and technology.

### 4.1. Contexts

Early research using Bandura’s social cognitive theory was conducted in clinical contexts (Bandura, 1977a). For example, Bandura and his colleagues conducted research with persons with snake phobias (Bandura & Adams, 1977; Bandura, Adams, & Bayer, 1977). Individuals’ self-efficacy for engaging in progressively more-threatening interactions with snakes was assessed, after which they received a treatment designed to raise their self-efficacy and performance. The results of these early studies supported the idea that gains in self-efficacy led to higher motivational outcomes (e.g., effort, persistence).

Since that time there has been an expansion of motivation research into non-clinical settings such as education, health, and business. Not

surprisingly, much social cognitive educational research using Bandura’s theory has been conducted in school contexts. Clearly more school-based research is needed as schools in the U.S. and globally become more diverse and given changes in technology, curricula, and instruction.

But schools are not the only places where learning occurs. Much learning occurs out of school in homes, workplaces, after-school programs, and communities. In contrast to school-based research, there is much less research on out-of-school contexts. Research is needed on how personal influences (e.g., goals, social comparisons) operate in contexts such as those involving homework, mentoring, tutoring, internships, and apprenticeships. For example, although mentoring researchers have addressed effective mentor characteristics (Allen & Eby, 2007), this research has not addressed how motivational processes such as goals, self-evaluations of progress, and self-efficacy operate during mentoring interactions. The motivational processes espoused by Bandura’s theory lend themselves well to out-of-school investigations, as exemplified by Zimmerman and Kitsantas (2005) who found that self-efficacy played a key role during homework. These out-of-school contexts may profitably be viewed from a situated perspective as espoused by Nolen (this volume), where the context is a social system that includes individuals and the reciprocal interactions that occur. While social cognitive motivational processes seem applicable across diverse contexts, their meaning can vary greatly due to the presence of contextual and cultural variables.

Even within school settings, most social cognitive motivation research has been done in the core areas of mathematics, science, reading, and writing. Research is needed using other disciplines such as art, music, social studies, and physical education. There also are other areas where social cognitive principles have seen little application though better integration would be beneficial. For example, in recent years researchers have explored the effects of various environmental influences on student perceptions and motivational outcomes including teacher affective support and methods for fostering a sense of belonging (Juvonen, 2006). Reciprocal relations among personal, behavioral, and environmental influences should be investigated. Key issues are how classroom variables that enhance students’ sense of belonging affect their self-efficacy and how, in turn, self-efficacy may affect sense of belonging. How do teachers’ affective support strategies interact with students’ personal motivational processes? A better understanding of these types of relations is a research priority.

### 4.2. Clarity and distinctiveness of social cognitive constructs

Research is recommended on assessing distinctiveness of social cognitive motivational influences and determining their relation with conceptually-similar constructs in other theories. The term “self-efficacy” can illustrate this issue.

“Self-efficacy” originated in Bandura (1977b) social cognitive theory with the early clinical research studies mentioned earlier. His original definition of self-efficacy was one’s perceived capabilities for performing actions at designated levels. Since then there has been a broadening of this focus such that today different types of self-efficacy are referred to and assessed such as self-efficacy for performance (akin to Bandura’s original definition) self-efficacy for learning, and self-efficacy for self-regulated learning. This seems acceptable so long as the original parameters for self-efficacy are retained (i.e., domain specific; assessed at the level of individual tasks).

But today even a cursory look at the literature reveals many research articles in which the researchers purport to assess self-efficacy, yet examination of the assessment questions and methods shows that researchers have strayed from Bandura’s original conception. Researchers using “self-efficacy” may be referring to earning particular course grades, being successful in college, feelings of competence in school, and the like. Such general conceptualizations are far removed from the original intent. This issue is important because the

measurement should align with the definition and different ways of measuring the same variable defined differently may produce inconsistent results. Research is needed that investigates how the predictive utility of self-efficacy changes as the definition and assessment move away from the original conceptualization.

Further, there are other conceptually similar variables in the motivation literature, such as self-concept, ability beliefs, expectancies for success, perceptions of competence, intentions, and grit (DiBenedetto & Schunk, 2018). For example, Anderman (this volume) notes that the variables “expectancies for success” from expectancy-value theory (Wigfield et al., 2016) and “self-efficacy” from social cognitive theory are conceptually similar. It would be informative to make a direct comparison of the predictive utilities these two variables. A fine distinction can be drawn between them based on generality (self-efficacy being the more domain specific), but the research question is whether that makes a difference in the prediction of motivational outcomes. Answering the latter question helps to address Anderman’s question of whether we need so many theories and whether theories differ in their practical utility.

The recommendation is for empirical investigations. As an example, a recent study examined the relation of self-efficacy and grit and their prediction of achievement (Usher, Li, Butz, & Rojas, 2019). The results showed self-efficacy to be the stronger predictor and that self-efficacy mediated the relation between grit and school outcomes. Studies such as this testing the roles of social cognitive motivational influences will help to establish their degree of distinctiveness.

#### 4.3. Technology

Social cognitive theory—like most motivation theories—was developed before the advent of contemporary technology. Some early research employed technology (e.g., Bandura’s modeling studies using televised models), but the basic social cognitive principles were developed and tested largely in face-to-face settings without advanced technology.

Although the theory’s principles are intended to be generic and apply across different contexts, some theoretical adaptation may be needed. Online and asynchronous media do not function in the same fashion as do face-to-face contexts. It should not be assumed that social cognitive motivational processes will operate in the same fashion in the latter contexts as they do in the former.

Social cognitive research is needed on the generality of modeled influences in technological environments. Early research on modeling was conducted with live and symbolic models (e.g., televised; Bandura & Walters, 1963). In the past several years the scope of modeled influences has expanded dramatically. Today learners routinely view online videos and connect with other learners electronically in multiple ways (Azevedo, Taub, & Mudrick, 2018; Moos, 2018; Nietfeld, 2018).

We might ask, for example, how important model characteristics are for online models. Is perceived similarity critical for motivation? What, if any, model features make a difference in learners’ motivation? It may be that perceived competence and credibility are critical no matter the model source but that perceived similarity is less important. Empirical answers to these questions have relevance for social cognitive predictions about modeling, and they will suggest implications for teaching and learning.

Testing social cognitive motivational principles in technological environments requires newer types of methodologies. For some time, self-regulation researchers have been conducting encouraging research. Researchers have shown, for example, that online tutors can help students develop self-regulatory skills, which can enhance their self-efficacy, motivation, and achievement (Azevedo et al., 2018; Moos, 2018). Digital games in particular, have been shown to influence self-regulation processes and lead to increases in the gamer’s self-efficacy (Nietfeld, 2018). We might predict that technology that highlights students’ progress in mastering learning goals should raise their self-

efficacy and motivation. Research evidence with middle-school students supports the link between digital games and motivation, interest, collaboration skills, and the ability to set proximal goals to reach long-term goals (Shores, Hoffmann, Nietfeld, & Lester, 2012).

Social cognitive research is needed using social media. These media offer ways for students to have social contact with others, and we know little about what types of media variables are effective, how students’ socially compare themselves with others via social media, and how the enhanced communication potential may influence motivation.

In addition, the potential for social media to interfere with learning is commonly experienced by many educators who struggle to maintain students’ attention and motivation in the classroom. In a study on college students’ use of social media in and outside the classroom, researchers found that students reported that they were aware of the impact of using social media on achievement, task completion, and understanding of the instructional content (Flanigan & Babchuk, 2015). If more than 90% of students bring their cell phones to school (Jacobsen & Forste, 2011), how might educators take advantage of students’ willingness to view modeling in videos (i.e. demonstrating how to conduct science experiments, solving math problems, playing a musical instrument) to enhance self-efficacy and motivation for academic achievement rather than ignoring students’ use of them as distractors?

Such research has implications for teaching and learning. There are increasing educational uses of Facebook and other social media. How might these help students set goals, monitor goal progress, assess their self-efficacy for learning, and the like? How might instruction be designed to incorporate social media and take social cognitive motivational principles into account? It seems incumbent for social cognitive theory to assess this potential impact

#### 5. Conclusion

Social cognitive theory has been intimately connected with motivation from its inception. Motivational variables emphasized by the theory have been extensively tested in research and theoretical predictions have been largely supported. But the motivation research agenda for social cognitive theory is far from complete. Suggestions have been made for areas of research. The hope is that the theory’s motivation research agenda will expand now and well into the future.

#### References

- Allen, T. D., & Eby, L. T. (Eds.). (2007). *The Blackwell handbook of mentoring: A multiple perspectives approach*. Malden, MA: Blackwell Publishing.
- Anderman, E. M. (this volume). Motivation theory in the 21st century: Balancing precision and utility. *Contemporary Educational Psychology*.
- Anderman, E. M., & Wolters, C. A. (2006). Goals, values, and affects: Influences on student motivation. In P. A. Alexander, & P. H. Winne (Eds.). *Handbook of educational psychology* (pp. 369–389). (2nd ed.). Mahwah, NJ: Erlbaum.
- Azevedo, R., Taub, M., & Mudrick, N. V. (2018). Understanding and reasoning about real-time cognitive, affective, and metacognitive processes to foster self-regulation with advanced learning technologies. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 254–270). (2nd ed.). New York: Routledge.
- Bandura, A. (1977a). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215.
- Bandura, A. (1977b). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2006a). Guide for creating self-efficacy scales. In F. Pajares, & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 307–338). Greenwich, CT: Information Age Publishing.
- Bandura, A. (2006b). Adolescent development from an agentic perspective. In F. Pajares, & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 45–70). Greenwich, CT: Information Age Publishing.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1–26.
- Bandura, A., & Adams, N. E. (1977). Analysis of self-efficacy theory of behavioral change. *Cognitive Therapy and Research*, 1, 287–308.
- Bandura, A., Adams, N. E., & Bayer, J. (1977). Cognitive processes mediating behavioral change. *Journal of Personality and Social Psychology*, 35, 125–139.
- Bandura, A., & Walters, R. H. (1963). *Social learning and personality development*. New



- York: Holt, Rinehart & Winston.
- Bassi, M., Steca, P., Delle Fave, A., & Caprara, G. V. (2007). Academic self-efficacy beliefs and quality of experience in learning. *Journal of Youth & Adolescence*, *36*, 301–312.
- Bernacki, M. L. (2018). Examining the cyclical, loosely sequenced, and contingent features of self-regulated learning: Trace data and their analysis. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 370–387). (2nd ed.). New York: Routledge.
- Bernacki, M. L., Alevan, V., & Nokes-Malach, T. J. (2015). An examination of self-efficacy during a learning episode: Initial levels, changes, and associations with learning. *Metacognition & Learning*, *10*, 99–117.
- Butler, D. L., & Cartier, S. C. (2018). Advancing research and practice about self-regulated learning: The promise of in-depth case study methodologies. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 352–369). (2nd ed.). New York: Routledge.
- Chen, P., & Zimmerman, B. (2007). A cross-national comparison study on the accuracy of self-efficacy beliefs of middle-school mathematics students. *Journal of Experimental Education*, *75*, 221–244.
- Chiu, M. M., & Klassen, R. M. (2010). Relations of mathematics self-concept and its calibration with mathematics achievement: Cultural differences among fifteen-year-olds in 34 countries. *Learning and Instruction*, *20*, 2–17.
- Cleary, T. J., & Callan, G. L. (2018). Assessing self-regulated learning using microanalytic methods. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 338–351). (2nd ed.). New York: Routledge.
- Cleary, T., & Kitsantas, A. (2017). Motivation and self-regulated learning influences on middle school mathematics achievement. *Psychology Review*, *46*, 88–107.
- DiBenedetto, M. K., & Schunk, D. H. (2018). Self-efficacy in education revisited through a sociocultural lens: Current and future directions. In G. A. D. Liem, & D. M. McInerney (Eds.). *Big theories revisited 2* (pp. 117–140). Charlotte, NC: Information Age Publishing.
- DiBenedetto, M. K., & Zimmerman, B. J. (2010). Differences in self-regulatory processes among students studying science: A microanalytic investigation. *The International Journal of Educational and Psychological Assessment*, *5*(1), 2–24.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York: Random House.
- Efklides, A., Schwartz, B. L., & Brown, V. (2018). Motivation and affect in self-regulated learning: Does metacognition play a role? In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 64–82). (2nd ed.). New York: Routledge.
- Flanigan, A., & Babchuk, W. (2015). Social media as academic quicksand: A phenomenological study of student experiences in and out of the classroom. *Learning and Individual Differences*, *44*, 40–45. <https://doi.org/10.1016/j.lindif.2015.11.003>.
- Graham, S. (this volume).
- Greene, J. A., Deekens, V. M., Copeland, D. Z., & Yu, S. (2018). Capturing and modeling self-regulated learning using think-aloud protocols. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 323–337). (2nd ed.). New York: Routledge.
- Harris, K. R., Graham, S., & Santangelo, T. (2013). Self-regulated strategies development in writing: Development, implementation, and scaling up. In H. Bembenutty, T. J. Cleary, & A. Kitsantas (Eds.), *Applications of self-regulated learning across diverse disciplines: A tribute to Barry J. Zimmerman* (pp. 59–88). Charlotte, NC: Information Age Publishing.
- Hattie, J., Hodis, F., & Kang, S. (this volume). Theories of motivation: A response. *Contemporary Educational Psychology*.
- Hiller, S. E. (2018). *Mastering science with metacognitive and self-regulatory strategies: A teacher-researcher dialogue of practical applications for adolescent students*. New York: Nova Science Publishers.
- Hiller, S. E., & Kitsantas, A. (2014). The effect of a horseshow crab citizen science program on student science performance and STEM career motivation. *School Science and Mathematics Journal*, *114*(6), 302–311. <https://doi.org/10.1111/ssm.12081>.
- Holzberger, D., Philipp, A., & Kunter, M. (2013). How teachers' self-efficacy is related to instructional quality: A longitudinal analysis. *Journal of Educational Psychology*, *105*, 774–786.
- Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, *17*, 63–84.
- Jacobsen, W., & Forste, R. (2011). The wired generation: Academic and social outcomes of electronic media use among university students. *Cyberpsychology, Behavior and Social Networking*, *14*(5), 275–280. <https://doi.org/10.1089/cyber.2010.0135>.
- Joët, G., Usher, E., & Bressoux, P. (2011). Sources of self-efficacy: An investigation of elementary school students in France. *Journal of Educational Psychology*, *103*(3), 649. <https://doi.org/10.1037/a0024048>.
- Juvonen, J. (2006). Sense of belonging, social relationships, and school functioning. In P. A. Alexander, & P. H. Winne (Eds.). *Handbook of educational psychology* (pp. 255–274). (2nd ed.). Mahwah, NJ: Erlbaum.
- Karpicke, J. D., & Grimaldi, P. J. (2012). Retrieval-based learning: A perspective for enhancing meaningful learning. *Educational Psychology Review*, *24*, 401–418.
- Kitasantas, A., & Zimmerman, B. J. (2000). The role of emulation and observation in the development of athletic self-regulation. *Journal of Educational Psychology*, *92*(4), 811–817.
- Klassen, R. M. (2004). A cross-cultural investigation of the efficacy beliefs of South Asian immigrant and Anglo non-immigrant early adolescents. *Journal of Educational Psychology*, *96*, 731–742.
- Klassen, R. M., Tze, V. M. C., Betts, S. M., & Gordon, K. A. (2011). Teacher efficacy research 1998–2009: Signs of progress of unfulfilled promise? *Educational Psychology Review*, *23*, 221–243.
- Klassen, R. M., & Usher, E. L. (2010). Self-efficacy in educational settings: Recent research and emerging directions. In T. C. Urland & S. A. Karabenick (Eds.), *Advances in motivation and achievement: Vol.16A. The decade ahead: Theoretical perspectives on motivation and achievement* (pp. 1–33). Bingley, U. K.: Emerald.
- Lazowski, R. A., & Hulleman, C. S. (2016). Motivation interventions in education: A meta-analytic review. *Review of Educational Research*, *86*, 602–640.
- Lee, W., Lee, M.-J., & Bong, M. (2014). Testing interest and self-efficacy as predictors of academic self-regulation and achievement. *Contemporary Educational Psychology*, *39*, 86–99.
- Lent, R. W., Ireland, G. W., Penn, L. T., Morris, T. R., & Sappington, R. (2017). Sources of self-efficacy and outcome expectations for career exploration and decision-making: A test of the social cognitive model of career self-management. *Journal of Vocational Behavior*, *99*, 107–117.
- Lent, R. W., Sheu, H.-B., Miller, M. J., Cusick, M. E., Penn, L. T., & Truong, N. N. (2018). Predictors of science, technology, engineering, and mathematics choice options: A meta-analytic path analysis of the social-cognitive choice model by gender and race/ethnicity. *Journal of Counseling Psychology*, *65*, 17–35.
- Locke, E. A. (2018). Long-range thinking and goal-directed action. In G. Oettingen, A. T. Sevincer, & P. M. Gollwitzer (Eds.). *The psychology of thinking about the future* (pp. 377–391). New York: Guilford Publications.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, *57*, 705–717.
- Locke, E. A., & Latham, G. P. (2015). Breaking the rules: A historical overview of goal setting theory. In A. J. Elliot (Vol. Ed.), *Advances in motivation science: Vol. 2*, (pp. 99–126). Oxford, U. K.: Elsevier.
- Maddux, J. E., & Kleiman, E. M. (2018). Self-efficacy. In G. Oettingen, A. T. Sevincer, & P. M. Gollwitzer (Eds.). *The psychology of thinking about the future* (pp. 174–198). New York: Guilford Publications.
- McInerney, D. M. (2008). The motivational roles of cultural differences and cultural identity in self-regulated learning. In D. H. Schunk, & B. J. Zimmerman (Eds.). *Motivation and self-regulated learning: Theory, research, and applications* (pp. 369–400). New York: Erlbaum.
- Miele, D. B., & Scholer, A. A. (2018). The role of metamotivational monitoring in motivation regulation. *Educational Psychologist*, *53*, 1–21.
- Moos, D. C. (2018). Emerging classroom technology: Using self-regulation principles as a guide for effective implementation. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 2434–3253). (2nd ed.). New York: Routledge.
- Morris, D. B., Usher, E. L., & Chen, J. A. (2017). Reconceptualizing the sources of teaching self-efficacy: A critical review of emerging literature. *Educational Psychology Review*, *29*, 795–833.
- Nett, U. E., Goetz, T., & Daniels, L. M. (2010). What to do when feeling bored? Students' strategies for coping with boredom. *Learning and Individual Differences*, *20*, 626–638.
- Nietfeld, J. L. (2018). The role of self-regulated learning in digital games. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 271–284). (2nd ed.). New York: Routledge.
- Nolen, S. B. (this volume). A situative turn in the conversation about motivation theories. *Contemporary Educational Psychology*.
- Rosenzweig, E. Q., & Wigfield, A. (2016). STEM motivation interventions for adolescents: A promising start, but further to go. *Educational Psychologist*, *51*, 146–163.
- Pape, S. J., Bell, V. Cl. & Yetkin-Ozdemir, I. (2013). Sequencing components of mathematics lessons to maximize development of self-regulation: Theory, practice, and intervention. In H. Bembenutty, T. J. Cleary, & A. Kitsantas (Eds.), *Applications of self-regulated learning across diverse disciplines: A tribute to Barry J. Zimmerman* (pp. 29–58). Charlotte, NC: Information Age Publishing.
- Rotter, J. B. (1954). *Social learning and clinical psychology*. Englewood Cliffs, NJ: Prentice Hall.
- Scherrer, V., & Preckel, F. (2019). Development of motivational variables and self-esteem during the school career: A meta-analysis of longitudinal studies. *Review of Educational Research*, *89*, 211–258.
- Schmitz, B., Klug, J., & Schmidt, M. (2011). Assessing self-regulated learning using diary measures with university students. In B. J. Zimmerman, & D. H. Schunk (Eds.). *Handbook of self-regulation of learning and performance* (pp. 251–266). New York: Routledge.
- Schunk, D. H. (1982). Effects of effort attributional feedback on children's perceived self-efficacy and achievement. *Journal of Educational Psychology*, *74*, 548–556.
- Schunk, D. H. (1983). Ability versus effort attributional feedback: Differential effects on self-efficacy and achievement. *Journal of Educational Psychology*, *75*, 848–856.
- Schunk, D. H. (1987). Peer models and children's behavioral change. *Review of Educational Research*, *57*, 149–174.
- Schunk, D. H. (2012). Social cognitive theory. In K. R. Harris, S. Graham, & T. Urland (Eds.), *Educational psychology handbook: Vol. 1. Theories, constructs, and critical issues* (pp. 101–123). Washington, DC: American Psychological Association.
- Schunk, D. H., & DiBenedetto, M. K. (2016). Self-efficacy theory in education. In K. R. Wentzel, & D. B. Miele (Eds.). *Handbook of motivation at school* (pp. 34–53). (2nd ed.). New York: Routledge.
- Schunk, D. H., & Ernter, P. A. (1999). Self-regulatory processes during computer skill acquisition: Goal and self-evaluative influences. *Journal of Educational Psychology*, *91*, 251–260.
- Schunk, D. H., & Greene, J. A. (Eds.). (2018). *Handbook of self-regulation of learning and performance* (2nd ed.). New York: Routledge.
- Schunk, D. H., & Hanson, A. R. (1989). Self-modeling and children's cognitive skill learning. *Journal of Educational Psychology*, *81*, 155–163.
- Schunk, D. H., Meece, J. L., & Pintrich, P. R. (2014). *Motivation in education: Theory, research, and applications* (4th ed.). Boston: Pearson Education.
- Schunk, D. H., & Swartz, C. W. (1993). Goals and progress feedback: Effects on self-efficacy and writing achievement. *Contemporary Educational Psychology*, *18*, 337–354.
- Schunk, D. H., & Usher, E. L. (2019). Social cognitive theory and motivation. In R. M. Ryan (Ed.). *The Oxford handbook of human motivation* (pp. 11–26). (2nd ed.). New

- York: Oxford University Press.
- Shell, D. F., Murphy, C. C., & Bruning, R. H. (1989). Self-efficacy and outcome expectancy mechanisms in reading and writing achievement. *Journal of Educational Psychology, 81*, 91–100.
- Sheu, H., Lent, R. W., Miller, M. J., Penn, L. T., Cusick, M. E., & Truong, N. N. (2018). Sources of self-efficacy and outcome expectations in science, technology, engineering, and mathematics domains: A meta-analysis. *Journal of Vocational Behavior, 109*, 118–136.
- Shores, L. R., Hoffmann, K. F., Nietfeld, J. L., & Lester, J. C. (2012). The role of sub-problems: Supporting problem-solving in narrative-centered learning environments. *Proceedings of Eleventh International Conference on Intelligent Tutoring Systems* (pp. 464–469).
- Tzohar-Rozen, M., & Kramarski, B. (2017). Metacognition and meta-affect in young students: Does it make a difference in mathematical problem solving? *Teachers College Record, 119*(13).
- Urdu, T., & Kaplan, A. (this volume).
- Usher, E. L. (2009). Sources of middle school students' self-efficacy in mathematics: A qualitative investigation of student, teacher, and parent perspectives. *American Educational Research Journal, 46*, 275–314.
- Usher, E. L., Ford, C. J., Li, C. R., & Weidner, B. L. (2019). Sources of math and science self-efficacy in rural Appalachia: A convergent mixed methods study. *Contemporary Educational Psychology, 57*, 32–53.
- Usher, E. L., Li, C. R., Butz, A. R., & Rojas, J. P. (2019). Perseverant grit and self-efficacy: Are both essential for children's academic success? *Journal of Educational Psychology, 111*, 877–902.
- Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of Educational Research, 78*, 751–796. <https://doi.org/10.3102/0034654308321456>.
- Usher, E. L., & Schunk, D. H. (2018). Social cognitive theoretical perspective of self-regulation. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 19–35). (2nd ed.). New York: Routledge.
- Usher, E. L., & Weidner, B. L. (2018). Sociocultural influences on self-efficacy development. In G. A. D. Liem, & D. M. McInerney (Eds.). *Big theories revisited 2* (pp. 141–164). Charlotte, NC: Information Age Publishing.
- Weiner, B. (2010). The development of an attribution-based theory of motivation: A history of ideas. *Educational Psychologist, 45*, 28–36.
- White, M. C., & DiBenedetto, M. K. (2018). Self-regulation: An integral part of standards based education. In D. H. Schunk, & J. A. Greene (Eds.). *Handbook of self-regulation of learning and performance* (pp. 208–222). (2nd ed.). New York: Routledge.
- Wigfield, A., Tonks, S. M., & Klauda, S. L. (2016). Expectancy-value theory. In K. R. Wentzel, & D. B. Miele (Eds.). *Handbook of motivation at school* (pp. 55–74). (2nd ed.). New York: Routledge.
- Williams, T., & Williams, K. (2010). Self-efficacy and performance in mathematics: Reciprocal determinism in 33 nations. *Journal of Educational Psychology, 102*, 453–466.
- Zee, M., & Koomen, M. Y. (2016). Teacher self-efficacy and its effects on classroom processes, student academic achievement, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research, 86*, 981–1015.
- Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.). *Handbook of self-regulation* (pp. 13–39). San Diego, CA: Academic Press.
- Zimmerman, B. J., & Kitsantas, A. (2005). Homework practices and academic achievement: The mediating role of self-efficacy and perceived responsibility beliefs. *Contemporary Educational Psychology, 30*, 397–417.
- Zimmerman, B. J., Schunk, D. H., & DiBenedetto, M. K. (2015). A personal agency view of self-regulated learning: The role of goal setting. In F. Guay, H. Marsh, D. M. McInerney, & R. G. Craven (Eds.). *Self-concept, motivation, and identity: Underpinning success with research and practice* (pp. 83–114). Charlotte, NC: Information Age Publishing.