Social cognitive theory (SCT) postulates that intellectual factors, behavior, and environment exert simultaneous and reciprocal influence over each other and the individual (Bandura, 1991). Simulation learning encompasses activities on a continuum from simple introductory scenarios requiring response to patient needs during basic hygienic care to situations demanding complex decision making and application of critical care skills. Using SCT as a framework for planning and implementing simulation learning activities not only optimizes task and content mastery but also supports student analysis of one’s own learning or thinking process. The focus of this article is to describe how intellectual factors in SCT are influenced during each step in the simulation learning process and to exemplify that theory-based integration of simulated learning supports metacognitive growth of adult learners in an associate degree nursing program.

Faculty create an environment conducive to learning, structure presimulation and postsimulation activities that foster symbolic coding operations, provide the structure for skill rehearsal supporting motor retention processes, and promote self-regulation of behavior and self-efficacy during the simulation and debriefing process. Successful outcomes in the simulation laboratory foster self-esteem. Simulation learning is uniquely suited to promoting student anticipatory control over similar future clinical situations in support of metacognition. Tailoring level of difficulty to participants’ mastery level supports successful outcomes that motivate students to set higher personal standards for goal attainment. Human agency is supported by deliberate consideration of the core principles of intentionality, forethought, self-reactiveness, and self-reflectiveness (Bandura, 2001) in selection of simulated learning activities and facilitation of the debriefing process. Effective integration of simulated learning into the curriculum uses simulation as a teaching method to support course learning outcomes and foster maturation of metacognitive growth to promote self-directed, entry-level practitioners.

SOCIAL COGNITIVE THEORY

Social cognitive theory describes learning that is affected by cognitive, behavioral, and environmental factors, which
are intricately and reciprocally connected (Bandura, 1991), to bring about the conscious desire to self-regulate future behavior. Bandura (1969) initially focused his research on observational learning through modeling the behavior of others. The four components of observational learning are (a) attentiveness, (b) symbolic coding operations, (c) motor retention processes, and (d) motivation. Intrinsic motivation and external incentives affect attentiveness to the learning environment. Retention of learning occurs through symbolic coding operations whereby the learner classifies and stores learning in the form of images or words for later retrieval. Motor retention processes are developed through practice of a skill or enacting a standard of behavior. Bandura’s extensive studies dispelled the notion of observational learning as simply an imitative process and supported the perception that human beings are the managers or agents of their own endeavors. Human agency is the concept that learners make an intentional decision to invest in learning and enact behavior change (Bandura, 2001).

The four components that influence human agency are (a) intentionality, (b) forethought, (c) self-reactiveness, and (d) self-reflectiveness. Bandura (2001) stated, “An intention is a representation of an action to be performed. It is not simply an expectation or prediction of future actions but a proactive commitment to bringing them about” (p. 5). As active agents or managers of their own learning, students demonstrate intentionality by setting goals based on the degree of investment needed to attain new behaviors, their motivation to change, and self-efficacy. Individuals demonstrate forethought by anticipation of consequences of decisions to self, others, and the environment (Bandura, 1991) in both goal setting and in choosing to enact new behaviors (Bandura, 2001). Self-efficacy influences the level of difficulty of self-selected goals, affective response to less than satisfactory achievement of outcomes, and persistence to achieve goals. Learners use anticipatory control of future situations by application of forethought, with an intention to act differently in the future (Bandura, 2001).

Individuals “cultivate multiple competencies to meet ever-changing occupational demands and roles” (Bandura, 2001, p. 11). As human agents of learning, a choice is made to evolve, adapt, and self-regulate behavior (Bandura, 2001). Self-regulation of behavior requires self-monitoring, self-diagnosis, and affective self-reaction that behavior change or skill acquisition is desirable and attainable. To self-monitor, the learner judges or evaluates performance based on benchmarks or the performance of others. Self-monitoring is an imperfect process because it is influenced by self-esteem. Self-diagnosis involves recognizing behavioral patterns and personal response to situations. Affective self-reaction is the concept that learners make choices, based on self-esteem and the perceived difficulty of goal attainment, about whether to value new knowledge and engage in learning (Bandura, 1991).

Using self-reflection, the learner evaluates the results of actions taken in light of personal values, motivation, and long-term goals. The learner can then make choices about a future course of action and gain new insights into individual ability to affect change and take control of a situation (Bandura, 2001). Reflection on observed or experienced outcomes may involve internal practice of new approaches or covert rehearsal (Bandura, 1969). Motivation to replicate the new skills and behavior arises from external influences, such as identifying with role models (Bandura, 1969), and environmental and cognitive factors, including self-regulation and self-efficacy (Bandura, 1991). Bandura (2001) noted, “Human functioning is rooted in social systems. Therefore, personal agency operates within a broad network of sociostructural influences” (p. 14). As social agents, individuals both respond to and shape social structures (Bandura, 2001).

**SOCIAL COGNITIVE THEORY AND SIMULATION IN PRACTICE**

**Purpose of Simulation to Enhance Curriculum**

Nurses function in a constant state of controlled chaos, responding to multiple patient, staff, and organizational demands, often simultaneously. Active learning in a simulation laboratory helps students learn to intervene in a way that is responsive to the often-competing needs of the patient at that time and in that place. Bandura (1991) stated, “Many of the decisional rules for exercising control over dynamic environments must be learned through exploratory experiences” (p. 255). Learning objectives for simulation range from simple to complex, depending on the degree of problem solving and intervention required of the student (Jeffries, 2005).

Simulated learning activities range from role-play to use of a high-fidelity manikin displaying cardiac indices. The degree of technology used should be appropriate to the activity and learning objectives (Dede, 2010). Development of metacognition, progress in self-regulation, and promotion of self-efficacy requires a planned approach to the integration of simulation into the curriculum. Scenario complexity should be congruent with the achievement of successive course learning outcomes and expectations for student cognitive growth (Table 1). For example, Bambini, Washburn, and Perkins (2009) explicitly addressed the relationship of simulated learning to the development of self-efficacy in a research study specifically designed for baccalaureate nursing students who were preparing for their first maternal–infant clinical experience. Participating students completed both presimulation and postsimulation surveys, and they reported more confidence in performing skills associated with postpartum care and higher levels of self-efficacy ($p < 0.01$) after completing the scenarios that were directly related to their course objectives. By using classroom concepts during simulated patient–care encounters and engaging in self-reflection during group debriefing, students learn to self-monitor practice, use anticipatory control to apply complex concepts to new patient care situations, adapt their responses in rapidly changing patient care environments, and self-regulate their behavior.

**Simulation Roles Applied in an Associate Degree Nursing Program**

As a socializing tool, simulation role enactment is useful in promoting teamwork and collaboration (Gordon & Buckley, 2009) to reinforce classroom learning about delegation and group dynamics and to optimize engagement of each student participant. Sharing of expertise is common in the nurs-
ing profession to identify changes in patient condition, select appropriate interventions, enhance client outcomes, and promote professional growth of novice nurses (Benner, Tanner, & Chesla, 1997). Students are encouraged to work together during the simulation, within the constraints of the self-selected roles. Bandura (2001) explained that in social learning, “group attainments are the product not only of the shared intentions, knowledge, and skills of its members, but also of the interactive, coordinated, and synergistic dynamics of their transactions” (p. 14). Some simulation participants act as role models for analysis and synthesis of data, others for performance of specific skills, and others for understanding the processes of accomplishing tasks within the health care environment. Each simulation learning session provides unique opportunities for learning from peer role models, vicarious learning from observing outcomes of peer actions, and active learning through practice and collaboration through communication and shared problem-solving. As students master the nursing process and progressively complex concepts, the purpose of the simulated learning activity increasingly focuses on the application of deeper levels of critical thinking, and metacognitive skills are supported by shifting simulation roles from novice (student) to experienced (preceptor) nurse to build self-efficacy in collaborative problem solving (Table 2).

Typically, four participants engage in a specific simulation. Each group may consist of four first-semester or second-semester freshmen or four third-semester or fourth-semester seniors, and each simulation is adapted to the level of the members involved. An alternative and popular approach pairs two freshmen and two seniors in a “hybrid” situation where the freshmen assume the role of nursing student and the seniors represent the role of the RN, clinical leader, or preceptor. During the second semester, the role of recorder is introduced to support self-diagnosis of performance. These experiences allow the freshmen to judge their decision making against higher standards and possibly result in an affective self-reaction that motivates the more novice student to a higher level of performance. At the same time, self-efficacy of senior nursing students is enhanced as they gain appreciation for their own expertise while serving as role models for freshmen. The entire process is an exercise in peer teaching that fosters leadership development and promotes a more relaxed learning environment (Kurtz, Lemley, & Alverson, 2010).

**SETTING THE STAGE: FOSTERING AND MAINTAINING ATTENTIVENESS**

Presimulation activities, laboratory preparation, and scenarios that parallel lecture content will support motor retention processes and reinforce symbolic coding operations to enhance understanding of classroom concepts. Bandura (2001) asserted that “evaluative self-engagement through goal setting is affected by the characteristics of goals, namely, their specificity, level of challenge and temporal proximity” (p. 8). Linking simulation learning to classroom content promotes mastery of didactic content, heightens attentiveness, and may improve test performance. Authentic and realistic situations are staged for the students so that the presence of the learning laboratory fades as the actuality of the situation becomes paramount (Jeffries, 2010). Expectations for engagement in the learning process are outlined, including ground rules, resources, and manikin overview. Simulation roles are explained and are selected by the students. Learning objectives are relayed to the participants. Although specific content-based goals are identified, the process of collaborative learning to enhance critical thinking and teamwork is a defined goal of each simulation. As noted by Bandura (1991), “goals specify the conditional requirements for self-evaluation” (p. 260).

**SIMULATION**

**Motor Retention Processes and Motivation for Self-Improvement**

By working together in small groups, all students can repeat procedures, practice communication skills, make decisions, ex-
experience the results of those decisions, and receive feedback. Students demonstrate significantly different skill levels, based on clinical and work experience, and often collaborate to pool their collective knowledge to solve more complex scenarios. Regardless of the complexity of the technology or the learning objectives in a simulation scenario, as students actively work to resolve the dissonance created by the scenario, assumptions are challenged, new strategies to examine clinical situations are developed, and new learning is related to past experience and stored for later retrieval (Parker & Myrick, 2010). Through this process, motor retention processes are stimulated and symbolic coding operations are engaged. As students apply anticipatory control to resolve the dissonance created by the scenario, assumptions are challenged (Parker & Myrick, 2010); students choose a specific plan of action (intentionality) and experience the consequences of their choices. This provides novice nurses with an experiential basis on which to anticipate better ways to control similar clinical situations.

To optimize student attentiveness, faculty adjust the progression of the scenario to avoid excessive levels of student stress and facilitate success that builds self-esteem. Meeting course learning objectives in the simulation laboratory is secondary to student learning. Simulation learning is student-centered and implemented to support student success. When students do not perform well in the learning laboratory, expectations should be lowered and simpler concepts should be taught before more complex behaviors can become manifest (Larew, Lessans, Spunt, Foster, & Covington, 2006). Negative experiences are deleterious to self-efficacy and reduce motivation by making goals seem unattainable (Bandura, 1991). Scenario selection and design match the “complexity of patient care needs, the order of problem presentation, and scenario pacing” (Larew et al., 2006, p. 20) to students’ level of expertise. Alternatively, when students demonstrate concept mastery, the facilitator increases the scenario difficulty level, ensuring that individuals are optimally challenged to enhance attentiveness, critical thinking skills, and metacognitive growth. These outcomes are reinforced by Bandura (2001), who stated “strong interest and engrossment in activities is sparked by challenging goals” (p. 8). Student success supports positive affective self-reaction that contributes to student self-efficacy, motivation, and future self-regulation of behavior (Bandura, 1991).

### Simulation, SCT, and Transfer of Learning

During enactment of the simulation, progressively clearer assessment information is provided as needed to trigger the desired student behavior (Larew et al., 2006). More advanced simulation activities provide a higher level of clinical “uncertainty” or require that students actively seek information to successfully meet patient needs (Jeffries, 2005, p. 101), which is more aligned with clinical practice. Through experiential learning, or vicariously responding to the emotional tone and reinforcement inherent in the simulation, the learner “acquires…a rule exemplified in a variety of modeling responses” (Bandura, 1969, p. 253). Students observing others in the simulation laboratory will identify with peer role models and may imitate desired behavior during serial scenarios or in the clinical environment. Observational learning allows individuals to identify cues or triggers for desired responses and predict outcomes of similar situations (Bandura, 1969). Replicating activities allows students to apply forethought, thus modifying their approach in response to predicted patient outcomes (Bandura, 2001). The collaborative nature of the simulated learning environment permits students

### TABLE 2

**Progression of Simulation Roles and Purpose Aligned With the Curriculum in an Associate Degree Program**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Nonpatient Roles</th>
<th>Content-Based Purpose</th>
<th>Socialization Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 1</td>
<td>Nursing student, family member, faculty</td>
<td>Demonstrate “rights” of medication administration.</td>
<td>Identify with the role of the student nurse to safely administer medication.</td>
</tr>
<tr>
<td>Nursing 2 and 4*</td>
<td>Nursing student (two freshmen), nurse (two seniors), recorder, faculty</td>
<td>Adjust approach to medication administration based on a single, unexpected assessment finding.</td>
<td>Identify with the role of the nurse to assess and intervene appropriately to safely administer medication.</td>
</tr>
<tr>
<td>Nursing 3</td>
<td>Nurse, preceptor, nursing assistant, recorder, faculty</td>
<td>Prioritize medication administration for the patient with a single health problem who has multiple competing needs; identify tasks that can be delegated.</td>
<td>Identify with the role of the nurse working in teams to optimize use of resources to prioritize multiple patient needs, including medication administration.</td>
</tr>
<tr>
<td>Nursing 4</td>
<td>Nurse, preceptor, nursing assistant, recorder, faculty</td>
<td>Prioritize medication administration when patient with multisystem problems has multiple competing needs; evaluate delegation of tasks and distribution of workload.</td>
<td>Evaluate team functioning to optimize use of resources to prioritize multiple patient needs, including medication administration.</td>
</tr>
</tbody>
</table>

* Both freshmen and seniors participate together in the simulation.

Note. Nursing 1 = first semester; Nursing 2 = second and final semesters; Nursing 3 = third semester; Nursing 4 = final semester.
to compare their performance to that of others in the group and set new standards for clinical performance. Bandura (2001) explained that “goals, rooted in a value system and a sense of personal identity, invest activities with meaning and purpose. By making self-evaluation conditional on matching personal standards, people give direction to their pursuits and create self-incentives to sustain their efforts for goal attainment” (p. 8) based on self-efficacy. Assessment of group and individual participant performance helps faculty to tailor the simulation, optimally challenge the students (Larew et al., 2006), and maintain a learning environment that promotes self-efficacy. Students often describe the simulation environment as stressful (Lasater, 2007), but faculty encourage students to express their emotional responses to the simulation scenario during the debriefing process (Dreifuerst, 2009), which helps students to frame negative self-perceptions or suboptimal performances as natural aspects of the learning curve and create opportunities for growth.

**Debriefing, Postsimulation Activities, and SCT**

Effective debriefing is the most important step to promote student learning in the simulation laboratory (Gordon & Buckley, 2009; Lasater, 2007) because it promotes self-regulation and self-direction to apply forethought and intentionality to optimize performance and patient outcomes in similar subsequent encounters. Feedback, even to the self, must be timely and informative (Bandura, 1991). Therefore, debriefing is provided immediately following the simulation scenario. A formal debriefing period provides learners with time to reflect on their performance and establish an intention to improve subsequent performance. Parker and Myrick (2010) asserted that “the social learning process requires a focus on communication and discourse to foster perspective change” (p. 330). Encouraging students to share and evaluate their feelings about the simulation promotes self-regulation by understanding that feelings of stress and anxiety are normal responses in both the simulation laboratory and the clinical setting. Allowing students to lead the debriefing promotes self-discovery and maintains “a student-centric focus” (Parker & Myrick, 2010, p. 332). Self-monitoring is promoted, as the case is viewed on video or outlined by the freshmen-level faculty or senior student observer or recorder.

Students judge their performance based on the performance of others in the group, feedback from others, and the scenario outcome. The students discuss how assessment cues drove clinical decision making, explain how patient-centered care affected the priority of nursing activities, relate how the outcomes may have been different if alternative interventions were implemented or provided in a more timely fashion, examine teamwork communication and collaboration, and evaluate the process and outcome of the scenario from a clinical and learning perspective. Using the nursing process as a framework for debriefing helps students to classify information and store it for later retrieval (Dreifuerst, 2009), thus promoting symbolic coding operations. However, it is important to note that “through this social learning process with their peers in a simulated clinical setting, nursing students may encounter challenges to their beliefs, values and assumptions that disorient their habits of mind” (Parker & Myrick, 2010, p. 330). Skillful debriefing can help students cope with such challenges in a positive and objective manner, which not only preserves their self-esteem but contributes to their ability to self-monitor and self-diagnose in a manner that effectively regulates self-behavior.

The foregoing debriefing activities relate to the goal of nursing education that aims to support students in the acquisition of the metacognitive skills of self-evaluation and self-regulation as professional nurses. Positive facilitator feedback also promotes self-efficacy. When content-based goals are not achieved by the group, metacognitive gains should be stressed. New goals, established at a higher or lower level of self-expectation, are set by learners that are based on self-reaction and external feedback (Bandura, 1991). Reflection on the process of learning includes covert rehearsal during group discussion of how new skills will be applied in subsequent patient encounters (Bandura, 1969). Debriefing provides nursing students with anticipatory control to recognize key situational cues, retrieve the information based on symbolic coding, and apply new rules or skills sets acquired in the simulation laboratory to practice settings. Documentation in a simulated medical record or reflective journal following the simulation laboratory promotes reflection and intentionality to apply anticipatory control of future clinical situations.

In addition to evaluative discussions and activities, each student completes an anonymous written evaluation of the overall simulation event, which not only provides faculty with feedback about the individual’s perceptions of the experience but affords the student further opportunity to reflect on personal accomplishments. “Simply adopting goals, whether easy or personally challenging ones, without knowing how one is doing seems to have no appreciable motivational effects” (Bandura & Cervone, 1983), so faculty share written feedback on the process of the simulation with students and consider how feedback should be used to optimize learning in future simulation sessions.

**SELF-EFFICACY, FEEDBACK, AND PROGRESSION OF EXPECTATIONS**

The following explains how social cognitive theory is applied in the simulation laboratory to promote self-efficacy and build cognitive skills in students in an associate degree nursing program (Table 3). In the first nursing course of the program, metacognitive skill development focuses on students’ ability to self-monitor their performance in simple simulation scenarios designed to challenge them to complete basic hygienic care when the patient has a competing need, such as toileting, or to use therapeutic communication skills. Learning objectives during simulation sessions for second-semester students continue to focus on following established standards or rules, such as the steps of medication administration or infection control guidelines, but a single, abnormal assessment finding that requires a single intervention to resolve is also introduced.

The debriefing process that follows hybrid simulations focuses on self-diagnosis so that students are encouraged to identify how their thinking should expand to consider different possibilities in the clinical area, as well as to identify personal barriers to successful mastery in terms of knowledge or skills acquisition or incomplete application of the nursing process. The third-semester
and fourth-semester courses provide a greater emphasis on the metacognitive skill of affective self-reaction that instills an intention to change ways of thinking and build an expectation of enhanced future performance. Simulation design requires students’ analysis of laboratory results, assessment findings, patient response to medication administration, comorbid conditions, and response to a constellation of abnormal assessment findings, which requires multiple interventions that are best implemented using the collaborative skills of the entire team. At all levels, self-regulation of future practice is supported by reflection and guided discovery during the debriefing process to support covert rehearsal and transfer of learning to subsequent clinical encounters.

**CONCLUSIONS AND RECOMMENDATIONS**

Nursing faculty facilitate student preparation to become safe and effective providers of care, collaborative members of the health care team, and self-directed learners. As life-long learners, nurses must have the metacognitive skills to self-regulate, critically reflect on nursing practice, and use anticipatory control of behavior to meet patients’ needs in unfamiliar clinical situations. Socialization and role acquisition are also important aspects of nursing education. By applying social cognitive theory, a single scenario can be developed that supports participant mastery of technical skills, enhances sensitivity of assessment skills, promotes timely interventions to meet patient needs, grooms communication skills, and supports role identity and collaborative practice. Scenarios selected and crafted to accomplish these aims can be integrated throughout the curriculum in a manner that is aligned with the curriculum and supports the progression of student metacognitive skills. Implementation of simulation as a teaching and learning method supports symbolic coding operations by assigning appropriate presimulation activities, optimizes student attentiveness and motor retention processes by skilled implementation supporting student discovery and self-esteem, and debriefing that supports self-monitoring, self-diagnosis, and affective self-reaction so that the student becomes self-directed to apply new behaviors and learning in subsequent similar situations. Self-efficacy is supported by success in the learning laboratory. Skilled debriefing is central to the development of critical thinking skills, achievement of expected learning outcomes, reflective learning, and the intent to apply the knowledge that has been acquired. Theory-based facilitation of simulated learning optimizes efficacy of this learning method to foster maturation of cognitive processes of SCT, metacognition, and self-directed entry-level practitioners. All of the foregoing activities embody the characteristics of human agency—intentionality, forethought, self-reaction, and self-reflectiveness—in accordance with Bandura’s (2001) social cognitive theory from an agentic perspective.

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