MEASURING THE EFFECTIVENESS OF TRANSFER OF LEARNING CONSTRUCTS AND INTENT TO TRANSFER IN A SIMULATION-BASED LEADERSHIP TRAINING PROGRAM

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The purpose of business training programs is to improve performance, which improved performance changes leadership behaviors based on the knowledge, skills, and abilities (KSAs) learned in training. One of the most common criticisms of leadership training is the tendency to focus on teaching theory but not on applying theory into practice, that is, transfer of learning. Research usually ends at the point of identifying, describing, or measuring factors that influence transfer. Ongoing research must identify what constructs in the transfer of learning process should be effectively changed or managed. There is a gap in research on the degree to which performance improvement through KSAs learned in a simulation training program actually transfer to the work environment. Additional research is needed that examines the relationship between transfer of learning and intent to transfer, which are critical outcomes in the field of human resource management and development. The purpose of the study was to examine the relationship between intent to transfer and four constructs in the transfer of learning process during a simulation-based leadership training program. Participants completed self-report assessments that measured the relationships between intent to transfer and four constructs: ability, motivation, work environment, and learner readiness. A correlational design was administered using a population of mid-level managers in a telecommunications organization.

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CHAPTER 1

INTRODUCTION

The purpose of business training programs is to improve performance (Stolovitch & Keeps, 2004). Improved performance changes leadership behaviors based on the knowledge and skills learned in training. According to Bloom (1984), people who transfer knowledge gained in new situations elevate their thinking skills to a higher level. Researchers and practitioners continue to explore training methodologies that enhance learning processes, improve leadership competencies and skills (de Freitas, 2007; DeMarco, Lesser, & O'Driscoll, 2007), and transfer learning to the work environment (Alvarez, Salas, & Garofano, 2004; Baldwin, Ford, & Blume, 2009; Burke & Hutchins, 2007).

Traditional training methodologies include lectures, case studies, videos, and role-play scenarios. Over the past 10 years the expansion of technological capabilities has introduced games and simulations into instructional design that provide innovative and creative learning methodologies. There is a gap in research on the degree to which performance improvement in knowledge and skills learned in a simulation training program actually transfer to the work environment (Brown, 2011; Scherpereel, 2005). Additional research is needed on what constructs contribute to intent to transfer learning (Al-Eisa, Furayyan, & Alhemoud, 2009; Bates, Holton, & Hatala, 2012; Hutchins, Nimon, Holton, & Bates, 2012). Some researchers apply adult learning principles through games and simulations as constructionist and experiential learning methodologies (de Freitas, 2007; DeKanter, 2005; Gee, 2004), and a plethora of research exists that describes the effectiveness of simulations and games that enhance learning (Galarneau & Zibit, 2006; Gee, 2004; Kirkley & Kirkley, 2005; Squire, 2005a, 2005b, 2008). However, controversy exists among academia, researchers, and practitioners on the effectiveness that

simulation-based training has on the transfer of learning and intent to transfer newly learned skills to the work environment (Faria, Hutchinson, Wellington, & Gold, 2009; Salas, Wildman, & Piccolo, 2009; Scherpereel, 2005; Squire, 2005a).

The ASTD 2011 State of the Industry Report noted a 13% increase in cost per employee on learning and development activities and infrastructure, with most of the training directed to managerial and supervisory skill development (Green & McGill, 2011). Organizations today are focusing on return on investment from training programs with the expectation that learning will immediately transfer to the work environment.

Need for the Study

One of the most common criticisms of leadership training is the tendency to focus on teaching theory but not on applying theory into practice, which researchers have called *transfer of learning* (Lane, 1995). In fact, according to Holton and Baldwin (2003), "Most authors end research at the point of identifying, describing, or measuring factors that may influence transfer without investigating how those factors might be effectively changed or managed" (p. 4). There is a gap in research on the degree to which performance improvement through knowledge, skills, and abilities (KSAs) learned in a simulation training program actually transfers to the work environment. Researchers and practitioners continue to explore the value of learning that can occur in simulations and games (Gee, 2004, 2007; Kirkley & Kirkley, 2005; Squire, 2005a) and improvement of leadership skills acquired through simulations (de Freitas, 2007; DeMarco et al., 2007).

Previous studies in both education and business environments focused on games and simulations used to train and support learning objectives (Brown, 2011; Salas et al., 2009; Scherpereel, 2005). Failure to meet learning objectives could have been a result of incorrect

experimental or constructionist design or methodologies. Other research (Francis, 2006; Sandford, 2006) found that learning occurred but not in the context in which it was initially designed. Research on error management training (EMT) predicts that making errors during a training exercise has a positive effect on learning (Keith & Frese, 2008). Through failure, participants are encouraged to explore and experiment with ideas.

Previous research predicts that transfer of learning is directed toward support in the work environment (Holton & Baldwin, 2003; Lim & Morris, 2006). Additional research is required on how to identify where transfer problems or issues occur and the barriers and catalysts that exist in transfer of learning (Bates et al., 2012; Hutchins et al., 2012; Saks & Belcourt, 2006). One of the main objections of a simulated-based learning environment is a lack of empirical data that support transfer of learning. This study examined the relationship between four transfer learning constructs of ability, motivation, work environment, learner readiness, and intent to transfer simulated learning experiences to the work environment.

Theoretical Framework

The theoretical framework used in this study is Holton's (1996) Human Resource Development (HRD) evaluation research and measurement model. Holton's model expanded on Noe's (1986) research that motivation to transfer affects the relationships between learning, change in behavior, and perceptions of the work environment. Holton's model provides a holistic approach to determining the effectiveness of training programs (Seyler, Holton, Bates, Burnett, & Carvalho, 1998). The Learning Transfer System Inventory (LTSI) and Intent to Transfer assessment emerged from an ongoing program committed to creating an assessment that validates transfer of learning research (Holton, Bates, & Ruona, 2000; Holton, Bates, Seyler, & Carvalho, 1997). The instrument is also used by practitioners as a diagnostic tool to assess

transfer problems. Early researchers who contributed to experiential learning and research include William James, John Dewey, Kurt Lewin, Carl Rogers, and Paulo Freire (A. Y. Kolb & Kolb, 2009). These researchers found that action based on experience was the core of the learning process. Expanding on the work of early researchers, D. A. Kolb (1984) theorized that learning was a process that transfers knowledge into experience.

Past studies have indicated that learner self-reports correlate with learning transfer (Noe, 2001; Tannenbaum & Yuki, 1992); intent to transfer (Noe, 1986; Noe & Schmitt, 1986; Ruona, Leimbach, Holton, & Bates, 2002); motivation to transfer (Seyler et al., 1998; Wenzler, 2009); changes in job performance (Bates, Holton, Seyler, & Carvalho, 2000; Bates, Kauffeld, & Holton, 2007; Hyun & Kwon, 2003; Mayer, Dale, Fraccastoro, & Moss, 2011; Rouiller & Goldstein, 1993; Susan & Judith, 2004; Swanson & Holton, 1999); and ability to transfer (Kraiger, Ford, & Salas, 1993; Maurer, Weiss, & Barbeite, 2003; Tracey, Tannenbaum, & Kavanagh, 1995).

Research on learning theories supports transfer of learning factors. The behaviorist theory is defined as experiential learning whereby participants learn by action, reflection, experience, development of concepts, and generalization (Argyris, 1990; Brenenstuhl & Catalanello, 1977; Byrne & Wolfe, 1974; Cheetham & Chivers, 2001; Kolb, 1984). The transfer of learning factors linked to the behaviorist theory include changes in job performance, motivation, and intent to transfer. The cognitive learning theory focuses on learning as a mental process of logical thinking, problem solving, decision making, and negotiation abilities (Argyris, 1990; Piaget, 1951; Whetten & Cameron, 2007). The cognitive learning theory is linked to the transfer of learning factors of ability and motivation. The constructivist learning theory, on the other hand, stresses active engagement and continual learning that constructs information based

on new knowledge and experience (Argyris, 1990; Duffy & Cunningham, 1996; Lainema, 2009). The transfer of learning factors linked to the constructivist learning theory include intent to transfer, ability, and motivation. The social learning theory is based on shared knowledge and experiences through social interaction, team collaboration, observation, modeling, imitating, and feedback (Bandura, 1977; Ormrod, 1999). The social learning theory is linked to the transfer of learning factors of ability, motivation, changes in performance, and intent to transfer. The andragogy (adult learning) learning theory provides a realistic learning environment, diversity, motivation, shared knowledge and skills, and identifies the individual benefits of learning. The andragogy learning theory is linked to transfer of learning factors of intent to the transfer, ability, motivation, and changes in performance.

Purpose of the Study

Many studies focus on general leadership skills and competencies (Brown, 2011; Bedner, Cunningham, Duffy, & Perry, 1992; Carlson & Missauk, 1972; Cheetham & Chivers, 2001; Combs, Liu, Hall, & Ketchen, 2006; DeMarco et al., 2007; Enos, Kehrhahn, & Bell, 2003; Faria et al., 2009; C. J. Jackson, 2002; Keith & Frese, 2008; Martineua, 2004; Whetten & Cameron, 2007). Additionally, numerous studies focus on validating that simulations and games can be designed as learning tools to develop skills and competencies (DeKanter, 2005; DeMarco et al., 2007; Shaffer, Squire, Halverson, & Gee, 2005). Few research studies address whether or not people who participate in simulation-based training transfer the knowledge learned in the simulation to individual work environments (Salas, Rosen, Held, & Weissmuller, 2009). Many empirical studies are developed after simulations are in practice and have proven successful over a period of time. Once a simulation or game has been purchased and incorporated into training programs, there is little incentive to conduct research studies to determine how much, if any,

learning is applied in the work environment (Holton & Baldwin, 2003). Also lacking is research that examines the relationship between transfer of learning and intent to transfer, which are critical outcomes in the field of human resource management and development.

The purpose of this correlational study was to add to the body of research that identified the catalysts and barriers to transfer of learning and intent to transfer. The model used in this study is the learning transfer system, which is used to investigate potential barriers and catalysts to training programs. The Learning Transfer System Inventory (LTSI) instrument emerged from an ongoing program committed to creating an assessment that validates research on transfer of learning and intent to transfer (Holton et al., 2001, 1997). In this study the LTSI instrument was used to measure the relationship between intent to transfer (dependent variable) and four constructs of transfer of learning (independent variables: ability, motivation, work environment, and learner readiness). At the same time, the constructs were further examined through interviews and observations with mid-level managers at a global telecommunications organization at a training facility in Princeton, New Jersey. The reason for combining both quantitative and qualitative data was to better understand and validate current study results, yielding the maximum information possible about the constructs in the study.

This study was conducted in a training program for mid-level managers in a global telecommunications organization. Transfer of learning constructs and intent to transfer constructs were measured using the self-report Learning Transfer System Inventory (LTSI) instrument.

This study is significant because it contributes to the research on examining the relationship between intent to transfer and the transfer of learning constructs of ability, motivation, work environment, and learner readiness in a simulation training environment.

Furthermore, this study has identified the potential for further investigation on how learning constructs might be effectively changed or managed to improve leadership performance. The study sought to answer the following question.

Research Question

The research question in this study examined whether LTSI scores could predict transfer of learning and intent to transfer. Based on the analysis of literature, the data results were expected to correlate with the research question.

Research Question: What is the relationship between intent to transfer and four constructs in transfer of learning (ability, motivation, work environment, and learner readiness)? Specifically, this study examined the following hypotheses:

H_1: There will be a statistically significant positive relationship between intent to transfer and ability.

H_2: There will be a statistically significant positive relationship between intent to transfer and motivation.

H_3: There will be a statistically significant positive relationship between intent to transfer and work environment.

H_4: There will be a statistically significant positive relationship between intent to transfer and learner readiness.

Limitations

Limitations to this study included the small group size of 22 participants with participants having diverse cultures and experience levels. The culture of this organization is unique in that collectivism values exist. Cultural differences may have affected trust and team-building exercises. Similarly, the 5-day training session may have affected trust and team-building exercises.

Transfer of learning and improved performance successes are dependent on individual attitudes toward simulation-based training experience. Although this study measured behavioral change or intent to transfer newly learned skills using the Holton (1996) transfer of learning model, transfer of learning on the job may not be successful. The appropriate conditions such as ability to use learning, motivation to learn, learner readiness, and work environment conditions must exist. Participants may be hesitant or resistant to change their current way of conducting business.

Some managerial positions did not align across organizational functions (i.e., accounting, call centers, marketing, procurement, product planning, product support, production, quality assurance, research and development support, sales, social media, and strategic planning). Participants may have experienced difficulty integrating across all functions of the organization in the simulation environment; however, the expectations of the training were to improve their business acumen to compensate for this limitation. Also, leaders had differing perceptions of the organization's strategy (operations, technology, or customer service). Intent to transfer was limited because of the lack of either work environment or support. Because of the small sample size, the results of this study cannot be generalized to reflect the skills in other organizations. However, the results are generalizable to other mid-level management positions within this organization. Participants invited to the program were preselected by the organization based on two criteria: the position as mid-level manager and future growth potential within the organization.

Delimitations

The study was not designed to hold individuals accountable for improving performance processes. Rather, the study focused on the transfer of learning constructs and intent to transfer learning from a simulation learning event to a work environment.

A limited set of demographic data were obtained in this study, including position, gender, and number of previous leadership training courses attended. The age and ethnicity of the study group were not reported, or evaluated at the request of the organization. The study did not validate ability measures or test results independently with testing bodies. Transfer of learning results were based on the Learning Transfer System Inventory (LTSI) used by Holton et al. (1997).

The sampling strategy in this study focused on mid-level managers in a fast-paced global telecommunications organization. The participants were preselected by management based on their management level within the organization and succession planning requirements. There was no relevance to age, experience, unit, or division.

This study was conducted as a team learning experience, with participants randomly divided into four teams. Each round of play generated scores achieved in the simulations. Teams were ranked in order of scores achieved in the simulation exercises at the end of each session.

Definition of Terms

Competencies: Areas in which a person performs fine – not stellar, but good enough (Whetten & Cameron, 2007).

Experiential learning: Experiential learning exists when a participant(s) cognitively, affectively, and behaviorally processes knowledge, skills, and/or abilities in a learning situation that involves active involvement (Brenenstuhl & Catalanello, 1977).

Intent to transfer: An individual's willingness to perform a desired behavior (Ajzen, 1991).

Learning: A permanent change in behavior that occurs when a person's interaction with the environment changes (McShane & Von Glinow, 2008, p. 85); to gain skills and knowledge and/or affect a change in attitudes and beliefs (Seyler et al., 1998, p.5).

Learning transfer constructs: In this study the term refers to constructs identified within the Learning Transfer System Inventory (LTSI), such as ability, motivation, work environment, and learner readiness that influence transfer of learning.

Simulation-based training (SBT): A methodology for providing systematic and structured learning experiences (Salas et al., 2009).

Team building: Any formal activity intended to improve the development and functioning of a work team (McShane & Von Glinow, 2008).

Transfer of learning: The degree to which employees use newly acquired knowledge and skills to perform their job effectively and enhance organizational effectiveness (Holton & Baldwin, 2003).

Transfer of training: In this study transfer of learning and transfer of training are interchangeable.

Work environment: Factors within an organizational climate (supervisor support, sanctions, and peer support) and situational constraints (opportunity to use) that affect transfer of learning (Seyler et al., 1998).

Summary

The study examined the relationship between LTSI constructs of ability, motivation, work environment, and learner readiness and intent to transfer. The study may support

simulation training as a viable training methodology for transfer of learning. This study was significant because it provided information confirming participants' intent to transfer new knowledge, skills, and abilities (KSAs) to the work environment. Results indicated that a strong relationship existed between ability and motivation. The relationship between work environment and ability, as well as work environment and motivation, was revealed to be a moderate relationship. Learner readiness and ability indicated a moderate relationship. Additionally, the study provided impetus for further research on how organizational systems can be changed or managed to enhance transfer of learning.

Chapter 1 introduced the purpose of training, the problem and need for the study, and the research question. Chapter 2 introduces the background of theories on learning, progression of instructional design, evolution of simulation-based training, the effectiveness of transfer of learning, and intent to transfer. Chapter 3 provides the conceptual framework and detailed methodology used to measure the relationship between transfer of learning and intent to transfer. Chapter 4 discusses the findings of the research. Chapter 5 presents the results, limitations, implications for performance improvement and suggests recommendation for future research.

CHAPTER 2

LITERATURE REVIEW

Researchers and practitioners continue to explore training methodologies that enhance learning processes to improve leadership competencies and skills (de Freitas, 2007; DeMarco et al., 2007). However, controversy exists among academia, researchers, and practitioners on the effectiveness of simulation-based training to improve leadership skills and competencies and the transfer of learning to a work environment. Furthermore, ongoing research investigates what constructs predict intent to transfer learning. The literature review for the study included studies on learning theories, elements of instructional course design and content, the evolution of simulation-based training, transfer of learning, and intent to transfer learning. The literature review in this chapter provides a foundation for the research question presented in this study.

The Learning Process

Between the late 1950s and the early 1970s numerous attempts were made to dissect and classify the domains of learning. These domains were cognitive (knowledge from the head), affective (feeling from the heart), and psychomotor (doing with the hands and/or body).
In the early 20th century, training began as on-the-job training then migrated to correspondence schools and sales training. During the 1930s, unemployment drove individuals to learn new crafts to survive the Great Depression. In the 1950s new opportunities opened for management, supervisors, administrators, technical, professional, and training positions that added a new leadership dimension to learning and training. The 1960s awakened the need for growing awareness of greater management training. Douglas McGregor introduced his Theory X and Theory Y in the field of motivation and management. A focus was placed on training needs assessments and evaluation techniques. In the 1970s organizational development (OD) gained

acceptance and expanded to include human resource management, behavior modeling, organization structure, and group dynamics.

At the beginning of the 1970s David Kolb (1971) introduced the concept of experiential learning theory (ELT) and created the Kolb Learning Style Inventory (LSI) assessment to determine the best methods for learning. In 1977 Albert Bandura introduced the social learning theory, which described how learning occurred through observation, imitation, and modeling.

In the 1980s training managers were utilizing computers, games, and simulations for training, and they were also studying methods of reporting return on investment. Total quality management became a focus as organizations searched for ways to reduce operating costs.

The years between 1920 and 1990 saw growth for major organizations such as Ford, General Motors, Du Pont, and others. "The success behind these great organizations was the focus on efficiencies in manufacturing, mass-production, specialization, marketing, and management" (Senge, Kleiner, Roberts, Ross, & Smith, 1991, p. 13). These organizations were the first to adopt technology, improve management, establish financial controls, develop strategic techniques, and build learning organizations. From the 1990s until the present day, training managers have been tasked with determining the best tools, methods, and resources to attain performance management, measures for performance, and performance improvement that align with organizational strategies (Faria, Hutchinson, Wellington, & Gold, 2009).

Learning Theories and Models

Theories of learning in educational psychology span a period of 150 years. These theories can be categorized into four perspectives: behaviorist, cognitive, humanistic, and social. Research by B. F. Skinner was based on studies related to human stimulus response, with learning occurring when there was an external change in behavior. Kurt Lewin and Carl Rogers

defined experiential learning as when the learner applies knowledge, skills, abilities, and experience to the learning process (Johnson & Johnson, 1982). Research by Piaget (1951) centered on mental processes, interactive engagement, and adaptation to change. Researchers A. Cross, A. Lawler, Merriam, Mager, and Pipe addressed the concept and theory of androgogy (adult learning). In 1985 Gagne identified specific learning conditions that must exist before transfer of learning occurs. A brief description of theories that facilitate learning follows.

Behaviorist Theory

Behaviorism is a learning theory that focuses on observed behavior. Behaviorism and programmed instruction methods introduced the first model of programmed learning (Lainema, 2009). Familiarity with the learning process and theories (behavioral, cognitive, social) assists training professionals in creating instructional design and content to effectively improve skills and transfer learning.

Current psychological research has reintroduced the value that experience contributes to the learning process. Brenenstuhl and Catalanello (1977) define experiential learning as a process in which "a participant(s) cognitively, affectively, and behaviorally processes knowledge, skills, and/or attitudes in a learning situation characterized by a high level of active involvement. . . . Experiential learning methods attempt to combine the processes of learning with the content of learning" (p. 466).

Byrne and Wolfe (1974) cite the experiential learning experience as a repetitive cycle that begins with concrete experience. The experience leads to reflective observations and development of abstract concepts and generalizations, creates hypotheses and actions, and tests theories that lead to concrete experiences. Experiential learning exercises are prominent in the delivery of college classrooms and organizational seminars. Experiential exercises are used

primarily in organizational theory and behavior classes (H. E. Baker & Paulson, 1995). D. A. Kolb (1984) explains experiential learning as the process of learning rather than the content being presented. Experiential teaching methods include immersion into the subject matter, which initiates interaction and reflection. Experiential learning allows the learner to create different mental models to increase life experiences (Argyris, 1990).

Some researchers have called for eliminating any distinction between experiential and traditional teaching (Joshi, Davis, Kathuria, & Weidner, 2005). Shuman and Hornaday (1975) cited several weaknesses in the experiential approach to teaching. First, the course content may be too structured, appearing like a cookbook or how-to exercise. Second, energy and attention may be diverted to assigned projects. Third, student evaluation is difficult to assess. A fourth weakness may be the limited time constraints placed on the facilitator.

Studies on the lack of experiential exercises in a strategic management course indicate a reliance on a combination of texts and cases. Experiential learning is action learning whereby participants investigate or act on situations or organization issues. Research by Argyris and Schön (1974) suggests that the omission of experiential learning methods based on predetermined content can dilute the learning process. Case studies do not allow group interactions among groups, which facilitates decision-making processes (Hitt, Ireland, & Hoskisson, 1997). In undergraduate college courses, cases will not bridge the gap between knowledge and real world experience (Joshi et al., 2005).

Experiential learning theory (ELT) is one of the most influential learning theories. ELT points to a holistic, integrative approach to learning, involving multiple related concepts and models of learning (Cheetham & Chivers, 2001). The most influential of these models is Kolb's model.

Cognitive Theory

Cognitive theory focuses on learning as a mental process, attempting to explain how an individual gathers and evaluates information (Whetten & Cameron, 2007). Research by Piaget (1951) discovered that individuals think differently and create schemas that describe the mental and physical actions involved in understanding and knowing. Schemas are simply problem-solving and decision-making skills.

Constructivist Theory

In educational psychology, research theories are based on how individuals gather, store, and use information (cognitive processes). From the constructivist viewpoint, interpreting human thinking and knowledge is built through activities, engagement or actions, and adaptation to individual environments (Piaget, 1951). Other research cites learning from the perspective of culture, social relationships, and language. Constructivism is based on the premise that learning is a continual process (Argyris, 1990). Learning continues to build and construct information based on new knowledge and experiences.

Constructivism challenges the approach of traditional instructional design. Bedner et al. (1992) argued that instruction should support multiple perspectives. Constructivist learning must involve activity within the instructional content, which should be repeated through different channels such as images, narrative form, feedback, engagement, and problem solving. Merrill (1992) criticized several assumptions of constructivism but agreed that the learner must be active. Jonassen (1992) described three stages of knowledge acquisition that progresses from introductory to advanced to expert. He argued that constructivist learning is most effective in the advanced knowledge stage.

Jerome Bruner introduced the constructivist theory that knowledge is constructed through experiences (Byrne & Wolfe, 1974). Constructivism is prevalent in one of the theory approaches for developing simulations and gaming training (Lainema, 2009). Duffy and Cunningham (1996) suggest that constructivism is an umbrella term that covers diverse approaches to learning. These authors concur that learning is an active process of acquiring knowledge, constructing, and supporting the learning process.

Duffy and Cunningham (1996) also present constructivism as an all-learning process, viewed in multiple perspectives, supported by resources and tools, interactive with community, and creating a sense of accomplishment. These researchers describe problem-based learning (PBL) as a constructivist theory.

The key issues in PBL instruction include a task analysis, identification of the problem, and the learning cycles working through collaborative problem analysis and progressing toward self-directed learning. According to Jonassen, Peck, and Wilson (1999), the basic principles of constructivism involve identification of a problem, verbal articulation, communicating the problem, negotiating through the problem, and sharing knowledge, information, and experiences. If individual ideas are different from the community standards, the ideas are disregarded. Some of the basic functions of constructivism can also be found in social theory.

Social Theory

Social theory focuses on the impact that group activities have on learning. Researcher Albert Bandura (1997) suggested that learning occurs by observing, imitating, or modeling the behaviors of others. Ormrod (1999) cited several general principles of social learning theory:

- Social learning theory can be considered a bridge or transition between behaviorist learning theories and cognitive learning theories.

- Social learning theory presents behavioral principles or action guidelines that can be used in traditional training methods.
- Social learning theory demonstrates principles through case studies, films, scripts, or incidents.
- Social learning theory allows practice of principles through role plays, or exercises.
- Social learning theory provides feedback on performance from peers, instructors or experts.

Ormrod (1999) found that learning occurs without performance through cognitive factors, such as observation and imitation of what has been learned. Through reinforcement, individuals form expectations about the consequences that may result in future behaviors. Like Bandura, Ormrod found that behavior is also influenced by the environment.

The educational implications of social learning theory include observation, describing the consequences, modeling behaviors of others, positive feedback that promotes self-efficacy, and setting realistic expectations. Several of the factors of social learning theory also apply to the andragogy theory of adult learning (Ormrod, 1999).

Andragogy Theory

Malcolm Knowles first used the term *andragogy* in an article titled "Adult Leadership" (Merriam, 2001). Other andragogist educators, including Brookfield (1986), Mezirow (1991), and Lawler (1991), discussed the concept and techniques that best promote adult learning. Assumptions of the theory of andragogy include the learner's need to know why he or she should learn something. Lawler (1991) suggests that goals and expectations be used throughout the training sessions to reinforce learning activities. Knowles, Holton, and Swanson (1998) emphasized the importance of facilities that motivate adult learners to go from being dependent learners to being self-directed learners. Professional development needs to allow participants

control over what, who, how, why, when, and where learning occurs. One example is to use technology to move at a faster pace, bypass information already familiar to the learner, and provide multiple forms of presentation material to accommodate various learning styles.

Andragogy also considers the previous experience of the learner. Adult learners need direct, concrete experiences that apply to real-work experiences. In addition, adult learners want to use experiences as well as to be recognized for their knowledge. Adult learners bring diverse experiences, knowledge, self-direction, interests, and competencies (Speck, 1996). Case studies, reflective activities, technology learning labs, and group projects allow opportunities for learners to share their knowledge and experience. According to Mezirow (1991), reflective learning allows adult learners to assess current abilities and assumptions.

Adult learners respond to intrinsic incentives such as increased job satisfaction, self-esteem, and quality of life more than to external motivators. Activities that build self-esteem and a sense of accomplishment motivate learners to take ownership of the learning process. Feedback is essential to their knowing how they are doing and the results of their efforts. Feedback is provided when learners are allowed to practice what is learned.

Adults need to participate in group activities that challenge them beyond application, analysis, synthesis, and evaluation. Team activities provide them an opportunity to share, reflect, and generalize learning experiences (Speck, 1996).

For adult learners to transfer learning, coaching and follow-up support must be facilitated in the work environment. Transfer of learning provides sustainability of the learning experience and improved performance. The various theories allow teachers, instructors, and practitioners to structure lessons that are more adaptable to the adult student.

Training Design and Objectives

One of the primary challenges in designing a training program is to define a limited number of clear, specific, and measurable objectives (training outcomes). Lack of clarity and measureable metrics increase the chances of failure in transfer of learning. In 1956 Bloom, Engelhart, Furst, Hill, and Krathwohl initiated a framework to standardize and measure educational goals, objectives, and standards. First, common learning goals were established. Second, the framework provided a standard curriculum structure. Third, the taxonomy created a congruent objective, including activities and course curriculum assessment (Krathwohl, 2002). Fourth, classroom instruction was generalized to include a broader range of cognitive processes. The taxonomy contained six major categories of the cognitive domain in a progressive order from lower to higher levels: knowledge, comprehension, application, analysis, synthesis, and evaluation. Analyses indicate that most objectives in a curriculum require only information recognition or recall, which falls under the Knowledge category. However, the goals of education or transfer of learning require a progression of understanding from basic knowledge to higher levels, such as from Comprehension to Synthesis categories.

Gentry and Burns (1981) used the Bloom et al. (1956) taxonomy to develop a research design for surveying users of simulations and experiential exercises. Anderson and Lawton (1988) cited various methods that could assess student learning in a simulation exercise using Bloom's learning hierarchy. They argued that no single assessment method provided a comprehensive measure of a student's simulation learning experience, and they urged the use of multiple instruments to measure different levels of Bloom's taxonomy for a more comprehensive assessment of transfer of learning. Bloom's taxonomy is an important factor in the development of knowledge and skills and the ability to transfer learning.

In the 1990s a former student of Bloom's, Lori Anderson, along with Bloom's colleague, David Krathwohl, revised Bloom's original taxonomy. The revision allowed teachers and instructional designers flexibility in classifying unit objectives, activities, and assessments in a clear, concise, and visual presentation format. The revision also simplified the cognitive processes related to instructional tasks, allowing instructors to easily track the student's basic knowledge processing to reflective knowledge.

Training design should include the intended outcomes of training (training objectives) as well as the selection of evaluation criteria (Bloom, 1984; Goldstein & Ford, 2002; Mager, 1984). For example, one of the objectives in a training program could be to teach motor skills with clearly defined step-by-step instructions that lead to intended outcomes. This method of training assists learners with modeling behaviors. In the case of interpersonal or leadership training, the training objective is designed to generalize rules, concepts, and principles. Trainees are often expected to customize the rules, concepts, and principles to fit their individual needs (Baldwin & Ford, 1988).

Learning styles assist teachers, instructional designers, and facilitators in creating learning material that directly addresses each learning style. Learning styles are instrumental when creating a curriculum for team development because each individual has a set of principles in which to perceive, interpret, and respond to information. This processing of information is referred to as *learning style* (Whetten & Cameron, 2007). A. Y. Kolb and Kolb (2009) advocated that team members must be involved and committed to the team and its purpose (concrete experience), can engage in reflection and conversation about the team's experiences (reflective observation), can engage in critical thinking about the team's work (abstract conceptualization), and can make decisions and take action (active experimentation) (p. 335).

According to Whetten and Cameron (2007), the best management skills curriculum provides opportunities and activities that involve each learning style. The authors argued that learning style is important in understanding how others process learning.

Training objectives tied to learning skills that are directly associated with skills in the work environment are labeled *closed skills*. Yelon and Ford (1999) characterized the difference in behavioral modeling and the generalization of concepts and principles as open and closed skills.

Trainees often apply newly acquired skills directly to the job. For example, use of computer software, operation of a new production machine, and the application of flight simulator training are closed skills. Rewards and reinforcements for transfer are usually self-evident.

In a study conducted by Enos et al. (2003), the social process of interactions with others was reported to build skill proficiency, which is defined as the ability to apply knowledge skillfully within a particular domain or job title (Sheckley & Keeton, 1999). Individuals who are proficient in certain areas possess an extensive and well-organized knowledge that is based on experience (Chi, Feltovich, & Glaser, 1981; Kraiger et al., 1993). Seibert and Daudelin (1999) found that proficiencies are developed through engagement and reflection, such as interaction with others and observation of others.

In the study of Enos et al. (2003), social practice theory explained how and why managers learned through interactions with others in the work environment. Lave and Wenger (1991) purported that learning is a social process. Learning occurs when working tasks are accomplished through the guidance and interaction with others. Through observation, assistance,

and modeling the behaviors of experienced individuals, managers can develop organizational norms, understanding, and the transfer of learning in an information-learning setting.

Using the research findings of Enos et al. (2003), educators and training practitioners should focus on learning opportunities that include interacting with others in the workplace, observing others, and challenging job assignments in order to develop skill proficiency (Sheckley & Keeton, 1999).

Learning in Teams

Teams follow the experiential learning process. In 1946 Kurt Lewin identified three key components of experiential learning for teams: conversation space, role leadership, and group dynamics. Lewin's (1946) discovery of the T-group cited the necessity for teams to create a conversational space in which to reflect on and discuss diverse experiences. The diverse experiences allow members to examine and integrate differences to meet environmental challenges. Conversational space allows team members to develop respect, accept diversity, reflect on the consequences of action, and create and improve processes (A. Baker, Jensen, & Kolb, 2002). As teams develop from individual to group status, members share functional tasks by taking on team roles or leadership. Individuals progress from meeting individual needs and sharing responsibilities to shared goals and objectives.

Wolfe and Box (1987) reported that team cohesion was related to a team's economic performance. Their findings were consistent with research conducted by Gosenpud, Milton, and Larson (1985). However, there was no mention in the simulation exercises of the relationship between results of the simulation exercise and team performance.

Current research on various methodologies and diverse learners indicate that ELT is useful in understanding team learning and performance. Team development involves the

collective learning experience of each team member (A. Y. Kolb & Kolb, 2005). Kayes, Kayes, and Kolb (2005) found that teams that were comprised of diverse learning styles performed at a higher level on critical thinking tasks. Sharp (2001) found that students who interact in classroom exercises improve teamwork skills using Kolb's ELT theory. Students recognized and capitalized on the diverse strengths, styles, and communication abilities to resolve conflict and communicate effectively. C. J. Jackson (2002) concluded that teams with well-balanced learning styles performed better:

> Designing teams that reflect the dynamic nature of team activities has great appeal in that it gives all team members a more equal opportunity to contribute and a more equal opportunity to be valued. . . . The process model advocates that different team members lead in different team activities or learning situations. (p. 11)

In a human resource course developed by Gardner and Korth (1997), ELT learning styles and the learning cycle focused on building effective teams. Strong relationships were found between learning styles and learning methods. Assimilators (reflective observation, abstract conceptualization dimensions) preferred lectures, reading, writing, and individual work. Accommodators with dimensions of AE and CE and some divergent (concrete experience and reflective observation dimensions) and convergent thinkers (abstract conceptualization and active experimentation dimensions) preferred partner and team work. Successful project teams displayed an experiential learning cycle that supports and improves the transfer of learning process (Gardner & Korth, 1997). Pauleen, Marshall, and Egort (2004) used ELT to construct and implement a graduate-level management team project using virtual teams. "Students reported that experiential learning exercises were valuable because of the variety of communication channels used in the team environment" (p. 95). Experiential learning and engagement in the learning cycle allow learners to transition from lower to higher developmental stages.

Teams learn from experience when members are involved and committed to the team's purpose and create new knowledge by identifying challenges (concrete experience). Successful teams engage in reflection, communicate about diverse experiences, and make observations to ensure that all alternatives and implications have been addressed (reflective observation). Critical thinking skills are enhanced when team members work together to develop new theories, devise plans or models, and simplify abstract events into coherent explanations (abstract conceptualization). Problem solving, decision making, instituting action plans, and experimenting with various strategies and approaches (active experimentation) enhance the experiential learning of teams.

The Concept of Learning Transfer

Transfer of learning studies cover over 100 years of research in psychology and education (Barnett & Ceci, 2002). Transfer of learning has been defined as the degree to which trainees apply knowledge, skills, and abilities (KSAs) gained in training to their respective jobs (Holton et al., 1997). A common element in the transfer of learning is the role that training plays in connecting past experiences to current issues. Research has demonstrated that commonalities between learning situations and actual work situations resulted in a greater transfer of learning (Butterfield & Nelson, 1989; Yorks et al., 1998). For example, Stolovitch and Yapi (1997) found that participants in a case study training method were able to transfer skills more effectively than participants who did not participate in the case study method training.

Transfer was originally defined thus: "Learning of a response in one task or situation influences the response in another task or situation." (Adams, 1987; Blume, Ford, Baldwin, & Huang, 2009, p. 3). Thorndike and Woodworth (1901) predicted that transfer occurred when the knowledge and skills acquired in the learning experience applied to other generalized situations.

Other definitions cite transfer as a two-dimensional concept applying generalization of knowledge and skills in various settings, situations, and individuals, and maintaining results after changes from the learning experience occur. Researchers have studied various factors that affect transfer and discovered that transfer is a complex process (Ford & Kraiger, 1995; Royer, 1979).

Learning Flow

Transfer of learning research conducted by Csikszentimihalyi (1996) indicates that learning flow is the "optimal experience as a mental state of extremely rewarding concentration that emerges in the space between frustration and boredom" (p. 975). In a learning environment any task that is demanding, peaks interest, and is engaging offers a positive experience (Clarke & Haworth, 1994; Skinner & Bermont, 1993). The degree of learning flow directly affects learner participation.

Colquitt, Lepine, and Noe (2000) reviewed trainee characteristics and work environment to examine the impacts on learning and transfer. In addition, they sought understanding on how trainees are motivated to learn. Results from the study found that motivation to learn was a significant factor in learning and transfer measures.

Previous research indicates that learners who experience flow through learning activities showed better learning outcomes, higher satisfaction, influence on learning, and greater performance (Hoffman & Novak, 1996; M. R. Kim, 2005; Massimini & Carli, 1988; Skadberg & Kimmel, 2004). Research by Trefz (1991) indicated that learners who had a higher satisfaction with the training methods significantly increased the knowledge and skills learned when compared with individuals who were dissatisfied with the training. Faerman and Ban (1993) also reported that the level of satisfaction directly impacted the level of transfer of learning.

Research indicates that transfer of learning occurs when support is provided by the organization, supervisors, and peers. Organizational support also has an indirect effect on

learner satisfaction. In addition, when learners are more engaged in the learning process and are more satisfied with the learning outcomes, they will be more motivated and committed to the organization. Hoffman and Novak (1996) claimed that facilitation with learning flow must provide learners with clear learning objectives, real-life applications, and immediate feedback. Learners should be challenged to increase the flow of learning, and they should control the flow of learning in order to process the information (D. A. Kolb, 1971; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003).

Blume et al. (2009) stated that transfer of training occurs "when learning that results from a training experience transfers to the job and leads to meaningful changes in work performance" (p. 2). Goldstein and Ford (2002) concurred that the true test of learning occurs when learning experiences are transferred to the work environment. Concerns about training investment often revolve around training transfer issues and the expected return on investment.

Many organizations are leveraging employee KSAs as a competitive advantage. Select human resource management practices, such as compensation and benefit incentives, employee participation, flexible work schedules, and training, are a few of the strategies used to create a competitive advantage. Effective training can leverage employee KSAs for organizational benefit (Becker & Huselid, 1998; Combs et al., 2006). Employee training is a consistent topic in driving performance management (Combs et al., 2006; Huselid, 1995). Paradise (2007) cites a study conducted by the American Society for Training and Development that reports U.S. organizations spend over $125 billion annually on employee training and development. Regardless of the large investments in training, training practitioners have difficulty in explaining to what extent employee performance changed.

Colquitt et al. (2000) reviewed trainee characteristics and work environment to examine the impact on learning and transfer. In addition, they sought understanding on how trainees are motivated to learn. Results from the study found that motivation to learn was a significant factor in learning and transfer measures.

Transfer of Learning Model

The most frequently cited transfer of training model was developed by Baldwin and Ford (1988). These researchers organized their research around training inputs, training outputs, and conditions of transfer. Training inputs include trainee characteristics, design, and work environment. Training outputs depict acquisition of knowledge and skills within the training interventions. Conditions of transfer refer to the generalization of knowledge and skills that can be applied to the job and the maintenance of the learning over time. Trainee characteristics consist of various factors, such as ability, skill, motivation, and personality. Training design factors include training objectives, training methodology, techniques, and opportunities for practice. Work environment includes the organizational climate, work support from supervisors and peers, and the performance constraints or opportunities for applying learning experiences. Rouillier and Goldstein (1993) separated the term *transfer climate* into two categories: situational cues and consequences. Situational cues are conveyed through managerial goals, peer support, equipment availability, and opportunity to practice. Consequences of transfer consist of punishment, positive or negative feedback, or lack of opportunity to apply skills learned.

Other researchers (Alvarez et al., 2004; Baldwin, Ford, & Blume, 2009b; Burke & Hutchins, 2007; Cheng & Hampson, 2008; Cheng & Ho, 2001; Kopp, 2006; Merriam & Leahy, 2005; Yamnill & McLean, 2001) focused on trainee and work environment characteristics and their impact on transfer. Several inconsistent and conflicting findings occur in the research. For

example, Cheng and Hampson (2008) found incoherence "in the relationships between general dispositions and transfer of training" (p. 334). Burke and Hutchins (2007) found little or no evidence supporting a relationship between personality and transfer of training. Cheng and Ho (2001) also reported conflicting findings related to organizational support.

Transfer of Learning Outcomes

Blume et al. (2009) examined the relationship between transfer and training interventions, learning outcomes and reactions. The training interventions were measured by pre- and post-training assessments. Learning outcomes measured the difference in trainee knowledge or learning and self-efficacy. Blume et al. discussed the two most common assessments used to measure learning outcomes: the use of the skill after training and the effectiveness in performing the skill after training. A meta-analysis study conducted by Taylor, Russ-Eft, and Taylor (2009) found that the impact of behavioral modeling training was related to transfer relationships between the individual and supervisor.

Transfer of learning occurs when knowledge and problem solving are linked. For example, Stokes, Kemper, and Kite (1997) discovered that experienced pilots performed better on simulation flight tests than less experienced pilots, and Gick and Holyoak (1983) found that individuals who were experienced with better-quality schemas (problem-solving skills) outperformed individuals who had poor schemas. Most transfer of learning occurs in formal training programs. Questions remain on the role that transfer climate plays in the transfer process in informal training.

Intent to Transfer

Research findings by Blume et al. (2009) reported that transfer measured immediately following training yielded consistently stronger relationships with predictor variables than

transfer measured after a time lag. Findings by Blume et al. concluded that trainee motivation had a stronger relationship with transfer measures of use rather than with measures of effectiveness.

Ajzen's (1991) theory of planned behavior suggests that intent to transfer must exist before transfer of learning occurs. Intent to transfer occurs when an individual intentionally performs a certain behavior. The greater the intent to act, the more likely an individual will change behavior. When an individual returns to the work environment, the intent to transfer learning has already been determined. The intent to transfer is determined by the personality traits and attitudes that the participant(s) develop about the training content, expectations, performance outcomes, and organizational support received upon return to the work environment.

Ajzen's (1991) theory of planned behavior also suggests that motivation is a factor in intent to transfer and influences the amount of effort an individual demonstrates. Al-Eisa et al., (2009) conducted a study on characteristics of self-efficacy, finding that a relationship exists between motivation to transfer and a commitment or readiness to transfer knowledge, skills, and abilities (KSAs) acquired in training.

Moderators That Impact Transfer Measures

Transfer moderators are conducted in three ways: transfer measures, source of transfer ratings, and use of knowledge, skills, and application. While issues on the source and type of measurement are important, the timing of the measurement is also a consideration. The length of time between the conclusion of the training and the training measurement is a factor in transfer of training. Taylor et al. (2009) made the following point:

> On one hand, longer time lags might be expected to result in smaller effect sizes as a result of learning decay, but on the other hand, too little time between training and posttest could result in trainees not having had opportunities to use newly learned skills or raters not having had sufficient observational opportunities. (p. 106)

Transfer measures can be taken immediately after training or after some time lag. Research findings by Blume et al. (2009) reported that transfer measured immediately following training yielded consistently stronger relationships with predictor variables than transfer measured after a time lag. Findings by Blume et al. conclude that trainee motivation has a stronger relationship with transfer measures of use rather than with measures of effectiveness.

According to Wenzler (2003b), the farther the performance measure to simulation training, the more difficult it is to measure true effects and establish a link between the two. Other factors that contribute to the influence of performance are skill level, participant motivation, different levels of job security, different levels of management support, and organizational climate. Feedback should be presented about what was learned and the effect on performance, the extent to which the objectives of the training were met, and the future challenges that were identified.

The source of ratings, such as whether an individual feels satisfaction or dissatisfaction with the outcome, may affect transfer ratings. Self-reports can be distorted when there is a need for social desirability or when someone is trying to impress a supervisor or peer (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Research conducted by Taylor et al. (2009) found that self-report assessments rated higher when compared to supervisor, peer, and subordinate ratings.

Ratings have been measured on the use of trained knowledge or skill, as well as the effectiveness in applying the knowledge or skill. Performance measurements work best when training is supported in the work environment (Salas et al., 2009).

Trainees should be allowed to implement and use the skills, attitudes, and solutions acquired in the training program. Newly acquired abilities or knowledge should be anchored in the real-life work environment. For transfer of training and performance measurements to be most effective, simulations must be applicable to job requirements and have a short lag time between learning and application.

The literature review conducted thus far on transfer of learning is ubiquitous. Although some significant relationships across studies exist, there are few consistent predictors of transfer. Blume et al. (2009) found that the single largest relationship to transfer was cognitive ability. Other strong relationships were trainee characteristics, motivation to learn, and a learning goal orientation. Work climate factors were directly influenced by organizational learning environments. Strong relationships indicated that supervisor support, peer support, and organizational climate contributed to transfer of learning.

Organizational Support as Environmental Factor

In 1994 Kirkpatrick introduced the concept that supervisory support is a critical factor in whether or not trainees apply the knowledge and skills learned from training (Kidder & Rouiller, 1997). The concept of organizational support centered on the question "to what extent does an organization value the contributions of their employees" (Rhoades & Eisenberger, 2002, p. 974). Most recent research on organizational support includes supervisor support, peer support, and organizational culture. Yoo, Lim, and Park (2011) discuss the cultural relationships among organizational support, feedback, goal setting, learner satisfaction, and learning transfer in a study of 379 participants in a Korean company who completed an e-learning course. Holton et al. (1997) suggested that peer support measures the reinforcement of learning, provides assistance, and offers positive feedback.

Research by Brinkerhoff and Montesino (1995) stated that supervisor support resulted in a significantly higher level of transfer of learning. Findings suggested that management support before and after training led to an increase in transfer of training. Xiao (1996) conducted a study in four Chinese electronic firms and cited peer support as a significant predictor of learning transfer based on self-reported data. Susan and Judith (2004) also found a significant relationship between peer support and learning transfer. In a study investigating the impact on both supervisory and peer support, Hyun and Kwon (2003) claimed significant impact on learning transfer. The results of this study confirmed the results of research conducted by Cromwell and Kolb (2004) on the importance of supervisory and peer support within an organization.

Conversely, Tracey et al. (1995) reported that a significant impact on transfer of learning was related to organizational culture. H. G. Kim, Seo, and Seo (2008) discussed organizational support as a combination of supervisor support, peer support, and the impact that job commitment and performance have on the organization. Ryu (2007) conducted research on the effect that organizational culture has on learner satisfaction in corporate e-learning. Results indicated a higher performance in employees who had organizational support. However, the greatest impact on transfer of learning occurs when support from supervisors, peers, and organizational culture work together (Maurer et al., 2003; Tracey et al., 1995). Organizational culture relates to how employees perceive, feel, and think. Robbins (2003) reports that organizational culture reflects how an organization reacts to the external environment and how the members adapt internally within the organization. While some researchers focus on organizational support, other researchers focus on the internal state of learning and acquiring knowledge and skill development.

Linking Learning Theories to Simulations

Constructivism can be linked to simulations by way of the intention-action-reflection learning process. In business simulations learners are introduced to a real-world problem. The simulation should be a new experience for each player. During the game participants discuss various characteristics and logic of the situation, exercise problem-solving skills, collaborate and share information, and negotiate or discuss alternatives. According to Lainema (2009), business gaming and simulations include constructing and reconstructing plans in response to the learning activity. Games and simulations provide a realistic learning environment (Gosenpud, 1990; Paul, Macredie, & Thomas, 1996) related to the adult learning theory. Games and simulations include social interaction that covers multidisciplinary fields and changing environments in relation to social learning theory. Simulations are designed to provide an environment that transfers learning beyond the learning situation.

Constructivism is more a set of principles than a learning theory. Advocates of constructivism often have different principles and applications. According to Merrill (1992), there is no empirical evidence that supports constructivists arguments. Hakkarainen, Palonen, Paavola, and Lehtinen (2004) note that constructivist learning perspectives lack progression from knowledge acquisition to advancement or application of learning. On the other hand, simulation and gaming exercises seem to support constructivist requirements that create effective learning environments.

Simulation-based Training

In 2009 the business simulation industry celebrated the 50th anniversary of using business simulations in training. The utilization of simulations and games has increased globally in organizational training and education from K-12, colleges, and universities. In 1929 a high-ranking manager, Mary Birshstein, worked in the Russian Bureau for the Scientific Organization

of Work in Leningrad. When the bureau merged with the Leningrad Institute, she conceived the idea of adapting the concept of war games to the business environment. In 1932 she developed the first simulation for a business environment, replicating the assembly process at a typewriter factory and training managers on how to handle production problems (Gagnon, 1987). From 1932 to 1940 Birshstein and her team in Leningrad developed over 40 similar exercises for use in varied industries.

In 1955 the RAND Corporation in North America developed a simulation exercise that focused on military logistics systems, and in 1956 the American Management Association developed a business game titled Top Management Decision Simulation (Hodgetts, 1970). The following year Greene and Andlinger, McKinsey and Company Consultants introduced the Business Management Game (Andlinger, 1958). The University of Washington was the first university that used a simulation game in a business course, Top Management Decision Simulation (Watson, 1981).

Business simulations grew quickly in the early 1960s, reaching over 190 business games in the United States, with more than 30,000 participants, ranging from business executives to students (Graham & Gray, 1969; Horn & Cleaves, 1980; Kibbee, Craft, & Nanus, 1961). In 1962 a survey was conducted of 107 American Assembly of Collegiate Schools of Business member universities to determine to what degree simulations and games were used in teaching. The results of the survey indicated that 71.1% of the schools surveyed (Dale & Klasson, 1962) were using simulations in the curriculum. Klabbers (1994) reported that, by the early 1970s, the New York University Business Game was widely used in European countries in the Netherlands, Israel, Poland, and Hungary. In the 1980s a survey of Eastern Europe universities listed over 22 separate universities using more than 30 business simulations in their courses (Assa, 1982). As

the concept of business simulations and games grew, organizations supporting the development of games emerged.

In 1962 the North American Simulation and Gaming Association (NASAGA) was founded, followed in 1974 by the Association for Business Simulation and Experiential Learning (ABSEL). From 1969 to 2008 international organizations evolved representing England, Scotland, the Netherlands, Japan, Switzerland, Austria, Germany, Australia, Singapore, India, and Thailand.

As technology advanced, game designs included more complexity, migrated to mainframe computer platforms, and on to personal computers. Fritzsche and Burns (2001) and Adobor and Daneshfar (2006) argued that technological advancements in current business games and simulations have contributed immensely to the improvement of teaching and learning. Today's simulations allow quick and easy input, changeable business environments, graphical displays, and multiple-player interaction (Fritzsche & Burns, 2001; Wolfe, 1994).

The migration from mainframe computers to the personal computer and the GUI interface of the 1980s made the installation and administration of business games much easier, and business gaming usage experienced a significant growth after 1985 (Faria & Wellington, 2004).

In 1994 Timothy Burns Lee invented the World Wide Web, which allowed text, images, and media to be displayed over the Internet. Over 200 games previously written for the mainframe did not convert to usage of the Internet due to technical and security problems (Schmidt, 2003).

Emerging technologies are shifting business simulations toward virtual reality technologies or "agent-based" simulation games. Virtual characters called avatars are the outgrowth of research in the field of artificial intelligence. The virtual characters provide

information that affects the environment and direction of the simulation. The avatar may be presented as an animated character or a representation of an intellectual and emotional human being, which creates an emotional engagement for the participant.

A study by Vogel, Greenwood-Ericksen, Cannon-Bowers, and Bowers (2006) indicated that the use of virtual reality technologies aided participants in understanding complex ideas. In the simulation Serious Games the authors captured and combined the engaging components of video games and educational games. Simulations and games have changed the paradigm of training in the industries of business, education, health, and public administration (Yilmaz, Oren, & Aghaee, 2006).

Learning via Simulation Technology

Over the years business simulation games have contributed to the paradigm shift on how educators use simulation and gaming technology to enhance learning. In the early 2000s a major focus of business education and learning was relevance, accountability, and value through performance measurements. Accrediting organizations such as the Association for the Accreditation of Collegiate Schools of Business (AACSB) and the Association of Collegiate Business Schools and Programs (ACBSP) are challenging educational institutions to adopt outcome measures that demonstrate student learning rather than previous traditional measures of what has been taught to students in the classroom.

Faria et al. (2009) published a review of 1,115 articles on business simulation game education and learning published in *Simulations & Gaming.* The review covered a span of 40 years and identified nine central themes on why educators use business simulation games. The major themes identified increasing participant knowledge and experience (skills), improving strategic thinking, teaching decision making, accomplishing course learning outcomes and

objectives, building effective teams, motivating participants, applying theory through practical solutions, participant engagement, and integrating ideas. A review of 304 business simulation education and learning articles narrowed the discussion to five topics: experience, strategy, decision-making experience, learning outcomes, and teamwork.

Business Simulations Effect on Education and Learning

Performance simulations are primarily used with jobs having complex decision-making, high-risk situations, and determining workforce performance gaps. Simulations are beneficial and cost effective when there is a need to deliver training in a short period of time to a large geographically dispersed workforce. Simulations are effective when there is a need for self-directed experience and learning that allows participants to explore content and control the training process. In fast-paced, competitive markets where change is constant, business simulations can be leveraged to train specific skills and knowledge that are critical as a competitive advantage. Wenzler (2003a) explained that simulations provide a hands-on learning environment similar to a real-life work environment. Performance simulations provide an environment where participants perform at a reduced speed with minimum risks associated with learning. Performance simulations allow a large number of possible alternatives where no one right answer is available. Feedback is immediate, allows individualized coaching, and provides opportunities to explore topics and concepts. Because of the flexibility and adaptability of simulations, content can be changed as frequently as needed. Simulations can be adapted to delivery over the Internet or intranet.

Research indicates that simulations are a form of both constructivist and experiential learning. Goetz and Bennis (1963) theorize that the greater the student engagement in learning, the more effective the learning process. Research conducted by Carlson and Misshauk (1972)

purported that participation in a simulation experience sharpens decision-making ability and skills analysis. Conversely, research by Cherryholmes (1966) cites little substantive evidence that simulations teach cognitive material, problem-solving skills, or critical thinking skills. Participants immersed in simulation experiences also benefit from the immediate feedback of decision making. This view is supported by Skinner's research on shaping the behavior of T-groups.

Business simulations remain a powerful vehicle for training that raises cognitive skills to a higher level of thinking, decision making, and strategic planning. Technological changes provide additional opportunities to improve the simulation learning experience. Numerous pedagogical innovations are emerging that will drive how simulation and games are used. Participants receive feedback that demonstrates the consequences of decision making and leads to evaluation and creation of alternative strategies and solutions. Knowledge and skills are enhanced through the experiential learning experience. In a business simulation learning environment, decision results are directly attributable to the participant's decision-making skills. Conversely, case studies direct learning to analysis, evaluation, and the generation of solutions. Feedback is not allowed on whether the analysis, evaluation, or solutions are accurate or achievable. Simulations allow participants to engage in a learning environment at their own pace. In a multi-player environment, simulations provide opportunities to improve communication and collaboration skills with an audience of players (social theory). Diverse backgrounds, cultures, educational institutions, and industries enable a comparative external evaluation of decision-making, strategic planning, team-building knowledge and skills (Faria et al., 2009).

Performance simulations provide business concepts that allow participants to immerse themselves in real-life work environments (andragogy theory). The actual learning occurs through experience, feedback, and remediation if required. Participants understand how well they are doing or how to convert mistakes into learning. When a participant fails a task in the simulation, it is a teaching moment. Feedback provides an adjustment in the participant's mental model through advice from the feedback.

Decision support. From the mid-1960s through the 1970s simulations included decision support supplemental materials which required response by participants to videotaped commercials, product and management reports, and marketing plans (Nulsen & Faria, 1977). Participant responses indicated that the decision support supplemental materials were enjoyable and increased learning through the simulation competitions.

In the 1980s most decision support programs centered on a template spreadsheet program to assist participants in analyzing and evaluating financial and operating performance decisions. Participants created "what if" scenarios, and feedback was provided based on the decisions made. In a business simulation conducted at Temple University, students were required to enter initial decisions into a program to initiate economic, market, and competitive forecasts (Suggess, 1980). The student module provided forecasts of profits, cash flow, inventories accounts receivable, interest charges, payables, and equity. "The administration module provided a compact listing of student team decisions, performance results, and relevant statistical analyses for each of interpreting and evaluating participant performance" (Faria et al., 2009, p. 475).

By the early 1990s simulations became more sophisticated in the design and function of a decision support program. Palia, DeRyck, and Mak (2002) discussed a simulation developed by The Boston Consulting Group (BCG) that imbedded a check and balance control within the

simulation that performed static analyses and comparisons of their competitors' product portfolios. The BCB package allowed game participants to "look for trends, evaluate competitor market positions, consider alternative factors outside their portfolios, and develop target portfolios" (p. 475).

The most recent technological development in decision support programs is artificial intelligence, which allows simulations to generate immediate feedback and coaching through supplemental knowledge-based learning resources. The learning resources could be tutorials, reference materials, exercises, and multimedia application tools (Summers, 2004).

Communication. Business simulations offer opportunities to improve communication, coordination, collaboration, and knowledge exchange. Participants in many business simulation competitions are assigned to teams. Research studies (Croson, 1999; Dasgupta & Garson, 1999; Kramer, 1999; Noy, Raban, & Ravid, 2006) reported that team functioning affects performance, enhances team communication, and improves team performance and individual learning. Technology capabilities such as the Internet, e-mail, chat rooms, teleconferencing, videoconferencing using Web cams, and social networks contribute to innovation, generation of multiple alternatives, and diversity of ideas (Adobor & Daneshfar, 2006). Martin (2003) reported that "global communication enables participants to work collaboratively regardless of the restrictions of time and distance" (p. 25).

As business simulations and games continue to incorporate more decision-making support programs within the learning environment, business education researchers seek ways to measure the transfer of learning. Companies such as Innovative Learning systems, Capsim, Industry Player Simulation Games, Forio Business Simulation Games, and others are Internet-based companies that imbed sophisticated analytical software tools to assess and analyze student

outputs. In a simulation and gaming exercise participant output can be captured to determine whether transfer of learning occurred.

Transfer of Learning and Improved Performance

Simulations and gaming learning objectives include experiential learning, training, development of negotiation and communication skills, perspectives, and strategies. In business simulations and gaming design actions the learning experience of each player is measured to estimate and improve knowledge and skill development (Biggs, 1990). For example, educational simulations and games are designed to learn and experience new issues and situations such as Middle Eastern policies and international negotiations (Vincent & Shepherd, 1998).

Some simulations and games require participants to assume different roles or identities during the game. The assumption of different roles provides an effective experiential learning exercise (D. A. Kolb, 1984), a change of behavior (Lewin, 1946), and beliefs and attitudes (Piaget, 1972). A primary objective of education and learning is to develop the skills, perspectives, and strategies of participants. Role-play provides an avenue to change or develop behaviors.

Simulations also provide a common language between diverse participants. The common language could be shared words, data, charts and graphs, images, and other graphic displays that bridge the gap of individual perspectives. Learning activities such as exploring various choices (Peters,Vissers, & Heijne (1998), giving and receiving feedback (Quanjel, Willems, & Talen, 1998), player interaction (Asakawa & Gilbert, 2003), and reflecting on the consequences of decision making (Rosenorn & Kofoed, 1998) provide common communication tools to enhance knowledge and skills.

Motivation to continue participation in the business simulation should also be considered. Simulation and gaming developers need to motivate players through visual and interactive devices that tap into intrinsic rewards, such as challenges, a sense of achievement, camaraderie, and realism (Vincent & Shepherd, 1998).

Games and simulation provide an engaging and immersive learning environment that requires a deeper level of thinking and complex problem-solving skills (Bloom et al., 1956; Gee, 2005). Early research on arcade-style games indicated that games created intrinsic motivation through challenge, curiosity, competition (Cordova & Lepper, 1996; Malone, 1981). Games can promote the development of new skills. Participants engaging in new roles come to a greater understanding of issues and view situations from different perspectives (Gee, 2005; Shaffer, 2004, 2005). Games present participants with holistic problems according to Squire (2005a), through failure participants can immediately identify the gaps or flaws in their decision making. Through cycles of recursive play, participants acquire new knowledge and skills. Participants who play business simulations and games test ideas, develop new skills, and participate in new social roles (Piaget, 1962; Vygotsky, 1978).

Simulations often deal with the behavioral side of performance improvements (Wenzler, 2003a). Wenzler discussed the importance of separating perceived satisfaction or dissatisfaction from the actual change process and future environment.

In 2009 Wenzler stated that simulations resulted in significantly higher retention of learning content than did traditional classroom learning. Participants in a performance simulation mastered content and new behaviors 40-70% faster than in classroom learning. Research conducted by Wenzler revealed that performance simulation can reduce the time for new employees to reach a level of competent performance by 80%.

Wenzler (2009) cited several benefits and associations between performance simulations and learning theories. Simulations allow learning to occur regardless of the learning style. Participants can apply their skills in a realistic environment through simulations. Case-based learning converts case studies to real-life engagement, enabling participants to learn through the experience of others. However, failure-driven learning helps participants acquire knowledge and skills through challenges and failures. Simulations allow participants to avoid repetitive behaviors and redirect efforts. Goal-directed learning drives what people do, but simulations leverage the power of natural learning so that participants can establish new goals. Incidental learning is the discovery of new ideas and facts that makes learning exciting and challenging. Learning by exploring is a product of self-interest that drives internal needs of motivation. While pursuing activities of interest, people generate ideas, hypotheses, and questions by learning through reflection. Simulations allow participants to speculate, wonder, imagine, create and innovate, and thus the ability to understand and remember material is enhanced. Learning through accommodation is the ability to change and manage situations by changing the self. Wenzler (2003a) suggests that the simulation experience is an experiential process of discovery and play, not knowing what the final result will be, but knowing that the person will be different after the experience.

Summary

Transfer of learning is the extent to which knowledge, skills, and abilities (KSAs) acquired from learning activities are applied on the job (Noe, 2001). Tannenbaum and Yuki, 1992) reported that the learner's level of satisfaction predicted the level at which transfer of training occurs. Researchers have discovered various factors that affect transfer of learning.

Factors include motivation, ability, peer, supervisor, organizational support, and trainee characteristics, such as self-efficacy and readiness to transfer (Holton & Baldwin, 2003).

One of the most innovative ways in which organizations can improve transfer of learning is to enable employees to develop skills in critical thinking and collaborative inquiry in the jobs performed. Training course design and content can provide tools to enhance innovative, creative, and critical thinking exercises but cannot apply them to real work environments.

Research in this study indicates that training through simulations and games applies a combination of multiple theories and models that result in transfer of learning and intent to transfer. Case-based, simulation-based, problem-based learning allows participants to engage in real-life situations. Failure-driven learning allows the repetition of behaviors and redirection of efforts through feedback, and incidental learning allows discovery and exploration, which motivates participant learning. Reflection generates ideas, imagination, creativity, innovation, and accommodation provides the ability to change. Each of these learning attributes is a part of the Holton (1997) theoretical framework on transfer of learning, which is discussed in Chapter 3.

CHAPTER 3

METHODOLOGY

This chapter includes the discussion of the research, sample, leadership program, research instrument, and demographic data. Data collection and analysis procedures are also described.

Research Design

A correlational design measures the strength of relationships between two or more variables to make better predictions (Gall, Gall, & Borg, 2007). A correlation design was selected for this study to measure the relationships between intent to transfer (dependent variable) and transfer of learning constructs (independent variables).

Sample

Several Fortune 500 organizations declined to participate in this study. Representatives from these organizations expressed concern about questions on the LTSI instrument, confidentiality, or incompatibility with existing leadership training initiatives. This global telecommunications organization was the only organization that agreed to participate in the study. An invitation to participate in the leadership training program was sent to 40 mid-level managers in a global telecommunications organization. Participants were located in domestic and foreign countries throughout the world. These 40 participants were preselected by the organization based on two criteria: the position as mid-level manager and future growth potential within the organization. Participation in the research study was voluntary. Participants could withdraw from the research at any time without penalty. Title, number of previous leadership courses attended, and gender were collected; at the request of the organization, ages and ethnicity were not considered. The training program was conducted at a training center in Princeton, New Jersey.

A power analysis software program determined the minimum number of subjects required to detect an effect (Faul, Erdfelder, Lang, & Buchner, 2007). The power analysis for this study indicated that a sample of 38 participants was required for a correlational analysis, with four predictors to detect a medium effect size (r =.50), and a 95% power with α = .05. This power analysis was selected to achieve a comparable effect to the Hutchins et al., (2012) study.

Dependent and Independent Variables

The dependent variable in this study was the intent to transfer knowledge, skills, and abilities (KSAs) learned in the leadership simulation training program as measured by the Learning Transfer System Inventory (LTSI) instrument. The independent variables in this study were ability, motivation, work environment, and learner readiness constructs as measured in the LTSI instrument.

Research Question

Research Question: What is the relationship between intent to transfer and four constructs in transfer of learning (ability, motivation, work environment, and learner readiness)? Specifically, this study examined the following hypotheses:

H_1: There will be a statistically significant positive relationship between intent to transfer and ability.

H_2: There will be a statistically significant positive relationship between intent to transfer and motivation.

H_3: There will be a statistically significant positive relationship between intent to transfer and work environment.

H_4: There will be a statistically significant positive relationship between intent to transfer and learner readiness.

Program

Tuesday and Wednesday of a 5-day training program were dedicated to the simulation training. Participants were so engaged in the simulation exercises that they spent 8-10 hours each day immersed in problem solving and critical thinking solutions. After each session participants were provided immediate feedback.

On Day 1 each participant was introduced and assigned to teams. Three teams consisted of 4 participants and two teams consisted of 5 participants. One team was comprised of all females. Teams had a minimum of 5 years leadership experience and varied in age. Participants included domestic and international leaders in the telecommunications organization. Participants also represented various departments within the organization, including finance, marketing, sales, production, strategic planning, call centers, and international operations.

The introduction of the facilitator for the simulation and basic expectations of the training session were discussed. The simulation facilitator reviewed the terminology, scenario, and functionality of the simulation.

The simulation training program provided each participant an experience of running a complete business. Faced with a full range of strategy-based decision-making options, participants had an opportunity to try new tactics, test unfamiliar strategic paradigms, and take risks in a risk-free environment.

Participants in the simulation exercises were confronted with complex and rapidly evolving scenarios that tested business acumen, collaboration and communication, and team-building skills through modeling, analysis, and strategic planning. The challenge of the simulation was to turn around a poor-performing, $100 million company with five average products in various market segments. Exercises required improvement to customer demands and

a faster and more economical production and delivery of products. Each management team had a 5- to 8-year period to build success. Time constraints in the exercises generated pressure for the management teams to develop a strategy and implement it thoroughly with every decision.

There were five rounds of play in the simulation. Each round represented a year in the company's life, and decisions were made in research and development, production, marketing, and finance. A practice round preceded each round. At the end of each round, comprehensive reports, graphs, and charts provided visual feedback on each company's individual performance, as well as correlations between management decisions and outcomes. An industry report was generated with extensive detail, such as product value chains for each company, inventory on hand, and production capacities. Each team was provided the same opportunity for competitive analysis.

Upon completion of the simulation training program on Wednesday, the LTSI and intent to transfer assessment was administered. Assessments were collected for data analysis.

Instrument

The Learning Transfer System Inventory (LTSI) is an assessment instrument which diagnoses and identifies barriers and catalysts to transfer of learning. The LTSI is based on the HRD research and evaluation model developed by Holton et al. (1997). The instrument has been translated into 17 languages. This model framework hypothesizes that HRD outcomes are derived from transfer of learning factors that influence (Holton et al., 2000; Noe & Schmitt, 1986) outcomes of learning, individual performance, and organizational performance. The intent to transfer section of the instrument is made up of four items measured on a 7-point Likert scale. The transfer of learning factors includes 48 items measured on a 5-point Likert scale. Five demographic questions were also included in the survey.

The LTSI instrument measures transfer of learning across 16 constructs representing two domains: training program and individual perceptions and reactions. The instrument was developed to minimize the redundancy and overlap in instruments measuring factors that affect learning transfer. This instrument has been used across a wide variety of organizations, training programs, and diverse cultures (Chen, Holton, & Bates, 2006; Yaghi, Goodman, Holton, & Bates, 2008). Over the past 15 years the LTSI instrument has assessed individual perceptions regarding the barriers and catalysts to transfer of learning (cf. Chen et al., 2006). Past studies indicate that LTSI scales correlate with self-report learning assessments (Devos, Dumay, Bonami, Bates, & Holton, 2007); intent to transfer (Bates et al., 2012); and perceived use of training (Ruona et al., 2002). Myers (2009) used the LTSI self-report instrument to predict learning and knowledge retention research. Previous studies found acceptable reliability in predicting motivation to transfer (Seyler et al., 1998); change in job performance (Bates et al., 2000, 2007); and organizational performance (Bates et al., 2007).

LTSI version 1 was a 63-item modification of Rouiller and Goldstein's (1993) instrument that identified organizational needs. Modifications included deletion of 14 items that did not relate to the organization being studied, addition of 7 items representing an opportunity to perform, and deletion of items unrelated to the organization; 10 items were included to strengthen certain scales. Four items were omitted altogether, with final revision resulting in a 66-item instrument.

The second version of the LTSI instrument was created in 2001 to assess an individual's ability to transfer learning, motivation to transfer, and work environment conditions that influenced success or failure in the transfer of learning process. Version 2 eliminated disproportionate items across constructs and added constructs of performance related to self-

efficacy, expectancy, personal capacity, feedback and performance coaching, and general motivation factors identified by other researchers (Ford, Quinones, Sego, & Sorra, 1992; Gist, 1987). Version 2 identified specific catalysts or barriers to learning transfer. Of the 16 factors, 11 constructs identified program-specific factors and 5 constructs identified factors that affected individual perceptions and reactions to training programs. Combining research and data over a 10-year period resulted in the third revision of the LTSI instrument.

In 2007 the LTSI instrument version 3 was a product of research gathered globally in 17 countries and translated into numerous languages (cf. Bates et al., 2012). Translated studies using the LTSI version 3 instrument supported the 16-factor structure and listed 89 items on the survey.

This study used LTSI version 4, made up of 48 items and 5 demographic items. Additional analyses of over 6,000 respondents from 14 different countries and various translations of the LTSI indicated that a reduction in the number of items was needed to reflect a more streamlined version. According to Bates et al. (2012), the goal of the latest version is "to increase organizational and respondent acceptance, minimize completion time, diminish respondent fatigue, and provide a more practical, easier-to-use, more accessible instrument for organizations, training practitioners, and researchers" (pp.18-19). No new items were added to the instrument. In a personal communication on July 6, 2012, Bates stated, "This version is not a new instrument. The same 16 scales are measured, are the same conceptually, and retain the same or very similar psychometric properties (e.g., reliability estimates)." Research using the LTSI version 4 indicated reliability scores for ability ranged from .78 -.80; motivation ranged from .72 -.85; work environment ranged from .80 -.74; and learner readiness ranged from .71 -.75. These reliability scores are consistent with previous research versions (Bates et al., 2000,

2007, 2012; Hutchins et al., 2012; Seyler et al., 1998). This study focused on measuring the relationship of intent to transfer and the transfer of learning constructs of ability, motivation, work environment, and learner readiness in a simulation leadership training environment.

Reliability

Cronbach's alpha was calculated for each variable and analyzed to determine the reliability of the instruments. Coefficient alpha was used in this study to test internal consistency reliability. The internal consistency reliability for the LTSI instrument constructs for the current study and previous studies is presented in Table 1. No items were eliminated to achieve acceptable reliability levels for this sample.

According to Kline (2005), acceptable levels of reliability range from above .90 (excellent), above .80 (very good), and above .70 (adequate). Clark and Watson (1995) noted that, in the past, reliability criteria ranged from high .80 or .90 alpha coefficients to lower .60 or .70 alphas. Constructs with the highest reliabilities in this study were ability ($\alpha = .80$), motivation ($\alpha = .85$), work environment ($\alpha = .61$), and intent (.66). Learner readiness scored the lowest ($\alpha = .63$), which was considered an acceptable reliability by Clark and Watson. The internal consistency results of this study supported the same reliability with previous studies with one exception, the low reliability for learner readiness, which was attributed to the small sample size.

Validation Research

The LTSI instrument has undergone a variety of validation studies, including cross-cultural studies, in an attempt to determine its construct and criterion validity (Holton, Bates, Bookter, & Yamkovenko, 2007). Construct validation established convergent and divergent validity through the correlation or relationships of other constructs. Convergent and divergent

validity studies presented an opportunity to link constructs (Trochim, 1996). Convergent validity examined whether the same or similar variables correlate and lead to the same result (Holton et al., 2007). Divergent validity is concerned with how unique or different a variable is from other measures, and is evidenced when little common variance between variables exist (Whitley, 1996). Using common factor analysis with convergent and divergent validity studies strengthened construct validation (Holton et al., 2007). The 16 factors in the LTSI instrument remain consistent, and the convergent and divergent validity of the instrument remains consistent (Bates et al., 2012). Bates et al. showed that correlations between the factors ranged from .55 to .00, with an average interscale correlation of .24. The data support the "discriminant validity and the distinctiveness of the factors measured by the LTSI" (p. 18).

Survey Questions

The LTSI instrument used in this study included 48 items that measured four constructs in transfer of learning (ability, motivation, work environment, and learner readiness), 5 demographic questions, and 4 questions on intent to transfer. Eleven questions related to an individual's ability to transfer learning. A sample item is "Trying to use this training will take too much energy away from my other work." Nine questions related to motivation to transfer, such as "My job performance improves when I use new things that I have learned." Twenty-two questions related to the work environment: "People often make suggestions about how I can improve my job performance." Six items related to learner readiness (self-efficacy, readiness to transfer); for example, "Prior to this training, I knew how the program was supposed to affect my performance."

The questions related to transfer of learning were measured on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The intent to transfer questions were

measured on a 7-point Likert-scale ranging from 1 (definitely not) to 7 (definitely yes). This 4th version of the instrument was administered in written format on Wednesday after the completion of the simulation exercises. The survey was completed within 10-15 minutes.

Table 1

Comparison of Transfer of Learning Results

Transfer of learning	Items	Reliability study	Authors / Dates
Ability	10, 11, 14, 17, 27, 28, 29, 30, 31, 32, 33	.78 -.80	Bates, Holton, & Hatala, 2012
Motivation	2, 3, 4, 6, 7, 15, 16, 34, 35, 36, 37, 38, 39	.72 -.85	Bates, Holton, & Hatala, 2012
Work Environment	5. 12, 18, 19, 20, 21, 22, 23, 24, 25, 26, 40, 41, 42, 43, 44, 48	.80 -.84	Bates, Holton, & Hatala, 2012
Learner readiness	1, 8, 9, 13, 45, 46, 47	.71 - .75	Bates, Holton, & Hatala, 2012

Previous studies during the past 10 years and in 17 translations found that Cronbach's alpha reliability estimates ranged from .72 to .85. According to Nunnally and Bernstein (1994), this range is considered acceptable (Bates et al., 2012, 2000; Blume et al., 2009; Holton & Baldwin, 2003). Once the data were collected, coefficient alpha was run to determine reliability of the subscale constructs in this study.

Demographic Data

The leadership development program was limited to mid-level management personnel with a minimum of 5 years of experience. Participants were preselected by organizational management based on current position within the organization and succession planning strategy

of the organization. Participants were located in various locations throughout the world (Dallas, Texas; Mexico City, Mexico; Ridgeview, NJ; Rio de Janeiro, Brazil; San Jose, CA; Seoul, Korea). The study was comprised of 59% male and 41% female participants. Management levels were represented by 36% managers, 27% senior managers, 9% operations managers, 18% directors, 4.5% senior directors, and 4.5% assistant controllers. A minimum 5 years of leadership experience was required. Previously attended leadership training programs ranged from leaders who attended 1 or 2 courses was 41%; 3 courses attended was 4.5%; 4 courses attended was 9%; 5 courses was 4.5%. Survey results are presented in Table 2 in Chapter 4.

Data Collection Procedures

The Institutional Review Board (IRB) at the University of North Texas (Denton) granted permission to conduct this study. Approval documents from the organization to conduct the research study have been received.

After conclusion of the simulation training program, a packet containing a participant consent form, letter of instruction, intent to transfer, and LTSI surveys was distributed to each participant for completion. Instructions included the following information: introduction of PhD candidate, brief overview of study, and approximate time to conduct study. All responses were completely confidential and were used for the purpose of this research only. There were no foreseeable risks in completing the survey. If at any time during the completion of the survey a participant wished to discontinue participation, there was no penalty. By participating in this study, participants assisted research in identifying the relationship between transfer of learning constructs and intent to transfer learning. Furthermore, participants helped to determine to what extent the LTSI can predict intent to transfer learning to the work environment. Participants who had questions and/or concerns, required additional information, or requested a follow-up

interview were provided contact information in the instruction letter. After completing the surveys, the packets were collected, and data were entered into SPSS 20 for analysis.

Data Analysis

The research question for this study examined the relationship between the LTSI transfer of learning constructs and intent to transfer. Pearson's correlation is an analysis that tests for a linear relationship between two quantitative variables. In this study the relationship between the dependent variable (intent to transfer) was tested for a linear relationship between the independent variables (ability, motivation, work environment, and learner readiness).

This study tested the four statistical assumptions of reliability, normality, linearity and homoscedasticity outlined by Osborne and Waters (2002). Reliability was assessed using Cronbach's alpha (α). Normality was analyzed using data plots, skewness, kurtosis, and Q-Q plots. Histograms and frequency distribution were reviewed for outliers that may cause Type I and Type II errors.

Statistical significance occurred if $p = < .05$. A medium effect size of $r = .50$ was used to determine the effectiveness and practical significance. If the results were not statistically significant, then it can be assumed that the intent to transfer has no relationship to the learning transfer constructs of ability, motivation, work environment, and learner readiness. If the results were statistically significant, then it can be assumed that intent to transfer has a strong, moderate, or low relationship to the learning transfer constructs based on previous research.

The small sample size in this study produced minimal reliable results. Tabachnick and Fidell (2007) recommended a sample size of 300 cases to obtain a generalizable result. However, these authors concede that variables with a reliability > .80 could be used in a smaller

sample size of 150 cases. According to Stevens (1996, p. 372), sample size requirements are being reduced as more research on the effect of sample size has been published.

After initial analysis of the data, a post hoc analysis was conducted. Items 10, 11, 12, 20, 22, 23, 40, 41, and 42 were omitted and reverse coded to strengthen reliability. Results were negligible. Items were then reverse coded.

Summary

This chapter described the research design, sample size, instrumentation, demographics, dependent and independent variables, research question, training program, instrument, data collection, and data analysis process used in this study. Results were analyzed using bivariate correlation methodology. Chapter 4 outlines the results of the study.

CHAPTER 4

RESULTS

Findings

The purpose of this study was to investigate the relationship between the Learning Transfer System Inventory (LTSI) transfer of learning constructs (ability, motivation, work environment, and learner readiness) and intent to transfer new skills. A sample study included 22 mid-level managers in a global telecommunications organization. These leaders worked in a variety of departments, such as accounting, call centers, marketing, procurement, product planning, product support, production, quality assurance, research and development support, sales, social media, and strategic planning.

Participation in the research was based on the willingness of each participate to contribute to research on intent to transfer and transfer of learning. Surveys were assessed for missing data. Due to the small sample size, research results were limited and are not generalizable across other organizations. However, results are generalizable within the organization with other mid-level managers who have the same or similar knowledge, skills, and abilities (KSAs). This chapter presents the empirical results for the study, including the sample, descriptive statistics, reliability, and correlation results. SPSS 20 was used to analyze the data.

Demographics

The initial proposal estimated 40 participants in the study. Due to various circumstances, a new product launch, and project deadlines, only 22 participants attended (see Table 2). Of the 22 participants, 13 were male (59%), and 9 (41%) were female. At the request of the organization, age and ethnicity demographics were omitted.

Table 2

Demographic Characteristics

Demographic variable	Sample characteristics
Decision to attend training	Pre-selection by organization based on mid-level manager position and future growth potential within the organization
Gender	M = 59% F= 41%
Management level	Manager - 36.4% Sr. Manager - 27.3.% Operations Manager - 9.1% Director - 18.2% Sr. Director - 4.5% Assistant Controller - 4.5%
Previous leadership courses attended	1 course - 40.9% 2 courses - 40.9% 3 courses - 4.5% 4 courses - 9.1% 5 courses - 4.5%

Reliability

Reliability of the instrument is supported in previous transfer of learning and intent to transfer studies (Bates et al., 2012; Holton et al., 2000). Reliabilities in previous research ranged from .71 to .85, with an average alpha of .79 (Bates et al., 2012; Holton & Baldwin, 2003; Holton et al., 1997).

Table 3 shows a comparison of transfer of learning results from previous and current studies. The intent to transfer, work environment, and learner readiness scores in this study were lower than other studies. The constructs for motivation and ability were slightly higher than previous reliability studies, at .85 and .80, respectively. The current reliability measures in Table

3 are a result of a post hoc analysis. In an attempt to improve reliability, Questions 10, 11, 14, 23, 24, 25, 40, 41, and 42 were reverse coded, and data were reanalyzed.

Table 3

Comparison of Transfer of Learning Results From Previous and Current Studies

LTSI Constructs	Items	Previous reliability*	Current reliability
Ability	10, 11, 14,17, 27, 28, 29, 30, 31, 32, 33	.75 -.78	0.80
Motivation	2, 3, 4, 6, 7, 15, 16, 34, 35, 36, 37, 38, 39	.72 -.78	0.85
Work Environment	5. 12, 18, 19, 20, 21, 22, 23, 24, 25, 26, 40, 41, 42, 43, 44, 48	.75 -.85	0.61
Learner Readiness	1, 8, 9, 13, 45, 46, 47	.71	0.63
Intent to Transfer	1a, 1b, 1c, 1d	.92**	0.66

* Previous study alpha values from Bates et al., 2012.
** Previous study alpha values from Hutchins et al., 2012.

Descriptive Statistics

The intent to transfer dependent variable included four questions. Descriptive statistics of the data are presented in Table 4. The survey was completed by all 22 participants in the leadership course, indicating 100% participation. Results from a 7-point Likert scale showed that intent to transfer ranged from minimum 5.25 to a maximum 7.00. The mean for all participants was 6.33, which indicates that participants had a strong intent to transfer learning to the work environment. The skewness values were high and negatively skewed to the left, which could be a result of the large 7-point Likert scale used to assess the intent to transfer construct (Gall et al., 2007). Another explanation could be that the title of the assessment "Intent to

Transfer" biased the participants toward responding on the high end of the scale. A third possibility is a lack of instruction to vary answers along the continuum.

Table 4

Descriptive Statistics on Intent to Transfer and Transfer of Learning Constructs

Variable	*N*	Min	Max	Mean	SD	Skewness	Kurtosis
Intent to Transfer	22	5.25	7.00	6.33	.569	-.513	-1.07
Transfer of Learning Constructs							
Ability	22	2.36	4.64	3.80	.497	-.956	2.10
Motivation	22	2.85	4.69	3.53	.443	.986	1.02
Work Environment	22	2.76	3.94	3.35	.333	-.102	-.718
Learner readiness	22	3.00	4.43	3.71	.380	.004	-.468

Scores for ability were above the midpoint on a 5-point scale; $M = 3.80$, $SD = .497$. This suggested a moderate and positive ability to apply new skills, resources needed to use new skills, and adequate financial and human resources to enable participant to use new skills.

Scores for motivation were above the midpoint on a 5-point scale; $M = 3.53$, $SD = .443$, which indicated a moderate and positive motivation to utilize learning in a work setting with skills and knowledge learned in the training program. Participants with positive motivation expect to transfer learning that will lead to changes in job performance.

Scores for work environment were at the midpoint on a 5-point scale; $M = 3.35$, $SD = .333$. These scores indicated that a moderate and positive work environment existed for

participants to receive constructive feedback from managers, peers, and team members when applying new abilities or attempting to improve work performance.

Scores for learner readiness were above the midpoint of the 5-point scale; $M = 3.71$, $SD = .380$. This suggested that the participants had a moderate and positive concept of how training was related to development and work performance and that they had the self-efficacy to change performance when necessary. The small variance in the construct could inflate the correlations.

The skewness values for this study were consistent with previous research (Holton et al., 1997; Holton & Baldwin, 2003; Hutchins et al., 2012; Velada, Caetano, Bates, & Holton, 2009). The kurtosis values for intent to transfer were between -3 and +3 and indicated no violations. The kurtosis had a slight variation (2.10), which could be attributed to a few extreme differences from the mean.

Further review of boxplots, scatter plots, histograms, and Q-Q plots appeared to be reasonably distributed. Participant 13 omitted answering Question 42. The omission of one question did not affect the data results. The missing data was substituted with the group mean into the empty cell, as suggested by Gall et al. (2007). The advantage of estimating the missing data was that it did not increase the probability of Type II errors or reduce the sample size in the study. No extreme outliers were displayed. These results supported a normal distribution of data (Hutchins et al., 2012).

Research Question Analysis

Bivariate correlations were analyzed using SPSS 20 to determine relationships between intent to transfer and the LTSI transfer of learning constructs (ability, motivation, work environment, and learner readiness). The research question was What is the relationship between LTSI transfer of learning constructs and intent to transfer? Table 5 represents the

correlation results. Due to the small sample size, additional ways to interpret data were explored. Correlations were run to measure relationships between the LTSI constructs.

Correlations Between LTSI Constructs

The correlation scores for ability and motivation showed no statistical significance; r = .309, p = .161. Relationships between work environment and ability, r = .359, p = .101, showed no statistical significance. Relationships between work environment and motivation showed a statistical significance, r = .417, p = .05. As scores on work environment increased, the scores on motivation increased. Scores for learner readiness and ability showed a moderate relationship, r = .470, p = .027. Scores for learner readiness and work environment showed a moderator relationship, r = .486, p = .022. As scores for learner readiness increased, scores for ability and work environment increased. Full results can be reviewed in Table 5.

Correlations Between LTSI Constructs and Intent to Transfer

- H_1: There will be a statistically significant positive relationship between intent to transfer and ability.

To investigate H_1, correlations were run to determine whether there was a statistically significant positive relationship between intent to transfer and ability. As indicated in Table 5 the scores for intent to transfer and ability showed no statistical significance; r = .377, p = .083.

- H_2: There will be a statistically significant positive relationship between intent to transfer and motivation.

To investigate H_2, correlations were run to determine whether there was a statistically significant positive relationship between intent to transfer and motivation. As indicated in Table 5, the scores for intent to transfer and motivation showed a moderate relationship; r = .435, p = .043. As scores for intent to transfer increased, scores for motivation increased.

- H_3: There will be a statistically significant positive relationship between intent to transfer and work environment.

To investigate H_3, correlations were run to determine whether there was a statistically significant positive relationship between intent to transfer and work environment. As indicated in Table 5, the scores for intent to transfer and work environment showed no statistical significance; *r = -.073, p = .748.*

- H_4: There will be a statistically significant positive relationship between intent to transfer and learner readiness.

To investigate H_4, correlations were run to determine whether there was a statistically significant positive relationship between intent to transfer and learner readiness. Table 5 indicated no statistical significance; $r = .215$; $p = .337$. Previous research indicated a statistical significance between these constructs (Bates et al., 2012; Hutchins et al., 2012).

Table 5

Correlations Between Intent to Transfer and LTSI Constructs

	Ability	Motivation	Work environment	Learner readiness	Intent
Ability	*.796*				
Motivation	.309	*.846*			
p-value	.161				
Work Environment	.359	.417	*.608*		
p-value	.101	.053*			
Learner Readiness	.470	.273	.486	*.625*	
p-value	.027*	.219	.022*		
Intent	.377	.435	-.073	.215	*.659*
p-value	.083	.043	.748	.337	

*statistical significant *p* values. Alpha values are found on the diagonal.

Comparison of Studies

This study was modeled after the Hutchins et al. (2012) study. A comparison of both studies follows in Table 6. Previous research by Hutchins et al. found the relationship between intent to transfer and ability with LTSI measures to be moderately and positively correlated. The results in this study for intent to transfer and ability with LTSI measures fell within the same range as the Hutchins et al. study.

The results in this study for intent to transfer and motivation with LTSI measures are consistent with previous research (Hutchins et al., 2012). The results of intent to transfer and work environment with LTSI measures were smaller, ran in an opposite direction, fell outside the range of the Hutchins et al. study, and were close to 0 correlation. The difference in correlations could be attributed to a smaller sample size and/or difference in international and domestic work environments, which may not be conducive to transfer of learning.

The results of intent to transfer and learner readiness with LTSI measures showed a larger range than the Hutchins et al. (2012) study. This study indicated a 22% larger variance than the Hutchins et al. study. The difference in results could be attributed to the leadership level of the participants and the high intent to transfer. The mislabeling of "Intent to Transfer" on the assessment could have biased responses by participants.

Table 6

Comparison of Hix and Hutchins LTSI studies

	Hix correlations	Hutchins correlations*
Ability	0.377	0.234
		0.326
		0.428
Motivation	0.435	0.591
		0.387
		0.173
Work Environment	-0.073	0.045
		0.339
Learner Readiness	0.215	0.176

*Data were extracted from Hutchins r^2 commonality analysis. The square root was taken of each subscale in the Hutchins et al. study for a common comparison between both studies.

Qualitative Data

In addition to conducting research for this study, corporate training consultation to the organization was also conducted. At the request of the human resource manager, interviews with employees were conducted on transfer of learning aspects of the simulation-based training program. The consultative information would be used later to support quantitative data results for this study. These questions and interviews were included only post hoc due to the small sample size and to further explore the relationships between intent to transfer and transfer of learning constructs from an alternative perspective. Furthermore, the 2 hours of follow-up interviews and 20 hours of observation provided additional analysis and understanding of why relationships were low to moderate.

During the simulation the characteristics of the behaviorist, cognitive, social learning, and adult learning theories were observed. Initially the 3 managers who experienced a language and cultural barrier found that transfer of learning occurred through reflection and becoming active in testing different scenarios as described in the behaviorist theory (Argyris, 1990; Brenenstuhl & Catalanello, 1977; Byrne & Wolfe, 1974; Cheetham & Chivers, 2001; D. A. Kolb, 1984). Once the participants had observed one or two rounds of the simulation, they enthusiastically engaged problem-solving activities. Through social interaction international participants began to model and imitate the other participants (adult learning theory). The active engagement, motivation, and shared knowledge from the other team participants indicated that transfer of learning was occurring.

Observations showed that several barriers existed in transfer of learning. For 3 participants a cultural barrier created a lack of understanding of a holistic view of an organization presented by the simulation exercises. Three participants from international countries were primarily assigned to one unit or division with little or no concept of the operations in other areas. Additionally, 4 international participants lacked an understanding of strategic planning concepts.

Research by Cheng and Ho (2001) also reported an impact on transfer related to the work environment in international organizations. Tracey et al. (1995) reported that a significant impact on transfer of learning was related to organizational culture. Yoo et al. (2011) discussed the cultural relationships or lack of relationships among organizational support, feedback, goal setting, learning satisfaction, and learning transfer that impact transfer of learning in this study.

As noted above, 3 managers cited that similar statements on the language and cultural barriers prevented them from fully understanding the objective of the simulation. “In the

beginning I did not understand the concept of the simulation training, and therefore, did not contribute much to the discussions. In my job we do not know what other units do." This statement refutes H_1 that there is a statistically significant positive relationship between intent to transfer and ability. The statements also refute H_3 that there is a statistically significant positive relationship between intent to transfer and work environment. Furthermore, the statements refute H_4 that there is a statistically significant positive relationship between intent to transfer and learner readiness.

One question proposed to managers was "How will you use this new knowledge when you return to your current job?" A manager in strategic planning stated, "I can definitely use this training in my current position when projecting and estimating costs and product delivery." A manager over product development stated, "This is great information to estimate and schedule manhours for current and future product launches." These two comments directly support H_2 that a statistically significant positive relationship exists between intent to transfer and motivation. The statements also support H_3 that there is a statistically significant positive relationship between intent to transfer and work environment.

Another manager said, "It was eye opening to work with 'dispatchers' from international operations who only had knowledge of their particular unit." This comment refutes H_3 that there is a statistically significant positive relationship between intent to transfer and work environment. Another manager cited, "I usually work alone in my marketing territory, and it was difficult to slow my fast-paced mode of operation and consider both short-term and long-term financial ramifications of our decisions." The previous statements refute H_3 that there is a statistically significant relationship between intent to transfer and work environment.

Team relationships were affected by lack of communication and collaboration time constraints. On the team comprised of females the dominant participant manager and 3 female analytical participant team members experienced personality clashes. As a result of the conflict, communication and collaboration between team members ceased. Time constraints on exercises affected team collaboration and communication with one team. The statements also refute H_3 that there is a statistically significant positive relationship between intent to transfer and work environment.

The data in this study did not correlate with other studies due to the small sample size, differences in ability, and work environments.

Summary

This chapter discussed the data and statistical tests conducted to determine whether there was a statistically significant positive relationship between LTSI transfer of learning constructs (ability, motivation, work environment, and learner readiness) and intent to transfer learning. A bivariate correlational design methodology was used to test the relationships between variables. A GPower analysis indicated a minimum sample size of 23 participants with an effect size of .05 to achieve a statistically positive significant result. The sample size for this study was 22 participants, which fell short of the minimum 23 requirement. A post hoc analysis was conducted with 80% power and an effect size of .05. The post hoc analysis showed results to be 60%, which were too low to find statistical significance. Statistical tests included Cronbach's alpha and bivariate correlations. The research question found intent to transfer and motivation to have a statistically significant positive relationship; there were no statistically significant positive relationships between intent to transfer and ability, work environment, or learner readiness. Further exploration found no statistical significant relationship between ability and motivation. Work environment and motivation showed a moderate relationship. Learner readiness and

ability and learner readiness and work environment showed a moderate statistical significance relationship. Scores also suggested that intent to transfer had a small correlation with motivation. Scores for intent to transfer and ability, work environment, and learner readiness showed no statistical significance.

CHAPTER 5

OVERVIEW

This chapter provides a summary of the results and limitations of the study. It presents implications for performance improvement and suggests recommendations for future research to enhance transfer of learning and intent to transfer.

Constraints to Data

This study had several constraints. Several Fortune 500 organizations declined to participate in the research study. After reviewing the Learning Transfer System Inventory (LTSI) instrument, representatives of one organization expressed concern "about the questions citing expectations of additional monetary rewards from the organization for attending training and supervisor sanctions." Representatives of another organization stated that the 2-year training program for leadership training was designed for specific competencies and measured constructs different from the LTSI instrument. Other organizations did not want to participate based on confidentiality or incompatibility with existing leadership training initiatives.

Because of the small sample size of this study, the data results are not generalizable to other organizations. Stake (2007) argues that one approach to the generalizability of data results is the selection of a smaller case that is representative of a larger case being investigated. Based on Stake's qualitative approach, the data results in this study are generalizable within the organization based on criteria established for mid-level management competencies such as performance, succession planning, and leadership skills. The current global telecommunications organization had initially scheduled two training classes in June and October 2012, with 80 participants invited to attend both training programs. The participating organization requested consultation at both training programs. Due to a change in corporate strategy and budgetary

constraints, the October 2012 class was cancelled, which eliminated 40 participants from the training program and research study. Furthermore, a new product launch conflicted with the June 2012 training program, which resulted in lower than expected attendance. All further data collection opportunities were canceled for a minimum of 12 to 18 months.

Campbell and Stanley (1963) cited other threats to this correlational design. The independent and dependent variables were collected from the same source and studied only once. There was a lack of control over several factors. The sample for this study violated both internal and external validity through preselection of participants by the organization based on mid-level management with similar roles and responsibilities. Although participants were assured of confidentially, names were attached to each survey. Confidentiality was maintained by detaching names and assigning numbers to each survey. Nevertheless, an error of misplaced precision may have occurred.

A further threat to validity was that the title of the assessment, "Intent to Transfer," was not omitted prior to administering the instrument. This oversight may have biased participants to negatively skew the results, replicating a Hawthorne effect. In addition, the intent to transfer assessment was administered after the demographic questions. According to Babbie (2007), if individuals are reminded of their personal status, they will respond differently. A better research design would place the intent to transfer assessment prior to the demographic section.

Other threats to internal validity might have occurred through a history event when a personality clash between team members occurred, resulting in one participant's withdrawing altogether from further communication and collaboration with other team members. Answers could have been skewed based on a bad attitude. One of the international participants asked for interpretation of two of the negatively stated questions on the instrument, which could have

threatened validity of the study. While the experimental simulation environment may be similar to a real-world environment for some of the managers, it may not be the case for others who have a more controlled work environment.

Post Hoc Power Analysis

A post hoc power analysis was conducted to improve internal consistency in the data. The second GPower analysis was run to determine a large effect size of $r = .80$ and $\alpha = .05$. The GPower analysis indicated that a sample of 23 was required to achieve a statistical significance. The data were re-run using the larger effect size. The required sample size was reduced to 23; however, the study with 22 participants did not meet the required sample size. The post hoc power analysis indicated a power of 60%, which is a minimal effect.

When Questions 10, 11, and 14 in the ability construct were reverse coded and the results re-run, there was no statistical significance between intent to transfer and ability. Questions 23, 24, 25, 40, 41, and 42 in the work environment construct were reverse coded and the results re-run. There was no statistical significance between intent to transfer and work environment. The motivation and learner readiness construct results remained the same with no statistical significance. Intent to transfer and motivation were the only constructs that indicated a moderate statistical significance. Results from this study were lower when compared to the Hutchins et al. (2012) study.

Summary of Findings

The data for the research question were tested using bivariate correlations. Descriptive statistics for intent to transfer indicated a strong intent to transfer learning to the work environment by all 22 participants in the global telecommunications organization. This is not surprising because each participant had a vested interest in improving leadership skills by

attending the training program. Planned behavior suggests that intent to transfer must exist before transfer of learning occurs (Ajzen, 1991). The greater the intent to act, the more likely an individual will change behavior. According to Ajzen, the learner will know by the end of the training session whether or not the transfer will occur, which supports the findings in this study of the high scores for intent to transfer.

The training environment motivated participants through visual and interactive (social process theory) simulations, through problem-solving challenges (Bandura, 1977; Ormrod, 1999), and realistic situations (andragogy theory) that can be transferred to the work environment (Gee, 2005; Malone, 1981; Shaffer, 2004, 2005; Squire, 2005a; Vincent & Shepherd, 1998). Failure-driving experiences were motivating constructs that drive transfer of learning (Wenzler, 2004). Participant's intense engagement in the simulation was exhibited in each round of play. Participants continued the simulation exercises for hours after the training session was concluded. Qualitative research also supports the findings in this study that there is a positive relationship between intent to transfer and motivation, thus improved performance.

Found scores on ability and motivation indicated no relationship to transfer learning to the work environment. The research found in the study does not support other research that the ability and motivation to understand, communicate, and remember material is enhanced through experiential learning, engagement with others, repetition, feedback, and reflection on the consequences of decision making (Asakawa & Gilbert, 2003; Quanjel et al., 1998; Rosenorn & Kofoed, 1998). Additional research on ability and motivation is substantiated by previous research that learners who experience flow through learning activities showed better learning outcomes, higher satisfaction, influence on learning, and greater performance (Hoffman & Novak, 1996; M. R. Kim, 2005; Massimini & Carli, 1988; Skadberg & Kimmel, 2004).

The only statistically significant relationships found in this study were intent to transfer and motivation and learner readiness and ability, which was supported by previous research. Relationships between work environment and motivation are supported by research conducted by Brinkerhoff and Montesino (1995) and Kidder and Rouiller (1997). The authors found that supervisor and peer support significantly impacted higher levels of transfer of learning. Previous studies that motivation influences the amount of effort an individual demonstrates supports the relationships between work environment and motivation (Ajzen, 1991; Seyler et al., 1998; Wenzler, 2009). Research by Colquitt et al. (2000) also supports the findings that motivation to learn was a significant factor in learning and transfer measures.

Holton et al. (1997) suggested that peer support measures provide reinforcement of learning, assistance, and positive feedback. Research by Yoo et al. (2011) also supports the findings in this study through studies on the cultural relationships among organization support, feedback, goal setting, learner satisfaction, and learning transfer. This research supports the findings in previous studies that there is a relationship between work environment and motivation and learner readiness and ability.

The failure to achieve a statistically significant relationship between intent to transfer and the other transfer of learning constructs may be attributable to several violations of internal and external validity (Campbell & Stanley, 1963). The most obvious threat was the small sample size and lack of generalizable research. Other threats include participant selection, data collection, and administration of assessment, history event, language, or cultural barriers.

Conclusions

The research question for this study was What is the relationship between the transfer of learning constructs and intent to transfer? The study found that participants had a strong intent to

transfer newly learned skills to the work environment, but when compared with transfer of learning constructs, the results were not significant, with the exception of work environment and motivation. The results may indicate lack of support, opportunity to transfer learning, or opposition barriers to use newly acquired skills. International subsidiaries may not allow participants to utilize newly learned skills.

Based on the findings in this study and interviews with the managers who attended the training, the program did indeed provide a strong intent to transfer new skills to the work environment; however, the quantitative results indicated otherwise. With few exceptions with the international participants, the work environment was conducive to the transfer of learning. The simulation exercises were highly engaging and motivated the participants, who stayed hours after the training sessions were concluded to work through various scenarios.

Recommendations

As stated previously the small sample size limited the potential results of this study. Recommendations for future research include the following:

With a larger sample size, researchers could run a factor analysis and multiple linear regression (MLR) analysis to control for underlying subscales within each LTSI construct (ability, motivation, work environment, learner readiness). The importance of running MLR is to further explore relationships that could identify barriers or catalysts to transfer of learning. For example, what barriers exist in resistance to change?

Future research could use multivariate correlations to analyze tenure within the company, international differences, age, gender, and education. One benefit would be to test whether males have a greater intent to transfer than females. Perhaps research could explore whether or not younger employees have greater intent to transfer than more tenured employees.

Future research and a larger sample size could identify specific barriers or catalysts to the work environment to assist organizations in the transfer of learning process. As a follow-up to the leadership training program, assessments from supervisors and peers could be administered shortly after participants return to their respective jobs to validate whether transfer of learning occurs.

Future research could look to an enhancement of the LTSI instrument. Items could be reduced or omitted to increase reliability, and negatively worded questions should be restated to reduce confusion to respondents.

A plethora of research exists on the validation of the LTSI assessment. Little research exists on the intent to transfer part of the assessment. Researchers could consider this research and expand the research by Hutchins et al. (2012) to examine the relationship between the LTSI factors and intent to transfer.

Implications for Field of Performance Improvement

Given the importance of learning and the transfer of learning outcomes in the field of HRD, continuous research is imperative to affect cost-effective leadership skills that immediately transfer new KSAs to the work environment. Future research can identify catalysts and barriers through needs assessment. The increase in utilizing technology provides many technological solutions, such as simulation-based training, that broaden leadership KSAs. The fast-paced, competitive environment confronting today's organizations must expand leadership skills outside current silos that impact organizational performance. Case studies lack the capability to provide broad-based enterprise-level skill sets. Simulations provide a risk-free environment for experimenting, engaging critical thinking skills, and building functional teams that positively affect organizational performance. Researchers must continuously strive for improved

performance through training interventions, additional training resources, and follow-up evaluations. Practitioners must assess potential transfer barriers and incorporate solutions within learning interventions.

This study has revealed implications for further research to identify and compare which constructs within the work environment improve leadership effectiveness, such as resistance to change, performance coaching, supervisor support (Holton & Baldwin, 2003); participant motivation (Seyler et al., 1998); ability (Kraiger et al., 1993; Maurer et al., 2003; Tracey et al., 1995); and learner readiness and self-efficacy, performance outcome expectations, and opportunities to transfer learning (Colquitt et al., 2000; Lim & Morris, 2006).

Improvements could be made to the instrument to improve reliability. Negatively worded items can be reverse coded or omitted from the LTSI instrument to lower the inflation of correlations and reduce small variances.

Based on the findings of this study, the opportunity exists to include simulation-based training as a viable training resource for new managers. Gen Y and Millennials enter the workforce with minimal experience but advanced skills in technology. Simulations can afford an engaging training experience compared to case studies and role-play scenarios. The LTSI can target interventions designed to enhance transfer skills. Research suggests that organizations are seeking immediate return on training investments. Data collected in this study, along with interviews with managers, indicate a high motivation and intent to transfer learning. Practitioners can use the LTSI to diagnose transfer problems, conduct needs assessments, design training programs that will influence transfer of learning, and direct change in behavior. The LTSI instrument can improve reliability by removing items.

Future studies could assist organizations with measuring transfer of learning outcomes, identifying barriers that restrict the transfer of learning, and seeking catalysts to improve training interventions, return on investment, and organizational performance.

APPENDIX A

PARTICIPANT CONSENT FORM

Informed Consent Notice

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

Title of Study: Measuring The Effectiveness of Simulation-Based Training: The Case of Leadership Development Program

Student Investigator: Joanne W. Hix Supervising Investigator: Dr. Jeff Allen

Purpose of the Study: You are being asked to participate in a research study which involves research to determine to what extent simulation-based training improves leadership skills in team building, leading people, collaboration and communication, and business acumen. Also, the study will investigate the relationship between transfer constructs of motivation, ability, work environment and learner readiness and the intent to transfer learning.

Study Procedures: You will be asked to complete surveys on leadership knowledge, skills and abilities and learning transfer constructs at various times during the training program. Each survey will take about 10-15 minutes to complete.

Foreseeable Risks: There are no foreseeable risks involved in this study.

Benefits to the Subjects or Others: Participation in the survey is not expected to be of any direct benefit to participants, but the results of the study are expected to contribute to the body of research on intent to transfer learning to the work environment and a measurement to the effects of a simulation-based training program. After a simulation program is purchased there is little or no incentive to test whether or not the training outcomes actually improve performance.

Compensation for Participants: None

Procedures for Maintaining Confidentiality of Research Records: All data collected in this survey will be evaluated anonymously and maintained in a confidential manner in any publications or presentations. Data will be maintained securely in the supervising investigator's office at the UNT campus.

Questions about the Study: If you have any questions about the study, you may contact Joanne W. Hix or Jeff Allen at Jeff.Allen@unt.edu.

Research Participants' Rights:

Your participation in the survey confirms that you have read all of the above and agree to the following:

Joanne W. Hix has explained the study to you and answered all of your questions. You have been told the possible benefits and potential risks and/or discomforts of the study.

You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of benefits. The study personnel may choose to step your participation at any time.

You understand why the study is being conducted and how it will be performed.

You understand your rights as a research participant and you voluntarily consent to participate in this study.

You understand you may print a copy of this form for your records.

I have read this informed consent notice and agree to participate in this study.

_____

Printed Name of Participant

_____ _____

Signature of Participant Date

For the Student Investigator or Designee:

I certify that I have reviewed the contents of this form with the subject signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

_____ _____

Signature of Student Investigator Date

APPENDIX B

INSTRUCTION LETTER FOR SURVEYS

INSTRUCTION LETTER

Thank you for participating in this research study. My name is Joanne Hix, a doctoral candidate at the University of North Texas in Denton Texas. This survey is one element of a study investigating to what extent leadership knowledge, skills, and attitudes in simulation-based training improved performance, and whether intent to transfer of learning to the work environment occurred.

Surveys are created for each participant in the training program. The entire survey will take about 10 to 15 minutes to complete. All responses will be completely confidential and not be included in the information reported. While completing the survey, please relate the questions to what you believe your leadership knowledge and skills were prior to participating in the simulation training and after you completed the simulation training. Please relate the questions related to intent to transfer learning to your ability, motivation, personal characteristics to transfer learning to the work environment. There are no foreseeable risks in completing the survey. If at any time during the completion of the survey you wish to discontinue your participation, you will not be penalized. By participating in this study you are helping us identify how simulation training can improve leadership training and transfer learning to the job more quickly and effectively.

If you have any questions, concerns, or would like to request a follow-up interview to provide additional information, contact information is provided below. Again, thank you for your willingness to participate in this important research.

Joanne Hix
University of North Texas, Doctoral Candidate

Jeff Allen
University of North Texas
Professor and Committee Chair
940-565-4918
jallen@unt.edu

APPENDIX C

IRB APPROVALS

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OFFICE OF THE VICE PRESIDENT FOR RESEARCH AND ECONOMIC DEVELOPMENT

June 21, 2012

Dr. Jeff Allen
Student Investigator: Joanne Hix
Department of Applied Technology and Performance Improvement
University of North Texas
RE: Human Subjects Application No. 12-301

Dear Dr. Allen:

In accordance with 45 CFR Part 46 Section 46.101, your study titled "Measuring the Effectiveness of Simulation-Based Training: The Case of Leadership Development Program" has been determined to qualify for an exemption from further review by the UNT Institutional Review Board (IRB).

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

No changes may be made to your study's procedures or forms without prior written approval from the UNT IRB. Please contact Jordan Harmon, Research Compliance Analyst, ext. 3940, if you wish to make any such changes. Any changes to your procedures or forms after 3 years will require completion of a new IRB application.

We wish you success with your study.

Sincerely,

Barb Hender for PLK

Patricia L. Kaminski, Ph.D.
Associate Professor
Chair, Institutional Review Board

PK:jh

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Tel: 201-229-4000

April 23, 2012

Ms. Joanne Hix
201 Kildeer Trail
Southlake, TX 76092

Dear Joanne,

This letter constitutes our agreement for you to conduct research on our Leader Development Course to be held in Princeton, NJ June 25-29. I look forward to seeing your results of leadership skills and competencies and the transfer of learning.

Best regards,

Randy Mase
Learning & Development Leader
Samsung Electronics North America HQ

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