Measuring the Effectiveness of Transfer of Learning Constructs and Intent to

Transfer in a Simulation-based Leadership Training Program

Joanne W. Hix, Ph.D.

Danxia Chen, Ph.D.

Dallas Baptist University

Abstract

The purpose of business training programs is to improve performance, which changes leadership behaviors based on knowledge, skills, and abilities (KSAs). 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. The challenge for Christian leaders is to impact leadership behaviors and to facilitate transfer of learning using methods grounded in Christian principles and values that capitalize on learning experience. This pilot study examined the relationship between intent to transfer and four constructs (ability, motivation, work environment, and learner readiness) in the transfer of learning process during a simulation-based leadership training program. Ongoing studies reveal 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 and affect management best practices. Participants completed self-report assessments that measured the relationships between intent to transfer and these four constructs. Quantitative data results indicated that there is a statistically significant relationship between intent to transfer and motivation; however, there is no correlation between intent to transfer and ability, work environment, and learner readiness. Qualitative data also suggested the important relationships of motivation and work environment to the intent to transfer. This study raised the awareness of utilizing simulation training programs among managers, impacting motivation on applying newly-acquired knowledge to work, applying biblical management practices, and fulfilling God's purpose as leaders.

Key Words: intent to transfer, ability, motivation, work environment, learner readiness, simulation, management

Introduction

The objective of business training programs is to improve performance by transferring newly learned skills and competencies to the workplace. The challenge for Christian leaders is to impact leadership behaviors and to facilitate transfer of learning using methods grounded in Christian principles and values that capitalize on learning experience. Opportunities exist to include simulation-based training as a viable training resource to expand knowledge management systems that support learning. Simulation-based training affords an engaging training experience compared to case studies and role play scenarios. Simulation technology overcomes several individual challenges that prohibit transfer of learning factors: ability, motivation, work environment and performance outcome expectations.

From an organizational perspective simulation-based training can identify barriers and catalysts of the knowledge management system. 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 (Argote, Beckham & Epple, 1990). Simulations can provide a fluid transfer process of individual expertise from one department to another that will significantly affect organizational performance. When a knowledge management structure is robust, a strong link develops between problem types and specific solutions that exist in transfer of learning. According to Bloom (1984), people who transfer knowledge gained in new situations elevate 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).

Organizations today are focusing on return on investment from training programs with the expectation that learning will immediately transfer to the work environment. As simulation technology evolves as a cost-friendly training intervention, organizations seek to understand its transferability to knowledge management. Further research is required to identify where transfer problems or issues occur, the barriers and catalysts that exist in transfer of learning (Bates, Holton, & Hatala, 2012; Blanchard, 2007; Collins, 2001a, 2001b; Gegenfurtner, 2011; Hutchins, Nimon, Holton & Bates, 2012; Klein, Noe & Wang, 2006; Koones & Posner, 2004; Lencioni, 2007; Maxwell, 2007; Ortberg, 2007; Saks & Belcourt, 2006), and the development of training strategies to enhance management of knowledge (Hwang, 2003). Additional research is required to determine the impact that Christian leadership principles contribute to intent to transfer for learner readiness and the work environment constructs (Kouzes & Posner, 2004; Maxwell, 1995).

The purpose of the pilot study was to examine the relationship between an individual's intent to transfer and the four constructs that contribute to transfer of learning. The simulated environment contributed to a larger understanding of how transfer of learning contributes to a greater knowledge management system. Studies in knowledge management suggest simulation training interventions can lead to the reflection of new strategies in the current work environment.

Opportunities to improve critical thinking skills through exploration and reflection lead to possible alternatives, strategies, and competitive advantage. Simulation training reduces the speed of learning by providing real-life work experience. Participants learn in a risk-free

environment. Participants in a global telecommunications organization 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.

The theoretical framework used in this study is Holton's (1996) Human Resource Development (HRD) evaluation research and measurement model. Holton's model provides a holistic approach to determine the effectiveness of training programs (Seyler, Holton, Bates, Burnett, & Carvalho, 1998). The instrument is also used by practitioners as a diagnostic tool to assess transfer problems.

Learning Theories and Models

Theories of learning can be categorized into four perspectives: behaviorist, cognitive, humanistic, and social. A brief description of theories that facilitate learning follows. Research by B. F. Skinner (1987) was based on studies related to human stimulus response, with learning occurring when there was an external change in behavior. Kurt Lewin (1946) and Carl Rogers (1964) defined experiential learning as when the learner applies knowledge, skills, abilities, and experience to the learning process (Johnson & Johnson, 1982). 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 (Cheethan & Chivers, 2001). Research by Piaget (1951) centered on mental processes, interactive engagement, and adaptation to change. Researchers (Cross, 1981; Lawler, 1991; Merriam, 2001; and Mager, 1984) addressed the concept and theory of androgogy (adult learning). Researcher Albert Bandura (1997) focused on the learning impact of group activities (social theory), such as

observation, imitation or modeling behaviors. In 1985 Gagne identified specific learning conditions that must exist before transfer of learning occurs.

Past research demonstrated commonalities between learning situations and actual work situations that resulted in a greater transfer of learning (Butterfield & Nelson, 1989; Yorks, O'Neil, Marsick, Lamm, Kolodny, & Nilson, 1998; Maxwell, 2007). Cherryholmes (1966) early study cites little substantive evidence that simulations teach cognitive material, problem-solving skills, or critical thinking skills. In 1972 Carlson and Misshauk expanded substantive evidence through the determination that participation in a simulation experience sharpens decision-making ability and skills analysis.   Simulation 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 communication tools to enhance knowledge and skills. Participants engaging in new roles come to a greater understanding of issues and view situations from different perspectives (Gee, 2005; Shaffer, 2004, 2005). Through failure participants can immediately identify the gaps or flaws in their decision making (Squire (2005).

Stokes, Kemper, & Kite (1997) discovered that experienced pilots performed better on simulation flight tests than less experienced pilots. A recent study by Wenzler (2009) revealed performance simulation can reduce the time for new employees to reach a level of competent performance by 80%. The study 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.

In a study by Colquitt, Lepine, & Noe (2000) motivation to learn was a significant factor in learning and transfer measures. Blume, Ford, Baldwin, and Huang (2009) further investigated the relationship of motivation and transfer and found that the single largest relationship to transfer was cognitive ability. The study went on to expose that trainee motivation had a stronger relationship with transfer measures of use rather than with measures of effectiveness. Al-Eisa, Furayyan, and Alhemoud (2009) conducted a study on characteristics of self-efficacy, supervisor support and motivation. Findings indicated that a relationship exists between motivation to transfer and a commitment or readiness to transfer knowledge, skills, and abilities (KSAs) acquired in training. Past research indicates motivation is a predictor of intent to transfer learning and is influenced by individual and situation characteristics (Colquitt et al., 2000; Noe, 1986, 2001; Tannenbaum & Yukl, 1992). In the book *Christian Reflections on the Leadership Challenge* authors Kouzes and Posner (2004) state leadership practices that motivate individuals and create a supportive work environment facilitate transfer of learning. (pp. 36-37)

Research Question

This study investigated the following 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 is not a statistically significant positive relationship between intent to transfer and ability.

H$_2$: There is not a statistically significant positive relationship between intent to transfer and motivation.

7

H$_3$: There is not a statistically significant positive relationship between intent to transfer

and work environment.

H$_4$: There is not a statistically significant positive relationship between intent to transfer

and learner readiness.

Methods

Population and Sample Participants

Managers play an important role in any organization. Managers' intent to transfer

learning and how they apply what they learn impacts the whole organization. In this current

study 40 mid-level managers in a global telecommunications organization 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.

Instrument

The Learning Transfer System Instrument (LTSI) was created 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. The 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

(1996). This model framework hypothesizes that HRD outcomes are derived from transfer of

learning factors that influence outcomes of learning, individual performance, and organizational performance (Holton, Bates, & Ruona, 2000; Noe & Schmitt, 1986).

Over the past 15 years the LTSI instrument has been modified four times. Version 1 was a 63-item modification of Rouille and Goldstein's (1993) instrument that identified organizational needs. Modifications in version 1 included deletion of 14 items unrelated to the organization being studied, inclusion of 10 items to strengthen certain scales, and omission of 4 items.

Version 2 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 identified specific catalysts or barriers to learning transfer that affected individual perceptions and reactions to training programs. 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 to the instrument.

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

This study used LTSI version 4, comprised of 48 items, 5 demographic items, and 4 items on intent to transfer. 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

9

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 scales are measured and are the same conceptually, and retain the same or very similar psychometric properties (e.g., reliability estimates)." Previous studies consistently demonstrated the same construct validity on these four constructs: ability, motivation, work environment and learner readiness (Bates, et al., 2012; Holton, Bates, Bookter, & Yamkovenko, 2007; Holton, et al., 2000). This current study also focused on measuring the relationship of intent to transfer and the transfer of learning constructs of ability, motivation.

Question Items

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).

Table 1

Comparison of Transfer of Learning Results

Transfer of learning	Items
Ability	10, 11, 14, 17, 27, 28, 29, 30, 31, 32, 33
Motivation	2, 3, 4, 6, 7, 15, 16, 34, 35, 36, 37, 38, 39
Work Environment	5. 12, 18, 19, 20, 21, 22, 23, 24, 25, 26, 40, 41, 42, 43, 44, 48
Learner readiness	1, 8, 9, 13, 45, 46, 47

Analysis Techniques and Effect Size

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

Data Collection

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 simulation training

11

program provided each participant an experience of running a complete business with an opportunity to try new tactics, test unfamiliar strategic paradigms, and take risks in a risk-free environment.

The challenge of the simulation was to turn around a poor-performing, $100 million company with 5 average products in various market segments. Exercises required improvement to customer demands and a faster and more economical production and delivery of products. Participants were divided into management teams and 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.

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. 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. The surveys were completed within 10-15 minutes. After completing the surveys, the packets were collected, and data were entered into SPSS 20 for analysis.

Data Analysis Results

The research question for this study examined the relationship between the LTSI transfer of learning constructs and intent to transfer. 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.

Data Score Reliability

Cronbach's alpha was calculated for each variable and analyzed to determine internal consistency reliability of the instruments. Clark and Watson (1995) noted that, in the past, reliability criteria ranged from high .80 or .90 alpha coefficients to low .60 or .70 alphas. Constructs with the highest reliabilities in this study were ability (α = .80), motivation (α = .85),

work environment (α = .61), and intent (.66). Learner readiness scored the lowest (α = .63), which was considered an acceptable reliability by Clark and Watson. 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; Bates, Holton, Seyler, & Carvalho, 2000; Blume, et al. 2009; Holton & Baldwin, 2003).

Descriptive Statistics

The initial proposal estimated 40 participants in the study. Due to various circumstances, for example a new product launch and several project deadlines, only 22 participants attended. 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.

The intent to transfer dependent variable included four questions. Descriptive statistics of the data are presented in Table 2. 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 a 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, Gall & Borg., 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 2

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
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 averaged: $M = 3.80$, $SD = .497$. Scores for motivation averaged: $M = 3.53$, $SD = .443$. Scores for work environment averaged: $M = 3.35$, $SD = .333$. Scores for learner readiness were above the midpoint of the 5-point scale; $M = 3.71$, $SD = .380$. The small variance in the construct could inflate the correlations.

The skewness values for this study were consistent with previous research (Holton, Bates, Seyler, & Carvalho, 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).

Correlation Analysis Results

Bivariate correlations were analyzed using SPSS to determine relationships between intent to transfer and the LTSI transfer of learning constructs (ability, motivation, work environment, and learner readiness). Due to the small sample size, additional ways to interpret data were explored. Correlations were run to measure relationships between the LTSI constructs. Table 3 represents the correlation results.

Correlations Between LTSI Constructs

The correlation analysis between the variable Intent to Transfer and these four LTSI constructs was run. Full results can be reviewed in Table 3.

- H_1: There is not 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 3, the scores for intent to transfer and ability showed no statistical significance; $r = .377$, $p = .083$.

- H_2: There is not 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 3, the scores for intent transfer and motivation showed a moderate relationship; $r = .435$, $p = .043$. The null hypothesis was rejected, which suggested as scores for intent to transfer

increased, scores for motivation increased.

- H$_3$: There is not 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 3, the scores for intent to transfer and work environment showed no statistical significance; *r = -.073, p = .748.*

- H$_4$: There is not 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. Results in Table 3 indicated no statistical significance; *r = .215; p = .337,* contradicting previous research, which indicated a statistical significance between these constructs (Bates et al., 2012; Hutchins et al., 2012).

Table 3

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*			

(continued)

Table 3. Correlations Between Intent to Transfer and LTSI Constructs (continued)

	Ability	Motivation	Work environment	Learner readiness	Intent
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.

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, one-on-one interviews with employees were conducted on transfer of learning aspects of the simulation-based training program. Eight structured interview questions using a 5-point Likert scale (1 – limited experience; 5 – exceptional experience) were created in collaboration with the human manager and occurred in a natural setting over a 20-hour period by an unbiased experienced human resource professional. 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; Kouzes & Posner, 2004). Once the participants had observed one or two rounds of the simulation, they enthusiastically engaged in problem-solving activities. Through social interaction international participants began to model and imitate the other participants (adult learning theory). In the book *Full Steam Ahead!* authors Blanchard and Stoner (2003) state behavioral change occurs when leaders provide a clear and compelling vision, a purpose and mission that ignites passion, and a supportive environment to be successful. Once the international participates caught the vision and purpose of the simulation, behavioral changes occurred in engagement and participation. 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, Tannenbaum, and Kavanagh (1995) reported that a significant impact on transfer of learning was related to organizational culture. Yoo, Lim, and Park (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. To establish a work environment that supported transfer

to the work environment, Lencioni (2007) says it is the responsibility of the leader to help people reach beyond what they are currently doing and try something new.

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."

One question posed 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 many hours for current and future product launches."

Another manager said, "It was eye opening to work with 'dispatchers' from international operations who only had knowledge of their particular unit." 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."

Team relationships were affected by lack of communication and collaboration. 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.

Using the results from the qualitative data on the simulation experience and intent to transfer, four significant correlations can be mined from this study. There is a significant relationship between ability, work environment, and learner readiness that suggest learner

readiness may be influenced by both employee ability and a supportive work environment. There is a significant relationship between motivation and work environment, which may suggest that employees with a supportive work environment are more highly motivated. There is a significant relationship between motivation and intent to transfer. However, it is unclear whether employees with higher levels of motivation have more intent to transfer. Or conversely, where there is a higher intent to transfer, there is a higher level of motivation.

Discussion

The research question for this study was to measure the strength of the relationship between the transfer of learning constructs and intent to transfer. The study found that when participants are motivated, they tend to have a strong intent to transfer newly learned skills. The results strongly supported the theory that motivation to transfer affects the relationships between learning, change in behavior, and perceptions of the work environment. The results are consistent with previous studies (Seyler et al., 1998; Wenzler, 2009). However, the intent to transfer was not correlated with ability, work environment, and learner readiness. The relationship between the intent to transfer with ability is not statistically significant in this study, which may suggest that mid-level managers have reached a certain ability level that produces little impact on their intent to transfer their learning. In this study the intent to transfer also shows little correlation with work environment. 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. In addition, the intent to transfer also has no statistically significant relationship with learners' readiness; thus, results may indicate that managers in a mid-level management have acquired the readiness level, which does not impact their intent to transfer significantly.

Based on the findings in this study and interviews with the managers who attended the training, the program inferred a strong intent to transfer new skills to the work environment; however, the quantitative results indicated otherwise. With few exceptions excluding 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 to work through various scenarios. This result further confirms the importance of motivation and intent to transfer. The greater the motivation, then the more likely those managers will apply newly acquired skills to the work environment and management practices.

The inference is made from the qualitative data in this study that participants learn from erroneous solutions made in a risk-free exploration environment, and receive immediate feedback that results in a deeper understanding of the work environment. Learning in an enterprise simulation experience emphasizes strategic, functional, and financial decision making processes, which in turn, transfers newly acquired competencies to the organization.

Millennials are entering today's workforce with a mastery of the simulation game environment. As Christian leaders we have the opportunity to capitalize on existing technology skills and competencies to direct those skills for the glory of God. Christian leaders are called to a higher purpose. The life of a Christian leader should be a beacon to those you lead. We are to serve as role models and lead like Jesus. John Maxwell (1995) states that we are to "model the way" (p. 41) for others by exemplifying personal integrity, strong Christian faith, and demonstrating a passion to serve others. In today's work environment we can utilize technology simulation-based training opportunities to further develop individual abilities, self- motivation, and intent to transfer learning in a cost-effective manner. Christian leaders can create a

supportive work environment that identifies potential leaders and equips them with knowledge, skills and competencies to reproduce a generation of future Christian leaders. Through a supportive work environment leaders allow others to gain experience and promote readiness to learn. Christian leaders lead by positive reinforcement that the learning experience is engaging, collaborative, and promotes the organizational goals and mission.

Having participants work together as a team allows learners to observe how the simulation was played, engage in problem-solving activities, and gain a better understanding of the overall operation of an enterprise organization. Through team collaboration, diverse multi-cultural perspectives, and information sharing, opportunities may exist to improve communication abilities, work environment, motivation and increase intent to transfer.

This current study on intent to transfer in a simulation process could assist organizations with measuring transfer of learning outcomes. In addition, simulations can identify barriers that restrict the transfer of learning and seek catalysts that improve training interventions. Individual and group performance could align strategically with organizational performance, and increase return on investment.

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. Identification of specific barriers or catalysts to the work environment would assist leadership and training practitioners in focusing on learning strategies that would enhance knowledge management systems.

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 to enhance knowledge management systems. 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, Ford & Salas, 1993; Maurer, Weiss, & Barbeite, 2003; Tracey et al.,1995); 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.

Implications for Christian Business Ministry and Conclusion

Managers, especially those who are Christian business managers, play an important role in business. One shoulders not only the responsibility of earthly business, but also promoting God's kingdom business. To glorify God, to serve others more effectively and efficiently, and to serve as a leadership role model, it is especially critical that Christian business managers master

the ability to learn and apply practical business applications. Based on the findings of this study, the opportunity exists to include simulation-based training as a viable training resource and add new value to knowledge management. 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 influences may exist in the areas of learner readiness and a supportive work environment. Higher levels of motivation may produce more intent to transfer or higher levels of motivation. Christian practitioners and business managers can use the LTSI to diagnose transfer problems, conduct needs assessments, design training programs that will influence transfer of learning, and direct changes in behavior. This will aid in leading Christian business to a great and bright future, making the Christian light shine brilliantly, and adding glory to God. The Christian business manager promotes success of an organization by allowing individuals a chance for success, creating a positive, creative and encouraging work environment, providing individuals with the right tools to work, and promoting a continued learning environment. Lending support to transfer of learning allows individual growth and development in ability, motivation, work environment and learner readiness. Employees must find motivation through rewarding work opposed to receiving rewards. Christian business managers can excel in providing a positive and encouraging work environment. Projects or assigned work must provide a sense of meaning and purpose. If a Christian leader supports employees in the work environment, they are motivated to do their best and accomplish the projected goals. Give praise for the things done correctly and on time.   In the parable of the talents in Matthew 25:21 (NIV) Jesus praises and encourages the one who is obedient and does his best, "Well done, thou good and faithful servant." In

conclusion, Blanchard (2004) states to lead like Jesus requires "encouraging the heart

(motivation or intent) and the head (beliefs and leadership point of view)." (p. 103) It is written

in Ecclesiastes 2:10 (NIV), "My heart took delight in all my work, and this was the reward for all

my labor." In obedience to God the ministry of Christian business managers makes an impact

for the kingdom of God, and that ministry sets them apart from other leaders.

REFERENCES

Al-Eisa, A., Furayyan, M., & Alhemoud (2009). An empirical examination of the effects of
    self-efficacy, supervisor support and motivation to learning on transfer intention.
    Management Decision, 47(8), 1221-1244.

Alvarez, K., Salas, E., & Garofano, C. M. (2004). An integrated model of training evaluation and
    effectiveness. *Human Resource Development Review*, *3*, 385-416.

Argote, L., Beckman, S. L. and Epple, D. (1990). The persistence and transfer of learning in
    industrial settings, *Management Science, 36*(2), 140-154.

Argyris, C. (1990). *Overcoming organizational defenses*. Boston: Allyn & Bacon.

Asakawa, T,, & Gilbert, N. (2003). Synthesizing experiences: Lessons to be learned from Inter-
    net-mediated simulation games. *Simulation & Gaming 34*(1), 10-22.

Baldwin, T. T., Ford, J. K., & Blume, B. D. (2009). Transfer of training 1988-2008: An updated
    review and agenda for future research. *International Review of Industrial and
    Organizational Psychology, 24*, 41-70.

Bandura, A. (1997). Exercise of personal and collective efficacy in changing societies. In A.
    Bandura (Ed.), *Self-efficacy in changing societies* (pp. 1-45). Cambridge, England:
    Cambridge University Press.

Bates, R. A., personal conversation, July 6, 2012.

Bates, R., Holton, E. F., III, & Hatala, J. P. (2012). A revised learning transfer systems
    inventory: Factorial replication and validation. *Human Resource Development
    International, 15*(5), 549-569.Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L.
    (2009). Transfer of training: A meta-analytic review. *Journal of Management
    OnlineFirst*, 1-41.

Bates, R. A., Holton, E. F., III, Seyler, D. A., & Carvalho, M. A. (2000). The role of

    interpersonal factors in the application of computer-based training in an industrial setting.

    Human Resource Development International, 3(1), 19-43.

Blanchard, K. (2004). Reflections on encourage the heart. In J. M. Kouzes & B. Z. Posner

    (Eds.), Christian Reflection on the Leadership Challenge. (pp. 101-118). San Francisco:

    Jossey-Bass.

Blanchard, K., & Stoner, J. (2003). *Full Steam Ahead!*. San Francisco: Berrett-Koehler.

Bloom, B. S. (1984). The 2 sigma problem: The search for methods of group instruction as

    effective as one-to-one tutoring. *Educational Researcher*, *13*(6), 4–16.

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2009). Transfer of training: A meta-

    analytic review. *Journal of Management OnlineFirst*, 1-41.

Brenenstuhl, D. C., & Catalanello, R. F. (1977). An analysis of the impact upon the learning

    effectiveness of traditional instruction, simulation gaming and experiential learning

    teaching methodologies: An experimental design. *Computer Simulation and Learning*

    Theory, 3, 463-473.

Burke, L. A., & Hutchins, H. M. (2007). Training transfer: An integrative literature review.

    Human Resource Development Review, *6*, 263-296.

Butterfield, E. C., & Nelson, G. D. (1989). Theory and practice of teaching for transfer.

    Educational Technology, Research and Development, 37(3), 5-38.

Byrne, E. T., & Wolfe, D. E. (1974). The design, conduct and evaluation of a computerized

    management game as a form of experiential learning. *Simulations, Gaming and*

    Experiential Learning Techniques, *1*, 22-30.

Carlson, J. G. H., & Misshauk, M. J. (1972). *Introduction to gaming: Management decision simulations.* New York: Wiley.

Cheetham, G., & Chivers, G. (2001). How professionals learn in practice: An investigation of informal learning amongst people working in professions. *Journal of European Industrial Training*, *25*(5), 248-292.

Cheng, E. W. L., & Ho, D. C. K. (2001). A review of transfer of training studies in the past decade. *Personnel Review*, *30*, 102-118.

Cherryholmes, C. (1966). Some current research on effectiveness of educational simulations: Implications for alternative strategies. *American Behavioral Scientist*, *10*, 4-7.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7(3), 309-319.

Collins, J. (2001a). Good to Great. New York: Harper Business.

Collins, J. (2001b). Why Some Companies Make the Leap and Others Don't. New York; HarperCollins.

Colquitt, J. A., Lepine, J. A., & Noe, R. A. (2000). Toward an integrative of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology, 85*, 678-707.

Cross, K. P. (1981). *Adults as Learners*. San Francisco. Jossey-Bass.

de Freitas, S. (2007). L*earning in immersive worlds: A review of game-based learning*. London, England: Joint Information Systems Committee.

DeMarco, M. K., Lesser, E., & O'Driscoll, T. (2007). *Leadership in a distributed world; Lessons from online gaming*. Armonk, NY: IBM.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical

power analysis program for the social, behavioral, and biomedical sciences. *Behavior

Research Methods, 39*, 175-191.

Gagne, R. M. (1985). *The conditions of learning and theory of instruction*. New York: Holt,

Rinchart & Winston.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). Nonexperimental research: Descriptive and

causal-comparative designs. In M. D. Gall, J. P. Gall, & W. R. Borg (Eds), *Educational

research* (pp. 318-321). Boston: Pearson.

Gee, J. (2005). What would a state of the art instructional video game look like? *Innovate, 1*(6).

Retrieved from

http://www.innovateonline.info/pdf/vol1_issue6/What_Would_a_State_of_the_Art_Instr

uctional_Video_Game_Look_Like_.pdf

Gegenfurtner, A. (2011). Motivation and transfer in professional training: A meta-analysis of

the moderating effects of knowledge type, instruction, and assessment conditions.

Education Research Review, 6, 153-168.

Holton, E. F., III (1996). The flawed four-level evaluation model. *Human Resource

Development Quarterly, 7,* 5-21.

Holton, E. F., III, & Baldwin, T. T. (2003). Improving learning transfer in organizations. San

Francisco: Jossey-Bass and Pfeiffer.

Holton, E. F., III, Bates, R. A., Bookter, A., & Yamkovenko, V. B. (2007). Convergent and

divergent validity study of the learning transfer systems inventory. *Human Resource

Development Quarterly, 18*(3), 385-419.

Holton, E. F., Bates, R. A., & Ruona, W. E. A. (2000). Development of a generalized learning transfer system inventory. *Human Resource Development Quarterly*, *11(4),* 333-360.

Holton, E. F., Bates, R. A., Seyler, D. L., & Carvalho, M. A. (1997). Toward construct validation of a transfer climate instrument. *Human Resource Development Quarterly*, *8*(2), 95-113.

Hutchins, H., Nimon, K., Holton, E., & Bates, R. (2012). Assessing learning transfer system factors and transfer of training: A survey of law enforcement personnel. *Proceedings of the Human Resource Development 2012 International Conference* (pp. 803-812). Knoxville, TN: AHRD.

Hwang, A. S. (2003). Training strategies in the management of knowledge. *Journal of Knowledge Management, 7*(3), pp. 92-104.

Johnson, D. W., & Johnson, F. P. (1982). *Joining together* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Klein, H. J., Noe, R. A., & Wang, C. (2006). Motivation to learn and course outcomes: The impact of delivery mode, learning goal orientation, and perceived barriers and enablers. *Personnel Psychology, 59*, 665-702.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice Hall.

Kouzes, J. M. & Posner, B. Z. (eds.). (2004). Christian Reflections on the Leadership Challenge. San Francisco: Jossey-Bass.

Kraiger, J., Ford, K. J., & Salas, E. (1993). Application of cognitive, skill-based, and affective theories of learning outcomes to new methods of training evaluation. *Journal of Applied Psychology, 78*(2), 311-329.

Lawler, P. A. (1991). *The keys to adult learning: Theory and practical strategies.* Philadelphia: Research for Better Schools.

Lencioni, P. (2004). Reflections on challenge the process. In J. M. Kouzes & B. Z. Posner

(Eds.), Christian Reflection on the Leadership Challenge. (pp. 71-81). San Francisco:

Jossey-Bass.

Lewin, K. (1946). *Field theory in social science*. New York: Harper and Row.

Lim, D. H., & Morris, M. L. (2006). Influence of trainee characteristics, instructional

satisfaction, and organizational climate on perceived learning and training transfer.

Human Resource. Development Quarterly, 17(1), 85-115.

Mager, R. F. (1984). *Preparing instructional objectives.* Belmont, CA: David S. Lake

Publishers.

Maurer, T. J., Weiss, E. M., & Barbeite, F. G. (2003). A model of involvement in work-related

learning and development activity: The effects of individual, situational, motivational,

and age variables. *Journal of Applied Psychology*, *88*(4), 707-724.

Maxwell, J. C. (1995). *Developing the Leaders Around You*. Nashville: Thomas Nelson

Maxwell, J. C. (2007). *The 21 Irrefutable Laws of Leadership.* (10th Anniversary ed.) Nashville:

Thomas Nelson.

Merriam, S. B (2001). Andragogy and self-directed learning: Pillars of adult learning theory.

New Directions for Adult & Continuing Education, 89 pp. 3-14

Noe, R. A. (1986). Trainees' attributes and attitudes: Neglected influences on training

effectiveness. *Academy of Management Review*, *11*(4), 736-749.

Noe, R. A., (2001). *Employee development* (2nd ed.). New York: McGraw Hill.

Noe, R. A., & Schmitt, N. (1986). The influence of trainee attitudes on training effectiveness:

Test of a model. *Personnel Psychology*, *39*, 497-523.

Nunnally, J. C., & Bernstein I. H. (1994). *Psychometric theory (3*rd ed.*)*. New York: McGraw-

      Hill.

Ortberg, N. (2004). Reflections on enable others to act. In J. M. Kouzes & B. Z. Posner (Eds.),

      Christian Reflection on the Leadership Challenge. (pp. 85-98). San Francisco: Jossey-

      Bass.

Osborne, J. W., & Waters, E. (2002). Four assumptions of multiple regression that researchers

      should always test. *Practical Assessment, Research & Evaluation, 8*(2)*.* Retrieved

      5/20/12 from http://ericae.net/pare/getvn.asp?v=8&n=2

Peters, V., Vissers, G., & Heijne, G. (1998). The validity of games. *Simulation & Gaming,

      29*(1), 20-30.

Piaget, J. (1951). *Dreams and limitations in childhood*. New York: Norton.

Quanjel, M., Willems, A. J., & Talen, A. N. (1998). CRISISLAB: Evaluation and improvement

      of crisis management through simulation/gaming. *Simulation & Gaming, 29*(4), 450-455.

Rogers, C. A. (1964). Toward a modern approach to values: The valuing process in the mature

      person. *Journal of Abnormal and Social Psychology, 63*(2), 601-667.

Rosenorn, T., & Kofoed, L. B. (1998). Reflection in learning processes through

      simulation/gaming. *Simulation & Gaming,* 29(4), 432-440.

Rouiller, J. Z., & Goldstein, I. L. (1993). The relationship between organizational transfer

      climate and positive transfer of training. *Human Resource Development Quarterly*, *4*,

      377-390.

Saks, A. M., & Belcourt, M. (2006). An investigation of training activities and transfer of

      training organizations. *Human Resource Management, 45*(4), 629-648.

Seyler, D. L., Holton, E. F., III, Bates, R. A., Burnett, M. F., & Carvalho, M. A. (1998). Factors affecting motivation to transfer training. *International Journal of Training and Development, 2*(1), 2-16.

Shaffer, D. W. (2004). Pedagogical practice: The professions as models for post-industrial education. *Teachers' College Record, 106*(7), 1401-1421.

Shaffer, D. W. (2005). Epistemic games. *Innovate 1*(6). Retrieved from
http://www.innovateonline.info/pdf/vol1_issue6/Epistemic_Games.pdf

Skinner, B. F. (1987). *Upon further reflection.* Englewood Cliffs, NJ: Prentice Hall.

Squire, K. (2005). Changing the game: What happens when video games enter the classroom? *Innovate Online-Journal, 1*(6). Retrieved from
http://www.innovateonline.info/index.php?view=article&id=82

Stokes, A. F., Kemper, K., & Kite, K. (1997). Aeronautical decision making, cue recognition, and expertise under time pressure. In C. E. K. Zsambok and G. Klein (Eds.), *Naturalistic decision making* (pp. 183-196). Mahwah, NJ: Erlbaum.

Tannenbaum, S. I., & Yuki, G. (1992). Training and development in work organizations. *Annual Review of Psychology, 43,* 399-441.

Tracey, J. B., Tannenbaum, S., & Kavanagh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, *80*(2), 239-252.

Velada, R., Caetano, A., Bates, R., & Holton, E. (2009). Learning transfer − validation of the learning transfer system inventory in Portugal. *Journal of European Industrial Training*, *33*(7), 635-656.

Wenzler, I. (2009). The ten commandments for translation simulation results into real-life

　　　performance. *Simulation & Gaming, 40*(1), 98-109.

Yoo, Y. J., Lim, K. Y., & Park, S.Y. (2011). Investigating the structural relationships among

　　　organizational support, learning flow, learners' satisfaction and learning transfer in

　　　corporate e-learning. *British Journal of Educational Technology*, *42*(6), 973-984.

Yorks, L., O'Neil, J., Marsick, V. J., Lamm, S., Kolodny, R., & Nilson, G. (1998). Transfer of

　　　learning from an action reflection learning program. *Performance Improvement*

　　　Quarterly, 11(1), 59-73.