

2004

Construct validation of an Arabic version of the Learning Transfer System Inventory for use in Jordan

Samer Abdelkarim Khasawneh

Louisiana State University and Agricultural and Mechanical College, skhasa1@lsu.edu

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_dissertations



Part of the [Human Resources Management Commons](#)

Recommended Citation

Khasawneh, Samer Abdelkarim, "Construct validation of an Arabic version of the Learning Transfer System Inventory for use in Jordan" (2004). *LSU Doctoral Dissertations*. 3856.

https://digitalcommons.lsu.edu/gradschool_dissertations/3856

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Doctoral Dissertations by an authorized graduate school editor of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.

**CONSTRUCT VALIDATION OF AN ARABIC VERSION OF THE
LEARNING TRANSFER SYSTEM INVENTORY FOR USE IN JORDAN**

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The School of Human Resource Education and
Workforce Development

by
Samer Abdelkarim Khasawneh
B.S., Yarmouk University, 1991
M.S., Central Michigan University, 1998
August, 2004

Dedicated to my parents (Abdel-karim Saleh Khasawneh and Fathia Mahmoud Athamneh), sisters, and brothers

ACKNOWLEDGEMENTS

This dissertation represents years of hard work on my part, but many more years of support and encouragement by some very exceptional people including family, mentors, friends and colleagues.

I am especially grateful to my parents, Abdel-Karim Saleh Khasawneh and Fathia Mahmoud Athamneh, my sisters (Summer, Lana, Faten, Heba, Lara, and Rasha) and my brothers (Thair and Mohammad) for their prayers, love and support.

I would like to express my sincere gratitude to my dissertation committee chair, Dr. Reid A. Bates, for his timely, indispensable support, and his extraordinary friendship, and much appreciation goes to my committee members, Dr. Michael F. Burnett, Dr. Satish Verma, Dr. Christine Distefano, and Dr. Kaustuv Roy for their guidance and support.

Finally, I would like to thank all my friends and colleagues at Louisiana State University especially those from the school of Human Resource Education.

TABLE OF CONTENTS

| | |
|--|-----|
| DEDICATION..... | ii |
| ACKNOWLEDGEMENTS | iii |
| LIST OF TABLES..... | vii |
| LIST OF FIGURES..... | x |
| ABSTRACT | xi |
| CHAPTER 1 INTRODUCTION | 1 |
| Rationale for the Study | 2 |
| Description of the LTSI | 4 |
| Importance of the Study..... | 5 |
| Problem Statement..... | 6 |
| Research Questions..... | 6 |
| CHAPTER 2 LITERATURE REVIEW..... | 8 |
| Training-Learning Transfer in the Workplace..... | 8 |
| Types of Transfer..... | 9 |
| Factors Affecting Training Transfer..... | 10 |
| Environmental Factors..... | 13 |
| Motivational Factors..... | 15 |
| Ability Factors..... | 17 |
| Secondary Influences..... | 19 |
| Development of the LTSI..... | 21 |
| Development and Construct Validation of the LTSI..... | 21 |
| The Learning Transfer System Inventory (LTSI) Revisions..... | 24 |
| Cross-Cultural Construct Validation of the LTSI..... | 26 |
| Convergent and Divergent Validation of the LTSI..... | 29 |
| Criterion-Related Validation of the LTSI..... | 31 |
| The Domain of Learning Transfer and Organizational Learning..... | 35 |
| Translation of Materials for Cross-Cultural Research..... | 38 |
| The Translation Process..... | 40 |
| Summary..... | 45 |
| CHAPTER 3 RESEARCH METHODOLOGY..... | 46 |
| Study Design..... | 46 |
| Population and Sample..... | 46 |
| Protection of Human Subjects..... | 47 |
| Instrumentation..... | 48 |
| Instrument Translation Process..... | 50 |

| | |
|---|-----|
| Data Collection Procedures | 53 |
| Data Analysis Procedures | 54 |
| Research Question One..... | 54 |
| Research Questions Two and Three | 58 |
| Research Question Four | 61 |
| | |
| CHAPTER 4 ANALYSIS OF RESULTS | 63 |
| Demographic Profile..... | 63 |
| Gender of Respondents | 63 |
| Age of Respondents | 63 |
| Educational Level of Respondents..... | 64 |
| Years of Experience in the Current Organization..... | 65 |
| Types of Training Attended..... | 65 |
| Choice of Training of Respondents | 66 |
| Sector of Organization of Respondents | 66 |
| Task of Organization for Respondents | 67 |
| Research Question One..... | 68 |
| Training-Specific Domain | 70 |
| Training-in-General Domain | 78 |
| Summary for Research Question One..... | 83 |
| Research Questions Two and Three | 86 |
| Gender..... | 87 |
| Age..... | 88 |
| Level of Education..... | 89 |
| Years of Experience..... | 91 |
| Types of Training..... | 93 |
| Choice of Training..... | 96 |
| Sector of Organization..... | 98 |
| Task of the Organization..... | 100 |
| Summary for Research Questions Two and Three | 104 |
| Research Question Four..... | 105 |
| Descriptive Statistics..... | 106 |
| Regression Analysis..... | 109 |
| Overall Organizational Learning Measure..... | 109 |
| Knowledge Indeterminacy | 112 |
| Learning Latitude..... | 114 |
| Organizational Unity..... | 117 |
| Innovation | 119 |
| Summary for Research Question Four..... | 122 |
| | |
| CHAPTER 5 DISCUSSION..... | 124 |
| Construct Validation | 124 |
| The Learning Transfer System and Group Differences | 128 |
| Individual Differences | 128 |
| Situational Differences..... | 130 |
| The Learning Transfer System and Organizational Learning..... | 133 |

| | |
|---|-----|
| Recommendations for Future Research | 135 |
| REFERENCES | 139 |
| APPENDIX | |
| A FACT SHEET, LEARNING TRANSFER SYSTEM INVENTORY (LTSI), ORGANIZATIONAL LEARNING SCALES, AND DEMOGRAPHIC VARIABLES | 150 |
| B LTSI SCALE DEFINITIONS AND DESCRIPTIONS | 163 |
| C OBJECTIVE EVALUATION INSTRUMENT FOR THE ORIGINAL LTSI ITEMS AND THE BACK-TRANSLATED ITEMS | 169 |
| D RESULTS OF THE OBJECTIVE EVALUATION | 183 |
| E ARABIC TRANSLATION OF THE FACT SHEET, LTSI ITEMS, ORGANIZATIONAL LEARNING ITEMS, AND DEMOGRAPHIC VARIABLES | 190 |
| F BEGINNING AND ENDING COMMUNALITIES FOR ITEMS OF THE TRAINING-SPECIFIC SECTION, TRAINING-IN-GENERAL SECTION AND ORGANIZATIONAL LEARNING SECTION..... | 202 |
| G LETTER OF PERMISSION..... | 206 |
| VITA | 208 |

LIST OF TABLES

| | |
|--|----|
| Table 1. Definitions of Organizational Transfer Climate Variables..... | 22 |
| Table 2. LTSI Scale Definitions, Loadings, and Reliability Coefficients | 25 |
| Table 3. LTSI Instrument Development | 28 |
| Table 4. Summary of the LTSI Criterion Validity Studies..... | 35 |
| Table 5. Objective Evaluation of Instrument Equivalency..... | 53 |
| Table 6. Sample Description by Gender | 63 |
| Table 7. Sample Description by Age | 64 |
| Table 8. Sample Description by Educational Level..... | 64 |
| Table 9. Sample Description by Work Experience in Years | 65 |
| Table 10. Sample Information by Types of Training | 65 |
| Table 11. Sample Information by Choice of Training..... | 66 |
| Table 12. Sample Information by Sector of the Organization | 67 |
| Table 13. Sample Information by Task of the Organization | 67 |
| Table 14. Factor Loadings for the Training-Specific Domain..... | 74 |
| Table 15. Factor Correlation Matrix for the Training-Specific Domain | 78 |
| Table 16. Factor Loadings for the Training-in-General Domain..... | 81 |
| Table 17. Factor Correlation matrix for the Training-in-General Domain..... | 82 |
| Table 18. Factor and Item Comparisons between the ALTSI and the LTSI | 83 |
| Table 19. Means, Standard Deviations, Coefficient Alpha, and Intercorrelations for the ALTSI..... | 85 |
| Table 20. Multivariate Tests of Significance, Effect Size, and Power for Gender..... | 88 |
| Table 21. Multivariate Tests of Significance, Effect Size, and Power for Age Groups | 89 |
| Table 22. Multivariate Tests of Significance, Effect Size, and Power for Educational Levels..... | 90 |

| | |
|---|-----|
| Table 23. Univariate F-Tests Results for the 16 ALTSI Factors across Levels of Education | 90 |
| Table 24. Post Hoc Comparisons across Levels of Education..... | 91 |
| Table 25. Multivariate Tests of Significance, Effect Size, and Power for Years of Experience ... | 92 |
| Table 26. Univariate F-Tests Results for the 16 ALTSI Factors across Years of Experience | 93 |
| Table 27. Post Hoc Comparisons across Years of Experience | 93 |
| Table 28. Multivariate Tests of Significance, Effect Size, and Power for Types of Training..... | 94 |
| Table 29. Univariate F-Tests Results for the 16 ALTSI Factors across Types of Training | 95 |
| Table 30. Post Hoc Comparisons across Types of Training | 95 |
| Table 31. Multivariate Tests of Significance, Effect Size, and Power for choice of Training | 97 |
| Table 32. Univariate F-Tests Results for the 16 ALTSI Factors across Choice of Training..... | 97 |
| Table 33. Mean and Standard Deviation for Choice of Training | 98 |
| Table 34. Multivariate Tests of Significance, Effect Size, and Power for Sector of Organization..... | 99 |
| Table 35. Univariate F-Tests Results for the 16 ALTSI Factors across Sector of Organization..... | 100 |
| Table 36. Mean and Standard Deviation for Sector of Organization | 100 |
| Table 37. Multivariate Tests of Significance, Effect Size, and Power for Task of the Organization..... | 101 |
| Table 38. Univariate F-Tests Results for the 16 ALTSI Factors across Task of the Organization..... | 102 |
| Table 39. Post Hoc Comparisons across Task of the Organization..... | 102 |
| Table 40. Correlation Table for the Organizational Learning Measures and the ALTSI Factors | 108 |
| Table 41. Multiple Regression Analysis of an Overall Measure of Organizational Learning | 110 |
| Table 42. Hierarchal Multiple Regression Analysis of an Overall Measure of Organizational Learning | 111 |

| | |
|--|-----|
| Table 43. Multiple Regression Analysis of Knowledge Indeterminacy | 112 |
| Table 44. Hierarchal Multiple Regression Analysis of Knowledge Indeterminacy | 113 |
| Table 45. Multiple Regression Analysis of Learning Latitude..... | 115 |
| Table 46. Hierarchal Multiple Regression Analysis of Learning Latitude..... | 116 |
| Table 47. Multiple Regression Analysis of Organizational Unity..... | 117 |
| Table 48. Hierarchal Multiple Regression Analysis of Organizational Unity..... | 118 |
| Table 49. Multiple Regression Analysis of Innovation | 119 |
| Table 50. Hierarchal Multiple Regression Analysis of Innovation | 121 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1. Conceptual Model of Instrument Constructs..... | 12 |
| Figure 2. Brislin's Original Translation Model | 43 |

ABSTRACT

Organizations in Jordan have invested heavily in employee training. However, these training efforts may not be as effective. One area of particular interest is learning transfer, or the extent to which learning from training is applied on the job. Recent research efforts have led to the development of the Learning Transfer System Inventory (LTSI), the only valid and reliable measure of key transfer system factors. This study validated the constructs of the LTSI for use in Jordan. By doing so, HRD practitioners in Jordan can use such instrument to diagnose early problems with learning transfer, the key to training effectiveness and individual performance.

The LTSI was translated through a rigorous cross-cultural translation process which involved forward and back translations, pilot testing, and the establishment of equivalency using objective measures of evaluation. The ALTSI was administered to 500 employees employed by 28 public and private sector organizations operating in Jordan who have attended nine different types of training. Responses were received from 450 employees with a response rate of 90%. The results showed that 18 factors were valid for use in Jordan. The reliabilities of these factors ranged from .70 to .87 with the exception of three factors.

The study also investigated the perceptions of transfer system characteristics across selected individual variables (gender, age, levels of education, and years of experience) and situational variables (types of training, choice of training, sector of the organization, and task of the organization). The results suggested that the learning transfer system perceptions differed across the individual variables (except for gender and age) and the situational variables. Private organizations and the technical sector appeared to have the strongest transfer system. Moreover, employees were more prone toward voluntary training.

Finally, the study established the relationship between the learning transfer system domain and the organizational learning domain, thus expanding their nomological network. The learning transfer systems explained a significant portion of the total variance in each measure of organizational learning. Results suggested that higher levels of learning transfer were associated with higher levels of organizational learning.

CHAPTER 1

INTRODUCTION

The present study is exploratory in nature with the primary purpose of validating and constructing an Arabic version of the Learning Transfer System Inventory (LTSI) for use in the country of Jordan and other Arabic-speaking countries. The LTSI is used as an evaluation and diagnostic tool to uncover the factors that affect transfer of learning in organizations. This in turn is expected to result in effective training and improved individual and organizational performance. The LTSI was chosen because it is a theoretically and psychometrically sound instrument that has shown evidence of cross-cultural factor validity. The LTSI has been translated and used in two different cultural contexts. It has been used in organizations in Taiwan (Chen, 2003) and Thailand (Yamnill, 2001). Moreover, the LTSI was tested with over 5000 subjects in the United States (U. S.) and has shown evidence of reliability as well as construct validity, criterion validity, convergent validity, and divergent validity (Bates, 1997; Bates, 2001; Bates, Holton, Seyler, & Carvalho, 2000; Bookter, 1999; Holton, Bates, & Ruona, 2000; Holton, Bates, Seyler, & Carvalho, 1997; Ruona, Leimbach, Holton, & Bates, 1999; Seyler, Holton, Bates, Burnett, & Carvalho, 1998). Validation of the LTSI in this study will advance learning transfer research in Jordan and other Arabic speaking countries where such research is almost non-existent. With an Arabic version of the LTSI, organizations in these countries will be able to diagnose early problems with learning transfer which can provides us with important insights into potential catalysts and barriers to training effectiveness. Understanding and improving training will ultimately advance organizational performance, the driving engine for the economy of Jordan.

Rationale for the Study

The world has become a globalized economic system, where countries with high levels of technology, finance, and information have more advantages in controlling the different sources of human capital, raw materials, and product development and distribution. Jordan, a small but strategic country, is plugged into the world economic system by privatizing its economy to attract foreign investments and is pursuing further steps in developing human capital in both private and public sectors (Central Bank of Jordan, 1994). It is doing so by strengthening and improving the education system, and establishing various institutions within the country for the sole purpose of employee training in various fields and disciplines, including vocational, trade, agricultural, education, technological, and other professional careers. Human Resource Development (HRD) in Jordan leads to the economic development of the whole nation and plays an essential role in the development of the countries surrounding Jordan (Central Bank of Jordan, 1994).

In Jordan, the HRD process operates within the domains of economic, social, political, and cultural values. It is concerned with developing and nurturing the workforce supply elements (i. e., all levels of formal and non-formal education systems, technical and vocational workers, dropouts, expatriate workers, and repatriate workers) and competency upgrading, performance improvement, and professional mobility and advancement. It strives to develop and nurture the workforce demand elements (i. e., adaptation to local, regional, and international labor market needs due to social and economic changes) while taking into consideration the various technological needs of the nation, such as information systems and data bases, to better link supply and demand elements. The HRD profession in Jordan also strives to be a knowledge-driven profession as evidenced by its efforts to link practice with research (Masri, 1998).

HRD has played an important role in maintaining a stable economic status for Jordan during the Gulf War crises (Neff, Wall, & Reynolds, 1992), which dramatically affected its neighboring countries. Jordan is determined to integrate its economy with the rest of the world and realizes that the competence and performance of the private sector is the engine behind such a move. To this end, Jordan has taken positive steps toward gaining a free trade agreement with the World Trade Organization (Business & Investment in Jordan, 1995) and has entered into a free trade treaty with the U.S. (Jordan Economics, 2001).

Jordanian organizations, like organizations throughout the Middle East, have invested heavily in the training and development of their employees. For example, organizations in the Middle East spend more than twice on training per employee (\$783) than do organizations in Latin America (\$311). This level of investment per employee is also substantially higher than the overall world average (\$630) (ASTD, 2002). It is expected that Jordanian organizations (compared to other organizations operating in the Middle East region) invest the most in employee training because of the skills and expertise of its professional and blue-collar workforce. For example, Jordan exports more than 300, 000 skilled, highly educated workers to neighboring Arab countries (Masri, 1998). In short, Jordanian organizations – as with U. S. organizations – see investment in training activities as critical for continuously improving individual job performance and overall organizational success.

Jordan, however, may not be immune to the ‘transfer problem’- or the discrepancy between what is learned in training and the extent to which that learning is ultimately used on the job – that has plagued many organizations in the U.S. and elsewhere. Many (Holton et al., 2000; Holton et al., 1997) believe that much of the discrepancy between learning and application can be attributed to a lack in the ability to assess, measure, diagnose, and understand the complex set

of factors that make up learning transfer systems. However, little research on training effectiveness has been undertaken in Jordan. Ability to assess transfer and transfer-related factors would provide more complete understanding of training effectiveness in Jordanian organizations. Accurate assessment is critical if organizations are to realize the full benefit from training investments. Finally, the development of a well-validated set of transfer scales is a key requirement. To date, however, no such measurement tools exist for countries and cultures outside the U. S.

The validation of the LTSI in Jordan will provide organizations in the Middle East with a tool that can improve training effectiveness by identifying the system of variables which influence the transfer of learning from the training environment to the work environment. Researchers from the School of Human Resource Education at Louisiana State University have developed and tested the LTSI, currently the only validated instrument available that measures a comprehensive set of learning transfer system factors.

Description of the LTSI

The LTSI can be used in multiple ways to improve training transfer in organizations. According to Holton et al. (2000), the LTSI can be used before training as a diagnostic tool to discover unknown and potential transfer problems and identify leverage points for change. It can be used as an evaluative tool following training to obtain additional information about why a training program did or did not work. The LTSI is also valuable as a diagnostic tool for investigating known transfer of training problems; as a means for targeting interventions designed to enhance transfer; as a mechanism for incorporating evaluation of transfer into regular employee assessments; and as an assessment tool to identify knowledge and skills needed by supervisors and trainers to support learning transfer. In particular, the LTSI can help us

identify the factors that contribute to the success of training transfer and further identify potential weaknesses in a particular work setting that have contributed to the failure of training.

The LTSI was developed by Holton and Bates (2002) and it is based on the Conceptual Evaluation and Measurement Model of Learning Transfer developed by Holton (1996). The LTSI includes 16 constructs that influence transfer. These 16 constructs represent two distinct domains. The training specific realm, with 11 constructs, includes constructs believed to influence a specific training session or intervention (program-specific). These include: learner readiness, motivation to transfer learning, personal outcomes-positive, personal outcomes-negative, personal capacity for transfer, peer support, supervisor/manager support, supervisor/manager sanctions, perceived content validity, transfer design, and opportunity to use learning. The second domain includes more general, less program-specific factors that may influence any or all types of training being conducted. These factors include transfer of effort-performance expectations, performance-outcomes expectations, resistance/openness to change, performance self-efficacy and feedback/performance coaching.

Importance of the Study

The present study will extend previous research done with the LTSI by conducting a cross-cultural validation of an Arabic version of the LTSI (ALTSI) in Jordan and exploring how the constructs measured by the ALTSI vary across organizations and are associated with other factors. This research is important because creating an Arabic version of the LTSI will enable researchers in Jordan to investigate the factors that influence transfer and to more fully evaluate the effectiveness of training. It is hoped that research such as this will draw attention to the importance of transfer in the viability of organizations and the economy as a whole in Jordan and spur greater intent and effort in understanding training effectiveness. For example, a cross-

culturally validated set of transfer system scales with known or acceptable psychometric qualities will facilitate meaningful study of learning transfer in organizations working in Arabic cultures, and will help those organizations assess transfer systems, develop interventions to enhance learning transfer, and ultimately improve organizational performance. In addition, a validated ALTSI scale will facilitate the study of learning transfer across cultures and the cross-organizational comparisons of learning transfer systems.

Problem Statement

Jordan and other Middle Eastern countries are investing heavily in employee training. This training is expected to improve both individual and organizational performance. It will not do so, however, unless what is learned in training is used on the job. Unfortunately, virtually no research in Jordan or the Middle East has been directed at understanding and improving learning transfer systems. Improving the learning transfer systems in organizations in Jordan requires the ability to accurately measure and diagnose the strengths and weaknesses of those systems. To date, no such measurement tool exists. Therefore, the purpose of this study is to develop a valid and reliable Arabic version of the LTSI for use in Jordan.

Research Questions

The present study will address the following research questions:

1. Will exploratory factor analysis of the ALTSI result in an interpretable factor structure consistent with the original LTSI factor structure?
2. Do individual perceptions of all the ALTSI factors differ systematically across participant demographic characteristics including gender, age, level of education, and years of experience in the current organization?

3. Do individual perceptions of all the ALTSI factors differ systematically across types of training, choice of training, sector of the organization (public vs. private), and task of the organization (e.g., manufacturing, high-tech, banking, and insurance)?
4. Do learning transfer system factors explain a significant portion of the variance in organizational learning characteristics in Jordanian organizations? This research question included two types of analyses:
 - (a) Do learning transfer system factors explain a significant portion of the variance in an overall measure of organizational learning?
 - (b) Do learning transfer system factors explain a significant portion of the variance in individual facets of organizational learning including knowledge indeterminacy, learning latitude, organizational unity, and innovation?

CHAPTER 2

LITERATURE REVIEW

The literature review for this study is organized in five sections. The first section discusses literature on training transfer, types of transfer and factors affecting transfer. The second section reviews the development of the LTSI. The third section discusses the validation studies pertaining to the LTSI. The fourth section discusses the relationship between learning transfer and organizational learning. The final section reviews cross-cultural materials for translation and methods of translation.

Training-Learning Transfer in the Workplace

The literature has used various terms besides learning transfer, such as “transfer” and “training transfer”, to conceptualize the same meaning. Learning transfer is defined as the degree to which trainees effectively transfer and apply the Knowledge, Skills, and Attitudes (KSAs) gained in the training environment to the work environment (Tannenbaum & Yukl, 1992). Learning transfer in the work place is concerned with how organizational members apply, generalize, and maintain work-related behavior changes that result from training. Transfer of training takes place whenever learned KSAs affect job performance.

Training transfer is an important area of research in human resource and leadership development because, in the global economy, an organization’s investment in training activities are aimed at improving employee job performance, and represents an enormous financial expenditure. In the U.S. alone, organizations spend more than \$400 billion on employee training (Holton et al., 1997). However, despite this high level of expenditure, only about 10% is projected to payoff in improved work performance resulting from the transfer of learning to the

job (Garavaglia, 1993). This issue of lack of transfer has encouraged HRD professionals and scholars to investigate the reasons behind such a discrepancy.

Types of Transfer

The issue of learning transfer is complex and multidimensional in nature. The literature suggested different types of transfer. For example “transfer distance”, a concept suggested by Laker (1990) refers to “near transfer” and “far transfer”. When a trainee applies what is learned from training to job situations similar to the training content, it is called near transfer, while if trainees apply what is learned to job situations different from the training content, then it is called far transfer. According to Holton and Baldwin (2000) near transfer represent short term results (our primary concern) while far transfer refers to long term transfer similar to generalization of learning construct suggested by Baldwin and Ford (1988). Transfer can also be classified as positive (facilitating job performance) and negative (inhibiting job performance) (Cormier & Hagman, 1987). Moreover, Royer (1979) characterized transfer as specific and non-specific, literal and figural. Specific transfer refers to a situation where there is a clear similarity between stimulus in the original learning and stimulus elements in the transfer learning (content dependent). The learner then will have the ability to detect those shared elements and will therefore lead to quicker acquisition of the transfer task. In nonspecific transfer, shared elements do not exist (content independent). Literal transfer involves transferring intact skill to a new learning task, while figural transfer involves using our own thinking as a tool to think about problems or learning about a particular issue.

Other types of generalization such as vertical and lateral transfer are equally important in understanding the transfer process. According to Gagne (1970), vertical transfer occurs when a skill contributes to the acquisition of another skill or knowledge (e.g., performance of a task at a

more advanced level of complexity than the task learned). Lateral transfer is defined as “a kind of generalization that spreads over a broad set of situations at roughly the same level of complexity” (p. 231). Finally, transfer is seen as having elements of time such as the differentiation between initiating transfer (the trainee first attempts to apply learning) and maintenance of transfer (persistence of trainees in applying learning) (Laker, 1990).

The distinction between these types of transfer characterizes the multidimensional nature of transfer and has several implications for understanding the transfer process. For example, training that emphasizes the acquisition of specific technical skills applicable to the job are more concerned with near transfer (Laker, 1990). The design for this type of training may be behavioral in nature and the degree of transfer may be more influenced by system factors (e.g., similarity of task between the training environment and the work environment) rather than personal factors such as motivation. However, management development training may emphasize far transfer because such training depends on interpersonal interactions, and it is more a function of personal factors rather than system factors. Therefore, variations in training content and training objectives influence which dimensions of transfer will be emphasized, all of which can network with a broad range of other variables (e.g., environment factors, motivation factors) to affect training outcomes.

Factors Affecting Training Transfer

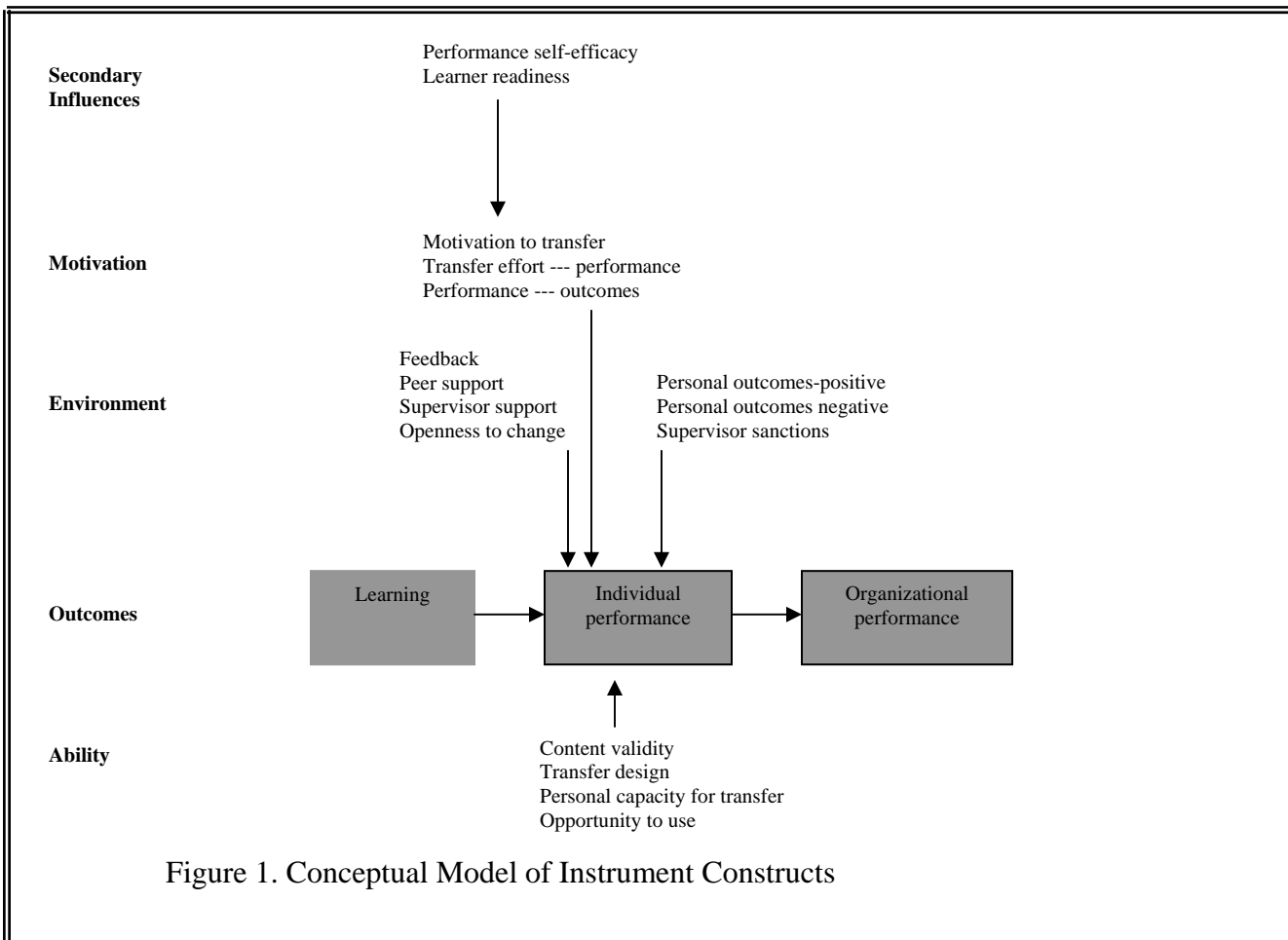
There has been a plethora of research on the factors that influence the transfer process. A comprehensive study by Baldwin and Ford (1988) reviewed previous literature on learning transfer and proposed that learning transfer is a function of three general factors. These factors included training design (learning principles, training sequencing, and training content validity), trainee characteristics (ability, motivation, and personality) and the work environment

(supervisor and peer support, and the opportunity to apply learned skills on the job) all of which influence an individual's ability to maintain and generalize their learned behavior on the job.

Indeed, training transfer is complex and is influenced by a variety of factors both in a direct and indirect ways. Despite this belief, much of the transfer research has focused on studying only specific factors that influence transfer of training rather than studying a whole set of factors in combination. For example, Matheieu and Zajac (1990) found that trainees who had high levels of motivation performed at higher rates and learned more than those trainees who had lower levels of motivation. Ford, Quinones, Segó, and Sorra (1992) found a positive correlation between the trainee's level of self-efficacy and transfer and job performance. Xiao (1996) found that supervisor support explained significant partial variance in self-reported measures of learning transfer. Finally, Gielen (1995) found that the trainee's self-efficacy and supervisory support accounted for 23% of the variance in the opportunity to perform.

Other researchers, however, believe that a systems view of training transfer is a more useful approach because of the importance of examining a variety of factors that interact together to influence training transfer (Kozlowski & Salas, 1997; Mathieu, Martineau, & Tannenbaum, 1993). For example, Holton et al. (2000) conceptualized a model of training transfer (see Figure 1), which included a whole set of transfer factors. The conceptual transfer model recognizes that transfer is influenced by a system of factors (the learning transfer system). This system includes factors such as interpersonal support for transfer, reward systems, personal characteristics, motivational influences, and training design elements. HRD practitioners and researchers wishing to improve learning transfer must be able to diagnose and study this system of factors. To date, the only valid and reliable instrument that measures a comprehensive set of learning transfer was developed by Holton and Bates (2002). The instrument was named the LTSI, and it

has been widely used across different organizations and training types, and has proven to be valid and reliable in diagnosing training transfer.



Note. From "Development of a generalized learning transfer system inventory," by E. F. Holton III, R. A. Bates, & W. E. A. Ruona, 2000, *Human Resource Development Quarterly*, 11, p. 339.

The above model recognizes that learning, individual performance, and organizational performance are primary outcomes of training. Individuals are expected to acquire learning during training. This learning is expected to improve performance on both the individual and organizational levels. Within this model, three classes of factors are believed to be the primary variables that interact to affect the transfer of learning from the training environment to the work environment. These factors are ability of trainees to use KSAs in the job setting, motivation to use KSAs, and work environment supporting use of KSAs. The model also includes secondary

influences (trainee characteristics) that affect learning transfer through their influence on motivation. This model will be used as a framework in reviewing training literature on factors influencing training transfer.

Environmental Factors.

A review of current training literature (Baldwin & Ford, 1988; Bunch, 2001; Ford, Kozlowski, Kraiger, Salas, & Teachout, 1997; Kozlowski & Hults, 1987; Richman-Hirsch, 2001; Rouiller & Goldstein, 1993; Tracey, Tannenbaum & Kavanagh, 1995) suggests that work environments can have a powerful impact on the extent to which newly acquired KSAs are used on the job. In general, research suggests that a post-training environment can either encourage or discourage the application of newly acquired skills on the job (Richman-Hirsch, 2001). The more positive the organizational transfer climate (e.g., more supportive context, especially from supervisors in the form of reinforcement and feedback), the more likely the employees will use the skills on the job (Richman-Hirsch, 2001; Rouiller & Goldstein, 1993). The more negative the organizational transfer climate (e.g., task constraints), the less likely trainees will be motivated to transfer and apply learned KSAs on the job (Noe & Schmitt, 1986).

Characteristics of the work environment including the level and type of support (supervisory and peer support) (Ford & Quinones, 1992; Quinones & Ford, 1995) have been recognized as some of the most important work environment factors influencing the transfer process. Researchers have recognized the importance of the supervisor's role in training transfer, and have classified it as the most influential variable (Xiao, 1996) because "most employees work hard to determine exactly what their boss expects and then strive to meet those expectations" (Georgenson, 1982, p. 75). Moreover, supervisor support can be classified as either supportive or non-supportive. Holton et al. (2000, 1997) suggest there are occasions in

which supervisors actively oppose employee use of new learning. Such behavior has been found to be negatively correlated with transfer. For example, Fleishman (1955) found that those supervisors who received training on how to be more caring of their employees were not successful at applying what they have learned. Follow-up interviews revealed that the reason for such failure was because supervisors of the trained managers were not supportive of the goals of the training.

Ford et al. (1992) also found that after technical training was provided for United States (U. S.) Air Force aviators, trainees had different opportunities to perform what they learned on the job. Further investigation revealed that supervisory and peer support had a substantial influence on trainees' access to opportunities for using new learning. Xiao (1996) studied learning transfer in four electronic companies in China. Organizational factors such as supervisor and peer support were the most influential in predicting transfer of training, explaining 12% of the variance in transfer. Brinkerhoff and Montesino (1995) investigated the influence of management support on the transfer and usage of trained skills on the job. The study involved 91 trainees who were divided into two groups: group 1 received management support while group 2 did not receive any support. Results indicated that group 1 had higher "training usage" and had more positive perceptions of transfer in comparison to group 2.

It is well documented that supervisor support is one of the most influential elements in training transfer (Baldwin & Ford, 1988; Tannenbaum & Yukl, 1992). It is the supervisor who controls transfer-related resources and who can and should provide rewards and performance feedback in ways to maintain learning transfer (Baldwin & Ford, 1988; Kozlowski & Salas, 1997).

Norms about change are another work environment factor that can influence learning transfer. For example, openness to change refers to the degree by which the trainees perceive their organization in general and their work group specifically to be open to new ideas and support and invest in change (Donovan, Hannigan, & Crowe, 2001). Bates et al. (2000) investigated the influence of support/openness to change on motivation to transfer of 73 chemical production workers after participating in a computer-based training. The study revealed that change resistance correlated negatively with motivation to transfer ($r = -.36, p < .01$) implying that the higher the degree of resisting changes by the organization (management and work group) the lower the degree of transfer.

In summary, the work environment can have a powerful impact on facilitating or inhibiting learning transfer. Some of the most influential variables in the work environment that influence transfer include supervisory and peer support. Supervisors can be either supportive or non-supportive of new learning. The supervisors also play an important role in maintaining learning on the job through proper rewards and prompt feedback. Finally, the environment of the organization that is open to new ideas and supports and invests in change may facilitate the transfer process.

Motivational Factors.

Another key factor influencing learning transfer is the motivation of trainees to transfer (Noe, 1986; Tannenbaum & Yukl, 1992). Motivation to transfer refers to the direction, intensity, and persistence of effort to acquire new skills from training and apply what is learned on the job (Noe, 1986; Salas & Cannon-Bowers, 2001). Trainees' motivation to transfer and use training is crucial for the effectiveness of training (Baldwin & Ford, 1988; Broad & Newstrom, 1992; Ford & Quinones, 1992; Kozlowski & Salas, 1997; Roe, 1997). As mentioned by Noe (1986)

“trainees are likely to be motivated to transfer new skills to the work situation when they are confident in using the skills; are aware of work situations in which demonstration of the new skills is appropriate; perceive that job performance improvements may likely occur as a result of use of the new skills; and believe that the knowledge and skills emphasized in the training program are helpful in solving work-related problems and frequent job demands” (p. 743).

One of the key motivational variables affecting transfer is trainees’ expectation about learning and learning transfer. Vroom (1964) defines expectancy as the level of effort that people believe will result in a particular outcome. Expectancies have been operationalized under two constructs: effort-performance expectancy (i. e., the expectations that a particular effort will lead to a particular performance) and performance-outcomes expectancy (i. e., the expectations that this action will lead to some type of reward) (Lawler, 1973).

Several studies have established that these motivational elements can have an impact on trainees’ application of new learning on the job. For example, a positive relationship was found between trainees’ expectancy and post training performance (Froman, 1977) and that raising employee expectation about outcomes enhances performance (Eden & Ravid, 1982). In addition, Werner, O’Leary-Kelly, Baldwin, and Wexley (1994) asserted that expectations of trainees about the outcomes of training might influence motivation to learn and subsequent performance. Noe (1986) discussed that trainees will be more motivated to perform well in training if they believe that their effort will lead to performance and that their performance will lead to rewards.

Tannenbaum and Yukl (1992) emphasized the importance of motivation before training (pretraining motivation) and suggested it could be an important factor in learning transfer. For example, Noe and Schmitt (1986) developed a composite measure of pretraining motivation that included three variables (effort-performance expectations, performance-outcome expectations,

and motivation to learn). This composite measure was found to be positively and significantly correlated with learning, and that learning had a significant influence on job performance measures. Similarly, Facticeau, Dobbins, Russell, Ladd, and Kudisch (1995), in a study of 967 public sector managers and supervisors, found that a measure of pretraining motivation was predictive of managers' self-reported training transfer.

In summary, this research suggests, in general, that motivation to transfer is to some degree contingent upon trainees' expectations that their effort would lead to performance and that performance should result in some type of reward.

Ability Factors.

Ability factors refer to those elements that are present in the training and work environment which enable trainees to transfer learning effectively. Training design is one ability element that can contribute to effective training and transfer (Baldwin & Ford, 1988; Tracey, Hinkin, Tannenbaum, & Mathieu, 2001). The training design literature suggests a number of important design elements such as identical elements, general principles, stimulus variability, and various conditions of practice (Baldwin & Ford, 1988; Goldstein & Musicante, 1986) may be important factors in the transfer process. The theory of identical elements suggests for example that the greater the similarity along multiple dimensions between the task as it is learned in training and as it is applied on the job the greater the potential for successful transfer (Thorndike & Woodworth, 1901). General principles include teaching trainees not only skills, but also theoretical principles that underlie the training content (McGee & Thayer, 1961). Stimulus variability proposes that when various relevant training stimuli are employed, then transfer is maximized (Ellis, 1965). As cited in Baldwin and Ford (1988), conditions of practice imply several notions: 1) training should be divided into segments (mass versus distributed

training); 2) practice in sum total, versus practicing with parts of the training material at a time (whole versus part training); 3) providing trainees with information about their performance (feedback); and 4) providing trainees with continuous learning beyond the skills learned and their applicability (overlearning).

More recent scholars (Bates, Holton, & Seyler, 1998) have proposed a training content validity construct as an important training design factor in learning transfer. Content validity refers to the degree to which trainees perceive that training content (KSAs) accurately reflects and meets actual job demands, and that methods and materials used in training content are similar to what is used in the actual job setting (Holton et al., 2000). If trainees perceive that the training program is relevant to their job requirements and performance then their motivation to transfer and practice on the job will be higher (Baldwin & Ford, 1988; Garavaglia, 1993). Research by Bates et al. (2000) found that “the higher the perceived relevance and utility of training program content...the more highly motivated they will be to master that content” (p. 28).

Other strategies such as goal setting, self-management, and relapse prevention have also been suggested as design factors that may have an impact on the transfer process (Bates, 1997; Werner et al., 1994). Goal setting is the process of setting specific, hard goals to meet some performance objectives (Locke, 1968). Self-management is defined as a process where trainees are taught how to deal with various incentives, responses, and consequences to achieve their personal outcomes (Luthans & Davis, 1979). Relapse prevention is a strategy used to provide help for trainees to understand the process of relapse for the purpose of not going back to the unwanted behavior which in turn enhances transfer (Wexley & Baldwin, 1986).

Design factors such as these have been included in a construct that Holton et al. (2000) call transfer design. Transfer design is defined as “the degree to which training has been

designed and delivered to give trainees the ability to transfer learning to the job” (p. 334). The inclusion of transfer design elements is important for learning transfer because these elements enhance trainees’ ability to retain, use, and apply knowledge on the job.

The opportunity to use tasks learned during training on the job is another ability element that can have a direct effect on transfer (Baldwin & Ford, 1988). The literature shows that the lack of opportunity to perform learned tasks is related to performance decrements (Ford & Quinones, 1992). If trainees are not allowed to practice with trained skills on the job then their training and transfer will be ineffective (Noe & Ford, 1992).

In order to find the opportunity and to use new learning on the job it is important that trainees have some ‘space’ in their work life to make this happen. In other words, trainees may return to work after training only to be faced with a number of job demands or responsibilities that limit their ability to transfer learning. Holton et al. (2000) define this as personal capacity for transfer, or “extent to which individuals have the time, energy, and mental space in their work life to make changes required to transfer learning to the job” (p. 334).

Secondary Influences.

Work environments, motivation, and ability elements are seen as “primary transfer influences” because they directly influence individual transfer performance. Other factors, particularly individual characteristics, have been shown to be important factors in the transfer process primarily through their influence on transfer-related motivation. Because the influence of these factors is mediated through their influence on motivation, they have been termed secondary influences on transfer. These secondary influences include performance self-efficacy and learner readiness.

Learner readiness is a construct conceptualized by Bass and Vaughn (1966) to encompass individual attributes such as maturation, experiential background, and motivation level that either inhibit or exhibit learning. This definition implies that trainees should be provided with realistic training previews (Hicks & Klimoski, 1987), (i. e., information shared prior to attending training about the training content and training methods) (Tannenbaum & Yukl, 1992) or even involved in the needs assessment process, or the design of the training program (Baldwin & Magjuka, 1991). This construct is concerned with the extent to which trainees are psychologically ready for training. Research suggests, for example, that trainees who received information about the training prior to their participation have superior intentions to transfer and apply what they learned back to their respective job settings (Baldwin & Magjuka, 1991).

The level of confidence (self-efficacy beliefs) trainees have in their ability to use the trained skills is also seen as a potentially important influence on transfer-related motivation. Self-efficacy is one of the main constructs of social learning theory developed by Bandura (1977) and has been shown to be positively related to training outcomes such as performance (Gist, 1987; Saks, 1995; Salas & Cannon-Bowers, 2001; Tannenbaum & Yukl, 1992; Tracey et al., 2001). Self-efficacy has been shown to predict performance in interpersonal skills training (Gist, Stevens & Bavetta, 1991) and insurance sales (Barling & Beattie, 1983). Moreover, self-efficacy was also related to motivation to transfer (Ford et al., 1992).

Other attitudinal factors such as job involvement (Lawler, 1986), organizational commitment (Noe, 1986), and goal orientation (Phillips & Gully, 1997), can also contribute to the effectiveness of the transfer process. Job involvement (the degree to which individuals psychologically identify with their work and the importance of work for their figure (Lodahl & Kejner, 1965) was considered a predictor of training motivation (Colquitt, Lepine, & Noe, 2000).

Organizational commitment (attachment of an individual to an organization) was also thought to have an influence on pre-training motivation (Facteau et al., 1995). Finally, goal orientation (defined as the mental representation used by people to explain and behave in achievement situations) was found to influence self-efficacy (Phillips & Gully, 1997). It was also positively related to cognitive activity, (Fisher & Ford, 1998) and was considered as a predictor of training motivation (Colquitt et al., 2000).

Development of the LTSI

As was mentioned earlier, gaining a greater understanding of the transfer process includes consideration of a system of factors. The impetus behind the development of the LTSI was to build an instrument capable of measuring what research suggests may be a key set of learning transfer system factors. The next sections of this manuscript describe the research and development efforts that support the validity and reliability of this instrument.

Development and Construct Validation of the LTSI

The initial development of the LTSI was based on the transfer climate instrument established by Rouiller and Goldstein (1993). Rouiller and Goldstein (1993) proposed that trainees perceive climate in organizations according to psychological cues (both situational and consequential). Table 1 shows that Rouiller and Goldstein (1993) conceptualized the training transfer climate as consisting of two types of workplace cues which include eight unique dimensions. The first set is called situational cues (goal cues, social cues, task cues, and self-control cues) that remind trainees of what they learned in training or provide them with an opportunity to practice with their training on the job. The second set of workplace cues, consequence cues (positive feedback, negative feedback, punishment, and no feedback), relate to

the job outcomes that affect the extent to which training has been transferred. These cues comprise what Rouiller and Goldstein (1993) called the learning transfer climate.

Table 1. Definitions of Organizational Transfer Climate Variables.

Situational Cues. Cues that serve to remind trainees of their training or provide them with an opportunity to use their training once they return to their jobs.

- A. Goal cues. Serve to remind trainees to use their training when they return to their jobs; for example, existing managers set goals for new managers that encourage them to apply their training on the job.
- B. Social cues. Arise from group membership and include the behavior and influence processes exhibited by supervisors, peers and/or subordinates; for example, new managers who use their training supervise differently from the existing managers.
- C. Task cues. Concern the design and nature of the job itself; for example, equipment is available in this unit that allows new managers to use the skills they gained in training.
- D. Self-control cues. Concern various self-control processes that permit trainees to use what has been learned; for example, "I was allowed to practice handling real and job-relevant problems".

Consequences. As employees return to their jobs and begin applying their learned behavior, they will encounter consequences that will affect their future use of what they have learned.

- A. Positive feedback. In this instance, the trainees are given positive information about their use of the trained behavior; for example, new managers who successfully use their training will receive a salary increase.
- B. Negative feedback. Here, trainees are informed of the negative consequences of not using their learned behavior; for example, area managers are made aware of new managers who are not following operating procedures.
- C. Punishment. Trainees are punished for using trained behaviors; for example, more experienced workers ridicule the use of techniques learned in training.
- D. No feedback. No information is given to the trainees about the use or importance of the learned behavior; for example, existing managers are too busy to note whether trainees' use learned behavior.

Note. From "The relationship between organizational transfer climate and positive transfer of training," by J. Z. Rouiller and I. L. Goldstein, 1993, *Human Resource Development Quarterly*, 4, p383.

Transfer climate is seen as the medium through which the work environment may influence the transfer of learning to the job. It is the individual perceptions of the work environment (Jones & James, 1979), which distinguishes it from other environments. These perceptions are likely to result from the behaviors and policies of members of the organization who, in turn, use it as a basis to form judgments and interpret situations (Pritchard & Karasick, 1973). For example, if trainees perceive their work environment as supportive of using newly acquired skills on the job, then they are more likely to use those skills on the job. Researchers (Holton et al., 1997) have asserted the role of the transfer climate as a mediating variable in the relationship between the organizational environment and the attitudes of individuals toward the job and their job behavior. Even though learning may be acquired during training, Rouiller and

Goldstein (1993) mentioned that transfer climate might either inhibit or help facilitate the transfer of what has been learned in training into the job situation.

The first version of the LTSI was developed by Holton et al. (1997) and was named the Learning Transfer Questionnaire (LTQ). The instrument contained 66 items, 49 of which were taken from Rouiller and Goldstein's (1993) original 63-item transfer climate instrument. Holton et al. (1997) added 17 new items both to measure a construct named "opportunity to perform" (Ford et al., 1992) and to strengthen some of the other variables. The expanded transfer climate instrument (66-items) was tested with 189 operating technicians from four petrochemical manufacturing facilities.

Holton et al. (1997) performed two sets of factor analysis. First, the original 49 items taken from Rouiller and Goldstein (1993) instrument were factor analyzed to determine if the underlying factor structure in the sample matched that found by Rouiller and Goldstein. The analysis resulted in five factors, as follows: supervisor support, peer/task support, transfer design, personal outcomes-positive, and personal outcomes-negative. These constructs were not similar to those proposed by Rouiller and Goldstein (1993).

The same factor analytic procedures were used with the expanded 66-item instrument. Common factor analysis resulted in nine constructs, explaining 80.6 percent of the common variance. Of the 66 items, 62 loaded at .40 or higher and were retained for further analysis. Nine constructs emerged and were labeled as follows: supervisor support, opportunity to use skills, transfer design, peer support, supervisor sanction, personal outcomes-positive, personal outcomes-negative, resistance, and content validity. Eight of the nine constructs had a simple structure, meaning that the items of one construct loaded high on that specific construct (.50 or greater) and less than .14 on all other factors in the scale. Reliabilities for these constructs ranged

from .68 to .95 with an average alpha of .79. Contrary to Rouiller and Goldstein's (1993) proposition that people perceive transfer climate by psychological cues, this analysis revealed that trainees perceive transfer climate by organizational referents (e.g., supervisor support, peer support).

The Learning Transfer System Inventory (LTSI) Revisions

After an extensive review of additional research, Holton et al. (2000) added seven more scales to the LTQ to comprise 16 factors. The new version was called the "Learning Transfer System Inventory" (LTSI). These 16 constructs (with 112 items) represented a more comprehensive set of factors believed to affect the transfer of training. The instrument was divided into two construct domains: the first section (training specific) included 11 constructs and contained 76 items. The second section (training general) included five constructs, containing 36 items.

To test the construct validity of the LTSI, data from 1,616 trainees from a wide range of industries and training programs were collected. An exploratory factor analysis using common factor analysis was performed. It is appropriate to use this method when the purpose is to uncover the underlying structure of the instrument. The two sections of the instrument were factor-analyzed separately. The analysis revealed high loading on major factors (.62) and low cross loading on other factors (.05). Cronbach alpha reliabilities ranged from .63 to .91 with only three of the scales below .70 (.63, .68, .69) (see Table 2). After dropping inappropriate items (i.e., items that loaded weakly or loaded singly), 68 items were retained in the final instrument, measuring 16 constructs. The overall measure of sample adequacy (MSA) values for each item was above .90 and items had factor loadings above .40.

The most recent version of the LTSI contains 89 items. These include the 68 items retained from the Holton et al. (2000) study and 21 additional items included in an effort to strengthen the reliability of the following scales: personal outcome-positive, personal capacity for transfer, supervisor/manager sanctions, opportunity to use learning, and feedback/performance coaching (see Table 2).

Table 2. LTSI Scale Definitions, Loadings, and Reliability Coefficients.

| Factor | DEFINITIONS | NUMBER OF ITEMS | α |
|--------------------------------------|--|------------------------|----------------------------|
| Training Specific Scales | | | |
| Supervisor/ Manager Support | The extent to which supervisor/manager support and reinforce use of training on the job. | 6 | .91 |
| Transfer Design | The degree to which 1) training has been designed and delivered to give trainees the ability to transfer learning to the job, and 2) training instructions match job requirements. | 4 | .85 |
| Perceived Content Validity | The extent to which trainees judge training content to accurately reflect job requirements. | 5 | .84 |
| Motivation to Transfer Learning | The direction, intensity, and persistence of effort toward utilizing in a work setting skills and knowledge learned. | 4 | .83 |
| Peer Support | The extent to which peers reinforce and support use of learning on the job. | 4 | .83 |
| Personal Outcomes-Negative | The extent to which individuals believe that not applying skills and knowledge learned in training will lead to outcomes that are negative. | 4 | .76 |
| Learner Readiness | The extent to which individuals are prepared to enter and participate in training. | 4 | .73 |
| Opportunity to Use Learning Personal | The extent to which trainees are provided with or obtain resources and tasks on the job enabling them to use training on the job. | 4 | .70 |
| Outcomes-Positive | The degree to which applying training on the job leads to outcomes that are positive for the individual. | 3 | .69 |
| Personal Capacity for Transfer | The extent to which individuals have the time, energy, and mental space in their work lives to make changes required to transfer learning to the job. | 4 | .68 |
| Supervisor/ Manager Sanctions | The extent to which individuals perceive negative responses from supervisor/managers when applying skills learned in training. | 3 | .63 |

(table cont.)

| Training in General Scales | | | |
|--|---|---|-----|
| Resistance/ Openness to Change | The extent to which prevailing group norms are perceived by individuals to resist or discourage the use of skills and knowledge required in training. | 6 | .85 |
| Performance- Outcomes Expectations | The expectation that changes in job performance will lead to valued outcomes. | 5 | .83 |
| Transfer Effort- Performance Expectations | The expectation that effort devoted to transferring learning will lead to changes in job performance. | 4 | .81 |
| Performance Self- Efficacy | An individual's general belief that they are able to change their performance when they want to. | 4 | .76 |
| Feedback/ Performance Coaching | Formal and informal indicators from an organization about an individual's job performance. | 4 | .70 |

Note. From "development of a generalized learning transfer system inventory," by E. F. Holton III, R. A. Bates, & W. E. A. Ruona, 2000, *Human Resource Development Quarterly*, 11, pp. 344-346.

Cross-Cultural Construct Validation of the LTSI

Yamnill (2001) carried out a study to validate the factor structure of the LTSI with a sample from Thailand. The study covered a cross section of Thai organizations (60) and random sampling was employed to choose trainees who had completed training in the past two months. The sample of the study was 1256 trainees, from whom 1,029 usable responses were received for a response rate of 81.9%. Two versions of the LTSI were used. One with 68 validated items, and the other with 89 items (21 additional research items included). Exploratory common factor analysis with oblique rotation was employed. The author factor analyzed each section separately for both versions of the LTSI. Version one (89 items) had two sections: specific training (contained 63 items) and training in general (contained 26 items). Version 2 (68 items) of the LTSI also has two sections: training specific (38 items) and training in general (30 items).

The results of the factor analysis (LTSI with 89 items) for the first section showed that 11 factors emerged and 55.19% of the variance explained. With regard to item loadings, 52 items met the minimum loading value of .35. Reliability coefficients were acceptable for all factors, ranging between .61 and .88.

Factor analysis for the second section (training in general) resulted in the emergence of five factors explaining 53.65% of the variance. Twenty-one items loaded .35 or higher on the five factors. The reliability for the factors was between .63 and .83, with only one factor reliability below .70. In conclusion, 73 items were retained in the instrument, assessing 16 factors.

For the 68-item LTSI, the same criteria for retaining the factors as stated above were used, resulting in the retention of 38 items representing 11 constructs for the specific training section (the same number found by Holton et al. (2000). Four factors were identical and the other seven factors were nearly identical (only two items loaded on different factors). The factors in the Thai version of the LTSI were named the same as those in the original English version of the LTSI. The reliability coefficients for these factors ranged from .58 to .85, with an average Cronbach alpha of .73. For the second section (training in general), 21 items were retained, explaining 53.1% of the variance and representing five factors. Three of these factors were identical to the original LTSI. The reliability coefficients for these factors ranged from .61 to .81 with an average Cronbach alpha of .72. In brief, the 68-item instrument resulted in 59 items, measuring 16 factors, while the 89-item instrument resulted in 73 items measuring 16 factors. The conclusion of the study asserted that the LTSI proposed by Holton et al. (2000) is cross-culturally valid for use in Thailand.

In another effort at the cross-cultural validation of the LTSI, Chen (2003) used a sample of 583 trainees from 20 different Taiwanese organizations. Chen (2003) used similar factor analytic criteria to that proposed by Yamnill, except for the minimum loadings (.40) of retaining items on factors. The impact of using this higher loading cut off was the loss of important items to the instrument. For the 68-item version, on the training in specific section, six factors were found to be identical to the original instrument with 39 items. These factors had reliabilities ranging from .68 to .89. For the training in general section, four out of five factors were identical to the original LTSI (19 items), with reliabilities all exceeding .80. With regard to the 89-item analysis, on the training specific section, ten factors emerged with 54 items, while all five factors in the training in general section were validated (25 items). The reliabilities ranged from .68 to .92 for specific factors and above .80 for training in general scales. Chen (2003) concluded that 14 factors of the LTSI are cross-culturally valid for use in Taiwanese organizations. In summary, employing similar factor analytic techniques supports the cross-cultural factor structure of the LTSI. Table 3 provides a summary of this research.

Table 3. LTSI Instrument Development.

| | |
|-------------------------------|---|
| LTQ | <ul style="list-style-type: none"> - Forty-nine items obtained from Rouiller and Goldstein's (1993) 63-item instrument. - Seventeen items added. - Final instrument with 66 items. - Factor analysis on the 49-item instrument resulted in five constructs. - Factor analysis on the 66-item instrument resulted in nine constructs. - Accounting for loadings cut off, LTQ resulted in 62 items. |
| LTSI First Version | <ul style="list-style-type: none"> - LTQ with 62 items. - Seven more constructs were added. - Total 112 items in the instrument representing two construct domains. - Training specific with 76 items and training in general with 36 items. |

(table cont.)

| | |
|--|---|
| | <ul style="list-style-type: none"> - Factor analysis resulting in 68 items measuring 16 constructs. |
| <p style="text-align: center;">LTSI</p> <p style="text-align: center;">Present Version</p> | <ul style="list-style-type: none"> - LTSI with 68 items. - Twenty-one research items added. - New LTSI with 89 items measuring 16 constructs. |
| <p style="text-align: center;">Cross-Cultural</p> <p style="text-align: center;">Construct Validation</p> <p style="text-align: center;">(Yamnil's Study)</p> | <ul style="list-style-type: none"> - LTSI (68-item instrument) resulted in 59 items measuring 16 constructs. - LTSI (89-item instrument) resulted in 73 items measuring 16 constructs. - Fifteen constructs were validated. |
| <p style="text-align: center;">Cross-Cultural</p> <p style="text-align: center;">Construct Validation</p> <p style="text-align: center;">(Chen's Study)</p> | <ul style="list-style-type: none"> - LTSI (68-item instrument) resulted in 58 items measuring 10 constructs. - LTSI (89-item instrument) resulted in 79 items measuring 15 constructs. - Fourteen constructs were validated. |

Convergent and Divergent Validation of the LTSI

Bookter (1999) conducted a study that examined the LTSI's convergent and divergent validity. As indicated by Robinson, Shaver, and Wrightsman (1991), the convergent and divergent validity of an instrument is a necessary component for a psychometrically sound instrument. Convergent validity is defined as the extent to which a measure is assessing what it is purported to assess while divergent validity refers to the extent that a measure is not assessing something that it is not purported to assess (Campbell & Fiske, 1959). Simply, convergent-divergent validity testing seeks to further establish the empirical validity of a measure by examining the correlations between the target measure and measures of similar constructs or opposing constructs. Convergent validity tests the extent to which different measures of the same or similar constructs are correlated. Divergent validity tests the extent to which measures of opposing constructs show low or negative correlations. Bookter's (1999) study proposed to answer the following research questions:

1. What are the theoretically based, psychometrically valid; comparison measures (instruments, scales and sub-scales) for the factors in the nomological network of the LTSI, which can be used to examine the convergent and divergent validity of the LTSI?
2. What are the convergent and divergent associations between the LTSI subscales, and the comparison constructs and measures identified in question one?

Research question one was accomplished by conducting a comprehensive search of the literature for comparison measures closely related to the constructs of the LTSI. Certain strict evaluation criteria were adapted from Robinson et al. (1991) and used to choose those comparison measures, including theoretical development structure, available norms, inter-item correlations, coefficient alphas, factor analysis, test re-test reliability, convergent validity, and divergent validity. As a result, 17 scales were chosen from 17 different instruments. These were work environment scale, KEYS environment scale, perceived work environment, index of organizational reaction, job descriptive index, alienation from work scale, task-goal attribute scale, leader reward behavior scale, facet-specific job satisfaction scale, work related expectancy scale, group process scale, self-efficacy scale, mastery scale, job dimensions scale, internal work motivation scale, manifest needs questionnaire, and critical psychological states scale.

Employing a sample of U.S. postal employees ($n = 204$), factor analysis was performed on the LTSI responses and resulted in a structure almost identical to that previously proposed by Holton et al. (1997) indicating that the scales are functioning in this sample in a way that is similar to what should be expected.

To establish the convergent and divergent validity of the LTSI constructs, each construct was compared and correlated with similar selected constructs that were identified from the literature as theoretically-based, psychometrically-valid measures. Pearson's Product Moment

correlation statistic was used to investigate the correlation between the 16 constructs of the LTSI and the two comparison measures chosen for each construct. The present study used correlation coefficients between .00 and .49 to indicate evidence of divergence, while an association ranging between .50 and 1.0 indicated evidence of convergence.

Overall analysis showed that all subscales of the LTSI (with the exception of two constructs) are divergent in nature because the correlations for most of the LTSI factors were below .49. This indicates that the constructs of the LTSI are unique, thus establishing its divergent validity. Two constructs of the LTSI showed strong evidence of convergent validity. These constructs were performance outcome-expectations (highly related to Performance Reward Expectancy, $r = .60$) and resistance to change (highly related to Group Process Scale, $r = -.51$). The evidence from this research further supports the empirical validity of the LTSI.

Criterion-Related Validation of the LTSI

Criterion-related validity refers to the degree to which scores on selected constructs are related to one or more outcome measure(s). Nunnally (1978) named criterion validity predictive validity because it predicts something external to the measuring instrument. According to Cronbach and Meehl (1955), establishing criterion-related validity usually requires that a test is administered and an independent measure is obtained on the same subjects, which is then used to obtain the correlation between the two. It is called predictive validity if the outcome measure (criterion) is obtained some time after the test is given, while it is called concurrent validity if the test score and the criterion score are determined at the same time.

Support for the criterion validity of the LTSI is suggested by at least five studies, which predicted motivation to transfer, performance, and intentions to participate in training.

The first study by Bates (1997) involved 73 production operators employed in the petrochemical-manufacturing sector in two production units. The study examined the ability of the LTQ constructs to predict supervisor rating of job performance using hierarchical regression analysis. These constructs included training content validity, transfer design, positive personal outcomes, negative personal outcomes, peer support, supervisor sanctions, supervisor support, opportunity to use training, and change resistance.

Regression analysis results showed that content validity (the degree of similarity between what is taught in training and what will be used on the job) alone explained 5.9% of the variance in performance ratings while transfer design increased the variance by 1.8%. On the other hand, the transfer climate variables (supervisor support, opportunity to use training, peer support, change resistance, supervisor sanctions, positive personal outcomes, and negative personal outcomes) significantly predicted 36% of the variance in performance ratings. Taken together, the nine constructs of the LTQ explained a total of 43.7% of the variance in performance ratings.

The second study by Seyler et al. (1998) involved 88 subjects who participated in CBT training from two units of a large petrochemical company. The authors investigated the influence of environmental factors (supervisor support, supervisor sanctions, peer support, and opportunity to use skills) as measured by items from the LTQ (version 1 of the LTSI) for their influence on motivation to transfer. Hierarchical regression analysis was used and when the environmental variables were entered last in the model, they explained an additional 26.4% of the variance in motivation to transfer over the previous model.

The third study (Ruona et al., 1999) involved 1,616 subjects who were originally used in the development of the second version of the LTSI. The study involved a wide range of training programs and organizational types for various employees, holding a variety of positions and job

levels. The LTSI consisted of 68 items designed to measure 16 constructs. These constructs were transfer design, motivation to transfer, transfer effort, perceived content validity, performance self-efficacy, opportunity to use training, outcome expectations, peer support, feedback, personal capacity for transfer, supervisor support, learner readiness, personal outcomes-positive, personal outcomes-negative, resistance/openness to change, and manager sanctions.

Utility reaction ratings (defined as participants' reaction to the training program) were correlated with the 16 constructs of the LTSI and have ranged from a high correlation ($r = .619$) to a low correlation ($r = .156$). The authors constructed a hierarchical regression, using 15 constructs of the LTSI and utility reaction as independent variables, and motivation to transfer as the dependent variable. The 15 constructs of the LTSI were entered first, and the utility reaction was entered second. The results of this analysis showed that the 15 constructs explained 64.1% of the variance, while utility reaction added only 3.8%.

Using a cross-section of data from the Bates (1997) study, Bates et al. (2000) investigated the ability of interpersonal transfer variables to predict job performance of computer-based training for 73 production operators. The LTQ with 68 items was used to predict trainees' performance, as measured by supervisors' ratings. The content of the instrument was: supervisor support, supervisor sanctions, peer support, change resistance, opportunity to use training, and content validity. The results indicated that when content validity was added to the regression model, it increased the explained variance in performance by 5%. Adding supervisor support and supervisor sanctions explained an additional 18% of the variance in performance ratings. The addition of peer support and change resistance explained another 20% of the variance in performance ratings. Finally, opportunity to use training was not a significant predictor (it explained only .002% of the variance). In conclusion, content validity, supervisor support,

supervisor sanctions, peer support, and change resistance explained a significant portion (43%) of the variance in performance ratings.

In a fifth study, Bates (2001) investigated the influence of three LTSI constructs on one objective measure and two subjective measures of training participation, using a sample of 287 subjects from a public sector highway department. These constructs were transfer effort-performance expectations, performance-outcomes expectations, and motivation to transfer learning. The objective measure was the number of organization sponsored training events trainees attended in the past 12 months. The subjective measure was the number of days in the past 12 months trainees had spent in training. The last subjective measure was intention to participate in training in the future, which was measured by a single item where trainees indicated the number of days of training they planned to attend in the next 12 months.

The three constructs of the LTSI were entered as mediators between a number of antecedent measures (continuous learning culture, staffing strategy, previous transfer success, and job-related math and reading proficiency) and the three outcome measures mentioned above. The coefficient alphas for transfer effort-performance expectations (TEPE), performance-outcome expectations (POE), and motivation to transfer learning (Mot Trans) were .80, .79 and .80, respectively.

Utilizing hierarchical regression, the combined effect of antecedent and mediator variables explained a significant portion of the variance in training participation, with 12.9% in objective measure, 16.5% in self-report, and 19.6% in intention to participate in the future. The effect of the motivational measures (TEPE, POE, and Mot Trans), along with attitudes toward training and motivation to participate in training accounted for 9.9% of the common variance in the objective measure (number of training courses attended), 7.8% of the variance in the

subjective measure (number of days in the past 12 months trainees had spent in training), and 6.6% of the variance in the number of training days trainees plan to participate in the next 12 months.

In conclusion, LTSI constructs have shown the ability to predict job performance ratings, self-reported motivation to transfer, and participation in training. A summary of the criterion validity studies is presented in Table 4.

Table 4. Summary of the LTSI Criterion Validity Studies.

| Study | Subjects | Criterion Measure | Constructs Investigated | % Variance Explained |
|-----------------------|-------------------------|---|---|----------------------|
| Bates (1997) | 73 production operators | Job performance ratings | Content validity, transfer design, positive personal outcomes, negative personal outcomes, peer support, supervisor sanction, supervisor support, opportunity to use, resistance to change. | 43.7% |
| Seyler et al., (1998) | 88 production workers | Motivation to transfer | Supervisor support, supervisor sanctions, peer support, and opportunity to use. | 26.4% |
| Ruona et al., (1999) | 1,616 employees | Motivation to transfer | Transfer design, motivation to transfer, transfer effort, perceived content validity, performance self-efficacy, opportunity to use, outcome expectations, peer support, feedback, personal capacity for transfer, supervisor support, learner readiness, personal outcomes-positive, personal outcomes-negative, resistance/openness to change, manager sanctions. | 64.1% |
| Bates et al., (2000) | 73 production workers | Performance ratings | Supervisor support, supervisor sanctions, change resistance, opportunity to use, content validity. | 43% |
| Bates (2001) | 287 employees | Training participation as measured by one objective and two subjective measures | Transfer effort-performance expectations, performance-outcomes expectations, and motivation to transfer learning along with two other motivational measures. | 9.9% 7.8% 6.6% |

The Domain of Learning Transfer and Organizational Learning

Because learning transfer research in organizations is relatively new, linkages between learning transfer constructs and constructs in other domains have not been established to a great degree. Therefore, an additional avenue that will be explored in this dissertation research is the extent to which learning transfer constructs are linked to important constructs in the domain of

organizational learning. Exploring how the LTSI constructs fit logically and lawfully into an expanded network of expected relationships or nomological network can provide further proof of the construct validity of the LTSI measures.

Organizational learning was chosen because it is one factor that can influence the success of organizations in a globalized system characterized by rapid technological advancements, fierce competition, and rapid rates of change in work environments (Nonaka & Takeuchi, 1995). For example, Kaiser (2000) asserted that organizational learning is the most important resource for the future and the only element an organization can depend on for growth.

Organizational learning is defined as “the intentional use of learning processes at the individual, group and system level to continuously transform the organization in a direction that is increasingly satisfying to its stakeholders (cited in Swanson & Holton, 2001, p. 172). Organizational learning is learning taking place at the system level rather than the individual level (Dixon, 1992, 1994). It is greater than the summation of the learning at the individual level and generally arises as a result of the process of sharing insights, knowledge, and mental models (Swanson & Holton, 2001). When the culture of the organization supports the development of shared mental models among organizational members, then organizational learning is activated (Swanson & Holton, 2001).

The above discussion directs our attention to the fact that learning at the system level not the individual level is important (Kuchinke, 1995). Organizational learning is not the collectivity of individual learning per se; rather, it is the culture of learning that is embedded in the organizational memory and practiced daily by organization members. Organizational learning, then, directs individuals to view things from different perspectives and prompts them to

challenge situations. It is the organizational culture that creates the conditions that lead to this type of creative behavior (Argyris & Schon, 1978).

It is obvious that organizational culture is a key factor that can influence the nature and the process of organizational learning (Nevis, DiBella, & Gould, 1995). Organizational culture is defined as the collection of shared meanings, values, norms, and expectations that guide organizational behavior (Burke & Litwin, 1992; Schein, 1985) and the medium by which organizational standards that explain and justify behaviors are constructed (as cited in Kaiser, 2000). According to Kaiser (2000), organizational culture promotes learning when there is basic understanding in the organization that any individual can be a source of knowledge, and that no one person knows everything. Moreover, individuals are encouraged to thinking independently and to try new ideas, while all organizational members are of one mind, working toward achieving common goals for the benefit of the total organization.

Another aspect of the organizational culture that boosts organizational learning is innovation (Holton & Kaiser, 2000). The development and success of organizations is largely a function of innovation (Torraco, 1998) to meet its challenging demands. Innovation may take place when new ideas are developed and implemented by members of an organization (Van de Ven, 1986). Innovation is regarded as an indicator of future organizational effectiveness and performance and another desired outcome of performance (Kaiser, 2000). Innovation usually takes place when there is an acquisition of information, interpretation of information, creation of meaning and the creation of organizational knowledge (Swanson & Holton, 2001).

It is likely that a link exists between learning transfer elements and measures of organizational learning. For example, an organizational culture that values, accepts, and rewards learning is more likely to have a positive learning transfer system than a culture that does not. If

supervisors and peers are supportive, open to changing the way things are done, provide supportive feedback about performance, and reward positive behavior then organizational culture and learning will be facilitated and enriched. It follows that employees working in this kind of organization would be more motivated to learn, transfer learning, and have more positive expectations about the outcomes of their efforts among these lines.

Unfortunately, there has been no previous research linking learning transfer constructs to organizational learning. This will be the first study of its kind to explore whether or not a link exists between these two distinct construct domains. The outcome of this analysis will provide HRD scholars and practitioners with new insights of the direction and magnitude of this relationship that, in turn, will be used to formulate new research questions about the contribution of learning transfer to overall organizational learning.

Translation of Materials for Cross-Cultural Research

Culture is defined as the shared values, attitudes, and beliefs among a group of people, which guides their way of thinking, doing, and living (Hofstede, 2001). Taking into account the rise of cross-cultural interactions, a need has emerged to translate research instruments from one culture with a unique language to another culture with a different language. The cross-cultural translation and validation process from one language to another language is a critical first step to the appropriate use of that instrument (Fouad & Bracken, 1986). Concepts that are present in one culture may not be meaningful in another culture (Brislin, 1980; Hui & Triandis, 1985). Therefore, it is crucial to establish the validity of instruments in various cultures.

The first step in establishing cross-cultural validity often involves translating the instrument into the target culture's language. To achieve the validity of those translations, equivalence in meaning should be established. Equivalence in meaning has been regarded as the

most important aspect of translation (Nida, 1964). Brislin, Lonner, and Thorndike (1973) emphasized that “unless researchers present empirical evidence to support their claim that the different-language versions of the same instrument are equivalent, translation problems will always be plausible rival hypotheses for any obtained results” (p. 32).

Researchers further advise using an “Emic-Etic” approach when translating instruments. The Emic concept refers to those sounds, ideas, and behaviors that are culture specific. The Etic concept refers to those sounds, concepts, and behaviors that are universal, or culture-free (Banville, Desrosiers, & Genet-Volet, 2000; Berry, 1969). This approach recognizes that different countries may share some elements of a culture, while some elements are only practiced and applied in one particular country. Consequently, researchers need to make sure that a concept used in one culture is similar enough in its meaning when used in another culture. Thus, if an instrument is developed in one culture and language and administered in another culture and language it may lose “the Emic or meaningful aspects of the other culture as practiced by their members” (Brislin et al., 1973, p. 24).

Sometimes researchers assume that the concepts used in their instrument are transferable across cultures. However, according to Eckensberger (1994), when an instrument is developed in the source language, then it is regarded as an Emic. When used in another language (target language), the instrument becomes an imposed Etic, meaning that it may carry meanings and concepts that are not familiar, or are not fully understood by members of the target culture. Thus, in translating an instrument from the source language into the target language, the goal is to make sure that the instrument from the source language, when translated into the target language, has the same meaning. To be considered valid, the cross-cultural translation of instruments must use a rigorous methodology to establish the meaning equivalence of the

instrument in the new culture. If an instrument (e.g., LTSI) shows evidence of cross-cultural validity, then its constructs can be considered as Etic (universal) (Triandis, 1976).

Sechrest, Fay, and Zaidi (1972) suggested the need to consider a number of equivalence issues when translating instruments. These issues include: vocabulary equivalence; idiomatic equivalence (one culture may have idioms that are not found in another culture); grammatical-syntactical equivalence (different languages may use different syntax and grammar); experiential equivalence (different terms might be used to refer to certain items or experiences, such that the two versions of the instrument must utilize real things that are experienced and used in both cultures); and conceptual equivalence (the same concepts used in both versions may have different meanings in different cultures, so we need to know what each concept means in the culture for which the translation is being made). However, functional equivalence was suggested as the most important (Hui & Triandis, 1985). Functional equivalence pertains to whether or not the items in the translated version of an instrument have a meaning similar to that of the source version.

The Translation Process

Cross-cultural research literature suggests several general methods of translating instruments from one culture to another that can be used in combination or separately. In any research project, the researcher can combine different parts of the translation methodology (Brislin, 1970) to fit the purpose of the study at hand, while resolving the limitations imposed by time, cost, and resource availability.

The first translation method is called the forward or direct approach, and is widely used (Sperber, Devellis, & Boehlecke, 1994). In this approach, instruments are translated from the source language to the target language by bilinguals, who work independently, or as a team

(Hansen, 1987; Herrera, DelCampo, & Ames, 1993; Prieto, 1992). The major drawback in this methodology (when used alone) is that functional equivalency of an instrument cannot be produced because we cannot determine whether the instrument is accurately translated without bias. Therefore, only an Emic approach is applied.

The next translation approach is called the back-translation. Back-translation involves a process where at least two bilingual translators (who are from the target language) are employed (Lomi, 1992). The process starts with one of the bilingual translators (or group of bilingual translators working independently) translating an instrument from its original language into the target language. Next, another bilingual translator (or group of translators working independently) translates the instrument back into the original language. These back-translators should not have seen the original source language version of the instrument. Then, using a subjective comparison process, the original and the back-translated versions are evaluated to ensure equivalence in meaning (Brislin, 1970). Finally, the two versions are field tested with a group of bilinguals to correct for any errors and disturbances in meaning (Hansen, 1987).

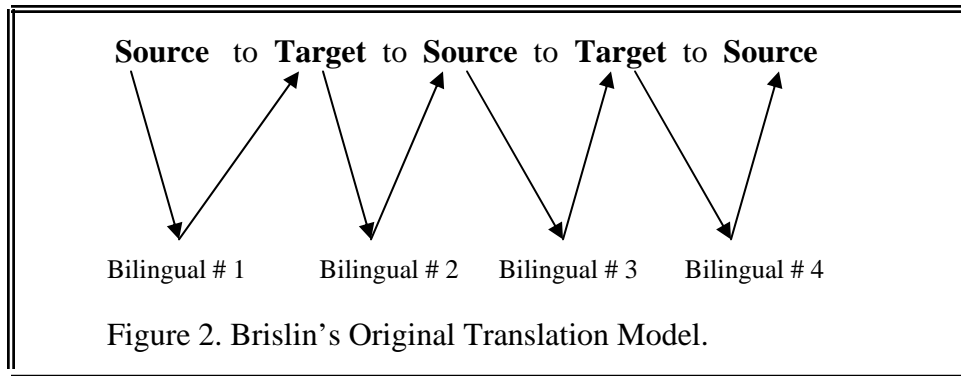
However, validation of translations by bilinguals is problematic (Hulin, 1987; Yang & Bond, 1980) because the instrument is intended ultimately for use on monolingual subjects. Bilingual subjects take on some concepts, values, and attitudes of the culture of the second language that they have mastered. Thus, bilinguals may represent a separate population whose responses cannot automatically be generalized to the monolingual population. Consequently, employing monolinguals to compare the two English versions of an instrument is highly recommended (Bullinger, Anderson, Cella, & Aaronson, 1993).

To obtain valid and rigorous results, the back-translation method was suggested as the essential and recommended method for assessing linguistic equivalence or similarity in words

and sentences (Brislin et al., 1973; Glidden-Tracey & Greenwood, 1997; Jones, Lee, Phillips, Zhang, & Jaceldo, 2001) because it has been shown to improve the quality of the translated version (Guillemin, Bombardier, & Beaton, 1993). Back-translation “operates as a filter through which non-equivalent terms will not readily pass” (Sechrest et al., 1972, p. 53) and through the use of this process, the researcher attempts to assess whether the original meaning of the instrument items is preserved after the original instrument has been translated into the target language, and then re-translated back into the original language. In short, having at least one forward and one back-ward translation is minimally required (Bullinger et al., 1993).

Brislin’s model (1970, 1986) “for translating and back-translating instruments is a well-known method of preparing valid and reliable tools for cross-cultural research” (Jones et al., 2001, p. 301). According to this model (see Figure 2), the instrument is translated by one bilingual expert from the source language (SL) into the target language (TL), and a second bilingual expert blindly (without previous knowledge of the original language version) back translates it to the source language. If discrepancies in meaning are detected in the back translated version when compared to the original, the terms which are in question are re-translated and again back translated by another bilingual expert.

These processes are repeated until no error in meaning is found. To reduce bias, and to produce more accurate translations, Jones et al. (2001) recommended including more bilinguals in the translation process and comparing both versions (the original and the back translated) with a group of monolinguals from the source language, which, in turn, enhances functional equivalence.



Note. From "back translation for cross-cultural research," by R. W. Brislin, 1970, *Journal of Cross-Cultural Psychology*, 1, pp. 187-16.

Researchers have varied in the methods used to establish meaning-equivalent versions of an instrument. For example, Vallerand (1989) suggested seven steps when translating instruments from one culture to another using an Emic-Etic approach (to verify whether the Emic of the original instrument and the Emic of the target culture have adequate common ground). The author asserted the importance of the back translation technique employing more bilingual translators (i. e., at least four bilinguals). Moreover, the translated version should be tested with a group of bilinguals to detect any words, statements and meanings that they do not understand. The next step suggested was to establish the content validity by having bilinguals compare the meaning of the original statements and the translated statements. Vallerand's (1989) translation methodology also suggested establishing the construct validity of the translated instrument by employing 20 subjects to answer the instrument. However, a sample of 20 is insufficient for factor analysis. Moreover, the author suggested establishing test-retest reliabilities with a one-month interval. In conclusion, Vallerand's methodology has not been widely used in its entirety, due to time and cost constraints (Banville et al., 2000).

Others (Butcher, 1982; Fouad and Bracken, 1986) have recommended a three-step-approach to translation as follows: first, direct translation by several bilingual experts; then blind back-translation by bilingual independent experts; and third, the final version administered and

field-tested on individuals fluent in both languages from the target population to ensure functional equivalence. These authors were more focused on the subjective evaluation and have not stressed the importance of objective evaluation in establishing functional and linguistic equivalence.

Sperber et al. (1994) recognized the shortcomings of previous literature and suggested a different approach to establishing the functional and linguistic equivalence between the original instrument and the back-translated instrument. Sperber et al. used two objective comparison measures to evaluate the comparability of language and similarity of interpretability. In this approach, raters use Likert-type scales ranging from 1 (not at all comparable/not at all similar) to 7 (extremely comparable/extremely similar) to rate the extent to which they believe both versions are similar in terms of language used and in the degree to which two versions of an item have the same meaning even if the wording were not the same. These comparison procedures should be evaluated by a group of people (15-20) who have knowledge in the field in which the instrument is intended for use. Subsequent evaluation of mean ratings across these two dimensions helps us to identify potentially questionable items and to retranslate them until there is some confidence that the items would be interpreted in the same manner in both languages.

Finally, the translation methodology of Herrera et al. (1993) emphasized the importance of clarity and equivalence when doing translations by employing monolinguals from the target population to read the translated instrument and to identify words and phrases that are difficult to understand. The authors suggested employing monolinguals with different educational levels (e.g., Masters, bachelors, and high school) when assessing instrument clarity. Hence, once the final version of the instrument is produced, it will be sent to a group of monolinguals representative of the target population, and who also should be at different educational levels.

These procedures ensure that the instrument is understood in the same manner by a variety of people from various educational levels.

Summary.

In reviewing previous literature, several translation methodologies (that can be used in combination) were suggested to enhance the validity and precision of the translation process. These techniques include forward translation, back-translation, subjective evaluation, and objective evaluation measures.

Forward and back-translation involves the use of multiple bilinguals when translating the instrument from the source language into the target language, as well as when back-translating the instrument from the target language into the source language. The logic behind using multiple translators is to offset any bias that might result from individual translations.

Subjective and objective evaluation procedures were also recommended to ensure functional equivalence of both the original version and the back-translated version of the instrument. Subjective evaluation enhances the clarity and equivalence of both versions by employing native monolinguals from the target culture, with different educational background levels, to detect errors and discrepancies in meaning. Objective evaluation includes the employment of monolinguals from the source culture to rate the comparability of language and similarity of interpretability of items on both versions, using a Likert-type scales ranging from 1 (not at all comparable/not at all similar) to 7 (extremely comparable/extremely similar).

CHAPTER 3

RESEARCH METHODOLOGY

This chapter describes the research methods used in this study including: a) study design; b) population and sample; c) protection of human subjects; d) instrumentation; e) instrument translation process; f) data collection procedures; and, g) data analysis procedures for each research question.

Study Design

The design of this study was an ex-post facto, with data collected using the survey method. First, an equivalent Arabic version of the LTSI was developed using cross-cultural translation techniques developed by the researcher. The Arabic version of the LTSI was named “ALTSI” throughout the study. The ALTSI was administered to trainees at the end of their training session or after training (up to six months). Secondly, the latent factor structure of the ALTSI was investigated using exploratory common factor analysis with oblique rotation. The two construct domains (specific and general) of the instrument were factor analyzed separately because they represent two different domains. Third, relationships between the validated constructs of the ALTSI and selected demographic variables were performed using multivariate analysis of variance (MANOVA). Finally, the ability of the ALTSI to account for variance in organizational learning constructs was explored using multiple regression analysis.

Population and Sample

The target population for this study was Jordanian workers employed by 28 different public and private sector organizations operating in Jordan. These organizations were characterized as being small-to-medium sized. A small business is defined as one having less than 100 employees (Headd, 2000) while a medium-sized business is defined as one having 100

to 499 employees (Storey, 1994). These organizations included manufacturing, high-tech, banking, insurance, retail, service industry, public/education, and public/government. The sample for this study consisted of 450 trainees (of the original 500; a 90% response rate) who all attended nine different types of training. Because of limited access to subjects in Jordan, both purposive sampling and convenience sampling (Ary, Jacob, & Razavieh, 1996) were used in this study. The desired sample size was determined by following the recommendations proposed by Benson and Nasser (1998), Floyd and Widaman (1995), and Hair, Anderson, Tatham, and Black (1998). These authors suggested factor analysis requires a minimum of five subjects per independent variable to assure adequate statistical power and generalizability of results. Taking into account that the first section of the instrument contained 63 items, the minimum sample size needed was 315 subjects. Furthermore, allowing for 10% missing or unusable data, the total sample size appropriate for use in this study was a minimum of 347 usable observations.

Approximately 38% ($n = 172$) of the respondents were from public sector organizations and about 62% ($n = 278$) were from the private sector. A little over 25% of the respondents were from public sector educational institutions with the remainder fairly evenly divided between public/governmental organizations and private sector manufacturing, high tech, banking, insurance, retail, and service organizations. A slight majority of the sample was male (54.7%). Respondents were predominantly 30 or more years old (71.4%) and held a bachelor's degree or higher (80%). Over 60% of the respondents had four or more years of work experience.

Protection of Human Subjects

The human rights of subjects were protected in this study. The study was exempted from review and approval to carry out the study was obtained from the Louisiana State University Institutional Review Board (IRB # 2315). Employees participating in the study were informed

verbally by the researcher, human resource personnel and/or by a fact sheet about the purpose of the study and the time it takes to complete the instrument. Also, participants were informed that participation is voluntary. Responses to the survey were anonymous. Access to the data was limited to the researcher and authors of the LTSI. The data collection tool for this research was a survey instrument comprised of the translated LTSI, organizational learning scales, and a section for demographic variables.

Instrumentation

The LTSI developed by Holton and Bates (2002) and the organizational learning measures developed by Holton and Kaiser (2000) were used in this study. Permission to use these instruments was granted by the instrument developers. The LTSI is a diagnostic tool used to assess the factors that influence learning transfer and to assess transfer systems in organizations. It is an 89-item instrument (see Appendix A) with two sections. The first section contains training-specific constructs that reference a specific training program completed by the respondents. With LTSI, this section involves 63 items representing 11 constructs (see Table 2). The constructs for this section are learner readiness, motivation to transfer learning, positive personal outcomes, negative personal outcomes, personal capacity for transfer, peer support, supervisor support, supervisor sanctions, perceived content validity, transfer design, and opportunity to use training. The second section of the LTSI contains 26 items; measuring five constructs that reference training-in-general in the respondent's organization (see Table 2). These constructs are transfer effort-performance, performance-outcomes, openness to change, performance self-efficacy, and performance coaching. For a complete review of the LTSI constructs and construct definition, see Appendix B. Respondents were asked to rate items using

a Likert type scale with 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Disagree nor Agree; 4 = Agree; and 5 = Strongly Agree as anchors.

The third section of the instrument included new scales and items measuring organizational learning with four subscales (knowledge indeterminacy, learning latitude, organizational unity, and innovation) (see Appendix C). The measure of knowledge indeterminacy had five items. This construct is defined as the perceived belief of employees that knowledge is not fixed, that everyone may be a source of knowledge, and that no one individual knows everything. The second subscale is learning latitude, which included four items. This construct measures the individual's freedom for independent thinking and the openness of the organization's culture to new ideas. The third subscale was organizational unity and it included five items. This construct measures the perceived belief that all organizational employees are of one state of mind, working toward the achievement of common goals, for the benefit of the entire organization. The fourth subscale was innovation. This construct measures the perceived ability of the organization to adopt and/or create new ideas and to implement these ideas in the development of new products and services and work processes. The four subscales use a Likert-type response rating scale with answers ranging from 1 = Not True to 6 = True.

The fourth section included six demographic items formulated by the researcher. These items asked respondents about their gender, age, level of education, years of experience in the current organization, type of training program attended, and their choice of training. Other information such as type of the organization (e.g., public vs. private) and sector of the organization (e.g., high-tech) were determined by the researcher. The instrument took about 25 minutes to complete.

Instrument Translation Process

Since all the scales used in this study were developed in English, a rigorous English-to-Arabic translation process was used that included an iterative process of forward translation, backward translation, assessment for clarity and correctness, and subjective and objective evaluation. The goal of the translation and various evaluation procedures was to produce an Arabic version of the items that were equivalent *in meaning* to the original English versions.

This last point is important because our objective was an *equivalent translation* not an identical word-by-word translation. Equivalent translations emphasize functional equivalence or the equivalence of meaning of the survey items between the original and translated instruments. Functional equivalence helps to ensure that the measures work in the new target culture as well as they did in the original culture because the translation is based on achieving equivalence in meaning rather than just the form of the sentence or word-by-word translation. Based on recommendations from the literature regarding the best practices of translating instruments, the following rigorous translation procedures used in this study are summarized below:

1. Forward translation. Two bilinguals from Jordan (including the researcher) who are Ph. D. students at Louisiana State University (LSU) with a major in Human Resource Education (HRE) and economics translated the LTSI and organizational learning measures from English into Arabic. Both bilinguals produced their own individual translations, compared results, discussed discrepancies, and then collaborated and reached agreement on one final Arabic version.
2. Back translation. Two different bilinguals, who are also Ph. D. students with a major in mathematics at LSU, who had never seen the original version of the LTSI, translated the ALTSI and organizational learning measures (Arabic version) back into English. The

translators produced individual translations, compared results, discussed discrepancies, and then collaborated and reached agreement on one final English version.

3. Assessment for clarity and correctness (subjective evaluation). An author of the original LTSI compared both English versions (original LTSI and the back-translated LTSI) to ensure that the items are equivalent in meaning. With regard to the LTSI items, discrepancies in meaning were found in 16 items (5, 6, 8, 11, 12, 14, 15, 16, 17, 19, 20, 23, 28, 29, 30, and 57). The problem in these discrepancies were the use of the word “practice” in the translated version rather than the words use, try, and utilize that were used in the original version. Other problematic items used words such as “efforts” instead of “performance” (item 64); “not like” instead of “criticize” (item 46); “disagree” instead of “reluctant” (item 77); “like to change” instead of “open to change” (item 75). Several other items (25, 27, 47, 60, 72, 79, 85, and 89) were unclear in meaning or had missing words. In the organizational learning scale items, three items were found to be troubling in meaning such as using the word “solutions” instead of “better solutions” (item 90), using “remain competitive” instead of “become more competitive” in item 106, and added extra words in item 99 (to a degree). In all these items, the author of the LTSI believed the discrepancies or other problems substantially changed the meaning of the sentences. The researcher corrected these discrepancies by re-translating those items to the target language (from English into Arabic) and then giving them to one of the back translators who re-back translated from Arabic into English. One of the authors of the LTSI re-evaluated the new translation again for accuracy and closeness in meaning. In the second round of translation, eight items (12, 13, 15, 20, 24, 26, 57, 91, and 99) still had minor problems such as missing words in a sentence and minor English grammatical differences (present tense vs. future tense) and

were re-translated and back-translated as before. The third round of translation had no problems and the author was satisfied that the back-translated items were equivalent in meaning to the original items.

4. Establishment of Equivalence (objective evaluation). Following the subjective evaluation, a more ‘objective’ approach was used to further establish meaning equivalence. In this evaluation, a group of 19 native English speakers (HRE graduate students and other HRD professionals) from the School of Human Resource Education at Louisiana State University rated the equivalence of meaning between the original LTSI and organizational learning items and the back-translated (English) items. The evaluation process proposed by Sperber et al. (1994) which provided an objective evaluation of both versions (see Table 5) was used. The authors proposed two criteria to conduct such an evaluation: 1) comparability of language, and 2) similarity of interpretability. Items were presented in pairs (original and back translated item) and were rated using the two scales described below. A 7-point Likert-type rating scale was used where 1 indicated “not at all comparable – not at all similar” in meaning to 7 “extremely comparable – extremely similar” in meaning. Items with mean ratings below four on both scales were put through the forward and backward translation process until adequate meaning equivalence was established. The means and standard deviations for both objective measures are listed in Appendix E. In the comparability of language measure, three items (33, 66, and 41) had values below 4.0 (3.77, 3.91, and 3.95). These items were translated into Arabic and again back-translated into English. In the similarity of interpretability measure, all items exhibited values above 4.0 indicating that all items had similar meaning.

5. Pilot testing. The LTSI Arabic version was sent to Jordan for review by five employees who come from different educational backgrounds (graduate level, undergraduate level, and high school graduates). The employees were asked to complete the instrument, identify any items they thought were ambiguous, and make any other comments they wished about instrument improvement. The comments on the returned instruments were positive and encouraging. These comments were: “the items in the instrument are easy to understand and respond to”; “the items represent their thoughts and worry about the usefulness of training”; and “even though the instruments are too long, they are comprehensive and complete”. This feedback did not lead to any additional changes. The final version of the Arabic version can be found in Appendix C.

Table 5. Objective Evaluation of Instrument Equivalency.

| Original item | Back-translated Version | |
|---------------|-------------------------|---|
| 1) | 1) | <p><u>A) Comparability of Language</u></p> <p>Not At All Moderately Extremely Comparable Comparable Comparable 1 2 3 4 5 6 7</p> <p><u>B) Similarity of Interpretation</u></p> <p>Not At All Moderately Extremely Similar Similar Similar 1 2 3 4 5 6 7</p> |

Note. Adopted from “Cross-cultural translation: Methodology and validation,” by A. D. Sperber, R. F. Devellis, and B. Boehlecke, 1994, *Journal of Cross-Cultural Psychology*, 25, p. 508.

Data Collection Procedures

During the researcher’s visit to Jordan in January 2002, contacts were initiated with two human resource managers and two CEOs, all of whom showed both interest and willingness to cooperate in the study. During the months of June, July, and August of 2003, the researcher used his personal contacts and relationships to gain access to information about the date, time, and

location of training. This process led to the identification of 28 organizations that showed interest in the study. The human resource managers, the CEO, or the training coordinators within each selected organization were verbally informed about the purpose of the study, the target population, time to complete the instrument, and confidentiality issues. Verbal consent was obtained from each organization to administer the questionnaire.

In this study, the ALTSI was administered in Jordan at varying time lengths following an episode of organizational training. Time varied from directly after training to six months after training. Holton et al. (2000) mentioned that the LTSI could be administered directly after training to diagnose participants' perceptions about what they will meet when they return to their jobs as well as 30-60 days after training to diagnose perceptions of the learning transfer system. When distributed immediately after a training program, either the researcher or the administrator of the training distributed and collected the instruments. In the other cases, the instruments were distributed to trainees through the human resources personnel, who in turn collected them and returned them to the researcher. Differences between times of administration of the instrument were recorded. Training participants were informed either by the administrator of the instruments and/or through a fact sheet (see Appendix A) about the purpose of the study, the time it takes to complete the questionnaire, and issues related to anonymity and confidentiality of information.

Data Analysis Procedures

The research questions in this study were analyzed using an SPSS software package. The methodology for answering each research question is described below.

Research Question One

The first research question asked, "Will exploratory factor analysis of the ALTSI result in an interpretable factor structure consistent with the original LTSI?" Factor analysis was used to

answer the first research question. There are two types of factor analysis: exploratory factor analysis and confirmatory factor analysis. Exploratory factor analysis is primarily used in the early stages of instrument development when the researcher is trying to determine the underlying structure of the instrument. Confirmatory factor analysis is used to confirm the structure of the measuring instrument. Since this is the first time the LTSI was used with a population in Jordan, the exploratory data analysis was more appropriate to use.

Factor analysis is a multivariate statistical technique used to examine the intercorrelations among a large set of variables, and then attempt to find a smaller number of constructs that still capture those relationships (Ary et al., 1996; Benson & Nasser, 1998). The objective of exploratory factor analysis (EFA) is to “reduce the number of dimensions necessary to describe the relationships among the variables” (Gardner, 2001, p. 243). In other words, EFA will uncover the underlying structure of the ALTSI, thereby allowing understanding of the simple structure of the measuring instrument. There are certain steps to follow when using factor analysis. These steps include: extracting factors, deciding on how many factors to retain, and rotating factors to an interpretable and more meaningful solution.

In exploratory factor analysis, there are two methods of extraction: common factor analysis and principal component analysis. Principal component analysis is used for prediction (Hair et al., 1998; Nunnally & Bernstein, 1994) and for data reduction (Floyd & Widaman, 1995). It is less appropriate for exploratory use because a) it does not account for error variance and attempts to explain everything by placing ones on the diagonal of the correlation matrix as an estimate of communalities (meaning that all variance, even error, is appropriate to explain); and b) it attempts to “represent all of the variance of the observed variables” (Floyd & Widaman, 1995, p. 294).

On the other hand, principal axis factoring (or common factor analysis) was more appropriate to use in this study because the purpose of the analysis is to uncover the underlying structure of the instrument. This method has the advantage of accounting for error variance when extractions are made, uses squared multiple correlations (SMC) of each variable with the remainder of the variables when calculating initial communalities, and places communalities on the diagonal of the input correlation matrix “to represent only the common variance of each variable” (Floyd & Widaman, 1995, p. 292) and to remove the unique (error) variance.

Communalities are the percentage of variance in the variable accounted for by the common factors, which are then used to extract factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Floyd & Widaman, 1995; Hair et al., 1998). When the communalities are between .40-.70 which is moderate in nature, it is advisable to use a sample size of 200 subjects or more for factor analysis, to produce an accurate estimate of the population parameters (Fabrigar et al., 1999). Finally, using principal axis factoring produces more accurate estimates of cross-loadings, communalities, factor loadings, and factor correlations than does principal component analysis because it accounts for error variance and uses the shared variance as an estimate of communalities on the diagonal of the correlation matrix (Fabrigar et al., 1999; Floyd & Widaman, 1995).

The overall measure of sampling adequacy (MSA) for the whole data set and for individual items was used to determine the appropriateness of factor analysis. Hair et al. (1998) suggested values above .90 to be excellent while values below .60 should be deemed unacceptable.

When determining the number of factors to extract, the visual scree plot and an eigenvalue greater than or equal to one was used (Benson & Nasser, 1998). An eigenvalue

represents the total variance explained by the factor (Benson & Nasser, 1998). However, in this study, it was appropriate to explore alternative factor structures other than that suggested by the eigenvalue greater than one criterion. This allowed for the exploration of factor structures that are more meaningful or conform more closely to established theory.

Visual scree plots were consulted to determine the number of factors to extract. The visual scree plot separates the scree of trivial factors from the cliff of nontrivial factors (Benson & Nasser, 1998). As a general rule the scree plot usually results in at least one, and sometimes two or three more factors being considered significant than does the eigenvalue standard. Subjective evaluation and visual inspection were satisfactory determinants (Floyd & Widaman, 1995).

Once the factors have been extracted, the next step is to rotate them as an aid in the interpretation of those factors. The main goal behind factor rotation is to produce a simple structure (Gorsuch, 1997) where each variable has the highest loading on its major factor, and the lowest loading on the remaining factors. Because the latent constructs in this study are expected to be correlated, a restriction placed on factors by orthogonal rotation, oblique rotation with direct oblimin was performed. With oblique rotation, the factor pattern matrix was used because the values are “standardized regression weights (betas) reflecting the relationship between the variable and a factor, after partialling out the relationship between the variable and the remaining factors” (Benson & Nasser, 1998, p. 27). The pattern matrix was more appropriate to examine than the structure matrix because “we are interested in the unique variance accounted for by each factor” (Morgan & Casper, 2000, p. 310). Finally, items were considered for retention on factors when they have a loading value above .30.

In conclusion, the following data were reported:

1. The overall MSA value for the data to ensure the appropriateness of the data for factor analysis.
2. The initial communalities for all items as well as the ending communalities (after iteration and rotation) (see Appendix F).
3. The overall percentage of variance accounted for by all factors and by each factor separately.
4. Rotated factor loadings for each factor.
5. Factor correlation matrix.
6. Cronbach's alpha was calculated on each of the factors (Cronbach, 1951). According to Perneger et al. (1995), coefficient alphas greater than .70 are acceptable for early stages of scale development.
7. Descriptive statistics including the mean and standard deviation on each of the factor-subcales was calculated.

Research Questions Two and Three

Research question two states, "Do individual perceptions of the ALTSI factors differ systematically across participant demographic characteristics including gender, age, level of education, and years of experience in the current organization?" Research question three asked, "Do individual perceptions of the ALTSI factors differ systematically across types of training, choice of training, sector of the organization (public vs. private), and task of the organization (e.g., manufacturing, high-tech, banking, and insurance)?" Investigating these demographic variables will help advance our understanding of their importance in building effective transfer systems and training programs in organizations. For example, if the ALTSI factors differed

depending on gender then HRD professionals can build training programs that is tailored to males and females. If the transfer systems are different depending on education level, then we can intervene to build literacy programs to advance employee skill levels as an initial step then build training programs that is tailored to each education level.

Multivariate Analysis of Variance (MANOVA) was used to identify the differences in Arabic transfer system distinctiveness among the variables mentioned in questions two and three. MANOVA is an extension of analysis of variance (ANOVA) in that it can accommodate more than one dependent variable. As with ANOVA, the independent variables in MANOVA are a categorical variable, and the focal point is on the differences between levels of each categorical variable. Nevertheless, what makes MANOVA a multivariate procedure is that it examines the differences between groups for more than one dependent variable simultaneously (Hair et al., 1998). Moreover, MANOVA was been chosen because it accommodates multiple dependent variables while controlling for the Type I error that can be inflated when multiple univariate analyses of variance are employed (Gardner, 2001).

In both of these research questions, the scale scores for the ALTSI constructs were treated as the dependent variables, whereas the different levels of the categorical variables mentioned in research questions two and three (e.g., age, level of education, and type of training) were treated as the independent variables. Each independent variable was tested separately.

In the case where significant differences among levels of the independent variables were detected (meaning that the collection of the dependent variables differed among levels of the independent variable), MANOVA analysis was then followed with univariate analysis of variance (ANOVA) and post hoc comparisons utilizing Tukey's test at an alpha level of .05.

Tukey's test is one of the most conservative post hoc methods because it maintains the experiment-wise error rate at the pre-determined alpha level (Hinkle, Wiersma, Jurs, 1998).

The tests of significance used with MANOVA are Hotelling's Trace, Pillai's Trace, Wilk's Lambda, and Roy's Largest Root when assessing the difference between group means. Pillai's Trace was the test of significance used in this study because it is not affected by violations of MANOVA assumptions, and it is widely recommended (Gardner, 2001). However, the other tests of significance along with their effect size and power were reported in this study to provide additional information about their similarities and differences with each other. In the event that the independent variable had two levels (e.g., gender), Hotelling T^2 was used; otherwise if the independent variable had more than two levels (e.g., levels of education), the ordinary MANOVA was used (Hair et al., 1998).

Finally, MANOVA assumptions were considered in this study. The first assumption was the equivalence of the variance/covariance matrices across all groups. Fortunately, if the groups are of roughly equal size (i. e., if the size of the largest group divided by the size of the smallest group is equal or less than 1.5), a violation of this assumption has minimal impact (Hair et al., 1998). The Box's M test was used to check for this assumption. Usually, values below .05 indicate a violation of this assumption.

The second assumption (homogeneity of variance) was tested using Leven's test of equality of error variance. However, if the groups are roughly of equal size then a violation of this assumption has a minimal impact. The last assumption states that any linear combination of the dependent variables must follow a normal distribution. This assumption was tested by visually inspecting skewness, kurtosis, and the histogram for each dependent variable.

Research Question Four

Research question four states, “Do learning transfer system factors explain a significant portion of the variance in organizational learning characteristics in Jordanian organizations?”

This research question involved two types of analysis:

- (a) Do learning transfer system factors explain a significant portion of the variance in an overall measure of organizational learning?
- (b) Do learning transfer system factors explain a significant portion of the variance in individual facets of organizational learning, including knowledge indeterminacy, learning latitude, organizational unity, and innovation?

In this analysis, the independent variables were scale scores created by summing the items on each factor for constructs of the ALTSI. An alpha level of .05 was set a priori. The four measures of organizational learning (knowledge indeterminacy, learning latitude, organizational unity, and innovation) (Kaiser, 2000) were treated as the dependent variables, and a scale score for each dependent variable was calculated. Moreover, a composite score (summing all the items resulted from factor analysis divided by the number of items) was created for an overall measure of organizational learning.

Regression analysis is a statistical technique that can be used to analyze the relationship between a dependent variable and independent variable(s) (Hinkle et al., 1998). When the number of independent variables exceeds two it is called multiple regression (MR) analysis. The objective of MR analysis is to provide information about the percentage of variance explained in the dependent variable by a group of independent variables (Hair et al., 1998). With regard to sample size, Hair et al. recommend employing a minimum of 15 subjects per independent variable.

MR analysis with full model entry (where the ALTSI factors were entered into the regression model all together) was used to answer the fourth research question. A separate regression analysis was performed for each dependent variable. The goal was to find out if independent variables explained a significant portion of the variance in each measure of organizational learning and in an overall composite score of organizational learning. This analysis was then followed with a hierarchical multiple regression to partition out the unique variance explained by each construct domain of the ALTSI. Moreover, information such as the correlation matrix, R Square, adjusted R Square, Beta weights, and the standard error of estimate were reported.

There are different assumptions associated with MR such as normality of the error term distribution, homoscedasticity (the variance of errors are expected to be the same at all levels of the independent variables), and independence of errors (Hair et al., 1998; Pedhazur, 1997). The first two assumptions were tested while the last assumption was assumed. Moreover, outliers and influential observations were checked (Bates, Holton, & Burnett, 1999). The standardized residual with values above the absolute value of two was used to indicate outliers, while Cook's D with values above one were used to indicate influential observations (Pedhazur, 1997).

CHAPTER 4

ANALYSIS OF RESULTS

This chapter presents the results of the construct validation of the Learning Transfer System Inventory (LTSI) in Jordan. The demographic profile of the respondents is presented first. The results of each research question follow the demographic data.

Demographic Profile

The demographic data collected in this study included gender, age, level of education, years of experience in the current organization, types of training, choice of training, sector of the organization (public vs. private), and task of the organization.

Gender of Respondents

Slightly more than half (54.7%) of the respondents were male (see Table 6).

Table 6. Sample Description by Gender.

| Gender | N | Percent |
|--------|-----|---------|
| Male | 246 | 54.7 |
| Female | 204 | 45.3 |
| Total | 450 | 100.0 |

Age of Respondents

The respondents were asked to indicate their age by marking one of five categories. Most participants in this sample were 30 or more years old ($\underline{n} = 321$ or 71.4%). The age category with the highest percentage of responses was 30-39 years (37.1%). Only 3.1% ($\underline{n} = 14$) of respondents were under the age of 21 and 11.6% ($\underline{n} = 52$) were older than 45 years. Table 7 provides a summary of the age distribution for the sample.

Table 7. Sample Description by Age.

| Age in Years | N | Percent |
|--------------|-----|---------|
| <21 | 14 | 3.1 |
| 21-29 | 115 | 25.6 |
| 30-39 | 167 | 37.1 |
| 40-44 | 102 | 22.7 |
| ≥45 | 52 | 11.6 |
| Total | 450 | 100.0 |

Educational Level of Respondents

In terms of educational level, most respondents ($n = 360$ or 80%) had completed a bachelor's degree or higher (see Table 8). About 16% were high school graduates, and about four percent had not completed high school.

Table 8. Sample Description by Educational Level.

| Education | N | Percent |
|-----------------------|-----|---------|
| Less than High School | 19 | 4.2 |
| High School Graduate | 71 | 15.8 |
| Bachelor's Degree | 311 | 69.1 |
| Master's Degree | 44 | 9.8 |
| Doctorate Degree | 5 | 1.1 |
| Total | 450 | 100.0 |

Years of Experience in the Current Organization

Table 9 shows the distribution of the respondents by years of experience in the organization in which they currently work. The respondents' years of experience fell into two major categories: 42% ($n = 189$) of the respondents had work experience that ranged between four to ten years, while 23.6% ($n = 106$) had work experience that ranged between 11-17 years. About 16% of respondents reported less than four years of experience.

Table 9. Sample Description by Work Experience in Years.

| Work Experience | N | Percent |
|--------------------|-----|---------|
| Less than 4 years | 74 | 16.4 |
| 4-10 years | 189 | 42.0 |
| 11-17 years | 106 | 23.6 |
| More than 17 years | 81 | 18.0 |
| Total | 450 | 100.0 |

Types of Training Attended

The respondents were asked to respond to an open-ended question to indicate the types of training they had most recently completed. Their responses were almost equally distributed among nine general types of training (see Table 10).

Table 10. Sample Information by Types of Training.

| Types of Training | N | Percent |
|--------------------------|----|---------|
| Computer/Library | 61 | 13.6 |
| Technical | 55 | 12.2 |
| Interpersonal | 55 | 12.2 |
| New Employee Orientation | 50 | 11.1 |

(table cont.)

| | | |
|--------------------------|-----|-------|
| Managerial | 49 | 10.9 |
| Safety | 48 | 10.7 |
| Accidents & Compensation | 47 | 10.4 |
| Web Page Design | 46 | 10.2 |
| Customer Relations | 39 | 8.7 |
| Total | 450 | 100.0 |

Choice of Training of Respondents

Table 11 presents the distribution of the respondents by their choice to attend training. Respondents were asked to select whether their participation in the training on which they based their responses to the ALTSI was voluntary or mandatory. Voluntary training indicated that trainees had a choice in attending training. On the other hand, mandatory training required participation. Slightly more than half of the respondents ($n = 234$ or 53.5%) reported the training on which they based their responses to the ALTSI scales was mandatory.

Table 11. Sample Information by Choice of Training.

| Training Choice | N | Percent |
|-----------------|-----|---------|
| Mandatory | 234 | 53.5 |
| Voluntary | 203 | 46.5 |
| Total | 437 | 100.0 |

Sector of Organization of Respondents

Table 12 presents the distribution of the respondents by sector (public vs. private) of the organization. Over 60% of respondents ($n = 278$ or 61.8%) worked in private sector organizations.

Table 12. Sample Information by Sector of the Organization.

| Sector of the Organization | N | Percent |
|----------------------------|-----|---------|
| Public | 172 | 38.2 |
| Private | 278 | 61.8 |
| Total | 450 | 100.0 |

Task of Organization for Respondents

Table 13 presents the distribution of the respondents by task of the organization. Over 25% of the respondents worked in organizations that provided education (e. g., public sector universities). Other than a relatively small percentage of responses from the service industry (5.6%), respondents were fairly evenly spread across manufacturing, high tech, banking, insurance, retail, and government.

Table 13. Sample Information by Task of the Organization.

| Task of the Organization | N | Percent |
|--------------------------|-----|---------|
| Public/Education | 116 | 25.8 |
| Insurance | 57 | 12.7 |
| Public/Government | 56 | 12.4 |
| High Tech | 55 | 12.2 |
| Banking | 53 | 11.8 |
| Retailer | 46 | 10.2 |
| Manufacturing | 42 | 9.3 |
| Service Industry | 25 | 5.6 |
| Total | 450 | 100.0 |

Research Question One

Research question one asks “Will exploratory factor analysis of the ALTSI result in an interpretable factor structure consistent with the original LTSI?” Principle axis factoring was performed utilizing the oblique rotation method to uncover the underlying structure of the LTSI in Jordan (an Arabic culture). The ALTSI consisted of 89 items measuring two construct domains: the training-specific domain with 63 items and the training-in-general domain with 26 items. The two sections of the ALTSI were analyzed separately.

Before conducting exploratory factor analysis, the data were screened in several ways to ensure their normality and appropriateness for factor analysis. With respect to normality, visual inspection of the histogram, mean, median, mode, skewness, and kurtosis for each item and for the whole data shows that the data were normally distributed.

With regard to the appropriateness of the data for factor analysis, two statistical tests (overall Measure of Sampling Adequacy (MSA) and the Bartlett Test of Sphericity) were conducted. MSA is an index used to determine the appropriateness of the data for factor analysis (Hair et al., 1998). The MSA assesses the degree of intercorrelations among variables and provides information about the appropriateness of the data for factor analysis. An (MSA) value above .70 shows that there is meaningful variance to explain and that the data are suitable for factor analysis. According to Hair et al. (1998), an MSA value below .60 is considered poor and potentially unacceptable, whereas values above .80 are considered meritorious. On the other hand, the Bartlett Test of Sphericity measures the “overall significance of all correlations within a correlation matrix” (Hair et al., 1998, p. 88). The null hypothesis states that there is no factor structure for the data at hand, then the goal is to reject the null hypothesis. A p-value below .05 indicates that there is a factor structure for the data and it is appropriate to run factor analysis.

The results of the MSA (.87) and the Bartlett Test of Sphericity ($p < .05$) indicated that the data were suitable for factor analysis.

MSA values can be applied to the data set as a whole as well as to individual variables. When MSA values for individual variables fall below .60 their deletion from the data set may be an appropriate measure to improve overall factorability. Another indication of the factorability of the data set was the item-to-respondent ratios, which ranged from 7.10:1 to 7.06:1 for the training-specific domain and 21.1:1 for the training-in-general domain. As a general rule, the minimum item-to-respondents ratio should be 5:1 (Hair et al., 1998).

To justify the application of factor analysis, it is important to ensure that the correlations of the data matrix for the variables have a substantial number of correlations above .30 (Hair et al., 1998). Visual inspection of the data matrix revealed a substantial number of correlations greater than .30. Moreover, the anti-image correlation matrix (with negative partial correlations) indicated a low partial correlation between the variables. The anti-image correlation matrix is important to consider because it includes information about partial correlations. Low partial correlations suggest “true” underlying factors exist because the variables can be explained by the factor that loads on each variable.

Finally, there are certain assumptions associated with factor analysis. These assumptions are multivariate normality, homoscedasticity, and linearity. According to Hair et al. (1998), these assumptions are more conceptual than statistical. Only multivariate normality is necessary if a statistical test is applied to the significance of the factors. The Bartlett Test of Sphericity with $p < .05$ confirmed this assumption.

Training-Specific Domain

The training-specific domain asked respondents to reference their responses to a specific training program. This section of the instrument contained 63 items. The overall MSA for this section was .87 indicating the data was appropriate for factor analysis. Before conducting factor analysis, the MSA value for each item was investigated. All individual items had adequate MSA values (above .60) except for items 20, 21, 24, 44, and 45 with values of .50, .54, .42, .55, and .54 respectively. These five items were deleted from further analysis. In specific terms, 18 items had an MSA value above .90; 23 had an MSA value between .80 and .89; 11 had an MSA value between .70 and .79; and six had an MSA value between .60 and .69.

Exploratory factor analysis procedures were completed for the purpose of identifying the latent constructs underlying the data. The criteria for determining how many factors to extract included the eigenvalue greater than one rule, and a visual inspection of both the scree plot (Ary et al., 1996) and several trial solutions. The initial analysis was run without specifying how many factors to retain. This procedure resulted in 15 factors explaining 62.86% of the common variance. However, this factor structure included three factors containing only one item that cross-loaded across multiple factors. Based on the previous analysis and after consulting the scree plot, the next analysis was run by specifying 12 factors to extract. A 12-factor solution appeared to provide a conceptual and theoretical representation of learning transfer system factors in Jordan.

The 12-factor solution explained 57.24% of the common variance and produced a more meaningful structure (see Table 14). Moreover, the residual correlation matrix was examined and no meaningful residuals were found, suggesting that the 12-factor structure was appropriate and that no more factors could be extracted. The 12 factors were named similar to the factors found

in the original LTSI with the exception of two additional factors (environmental obstacles to transfer and job space & transfer consequences) which emerged as a result of the combination of two factors for each. These factors were described as follow:

1. Transfer design. The first factor included six items with a reliability estimate of .87 and accounted for approximately 20% of the total variance in all items. Transfer design measures the extent to which training has been designed and delivered to give trainees the ability to transfer learning to the job. This factor included items such as “the activities and exercises the trainers used helped know how to apply my learning on the job” and “the trainer(s) used lots of examples that showed me how I could use my learning on the job”.
2. Environmental obstacles to transfer. This factor included four items with a reliability estimate of .72 and accounted for 5.7% of the total variance. This factor measures the degree to which supervisors’ control of resources at work such as budgets, materials, and supplies hinder the application of learning on the job without their approval. This factor included items such as “my supervisor opposes the use of the techniques I learned in training” and “it will be hard to get materials and supplies I need to use the skills and knowledge learned in training”.
3. Personal outcomes-positive. This factor included four items ($\alpha = .85$) related to behaviors such as applying training on the job will result in outcomes that are positive for the individual (e.g., salary increase). It accounted for 4.9% of the total variance. This factor included items such as “if I use my training, I will receive a salary increase” and “if I use what I learn in training, it will help me get higher performance ratings”.

4. Peer support. The fourth factor included four items ($\alpha = .85$) related to the extent to which peers reinforce and support the use of learning on the job, and it accounted for 4.3% of the total variance. This factor included items such as “my colleagues appreciate my using new skills I have learned in training” and “my colleagues encourage me to use the skills I have learned in training”.
5. Supervisor sanctions. This factor included four items ($\alpha = .71$) related to the extent to which individuals perceive negative responses from supervisors when applying skills learned in training. It accounted for 4.1% of the total variance. This factor included items such as “my supervisor will object if I try to use this training on the job” and “my supervisor will oppose the use of techniques I learned in this training.
6. Supervisor support. This factor included six items ($\alpha = .85$) related to the extent to which supervisors support and reinforce use of training on the job. It accounted for 3.3% of the total variance. This factor included items such as “my supervisor meets with me to discuss ways to apply training on the job” and “my supervisor lets me know I am doing a good job when I use my training”.
7. Motivation to transfer. The seventh factor contained four items ($\alpha = .76$) related to the direction, intensity, and persistence of effort toward utilizing in a work setting skills and knowledge learned. This factor accounted for 3.1% of the total variance and included items such as “training will increase my personal productivity” and “I believe that training will help me do my current job better”.
8. Learner readiness. This factor included four items ($\alpha = .75$) and accounted for 2.7% of the total variance. This factor is related to the extent to which individuals are prepared to enter and participate in training. It included items such as “prior to the

- training, I knew how the program was supposed to affect my performance” and “before the training, I had a good understanding of how it would fit my job-related development”.
9. Content validity. This factor included five items ($\alpha = .77$) related to the extent to which trainees judge training content to accurately reflect job requirements. It accounted for 2.6% of the total variance. This factor included items such as “the methods used in training are very similar to how we do it on the job” and “the situations used in training are very similar to those I encounter on my job”.
 10. Job space & transfer consequences. The tenth factor included three items ($\alpha = .48$) that accounted for 2.4% of the total variance. This factor measures the extent to which people recognize that using training on the job is associated with certain consequences. For example, trainees perceived that if they had time in their schedule to use training then they will likely get a raise. However, if trainees did not use their time wisely to apply training on the job they might be reprimand. This factor included items such as “successfully using this training will help me get a salary increase” and “I have time in my schedule to change the way I do things to fit my new learning”.
 11. Opportunity to use training. This factor included three items ($\alpha = .70$) related to which trainees are provided with or obtain resources and tasks on the job enabling them to use training on the job. It accounted for 2.4% of the total variance. This factor included items such as “I will get opportunities to use training on the job” and “there are enough human resources available to allow me to use skills acquired in training”.
 12. Capacity for transfer. The twelfth factor included two items ($\alpha = .55$) and accounted for 2.3% of the total variance. This factor measures the extent to which individuals

have the time, energy, and mental space in their work lives to make changes required to transfer learning to the job. This factor included items such as “I don’t have time to try to use this training” and “trying to use this training will take too much energy away from my other work”.

Table 14. Factor Loadings for the Training-Specific Domain.

| Item # | Factor | | | | | | | | | | | |
|--|--------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| <i>Transfer Design</i> (avg. loading = .59; avg. cross-loading = .05) | | | | | | | | | | | | |
| 52 | .73 | .00 | .05 | .02 | -.00 | .07 | .06 | -.01 | -.07 | .06 | -.05 | -.00 |
| 54 | .67 | -.01 | .01 | -.01 | .05 | .07 | -.04 | .02 | -.03 | -.03 | -.02 | .03 |
| 51 | .63 | -.04 | .00 | -.10 | -.01 | .03 | .14 | .04 | -.06 | .10 | .04 | -.03 |
| 53 | .62 | -.04 | .10 | -.15 | .04 | .06 | .00 | .09 | .00 | -.07 | .08 | -.05 |
| 55 | .57 | -.12 | .08 | -.11 | -.03 | .00 | -.00 | .06 | -.10 | -.06 | .06 | .02 |
| 50 | .36 | -.14 | -.07 | -.12 | -.02 | .09 | .12 | .02 | -.20 | .18 | .01 | .01 |
| <i>Environmental Obstacles to Transfer</i> (avg. loading = .60; avg. cross-loading = .07) | | | | | | | | | | | | |
| 63 | -.13 | .72 | -.07 | .06 | -.02 | .06 | .09 | .02 | .00 | .00 | .08 | -.08 |
| 61 | -.05 | .65 | .00 | -.02 | -.01 | .04 | .14 | -.08 | .00 | .01 | .00 | -.05 |
| 42 | .05 | .53 | -.00 | -.11 | .07 | -.20 | -.16 | .06 | .04 | .10 | -.05 | -.08 |
| 38 | -.01 | .49 | -.08 | .23 | -.05 | .06 | -.16 | .07 | .07 | .29 | .01 | -.02 |
| <i>Personal-Outcomes Positive</i> (avg. loading = .72; avg. cross-loading = .04) | | | | | | | | | | | | |
| 7 | -.00 | -.00 | .87 | .03 | -.00 | .00 | .01 | .09 | .06 | -.03 | .07 | .02 |
| 8 | -.00 | -.03 | .87 | .00 | -.01 | .01 | .02 | .06 | -.02 | -.05 | .01 | -.02 |
| 6 | .06 | -.04 | .82 | .03 | .03 | -.00 | .06 | .00 | .03 | .03 | .00 | -.04 |
| 15 | -.08 | -.09 | .32 | -.14 | -.02 | .13 | .12 | .00 | -.05 | .21 | .00 | .08 |
| <i>Peer Support</i> (avg. loading = .69; avg. cross-loading = .04) | | | | | | | | | | | | |
| 29 | .03 | -.00 | .00 | -.80 | -.01 | .03 | .00 | -.05 | .11 | .08 | .10 | -.00 |

(table cont.)

| | | | | | | | | | | | | |
|-------------------------------|------|------|------|--|------|------|------|------|------|------|------|------|
| 30 | .06 | .02 | .02 | -.78 | .00 | .04 | .00 | -.03 | .03 | .01 | -.00 | .04 |
| 28 | .13 | -.03 | .09 | -.63 | .03 | .08 | -.01 | .00 | .05 | .00 | .04 | .00 |
| 31 | -.00 | -.03 | -.01 | -.55 | -.09 | .16 | -.05 | .10 | -.02 | .04 | .03 | .02 |
| Supervisor Sanctions | | | | (avg. loading = .63; avg. cross-loading = .04) | | | | | | | | |
| 35 | -.01 | -.04 | -.03 | -.02 | .72 | .03 | -.07 | .02 | -.05 | .09 | -.15 | -.01 |
| 36 | .01 | .04 | -.13 | -.03 | .71 | .06 | -.07 | .01 | .00 | -.01 | -.05 | .07 |
| 34 | .01 | -.00 | .04 | .04 | .56 | -.01 | .06 | .02 | .00 | .07 | -.08 | -.03 |
| 41 | -.02 | .02 | .05 | .03 | .53 | -.02 | .00 | -.03 | -.02 | -.07 | .16 | -.02 |
| Supervisor Support | | | | (avg. loading = .66; avg. cross-loading = .03) | | | | | | | | |
| 39 | -.01 | .17 | .03 | .08 | -.06 | .75 | -.05 | -.10 | .01 | .03 | .09 | .02 |
| 40 | .12 | .08 | -.02 | -.03 | .00 | .72 | .07 | .02 | .07 | -.09 | -.02 | -.02 |
| 33 | -.04 | -.16 | -.00 | -.05 | .06 | .69 | -.06 | .04 | -.04 | -.02 | -.04 | -.01 |
| 43 | .09 | .03 | .05 | .02 | .02 | .65 | -.03 | .08 | .04 | -.13 | .02 | -.02 |
| 32 | -.03 | -.06 | -.03 | -.18 | .05 | .59 | .10 | .10 | -.06 | .02 | -.05 | -.02 |
| 37 | .03 | -.11 | .01 | -.12 | .03 | .57 | -.06 | -.03 | -.01 | .09 | .02 | .01 |
| Motivation to Transfer | | | | (avg. loading = .59; avg. cross-loading = .05) | | | | | | | | |
| 3 | .03 | .00 | .11 | -.07 | .01 | -.01 | .63 | .02 | -.03 | .08 | -.11 | .17 |
| 4 | .05 | .02 | .08 | .05 | -.00 | .02 | .61 | .05 | -.02 | .07 | .03 | -.03 |
| 2 | .06 | .02 | .01 | -.05 | .01 | -.01 | .57 | .06 | .11 | -.00 | .05 | .08 |
| 5 | .02 | .02 | .03 | .04 | .05 | .02 | .56 | .14 | -.10 | -.05 | -.02 | .11 |
| Learner Readiness | | | | (avg. loading = .63; avg. cross-loading = .05) | | | | | | | | |
| 13 | .06 | .01 | .06 | .07 | -.05 | .08 | -.02 | .69 | .06 | -.00 | -.13 | .00 |
| 10 | -.03 | -.07 | .00 | .00 | -.04 | -.00 | -.05 | .68 | -.05 | -.07 | .00 | .04 |
| 9 | -.07 | .09 | .03 | -.05 | .04 | .04 | .14 | .60 | -.06 | .04 | .01 | .00 |
| 1 | .10 | .03 | .07 | .00 | -.00 | -.09 | .16 | .54 | .02 | -.10 | .02 | .09 |
| Content Validity | | | | (avg. loading = .50; avg. cross-loading = .10) | | | | | | | | |
| 47 | -.04 | -.15 | .01 | .13 | .01 | .01 | -.00 | .15 | -.61 | .15 | .06 | .11 |
| 48 | .20 | .03 | .00 | .07 | .06 | .05 | .01 | .02 | -.57 | -.00 | .06 | -.03 |

(table cont.)

| | | | | | | | | | | | | |
|---|-------|------|------|------|------|------|------|------|------|------|------|------|
| 49 | .23 | .07 | -.04 | .01 | -.03 | .07 | .23 | -.11 | -.47 | -.18 | -.14 | .01 |
| 58 | .17 | -.10 | .12 | -.09 | .00 | .02 | -.04 | .05 | -.44 | -.07 | .23 | .00 |
| 59 | .13 | .11 | .09 | -.05 | -.03 | .05 | -.05 | .11 | -.40 | -.11 | .33 | .11 |
| <i>Job Space and Transfer Consequences</i> (avg. loading = .41; avg. cross-loading = .05) | | | | | | | | | | | | |
| 22 | .07 | .10 | .26 | .02 | -.02 | .05 | -.04 | -.13 | -.02 | .46 | -.04 | .05 |
| 23 | -.00 | .24 | .02 | -.03 | -.01 | .03 | -.08 | -.01 | -.08 | .44 | -.04 | -.04 |
| 25 | .05 | .01 | -.00 | -.14 | .05 | .01 | .11 | .06 | .00 | .33 | .06 | -.01 |
| <i>Opportunity to Use</i> (avg. loading = .42; avg. cross-loading = .07) | | | | | | | | | | | | |
| 56 | .09 | .10 | .26 | .02 | -.02 | .05 | -.04 | -.13 | -.14 | .08 | .50 | .10 |
| 57 | .14 | .24 | .02 | -.03 | -.01 | .03 | -.08 | -.01 | -.12 | .01 | .43 | .00 |
| 60 | .09 | .01 | -.00 | -.14 | .05 | .01 | .11 | .06 | -.23 | .06 | .33 | .10 |
| <i>Capacity for Transfer</i> (avg. loading = .63; avg. cross-loading = .04) | | | | | | | | | | | | |
| 12 | -.08 | -.03 | -.03 | -.02 | .00 | .00 | .00 | -.02 | .06 | .03 | -.11 | .72 |
| 11 | -.01 | -.02 | .03 | -.13 | .03 | -.03 | .03 | -.03 | -.03 | -.04 | -.01 | .53 |
| Eigenvalues | 11.31 | 3.28 | 2.86 | 2.50 | 2.40 | 1.91 | 1.80 | 1.55 | 1.52 | 1.37 | 1.36 | 1.33 |
| % | 19.50 | 5.66 | 4.94 | 4.31 | 4.14 | 3.30 | 3.10 | 2.67 | 2.61 | 2.37 | 2.36 | 2.29 |

Items were retained on factors if they had a minimum factor loading of .30. Items with a multiple cross-loading of .20 and above on at least three factors were deleted from the factor. The .30 level is a generally accepted minimum factor loading because it indicates that approximately 10% of the variance for a corresponding variable has been explained by a factor (Tinsley & Tinsley, 1987). The pattern matrix was chosen to examine the data instead of the structure matrix because in using the oblique rotation method we were interested in the unique variance accounted for by each factor. Also, because the pattern matrix yields partial weights, the values in this matrix are more appropriate to interpret (Hair et al., 1998).

Using these criteria, 49 items of the original 63 items were retained on the ALTSI and accounted for 57.24% of the total variance. Fourteen items were dropped because of low factor loadings and cross-loadings. Most items loaded on their respective factors (as suggested by previous research with the LTSI) except for items 50 and 51 which loaded on the transfer design instead of the opportunity to use factor. Capacity for transfer factor had only two items. Personal outcomes-negative did not emerge as a possible factor for learning transfer in Jordan. To a large extent the original factor structure of the LTSI was replicated. Ten of the 12 factors matched those of the original LTSI. The other two factors (environmental obstacles to transfer and job space & transfer consequences) emerged in this analysis from a combination of factors. Factor loadings for items retained in this solution ranged from .33 to .87 with an average loading of .59 on major factor and .05 on the rest of the factors (see Table 14).

In brief, the loading of items was characterized by an interpretable simple structure, meaning that they had high loadings on the major factor and low cross-loadings on the other factors. Ten of the 12 constructs hypothesized in the original English version of the instrument emerged. Items loading on those factors were highly consistent with the original LTSI items. All factors had acceptable reliabilities as estimated by Cronbach's Alpha except for two factors (capacity for transfer and job space & transfer consequences). Scale reliabilities ranged from .70-.87, with an average alpha of .74. Ten of the 12 scales exceeded Nunnally and Bernstein's (1994) suggested minimum reliability of at least .70 for instruments in early stages of development (see Table 19). Also, table 19 provides information on means, standard deviations, and reliability coefficients for the 12 factors extracted.

Finally, table 15 provides the factor correlation matrix for the 12 factors. This matrix is useful in examining the unique relationship between the constructs. For example, we can derive

that trainees' perceptions of supervisor support is associated with their perceptions of positive outcomes once they apply training on the job.

Table 15. Factor Correlation Matrix for the Training-Specific Domain.

| Factor | TD | EOT | POP | PEER | SAN | SUPT | MOT | LR | CV | JSTC | OPP | CAP |
|--------|------|------|------|------|------|------|------|------|------|------|-----|-----|
| TD | -- | | | | | | | | | | | |
| EOT | -.06 | -- | | | | | | | | | | |
| POP | .22 | .03 | -- | | | | | | | | | |
| PEER | -.25 | .09 | -.37 | -- | | | | | | | | |
| SAN | .06 | .00 | .07 | .00 | -- | | | | | | | |
| SUPT | .32 | -.04 | .26 | -.44 | .06 | -- | | | | | | |
| MOT | .27 | -.16 | .23 | -.21 | .06 | .18 | -- | | | | | |
| LR | .24 | -.07 | .25 | -.11 | -.01 | .13 | .25 | -- | | | | |
| CV | -.32 | -.02 | -.27 | .24 | -.04 | -.27 | -.17 | -.15 | -- | | | |
| JSTC | .05 | .10 | .16 | -.09 | -.02 | .12 | -.03 | .03 | -.07 | -- | | |
| OPP | .22 | -.19 | -.03 | -.02 | -.00 | .13 | .08 | .04 | -.07 | .05 | -- | |
| CAP | .26 | -.16 | .09 | -.04 | .14 | .14 | .16 | .16 | -.11 | -.04 | .13 | -- |

Note. TD (Transfer Design), EOT (Environmental Obstacles to Transfer), POP (Personal Outcomes-Positive), PEER (Peer Support), SAN (Supervisor Sanctions), SUPT (Supervisor Support), MOT (Motivation to Transfer), LR (Learner Readiness), CV (Content Validity), JSTC (Job Space and Transfer Consequences), OPP (Opportunity to use Training), and CAP (Capacity for Transfer).

Training-in-General Domain

This section of the instrument contained 26 items. The MSA for the training-in-general data set was .85, indicating it was appropriate for factor analysis. All individual items had an acceptable MSA value above .60. Three items had an MSA value above .90; 16 items had an MSA value between .80 and .89; and seven items had an MSA value between .70 and .79.

The initial examination of the eigenvalues using the eigenvalue greater than one criterion suggested the presence of seven factors, explaining 60.78% of the total variance. Two constructs (feedback and effort-performance expectations) split into two different factors. The feedback factor structure appeared conceptually to have two different factors. Trainees perceived two different types of feedback following the application of their training. The first type of feedback was named feedback/advice, because it is related to verbal feedback received from fellow workers in the form of advice. An example of items included in this scale was “people often make suggestions about how I can improve my job performance”. The second type of feedback

was named feedback/help because it is related to actual help trainees received from fellow workers as a form of feedback. An example of items included in this construct was “when I try new things I have learned, I know who will help me”. The second factor (effort-performance expectations) split also into two constructs. However, a conceptual ground for this distinction did not seem to be justified.

Based on the above discussion and recommendations of the scree plot, a six-factor solution was forced. The six-factor solution explained 56.85% of the common variance and it represented the most meaningful solution and it was highly consistent with the original LTSI (Holton et al., 2000). The seven factors structure was not as sound theoretically because it created an extra factor by causing a split in the effort-performance expectations construct. The residual matrix was also examined for the six-factor solution and very low correlations existed, suggesting that there were no more factors to extract. After using a cut off value of .30, along with deleting cross-loadings above .20, 24 items of the original 26 items were retained (see Table 16). The average loading on major factor was .61 with an average loading of .05 on the rest of the factors. Finally, the respondent-to-item ratio was 21.1:1.

The factors were named similar to those found in the original LTSI as follow (see Table 16):

1. Effort-performance expectations. This factor included four items ($\alpha = .79$) related to the extent to which trainees perceive their efforts in applying training on the job to result in some type of performance. It accounted for 24.5% of the total variance. This factor included items such as “the harder I work at learning, the better I do my job” and “the more training I apply on the job”.

2. Feedback/advice. This factor included four items ($\alpha = .79$) related to the type of feedback trainees receive when applying training on the job. It accounted for 8.7% of the variance. This factor included items such as “people often make suggestions about how I can improve my job performance” and “after training, I get feedback from people on how well I am applying what I learn”.
3. Performance-outcomes expectations. The third factor included four items ($\alpha = .83$) explaining 7.5% of the total variance and it is related to the expectations that changes in job performance will lead to valued outcomes. This factor included items such as “when I do things to improve my performance, good things happen to me” and “my job is ideal for someone who likes to get rewarded when they do something really good”.
4. Resistance/openness to change. This factor included five items ($\alpha = .53$) measuring the degree to which trainees perceive their work groups as open or reluctant to change. It accounted for 6.0% of the change. This factor included items such as “my group is reluctant to try new ways of doing things” and “my workgroup is open to change if it will improve our job performance”.
5. Feedback/help. The fifth factor included three items ($\alpha = .73$) measuring the extent to which trainees received actual help when trying to apply training on the job. It accounted for 4.9% of the variance. This factor included items such as “when I try new things I have learned, I know who will help me” and “if my performance is not what it should be, people will help me improve”.
6. Self-efficacy. This factor included four items ($\alpha = .80$) measuring the level of confidence trainees have in their ability to change their performance when they want

to. It accounted for 4.3% of the total variance. This factor included items such as “I am confident in my ability to use new skills at work” and “I never doubt my ability to use newly learned skills on the job”.

Table 16. Factor Loadings for the Training-in-General Domain.

| Item # | Factor | | | | | |
|---|--------|--|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| <i>Effort Performance-Expectations</i> | | (avg. loading = .63; avg. cross-loading = .06) | | | | |
| 66 | .76 | -.00 | .05 | -.04 | .00 | -.02 |
| 65 | .64 | -.00 | .07 | .09 | .03 | -.11 |
| 69 | .59 | -.03 | -.16 | -.06 | -.13 | -.08 |
| 71 | .53 | .00 | -.07 | .02 | -.14 | -.14 |
| <i>Feedback/Advice</i> | | (avg. loading = .61; avg. cross-loading = .07) | | | | |
| 81 | -.07 | .76 | .00 | .04 | -.08 | -.01 |
| 80 | -.02 | .73 | .02 | -.03 | -.17 | -.13 |
| 79 | .14 | .49 | -.13 | .01 | .08 | -.05 |
| 86 | -.07 | .45 | -.02 | .02 | -.40 | -.06 |
| <i>Performance-Outcomes Expectations</i> | | (avg. loading = .66; avg. cross-loading = .06) | | | | |
| 67 | -.00 | .06 | -.84 | -.11 | -.03 | .00 |
| 68 | -.00 | .14 | -.81 | .01 | .00 | -.04 |
| 72 | -.01 | .13 | -.68 | .01 | -.07 | -.02 |
| 70 | .26 | .09 | -.30 | .08 | -.21 | -.05 |
| <i>Resistance/Openness to Change</i> | | (avg. loading = .44; avg. cross-loading = .04) | | | | |
| 76 | -.01 | .01 | .10 | .59 | -.06 | -.04 |
| 74 | .02 | .04 | .09 | .52 | .03 | -.02 |
| 77 | -.05 | -.04 | -.10 | .44 | .02 | -.02 |
| 73 | -.06 | -.03 | .02 | .34 | -.09 | -.10 |
| 78 | .12 | .02 | -.06 | .30 | .02 | .05 |

(table cont.)

| Feedback/Help | | (avg. loading = .63; avg. cross-loading = .06) | | | | | |
|----------------------|-------|--|------|------|------|------|--|
| 88 | .01 | -.09 | -.02 | .07 | -.83 | .07 | |
| 89 | .10 | .17 | -.04 | -.05 | -.57 | -.00 | |
| 87 | .07 | .10 | -.05 | .01 | -.48 | -.15 | |
| Self-Efficacy | | (avg. loading = .66; avg. cross-loading = .05) | | | | | |
| 83 | -.01 | .02 | -.03 | -.01 | .06 | -.83 | |
| 84 | .04 | .06 | -.08 | .07 | .03 | -.66 | |
| 82 | .13 | -.06 | .04 | .03 | -.03 | -.59 | |
| 85 | .08 | .10 | -.02 | .04 | -.06 | -.56 | |
| Eigenvalues | 6.62 | 2.26 | 1.94 | 1.56 | 1.28 | 1.13 | |
| % of Variance | 25.45 | 8.71 | 7.45 | 6.00 | 4.90 | 4.34 | |

Overall reliabilities were above the minimum level suggested by Nunnally and Bernstein's .70 alpha level except for the resistance/openness to change factor which yielded an alpha of .53. Other reliabilities ranged from .73 to .83, producing an overall average alpha of .79, indicating that true factors did exist. Finally, table 17 provides information on the factor correlation matrix whereas table 19 provides information on means, standard deviations, and reliability coefficients for the extracted six factors.

Table 17. Factor Correlation matrix for the Training-in-General Domain.

| Factor | EPE | FEEDA | POE | CHGE | FEEDH | SE |
|--------|------|-------|------|------|-------|----|
| EPE | -- | | | | | |
| FEEDA | .22 | -- | | | | |
| POE | -.40 | -.19 | -- | | | |
| CHGE | .21 | .19 | -.16 | -- | | |
| FEEDH | -.22 | -.39 | .28 | -.19 | -- | |
| SE | -.46 | -.13 | .25 | -.28 | .33 | -- |

Note. EPE (Effort-Performance Expectations), FEEDA (Feedback/Advice), POE (Performance-Outcomes Expectations), CHGE (Resistance/Openness to Change), FEEDH (Feedback/Help), SE (Self-Efficacy).

Summary for Research Question One.

For both the training-specific and training-in-general analysis (a) factor loadings reflected interpretable simple structures; (b) only items with loadings .30 or higher were included in the scales; and (c) average item loading values were greater than .50 on major factors and less than .15 on other factors for all scales.

For the training-specific domain, 12 factors emerged, explaining 57.24% of the total variance. All items (except for items 50 and 51 which loaded on transfer design factor instead of opportunity to use factor) loaded on their respective factors and closely matched the items found in the original English version of the LTSI. Finally, using a cut off for factor loadings of .30, and deleting multiple cross-loadings above .20, 49 items were retained in this section of the instrument. With the exception of two constructs (capacity for transfer and job space & transfer consequences), scale reliabilities ranged from .70-.87. Table 19 shows interfactor correlations and indicates that 70% percent of the factors were significantly correlated.

For the training-in-general domain, six factors were extracted explaining 56.85% of the variance. Twenty-four items were retained and were highly consistent with that of the original LTSI items. The constructs had acceptable reliabilities (except for Resistance/Openness to Change) ranging from .73-.83. Table 18 provides a comparison between the factors, their respective items found in the ALTSI, and those of the original LTSI. Most of the factors were significantly correlated (see Table 19).

Table 18. Factor and Item Comparisons between the ALTSI and the LTSI.

| Factor | LTSI Item Numbers | *Additional Items | ALTSI Item Numbers |
|---|--------------------------|--------------------------|---------------------------|
| Specific Training Program Scales | | | |
| Learner Readiness | 1, 9, 10, 13 | | 13, 10, 9,1 |
| Motivation to Transfer | 2, 3, 4, 5 | | 3, 4, 2, 5 |

(table cont.)

| | | | |
|--|------------------------|------------------------|---|
| Personal Outcomes-Positive | 6, 16, 17, | 7, 8, 15, 18, 22 | 7, 8, 6, 15 |
| Personal Outcomes-Negative | 14, 21, 23, 24 | | NA |
| Personal Capacity for Transfer | 19, 25, 26, 27 | 11, 12, 20 | 12, 11 |
| Peer Support | 28, 29, 30, 31 | | 29, 30, 28, 31 |
| Supervisor/Manager Support | 32, 33, 37, 39, 40, 43 | | 39, 40, 33, 43, 32, 37 |
| Supervisor/Manager Sanctions | 38, 44, 45, | 34, 35, 36, 41, 42, 46 | 35, 36, 34, 41 |
| Perceived Content Validity | 47, 48, 49, 58, 59 | | 47, 48, 49, 58, 59 |
| Transfer Design | 52, 53, 54, 55 | | 52, 54, 51, 53, 55, 50 |
| Opportunity to Use Learning | 56, 60, 61, 63 | 50, 51, 57, 62 | 56, 57, 60 |
| | | | **Environmental Obstacles to Transfer 63, 61, 42, 38 |
| | | | **Job Space and Transfer Consequences 22, 23, 25 |
| Training-in-General Scales | | | |
| Transfer Effort—Performance Expectations | 65, 66, 69, 71 | | 66, 65, 69, 71 |
| Performance—Outcomes Expectations | 64, 67, 68, 70, 72 | | 67, 68, 72, 70 |
| Resistance/Openness to Change | 73, 74, 75, 76, 77, 78 | | 76, 74, 77, 73, 78 |
| Performance Self-Efficacy | 82, 83, 84, 85 | | 83, 84, 82, 85 |
| Feedback/Performance Coaching | 79, 86, 87, 89 | 80, 81, 88 | *** Feedback/Advice 81, 80, 79, 86 ***Feedback/Help 88, 89, 87 |

Note. *The LTSI consisted of some “original” scale items plus some additional research items that was included to improve the psychometric properties of some of the scales.

The present analysis included all items (original and additional).

**Additional scales.

***The original scale (feedback) split into two different scales.

Table 19. Means, Standard Deviations, Coefficient Alpha, and Intercorrelations for the ALTSI.

| Scales | α | Mea n | SD | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | |
|---|----------|----------|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|--------|-------|-------|-------|-------|-------|----|--|
| 1. Motivation to Transfer | .76 | 4.12 | .51 | 448 | -- | | | | | | | | | | | | | | | | | | |
| 2. Capacity for Transfer | .55 | 3.87 | .51 | 446 | .17** | -- | | | | | | | | | | | | | | | | | |
| 3. Transfer Design | .87 | 3.79 | .62 | 444 | .40** | .18** | -- | | | | | | | | | | | | | | | | |
| 4. Content Validity | .77 | 3.62 | .63 | 445 | .31** | .18** | .58** | -- | | | | | | | | | | | | | | | |
| 5. Opportunity to use Training | .70 | 3.58 | .67 | 445 | .26** | .17** | .57** | .53** | -- | | | | | | | | | | | | | | |
| 6. Learner Readiness | .75 | 3.54 | .70 | 445 | .35** | .13** | .34** | .28** | .23** | -- | | | | | | | | | | | | | |
| 7. Peer Support | .85 | 3.51 | .75 | 445 | .22** | .08 | .44** | .29** | .41** | .14** | -- | | | | | | | | | | | | |
| 8. Supervisor Support | .85 | 3.47 | .70 | 440 | .22** | .11* | .45** | .35** | .42** | .19** | .51** | -- | | | | | | | | | | | |
| 9. Personal Outcomes-Positive | .85 | 3.29 | .88 | 446 | .36** | .10* | .37** | .33** | .34* | .32** | .40** | .32** | -- | | | | | | | | | | |
| 10. Job Space and Transfer Consequences | .48 | 2.90 | .70 | 449 | .05 | -.04 | .19** | .14** | .17** | .04 | .21** | .19** | .30** | -- | | | | | | | | | |
| 11. Supervisor Sanctions | .71 | 2.84 | .80 | 445 | .05 | .11* | .05 | .06 | .03 | .01 | -.01 | .10* | .06 | .04 | -- | | | | | | | | |
| 12. Environmental Obstacles to Transfer | .72 | 2.78 | .75 | 449 | -.19** | -.21** | -.25** | -.17** | -.20** | -.10** | -.18** | -.15** | -.13** | .24** | -.01 | -- | | | | | | | |
| 13. Self-Efficacy | .80 | 3.90 | .64 | 449 | .37** | .17** | .44** | .36** | .32** | .25** | .36** | .32** | .28** | .01 | -.01 | -.27** | -- | | | | | | |
| 14. Effort-Performance Expectations | .79 | 3.90 | .63 | 443 | .39** | .17** | .55** | .44** | .42** | .27** | .44** | .40** | .32** | .16** | .02 | -.21** | .54** | -- | | | | | |
| 15. Resistance/Openness to Change | .53 | 3.75 | .38 | 446 | .21** | .24** | .25** | .27** | .17** | .19** | .05 | .12* | .09 | .06 | .15** | -.13** | .27** | .19** | -- | | | | |
| 16. Feedback/Help | .73 | 3.54 | .72 | 449 | .22** | .17** | .41** | .26** | .36** | .12** | .37** | .39** | .27** | .25** | -.02 | -.10** | .35** | .36** | .19** | -- | | | |
| 17. Performance Outcome-Expectations | .83 | 3.54 | .84 | 447 | .24** | .05 | .41** | .30** | .34** | .07 | .32** | .33** | .31** | .23** | .01 | -.21** | .30** | .41** | .12** | .38** | -- | | |
| 18. Feedback/Advice | .79 | 3.48 | .72 | 443 | .17** | .06 | .32** | .27** | .32** | .06 | .27** | .23** | .28** | .06 | .07 | .29** | .28** | .28** | .18** | .53** | .36** | -- | |

**Correlation is significant at the .01 level.

*Correlation is significant at the .05 level.

Bold print represents the training-in-general domain.

Research Questions Two and Three

Research question two asks “Do individual perceptions of the ALTSI factors differ systematically across participant demographic characteristics including gender, age, level of education, and years of experience in the current organization?” Research question three asks “Do individual perceptions of the ALTSI factors differ systematically across types of training, choice of training, sector of the organization (public vs. private), and task of the organization (e.g., manufacturing, high-tech, banking, and insurance).

Multivariate analysis of variance (MANOVA) statistical procedures were used because these research questions involved multiple dependent and independent variables. The 16 transfer factors found in the ALTSI were treated as the dependent variables, whereas categorical level variables (e.g., types of training) were used as the independent variables. The results for each independent variable were reported separately. MANOVA analysis yielding significant differences was followed with ANOVA analysis and post hoc comparisons, respectively. All post hoc comparisons utilized Tukey’s test at an alpha level of .05.

A core assumption associated with the use of MANOVA is whether the variance/covariance matrices are equal for all groups. If the ratio of the largest group to the smallest group is less than 1.5:1, then one need not test or correct for the unequal covariance across groups (Hair et al., 1998). However, if the ratio exceeds 1.5:1, then the Box M test is used. According to Harris (1985), if the Box Test yields a significant p-value, one should still run and interpret the MANOVA results. Others (Gardner, 2001) recommend that one should be concerned with the results of the Box test if and only if, the sample sizes are very disparate (e.g., ratios of 20:1). The box test is very sensitive, so even if the variance/covariance matrices are

unequal across groups it does not necessarily mean that the F values are invalid (George & Mallery, 2003).

A second concern is whether the error variance of the dependent variables is equal across groups. Levine's test of equality of error variance was used to test for this assumption. It is important to note that the F-test used in conducting the MANOVA is robust to violations of the assumptions of ANOVA, (i.e., the equality of error variances for all treatment groups) (Hair et al., 1998). If the sample sizes are roughly equal, then violations of this assumption have only a slight effect on the corresponding Univariate F-test for treatment differences (Gardner, 2001). Moreover, if the test shows significant results, but the F value is not large, then there is not cause for great concern (George & Mallery, 2003).

Thirdly, any linear combination of the dependent variables must follow a normal distribution. This assumption was confirmed by visually inspecting the skewness, kurtosis, and the histogram for each dependent variable. Moreover, observations must be independent of each other. This assumption was not violated in this study.

Finally, the recommended sample size for MANOVA is 20 observations per cell. At minimum, the number of subjects in each cell should be more than the number of the dependent variables utilized in the study in order to be considered for this analysis (Hair et al., 1998). The minimum required sample size was satisfied in this study.

Gender

Gender was used as an independent variable to determine whether learning transfer system perceptions differed for males ($\underline{n} = 219$) versus females ($\underline{n} = 180$). The results of the box test showed no significant differences in the variances among the two groups (Box's $M = 207.77$,

$F = 1.16$, $df = 171$, $p = .08$). With respect to the equality of error variance, all factors met this assumption except for performance outcomes-expectations, which yielded a p-value equal to .01.

Pillai's Trace was selected as the test statistic to evaluate the presence of differences across gender, with regard to the set of dependent variables. MANOVA analysis revealed no significant differences across levels of gender. The calculated value of Pillai's Trace was .05 ($F = 1.21$, $df = 18$, $p = .25$) indicating that differences did not exist for male and female respondents across the dependent variables (see Table 20).

Table 20. Multivariate Tests of Significance, Effect Size, and Power for Gender.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|--------------|----------|-----------|-------------|--------------------|--------------|
| Pillai's Trace | .05 | 1.21 | 18 | .25 | .05 | .82 |
| Wilks' Lambda | .95 | 1.21 | 18 | .25 | .05 | .82 |
| Hotelling's Trace | .08 | 1.21 | 18 | .25 | .05 | .82 |
| Roy's Largest Root | .08 | 1.21 | 18 | .25 | .05 | .82 |

Age

Age categories were used as an independent variable to determine if they yielded significant differences in the perception of the learning transfer system factors. There were 14 respondents in the 21 years or less age category, 100 respondents in the 21-29 years age category, 151 respondents in the 30-39 years age category, 88 respondents in the 40-44 years age category, and 47 respondents in the age category of 45 years and above. To reduce the size variation between the groups, the age ranges were reduced from five categories to three categories. The categories and the number of respondents in each category were as follow: 109 respondents in age category 29 years and below, 155 respondents in the 29-39 years of age category, and 136 respondents in the above 40 years age category.

The ratio of the largest group to the smallest group was 1.2:1, indicating that violation of the assumption of unequal covariance matrices across groups should not be of any concern. The

box test showed statistically significant differences (Box's $M = 677.19$, $F = 1.19$, $p < .01$). According to Hair et al. (1998), if the ratio of the largest group to the smallest group is less than 1.5:1, one need not test and correct for this assumption. Based on that, MANOVA analysis was performed. With respect to the equality of error variance, all factors met this assumption except for feedback/help and self-efficacy constructs.

MANOVA analysis revealed no significant differences across the age categories examined. The calculated value of Pillai's Trace was .22 ($F = 1.21$, $df = 72$, $p = .11$), indicating that differences did not exist for levels of age across the dependent variables (see Table 21).

Table 21. Multivariate Tests of Significance, Effect Size, and Power for Age Groups.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|-------|------|----|------|-------------|-------|
| Pillai's Trace | .22 | 1.21 | 72 | .11 | .05 | .99 |
| Wilks' Lambda | .80 | 1.22 | 72 | .11 | .05 | .99 |
| Hotelling's Trace | .23 | 1.22 | 72 | .11 | .05 | .99 |
| Roy's Largest Root | .11 | 2.36 | 18 | .00 | .10 | .99 |

Level of Education

Education levels were used as the independent variables to determine if significant differences existed in the perceptions of the learning transfer systems across levels of education. There were 17 respondents with an education level less than high school graduates, 59 high school graduates, 276 respondents with a bachelor's degree, 42 respondents with a masters' degree, and five respondents with a Ph. D. degree.

The ratio of the largest group to the smallest group was 55.2:1. The Box test revealed significant differences (Box's $M = 509.00$, $F = 1.28$, $p < .01$), indicating that the covariance matrixes were not equal across the groups. However, MANOVA analysis was performed because this test is robust and is affected by sample size (Harris, 1985). MANOVA analysis showed statistically significant differences across educational levels. The calculated value of

Pillai's Trace was .28 ($F = 1.58$, $df = 72$, $P < .01$) (see Table 22), indicating that differences did exist across levels of the independent variable for at least one of the dependent variables. With respect to the equality of error variance, all factors met this assumption except capacity for transfer variable.

Table 22. Multivariate Tests of Significance, Effect Size, and Power for Educational Levels.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|--------------|----------|-----------|-------------|--------------------|--------------|
| Pillai's Trace | .28 | 1.58 | 72 | < .01 | .07 | .99 |
| Wilks' Lambda | .75 | 1.59 | 72 | < .01 | .07 | .99 |
| Hotelling's Trace | .31 | 1.59 | 72 | < .01 | .07 | .99 |
| Roy's Largest Root | .13 | 2.75 | 18 | < .01 | .12 | .99 |

ANOVA analysis showed that 11 of the 18 factors differed significantly across levels of education (see Table 23). Post hoc comparisons revealed significant differences in eight factors (see Tables 24). Respondents with a less than high school education rated transfer design, personal outcomes-positive, supervisor sanctions, motivation to transfer, content validity, effort-performance expectations, performance outcomes-expectations, and openness to change higher than did respondents with high school diplomas, bachelor degrees, and master's degrees.

Table 23. Univariate F-Tests Results for the 16 ALTSI Factors across Levels of Education.

| | Sum of Squares | Mean Square | F | Sig. |
|-------------------------------------|-----------------------|--------------------|----------|-------------|
| Between Subjects Effects | | | | |
| Transfer Design | 3.09 | .77 | 2.10 | .08 |
| Environmental Obstacles to Transfer | 4.90 | 1.23 | 2.37 | .05 |
| Performance Outcomes-Positive | 7.24 | 1.81 | 2.48 | .04 |
| Peer Support | 3.08 | .77 | 1.41 | .23 |
| Supervisor Sanctions | 8.44 | 2.04 | 2.36 | .01 |
| Supervisor Support | 2.72 | .68 | 1.40 | .23 |
| Motivation to Transfer | 2.71 | .68 | 2.74 | .02 |
| Learner Readiness | 2.15 | .54 | 1.14 | .34 |
| Content Validity | 4.33 | 1.08 | 2.83 | .02 |
| Job Space and Transfer Consequences | 2.52 | .63 | 1.41 | .23 |
| Opportunity to Apply | 2.74 | .69 | 1.57 | .18 |
| Capacity to Transfer | 2.30 | .58 | 2.35 | .05 |

(table cont.)

| | | | | |
|-----------------------------------|------|------|------|-----|
| Effort-Performance Expectations | 4.33 | 1.08 | 2.87 | .02 |
| Feedback/Advice | 5.03 | 1.26 | 2.45 | .04 |
| Performance-Outcomes Expectations | 8.45 | 2.11 | 3.10 | .01 |
| Resistance/Openness to Change | 2.69 | .67 | 4.86 | .01 |
| Feedback/Help | 1.89 | .47 | .94 | .44 |
| Self-Efficacy | 2.39 | .60 | 1.51 | .20 |

Table 24. Post Hoc Comparisons across Levels of Education.

| | Mean | Mean Difference | Sig. |
|---|-----------|-----------------|-------|
| <u>Transfer Design</u> | | | |
| Less than high school vs. high school | 4.14/3.67 | .74* | .03 |
| <u>Personal Outcomes-Positive</u> | | | |
| Less than high school vs. high school | 3.77/3.11 | .66* | .03 |
| <u>Supervisor Sanctions</u> | | | |
| Less than high school vs. Doctorate | 3.26/2.10 | 1.16* | .02 |
| <u>Motivation to Transfer</u> | | | |
| Less than high school vs. high school | 4.50/4.09 | .41* | .03 |
| Less than high school vs. bachelor's degree | 4.50/4.10 | .40* | .05 |
| <u>Content Validity</u> | | | |
| Less than high school vs. high school | 4.02/3.50 | .52* | .01 |
| <u>Effort-Performance Expectations</u> | | | |
| Less than high school vs. high school | 4.26/3.76 | .50* | .02 |
| Less than high school vs. master's degree | 4.26/3.77 | .49* | .04 |
| <u>Performance-Outcomes Expectations</u> | | | |
| Less than high school vs. Master's | 3.98/3.27 | .70* | .02 |
| <u>Resistance/Openness to Change</u> | | | |
| Less than high school vs. high school | 4.07/3.71 | .35* | < .01 |
| Less than high school vs. bachelor's degree | 4.07/3.72 | .34* | < .01 |

Years of Experience

The respondent's total years of experience in the current organization was treated as an independent variable to determine if significant differences in learning transfer system perceptions emerged across these categories. The years of experience was grouped into four categories as follow: less than four years ($\underline{n} = 67$), 4-10 years ($\underline{n} = 168$), 11-17 years ($\underline{n} = 96$), and more than 17 years ($\underline{n} = 68$). The ratio of the largest group to the smallest group was 2.5:1. The Box test showed statistically significant differences (Box's $M = 781.96$, $F = 1.38$, $p < .01$).

However, because this test is robust (Harris, 1985), MANOVA analysis was run and results were interpreted. With respect to the equality of error variance, all factors met this assumption except for content validity, supervisor sanctions and performance outcomes-expectations.

MANOVA analysis showed statistically significant differences across categories of work experience. The calculated value of Pillai's Trace was .21 ($F = 1.69$, $df = 54$, $p < .01$) (see Table 25).

Table 25. Multivariate Tests of Significance, Effect Size, and Power for Years of Experience.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|--------------|----------|-----------|-------------|--------------------|--------------|
| Pillai's Trace | .21 | 1.69 | 54 | < .01 | .07 | .99 |
| Wilks' Lambda | .80 | 1.62 | 54 | < .01 | .07 | .99 |
| Hotelling's Trace | .23 | 1.62 | 54 | < .01 | .07 | .99 |
| Roy's Largest Root | .12 | 2.49 | 18 | < .01 | .11 | .99 |

A between subjects ANOVA analysis revealed that five of the 18 factors were significantly different across categories of years of work experience (see Table 26). Post hoc comparisons showed significant differences in four factors (see Table 27). Respondents who have worked 11-17 years rated effort-performance expectations higher than respondents who have worked 4-10 years. Respondents who have worked less than four years and more than 17 years rated motivation to transfer higher than respondents who have worked 4-10 years. Respondents who have worked less than four years had less environmental obstacles to transfer. Finally, respondents who have worked more than 17 years rated resistance/openness to change higher than respondents who have worked 11-17 years.

Table 26. Univariate F-Tests Results for the 16 ALTSI Factors across Years of Experience.

| | Sum of Squares | Mean Square | F | Sig. |
|-------------------------------------|-----------------------|--------------------|----------|-------------|
| Between Subjects Effects | | | | |
| Transfer Design | 3.80 | .93 | 2.54 | .06 |
| Environmental Obstacles to Transfer | 6.08 | 2.03 | 3.97 | < .01 |
| Performance Outcomes-Positive | 5.42 | 1.81 | 2.46 | .06 |
| Peer Support | 4.52 | 1.51 | 2.78 | .04 |
| Supervisor Sanctions | 1.41 | 0.47 | .75 | .51 |
| Supervisor Support | 2.40 | .80 | 1.65 | .17 |
| Motivation to Transfer | 3.66 | 1.22 | 4.98 | < .01 |
| Learner Readiness | 2.09 | 0.70 | 1.47 | .22 |
| Content Validity | 3.15 | 1.05 | 2.73 | .04 |
| Job Space and Transfer Consequences | 3.12 | 1.04 | 2.33 | .07 |
| Opportunity to Apply | 1.56 | .52 | 1.18 | .31 |
| Capacity to Transfer | 1.30 | 0.43 | 1.75 | .15 |
| Effort-Performance Expectations | 3.10 | 1.03 | 2.71 | .04 |
| Feedback/Advice | 3.30 | 1.31 | 2.53 | .06 |
| Performance-Outcomes Expectations | 3.76 | 1.26 | 1.81 | .14 |
| Resistance/Openness to Change | 1.69 | 0.56 | 3.99 | < .01 |
| Feedback/Help | 1.69 | .56 | 1.12 | .34 |
| Self-Efficacy | 2.12 | .71 | 1.79 | .14 |

Table 27. Post Hoc Comparisons across Years of Experience.

| | Mean | Mean Difference | Sig. |
|--|-------------|------------------------|-------------|
| <u>Environmental Obstacles to Transfer</u> | | | |
| 4-10 years vs. less than four years | 2.85/2.52 | .32* | < .01 |
| <u>Motivation to Transfer</u> | | | |
| Less than four years vs. 4-10 years | 4.22/4.03 | .19* | .04 |
| More than 17 years vs. 4-10 years | 4.27/4.04 | .24* | < .01 |
| <u>Effort-Performance Expectations</u> | | | |
| More than 17 years vs. 4-10 years | 4.05/3.80 | .25* | .02 |
| <u>Resistance/Openness to Change</u> | | | |
| More than 17 years vs. 4-10 years | 3.85/3.71 | .14* | .03 |
| More than 17 years vs. 11-17 years | 3.85/3.70 | .15* | .03 |

Types of Training

Types of training were used as the independent variables whereas ALTSI factors were used as the dependent variables. Types of training were: managerial ($n = 35$); technical ($n = 55$);

interpersonal ($n = 46$); computer/library ($n = 56$); customer relations ($n = 32$); safety ($n = 44$); new employee orientation ($n = 44$); accidents and compensation ($n = 42$); and webpage design ($n = 45$). The ratio of the largest group to the smallest group was 1.7:1, indicating that violation of the unequal matrices across groups may not be serious. The Box test revealed statistically significant differences (Box's $M = 2390.37$, $F = 1.44$, $p < .01$). MANOVA was run and results were interpreted because the Box test is not a robust test (Harris, 1985). With respect to the equality of error variance, all factors met this assumption except: transfer design; environmental obstacles to transfer; personal outcomes-positive; motivation to transfer; content validity; capacity to transfer; and self-efficacy.

MANOVA analysis showed statistically significant differences across types of training. The calculated value of Pillai's Trace was .83 ($F = 2.43$, $df = 144$, $p < .01$) across types of training. Thus, ALTSI transfer factors differ across training types (see Table 28).

Table 28. Multivariate Tests of Significance, Effect Size, and Power for Types of Training.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|--------------|----------|-----------|-------------|--------------------|--------------|
| Pillai's Trace | .83 | 2.43 | 144 | < .01 | .10 | .99 |
| Wilks' Lambda | .41 | 2.49 | 144 | < .01 | .11 | .99 |
| Hotelling's Trace | .98 | 2.55 | 144 | < .01 | .11 | .99 |
| Roy's Largest Root | .31 | 6.52 | 18 | < .01 | .24 | .99 |

Between subjects ANOVA results showed that 12 of the 16 ALTSI factors were significantly different across types of training (see Table 29). However, in the post hoc comparisons, only 11 of those factors were significantly different across training types (see Table 30). Respondents who received technical training rated learner readiness, motivation to transfer, capacity, personal outcomes-positive, and opportunity to use higher than those who received interpersonal training, customer relations training, new employee training, webpage design, computer/library training, safety, and accidents & compensation training.

Table 29. Univariate F-Tests Results for the 16 ALTSI Factors across Types of Training.

| | Sum of Squares | Mean Square | F | Sig. |
|-------------------------------------|-----------------------|--------------------|----------|-------------|
| Between Subjects Effects | | | | |
| Transfer Design | 4.34 | .54 | 1.47 | .16 |
| Environmental Obstacles to Transfer | 29.64 | 3.71 | 8.09 | < .01 |
| Performance Outcomes-Positive | 28.03 | 3.50 | 5.11 | < .01 |
| Peer Support | 15.87 | 1.98 | 3.82 | < .01 |
| Supervisor Sanctions | 14.65 | 1.83 | 3.07 | < .01 |
| Supervisor Support | 7.05 | .88 | 1.89 | .06 |
| Motivation to Transfer | 6.37 | .80 | 3.30 | < .01 |
| Learner Readiness | 12.65 | 1.58 | 3.51 | < .01 |
| Content Validity | 5.73 | .72 | 1.87 | .06 |
| Job Space and Transfer Consequences | 7.36 | .92 | 2.09 | .03 |
| Opportunity to Apply | 8.47 | 1.06 | 2.48 | < .01 |
| Capacity to Transfer | 8.30 | 1.04 | 4.47 | < .01 |
| Effort-Performance Expectations | 4.38 | .54 | 1.43 | .18 |
| Feedback/Advice | 13.31 | 1.66 | 3.33 | < .01 |
| Performance-Outcomes Expectations | 6.56 | .82 | 1.18 | .31 |
| Resistance/Openness to Change | 2.38 | .30 | 2.11 | .03 |
| Feedback/Help | 6.18 | .77 | 1.55 | .14 |
| Self-Efficacy | 10.73 | 1.34 | 3.54 | < .01 |

Table 30. Post Hoc Comparisons across Types of Training.

| | Mean | Mean Difference | Sig. |
|--|-------------|------------------------|-------------|
| <u>Environmental Obstacles to Transfer</u> | | | |
| Managerial vs. technical | 2.69/2.14 | .55* | < .01 |
| Interpersonal vs. technical | 2.74/2.14 | .60* | < .01 |
| Computer/library vs. technical | 2.70/2.14 | .56* | < .01 |
| Customer relations vs. technical | 2.91/2.14 | .77* | < .01 |
| New employee relations vs. technical | 3.09/2.14 | .78* | < .01 |
| Accidents & compensation vs. technical | 2.87/2.14 | .95* | < .01 |
| Webpage design vs. technical | 2.90/2.14 | .76* | < .01 |
| Safety vs. technical | 2.92/2.14 | .77* | < .01 |
| <u>Personal Outcomes-positive</u> | | | |
| Technical vs. webpage design | 3.47/2.92 | .54* | .03 |
| Technical vs. new employee orientation | 3.47/2.92 | .54* | .03 |
| Accidents & compensation vs. interpersonal | 3.78/3.03 | .75* | < .01 |
| Accidents & comp. vs. New employee orientation | 3.78/2.92 | .85* | < .01 |
| Accidents & compensation vs. webpage design | 3.78/2.92 | .86* | < .01 |
| <u>Peer Support</u> | | | |
| Accidents & compensation vs. managerial | 3.94/3.40 | .53* | .03 |

(table cont.)

| | | | |
|--|-----------|------|-------|
| Accidents & compensation vs. interpersonal | 3.94/3.40 | .54* | .01 |
| Accidents & compensation vs. safety | 3.94/3.31 | .61* | < .01 |
| Accidents & compensation vs. new employee ort. | 3.94/3.33 | .59* | < .01 |
| Accidents & compensation vs. webpage design | 3.94/3.28 | .66* | < .01 |
| <u>Supervisor Sanctions</u> | | | |
| Managerial vs. computer/library | 3.21/2.58 | .63* | < .01 |
| Managerial vs. webpage design | 3.21/2.56 | .65* | < .01 |
| <u>Motivation</u> | | | |
| Technical vs. new employee orientation | 4.28/3.91 | .32* | .03 |
| Technical vs. webpage design | 4.28/3.96 | .32* | .03 |
| Accidents & compensation vs. webpage design | 4.29/3.91 | .38* | < .01 |
| <u>Learner Readiness</u> | | | |
| Technical vs. interpersonal | 3.87/3.44 | .43* | .04 |
| Technical vs. customer relations | 3.87/3.37 | .50* | .03 |
| Technical vs. new employee orientation | 3.87/3.25 | .62* | < .01 |
| <u>Job Space and Transfer Consequences</u> | | | |
| Safety vs. accident & compensation | 3.20/2.67 | .53* | < .01 |
| <u>Opportunity to Use</u> | | | |
| Technical vs. interpersonal | 3.83/3.35 | .48* | < .01 |
| <u>Capacity</u> | | | |
| Technical vs. computer/library | 4.17/3.73 | .44* | < .01 |
| Technical vs. customer relations | 4.17/3.83 | .43* | < .01 |
| Technical vs. safety | 4.17/3.69 | .48* | < .01 |
| Technical vs. accident & compensation | 4.17/3.77 | .40* | < .01 |
| Technical vs. webpage design | 4.17/3.75 | .42* | < .01 |
| <u>Feedback/Advice</u> | | | |
| Accidents & compensations vs. webpage design | 3.79/3.13 | .65* | < .01 |
| Accidents & compensations vs. interpersonal | 3.79/3.28 | .51* | .02 |
| Accidents & compensations vs. Computer/library | 3.79/3.32 | .47* | .03 |
| <u>Self-Efficacy</u> | | | |
| Accidents & compensations vs. webpage design | 4.11/3.68 | .43* | .03 |

Choice of Training

Choice of training, voluntary vs. mandatory, was used as the independent variable to determine if differences in the perceptions of the learning transfer systems were present for those voluntarily attending training versus those required by their organization to attend training. There were 168 respondents who voluntarily participated in training and 219 respondents whose training choice was mandated. The Box test revealed statistically significant differences (Box's $M = 361.36$, $F = 2.01$, $p < .01$). The ratio of voluntary participation to mandatory participation

was 1.30:1. Hair et al. (1998) contended that if the ratio of the largest group to the smallest group is less than 1.5:1, one need not test and correct for unequal covariance across groups. With respect to the equality of error variance, all factors met this assumption except: environmental obstacles to transfer; supervisor support; job space and transfer consequences; self-efficacy; and effort-performance expectations.

MANOVA analysis showed statistically significant differences across choice of training. The calculated value of Pillai's Trace was .12 ($F = 2.85, df = 18, p < .01$) indicating that ALTSI factors differed across the two groups (voluntary vs. mandatory) (see Table 31).

Table 31. Multivariate Tests of Significance, Effect Size, and Power for Choice of Training.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|-------|------|----|-------|-------------|-------|
| Pillai's Trace | .12 | 2.85 | 18 | < .01 | .12 | .99 |
| Wilks' Lambda | .88 | 2.85 | 18 | < .01 | .12 | .99 |
| Hotelling's Trace | .14 | 2.85 | 18 | < .01 | .12 | .99 |
| Roy's Largest Root | .14 | 2.85 | 18 | < .01 | .12 | .99 |

A between subjects ANOVA results showed that six of the 18 factors were significantly different between voluntary and mandatory participation in training (see Table 32). The six factors were transfer design; motivation to transfer; effort-performance expectations; performance-outcomes expectations; feedback/help; and self-efficacy. Respondents who voluntarily participated in training rated transfer design, motivation to transfer, effort-performance expectations, performance-outcomes expectations, feedback/help, and self-efficacy higher than those who participated in mandatory training (see Table 33).

Table 32: Univariate F-Tests Results for the 16 ALTSI Factors across Choice of Training.

| | Sum of Squares | Mean Square | F | Sig. |
|-------------------------------------|----------------|-------------|------|------|
| Between Subjects Effects | | | | |
| Transfer Design | 2.31 | 2.31 | 6.36 | .01 |
| Environmental Obstacles to Transfer | .88 | .88 | .88 | .19 |

(table cont.)

| | | | | |
|-------------------------------------|------|------|-------|-------|
| Performance Outcomes-Positive | 2.17 | 2.17 | 2.91 | .08 |
| Peer Support | 1.54 | 1.54 | 2.81 | .09 |
| Supervisor Sanctions | .78 | .78 | 1.25 | .26 |
| Supervisor Support | 1.05 | 1.05 | 2.18 | .14 |
| Motivation to Transfer | 3.64 | 3.64 | 15.07 | < .01 |
| Learner Readiness | .01 | .01 | .03 | .84 |
| Content Validity | 1.35 | 1.35 | 3.46 | .06 |
| Job Space and Transfer Consequences | .51 | .51 | 1.14 | .28 |
| Opportunity to Apply | .002 | .002 | .00 | .99 |
| Capacity to Transfer | .001 | .001 | .00 | .96 |
| Effort-Performance Expectations | 6.65 | 6.65 | 18.31 | < .01 |
| Feedback/Advice | .04 | .04 | .09 | .76 |
| Performance-Outcomes Expectations | 6.76 | 6.76 | 9.85 | < .01 |
| Resistance/Openness to Change | .15 | .15 | 1.06 | .30 |
| Feedback/Help | 2.68 | 2.68 | 5.39 | .02 |
| Self-Efficacy | 4.94 | 4.94 | 12.80 | < .01 |

Table 33. Mean and Standard Deviation for Choice of Training.

| | Mean | | SD | |
|-----------------------------------|-----------|-----------|-----------|-----------|
| | Voluntary | Mandatory | Voluntary | Mandatory |
| Transfer design | 3.88 | 3.72 | .60 | .60 |
| Motivation to transfer | 4.23 | 4.04 | .46 | .51 |
| Effort-performance expectations | 4.02 | 3.76 | .53 | .65 |
| Performance-outcomes expectations | 3.64 | 3.38 | .91 | .78 |
| Feedback/help | 3.61 | 3.44 | .72 | .68 |
| Self-efficacy | 4.02 | 3.80 | .51 | .69 |

Sector of Organization

Sector of the organization (public vs. private) was used as the independent variable to determine whether perceptions of the learning transfer systems differed for respondents in public ($n = 147$) versus private ($n = 252$) organizations. The ratio of public to private organizations was 1.7:1. According to Hair et al. (1998) if the ratio of the largest group to the smallest group is more than 1.5:1, the Box test of equality of covariance matrix across groups is needed. For this section, the Box test showed statistically significant differences (Box M = 335.29, $F = 1.85$, $p <$

.01). However, since this test is not robust (Harris, 1985), MANOVA analysis was performed and the results were interpreted. With respect to the equality of error variance, all factors met this assumption except: environmental obstacles to transfer, supervisor support; motivation to transfer; capacity; self-efficacy; performance-outcomes expectations; resistance/openness to change; and effort-performance expectations.

MANOVA analysis revealed significant differences across sector of the organization. The calculated value of Pillai's Trace was .12 ($F = 2.82$, $df = 18$, $p < .01$) indicating that perceptions of the transfer systems are different across participants from public vs. private organizations (see Table 34).

Table 34. Multivariate Tests of Significance, Effect Size, and Power for Sector of Organization.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|--------------|----------|-----------|-------------|--------------------|--------------|
| Pillai's Trace | .12 | 2.82 | 18 | < .01 | .12 | .99 |
| Wilks' Lambda | .88 | 2.82 | 18 | < .01 | .12 | .99 |
| Hotelling's Trace | .13 | 2.82 | 18 | < .01 | .12 | .99 |
| Roy's Largest Root | .13 | 2.82 | 18 | < .01 | .12 | .99 |

A between subjects ANOVA results showed that five of the 18 factors were significantly different between the public and the private sector (see Table 35). The five factors were environmental obstacles to transfer, supervisor sanctions, job space and transfer consequences, opportunity to use, and feedback/advice. Respondents from the private sector rated opportunity to use, job space and transfer consequences, and feedback/advice higher than the public sector. Moreover, the public sector had more supervisor sanctions and environmental obstacles to transfer than did the private sector (see Table 36).

Table 35: Univariate F-Tests Results for the 16 ALTSI Factors across Sector of Organization.

| | Sum of Squares | Mean Square | F | Sig. |
|-------------------------------------|-----------------------|--------------------|----------|-------------|
| Between Subjects Effects | | | | |
| Transfer Design | .00 | .00 | .00 | .93 |
| Environmental Obstacles to Transfer | 2.20 | 2.20 | 4.24 | .04 |
| Performance Outcomes-Positive | 1.56 | 1.56 | 2.11 | .14 |
| Peer Support | .56 | .56 | 1.02 | .31 |
| Supervisor Sanctions | 3.72 | 3.72 | 6.07 | .01 |
| Supervisor Support | .81 | .81 | 1.67 | .19 |
| Motivation to Transfer | .04 | .04 | .17 | .67 |
| Learner Readiness | .01 | .01 | .03 | .86 |
| Content Validity | .52 | .52 | 1.33 | .24 |
| Job Space and Transfer Consequences | 3.54 | 3.54 | 8.02 | < .01 |
| Opportunity to Apply | 2.05 | 2.05 | 4.73 | .03 |
| Capacity to Transfer | .00 | .00 | .00 | .93 |
| Effort-Performance Expectations | .72 | .72 | 1.89 | .17 |
| Feedback/Advice | 9.11 | 9.11 | 18.22 | < .01 |
| Performance-Outcomes Expectations | .00 | .00 | .01 | .90 |
| Resistance/Openness to Change | .21 | .21 | 1.51 | .21 |
| Feedback/Help | .22 | .22 | .45 | .50 |
| Self-Efficacy | .16 | .16 | .40 | .52 |

Table 36. Mean and Standard Deviation for Sector of Organization.

| | Mean | | SD | |
|-------------------------------------|--------|---------|--------|---------|
| | Public | Private | Public | Private |
| Environmental obstacles to transfer | 3.79 | 3.78 | .58 | .62 |
| Supervisor sanctions | 2.69 | 2.81 | .62 | .77 |
| Job space and transfer consequences | 2.77 | 2.97 | .64 | .67 |
| Opportunity to use | 3.48 | 3.62 | .61 | .68 |
| Feedback/advice | 3.25 | 3.56 | .75 | .67 |

Task of the Organization

Task of the organization was used as the independent variable whereas ALTSI factors were used as the dependent variables. Task of the organization included: manufacturing ($\underline{n} = 40$); high-tech ($\underline{n} = 55$); banking ($\underline{n} = 41$); insurance ($\underline{n} = 50$); retailer ($\underline{n} = 44$); service industry ($\underline{n} =$

22); public/education ($n = 107$); and public/government ($n = 41$). The ratio of the largest group to the smallest group was 4.65:1. The Box test revealed statistically significant differences (Box's $M = 2349.42$, $F = 1.59$, $p < .01$). MANOVA was run and results were interpreted because the Box test is not a robust test (Harris, 1985). With respect to the equality of error variance, all factors met this assumption except: transfer design; environmental obstacles to transfer; personal outcomes-positive; motivation to transfer; learner readiness; capacity; effort-performance expectations; performance-outcomes expectations; and self-efficacy.

MANOVA analysis showed statistically significant differences across sector of the organization. The calculated value of Pillai's Trace was .79 ($F = 2.70$, $df = 126$, $p < .01$) across task of the organization, meaning that ALTSI transfer factors differed across task of the organization (see Table 37).

Table 37. Multivariate Tests of Significance, Effect Size, and Power for Task of the Organization.

| MANOVA Test | Value | F | df | Sig. | Effect Size | Power |
|--------------------|--------------|----------|-----------|-------------|--------------------|--------------|
| Pillai's Trace | .79 | 2.70 | 126 | < .01 | .11 | .99 |
| Wilks' Lambda | .42 | 2.78 | 126 | < .01 | .11 | .99 |
| Hotelling's Trace | .97 | 2.85 | 126 | < .01 | .12 | .99 |
| Roy's Largest Root | .35 | 7.44 | 18 | < .01 | .26 | .99 |

A between subjects ANOVA results showed that the 18 ALTSI factors were significantly different across task of the organization (see Table 38). However, performance-outcomes expectations did not appear significant in the post hoc comparisons (see Table 39). Respondents who worked in the high-tech industry had higher ratings of their perceptions of the transfer system factors than did the other sectors.

Table 38. Univariate F-Tests Results for the 16 ALTSI Factors across Task of the organization.

| | Sum of Squares | Mean Square | F | Sig. |
|-------------------------------------|-----------------------|--------------------|----------|-------------|
| Between Subjects Effects | | | | |
| Transfer Design | 8.56 | 1.22 | 3.44 | < .01 |
| Environmental Obstacles to Transfer | 36.73 | 5.24 | 11.17 | < .01 |
| Performance Outcomes-Positive | 19.80 | 2.82 | 4.01 | < .01 |
| Peer Support | 20.34 | 2.90 | 5.75 | < .01 |
| Supervisor Sanctions | 11.25 | 1.60 | 2.66 | .01 |
| Supervisor Support | 11.73 | 1.67 | 3.60 | < .01 |
| Motivation to Transfer | 5.84 | .83 | 3.45 | < .01 |
| Learner Readiness | 9.60 | 1.37 | 2.99 | < .01 |
| Content Validity | 10.86 | 1.55 | 4.21 | < .01 |
| Job Space and Transfer Consequences | 9.87 | 1.41 | 3.26 | < .01 |
| Opportunity to Apply | 6.87 | .98 | 2.28 | .02 |
| Capacity to Transfer | 8.55 | 1.22 | 5.30 | < .01 |
| Effort-Performance Expectations | 7.62 | 1.08 | 2.92 | < .01 |
| Feedback/Advice | 12.91 | 1.84 | 3.70 | < .01 |
| Performance-Outcomes Expectations | 10.41 | 1.48 | 2.18 | .03 |
| Resistance/Openness to Change | 2.03 | .28 | 2.04 | .04 |
| Feedback/Help | 10.04 | 1.43 | 2.99 | < .01 |
| Self-Efficacy | 9.85 | 1.40 | 3.70 | < .01 |

Table 39. Post Hoc Comparisons across Task of the Organization.

| | Mean | Mean Difference | Sig. |
|--|-------------|------------------------|-------------|
| <u>Transfer Design</u> | | | |
| High-tech vs. retailer | 3.94/3.45 | .48* | < .01 |
| Public/government vs. retailer | 3.99/3.45 | .53* | < .01 |
| <u>Environmental Obstacles to Transfer</u> | | | |
| Manufacturing vs. high-tech | 3.05/2.14 | .91* | < .01 |
| Manufacturing vs. public/government | 3.05/2.51 | .53* | < .01 |
| Banking vs. high-tech | 3.03/2.14 | .89* | < .01 |
| Insurance vs. high-tech | 2.88/2.14 | .73* | < .01 |
| Retailer vs. high-tech | 3.11/2.14 | .97* | < .01 |
| Service industry vs. high-tech | 2.86/2.14 | .72* | < .01 |
| Public/education vs. high-tech | 2.17/2.14 | .56* | < .01 |
| Retailer vs. public/education | 3.11/2.71 | .40* | < .01 |
| Retailer vs. public/government | 3.11/2.51 | .60* | < .01 |
| <u>Personal Outcomes-positive</u> | | | |
| High-tech vs. retailer | 3.47/2.90 | .56* | .02 |
| Insurance vs. retailer | 3.67/2.90 | .77* | < .01 |
| Insurance vs. public/education | 3.67/3.12 | .54* | < .01 |

(table cont.)

| | | | |
|--|-----------|------|-------|
| <u>Peer Support</u> | | | |
| Insurance vs. manufacturing | 3.87/3.38 | .48* | .02 |
| High-tech vs. retailer | 3.69/3.11 | .58* | < .01 |
| Insurance vs. public/education | 3.87/3.35 | .52* | < .01 |
| public/government vs. retailer | 3.69/3.11 | .58* | < .01 |
| <u>Supervisor Sanctions</u> | | | |
| Retailer vs. public/education | 3.18/2.62 | .55* | < .01 |
| <u>Supervisor Support</u> | | | |
| Insurance vs. retailer | 3.71/3.23 | .47* | .01 |
| Insurance vs. public/education | 3.71/3.32 | .38* | .02 |
| <u>Motivation to Transfer</u> | | | |
| High-tech vs. retailer | 4.29/3.89 | .39* | < .01 |
| Insurance vs. retailer | 4.22/3.89 | .32* | .02 |
| Public/government vs. retailer | 4.26/3.89 | .37* | .01 |
| <u>Learner Readiness</u> | | | |
| High-tech vs. banking | 3.87/3.39 | .48* | .01 |
| High-tech vs. retailer | 3.87/3.30 | .56* | < .01 |
| <u>Content Validity</u> | | | |
| High-tech vs. retailer | 3.81/3.27 | .55* | < .01 |
| High-tech vs. public/education | 3.81/3.44 | .38* | .01 |
| Service industry vs. Retailer | 3.90/3.27 | .63* | < .01 |
| <u>Job Space and Transfer Consequences</u> | | | |
| Manufacturing vs. public/government | 3.14/2.62 | .51 | .01 |
| Retailer vs. public/government | 3.07/2.62 | .45 | .03 |
| <u>Opportunity to Use</u> | | | |
| High-tech vs. public/education | 3.83/3.44 | .38* | .01 |
| <u>Capacity</u> | | | |
| High-tech vs. Manufacturing | 4.17/3.61 | .56* | < .01 |
| High-tech vs. banking | 4.17/3.82 | .34* | .01 |
| High-tech vs. insurance | 4.17/3.77 | .40* | < .01 |
| High-tech vs. retailer | 4.17/3.87 | .29* | .04 |
| High-tech vs. service industry | 4.17/3.77 | .40* | .02 |
| High-tech vs. public/education | 4.17/3.84 | .33* | < .01 |
| <u>Effort-Performance Expectations</u> | | | |
| Public/government vs. retailer | 4.18/3.59 | .58* | < .01 |
| Banking vs. public/education | 3.90/3.84 | .40* | .04 |
| Retailer vs. public/education | 3.59/3.84 | .41* | .02 |
| <u>Feedback/Advice</u> | | | |
| Banking vs. public/education | 3.57/3.17 | .40* | .04 |
| Insurance vs. public/education | 3.66/3.17 | .49* | < .01 |
| Retailer vs. public/education | 3.59/3.17 | .41 | .02 |
| <u>Resistance/Openness to Change</u> | | | |
| High-tech vs. banking | 3.85/3.60 | .25* | .03 |
| <u>Feedback/Help</u> | | | |
| High-tech vs. retailer | 3.75/3.19 | .55* | < .01 |
| <u>Self-Efficacy</u> | | | |

(table cont.)

| | | | |
|--------------------------------|-----------|------|-------|
| High-tech vs. retailer | 4.05/3.50 | .55* | < .01 |
| Banking vs. retailer | 3.93/3.50 | .43* | .03 |
| Insurance vs. retailer | 3.99/3.50 | .48* | < .01 |
| Public/education vs. retailer | 3.88/3.50 | .38* | .01 |
| Public/government vs. retailer | 3.99/3.50 | .48* | < .01 |

Note. * The mean difference is significant at the .05 level.

Summary for Research Questions Two and Three.

Research question two asked if the perception of the learning transfer systems differed across individual level variables including gender, age, level of education, and work experience. Significant differences were not found across levels of gender and age. However, the perception of the learning transfer systems differed significantly across levels of education and work experience. With regard to levels of education, Respondents with a less than high school education rated transfer design, personal outcomes-positive, supervisor sanctions, motivation to transfer, content validity, effort-performance expectations, performance outcomes-expectations, and openness to change higher than did respondents with high school diplomas, bachelor degrees, and master's degrees. Work experience comparisons showed that respondents who have worked 11-17 years rated effort-performance expectations higher than respondents who have worked 4-10 years. Respondents who have worked less than four years and more than 17 years rated motivation to transfer higher than respondents who have worked 4-10 years. Respondents who have worked less than four years had less environmental obstacles to transfer. Finally, respondents who have worked more than 17 years rated resistance/openness to change higher than respondents who have worked 11-17 years.

Research question three asked if the perception of the learning transfer systems differed across situational level variables including types of training, choice of training, sector of organization and task of organization. Perceptions of the transfer systems were significantly different across all levels of the situational variables.

Respondents who received technical training rated learner readiness, motivation to transfer, capacity, personal outcomes-positive, and opportunity to use higher than those who received interpersonal training, customer relations training, new employee training, webpage design, computer/library training, safety, and accidents & compensation training.

Respondents who voluntarily participated in training rated transfer design, motivation to transfer, effort-performance expectations, performance-outcomes expectations, feedback/help, and self-efficacy higher than those who participated in mandatory training. Respondents from the private sector rated opportunity to use, job space and transfer consequences, and feedback/advice higher than the public sector. Moreover, the public sector had more supervisor sanctions and environmental obstacles to transfer than did the private sector. Finally, respondents who worked in the high-tech industry had higher ratings of their perceptions of all transfer system factors than did the other sectors.

Research Question Four

Research question four asks “Do learning transfer system factors explain a significant portion of the variance in organizational learning characteristics in Jordanian organizations? This research question involves two types of analysis:

- (a) Do learning transfer system factors explain a significant portion of the variance in an overall measure of organizational learning?
- (b) Do learning transfer system factors explain a significant portion of the variance in individual facets of organizational learning, including knowledge indeterminacy, learning latitude, organizational unity, and innovation?

Multiple regression analysis with full model entry was used to answer the fourth research question. Factor sum scores of the validated constructs of the ALTSI were used as the

independent variables, whereas factor scores of the five measures of organizational learning (overall measure of organizational learning, knowledge indeterminacy, learning latitude, organizational unity, and innovation) were used as the dependent variables in this study. Separate regression analyses were created for each dependent variable. However, since the ALTSI consists of two construct domains (training-specific and training-in-general), multiple regression analysis with full model entry was followed with hierarchical multiple regression analysis. The ALTSI-specific factors were entered as the first block while the ALTSI-general factors were entered as the second block.

Descriptive Statistics

The ALTSI factors were measured on a five-point Likert-type scales that ranged from 1 “strongly disagree” to 5 “strongly agree”, while the organizational learning variables were measured on a six-point Likert-type scale that ranged from 1 “not true” to 6 “true”. Pair-wise deletion of cases with missing values was used.

Analysis of regression diagnostics did not reveal the presence of influential observations. Standardized residual values (cases above the absolute value of two indicated outliers) and Cook’s D values (values above the absolute value of one suggested the possibility of influential observations) were checked to determine the presence of outliers and influential observations. Standardized residuals for each dependent variable indicated the presence of outliers (13-18 cases, on average, for each dependent variable). However, none of these cases (or outliers) were influential (Cook’s D values ranged from .00 to .01); therefore, all cases were retained in the study.

Regression assumptions were checked in this study. Assumptions of regression included normality of error, homoscedasticity, and independence of errors (Pedhazur, 1997). The first two

assumptions were checked for each dependent variable, whereas the last assumption was automatically assumed. To test for the normality of error assumption, the histograms of the regression standardized residual (standardized residual against frequency plot) and the normal p-p plots of regression standardized residuals indicated that errors were normally distributed for each dependent variable. The homoscedasticity assumption was also investigated for each dependent variable utilizing the scatter plots (unstandardized predicted value against standardized residual). Results indicated that cases were approximately homogeneous in their variances (cases were scattered around the reference lines). Overall, these tests indicated no serious violation of regression assumptions.

Finally, collinearity statistics were also checked for this study. Collinearity (i.e., independent variables are highly correlated) statistics were in the acceptable range. When the independent variables are highly correlated then there is an indication of redundancy. Our goal was to have high correlation between the independent and dependent variables so that the overall R^2 is maximized (Pedhazur, 1997). Collinearity included two measures: the Variable Inflation Factor (VIF) and tolerance. The VIF measure indicates the inflation in the variance (standard error) due to high intercorrelations between the independent variables. The larger the VIF value, the larger the standard error (i.e., the more variability). Usually values above five are worth considering. On the other hand, tolerance deals with accuracy (i.e., values closer to zero are an indication of redundancy and values closer to one indicate no correlation among the independent variables). In this study, VIF values ranged from 1.15 to 1.90 and tolerance values ranged from .52 to .93.

With regard to sample size, a minimum of 15 subjects per independent variable (Hair et al., 1998) is required for regression analysis. Since there are 16 independent variables, at least

240 subjects are needed. In this study, there were 450 subjects; therefore the minimum sample size was achieved. The means, standard deviations, intercorrelations, and reliability estimates for all measures are shown in table 40.

Examination of the intercorrelations suggests several noteworthy patterns. First, the correlations among variables were generally low to moderate, suggesting the measures used in this study were assessing different constructs. Secondly, organizational learning measures showed significant correlations with most of the transfer system variables except for motivation to transfer, capacity for transfer, personal outcomes-positive, supervisor sanctions, and openness to change. Thirdly, all of the associations were in the expected direction.

Table 40. Correlation Table for the Organizational Learning Measures and the ALTSI Factors.

| Variable | 1 | 2 | 3 | 4 | 5 |
|--|-------|-------|--------|-------|--------|
| 1 Knowledge Indeterminacy | -- | | | | |
| 2 Learning Latitude | .33** | -- | | | |
| 3 Organizational Unity | .45** | .38** | -- | | |
| 4 Innovation | .50** | .34** | .54** | -- | |
| 5 Overall Measure | .71** | .62** | .81** | .84** | -- |
| 6 Transfer Design | .16** | .18** | .16** | .15** | .20** |
| 7 Environmental Obstacles to Transfer | .08 | -.05 | -.07 | .03 | -.00 |
| 8 Personal Outcomes-Positive | -.01 | -.00 | .00 | .01 | .00 |
| 9 Peer Support | .10* | .13** | .22** | .18** | .20** |
| 10 Supervisor Sanctions | -.10* | -.04 | -.13** | -.08 | -.13** |
| 11 Supervisor Support | .15** | .12* | .17** | .18** | .19** |
| 12 Motivation to Transfer | .00 | .06 | .00 | .04 | .03 |
| 13 Learner Readiness | .05 | .11* | .07 | .02 | .07 |
| 14 Content Validity | .15** | .17** | .16** | .17** | .21** |
| 15 Job Space and Transfer Consequences | .12** | .04 | .14** | .24** | .18** |
| 16 Opportunity to Use | .14** | .11* | .22** | .18** | .22** |
| 17 Capacity for Transfer | -.03 | .02 | .01 | .03 | .00 |
| 18 Effort-Performance Expectations | .17** | .17** | .15** | .20** | .22** |
| 19 Feedback/Advice | .21** | .00 | .18** | .18** | .20** |
| 20 Performance-Outcomes Expectations | .17** | .13** | .19** | .15** | .21** |
| 21 Resistance/Openness to Change | .06 | .07 | .03 | .07 | .07 |
| 22 Feedback/Help | .30** | .12** | .20** | .28** | .30** |
| 23 Self-Efficacy | .18** | .15** | .11** | .06 | .16** |

Note. The rest of the correlations and descriptive information are shown in table 19.

* P # .05

** P # .01

Regression Analysis

A sum score was created for each individual measure of organizational learning as well as an overall composite measure that summed all measures into a single scale. Multiple regression analysis with full model entry was used with each of the organizational learning sub-scale scores and the overall composite score as the dependent variables, and the ALTSI factors as the independent variables. Separate analyses were performed for each dependent variable. Since the ALTSI contains two separate domains (i.e., training-specific domain and training-in-general domain) hierarchal regression analysis was also performed to examine how the variance in measures of organizational learning was partitioned among the two domains of learning transfer.

The training-specific factors were entered first in the analysis as the first block and the training-in-general factors were entered second. The LTSI is constructed in a way where trainees are asked to think about their perceptions toward a specific training program recently attended first before thinking about training in general. The proximity to the training was used as a determination of which block of variables should be entered first. The training-specific factors were entered first because they apply to the training most recently completed by respondents. Therefore, there perception of the LTSI factors is more proximal while training-in-general factors will have more distant proximity of learning transfer perceptions in organizations.

The results for each dependent variable are presented below.

Overall Organizational Learning Measure.

The first dependent variable examined was the composite measure of organizational learning. Multiple regression analysis with full model entry yielded statistically significant results ($F(18, 361) = 4.38, p < .01$). The ALTSI factors explained 18% of the variance in the overall measure of organizational learning (see Table 41). Standardized Beta weights suggested

that personal outcomes-positive; supervisor sanctions; job space & transfer consequences; and feedback/help were the significant predictors of an overall measure of organizational learning.

Table 41. Multiple Regression Analysis of an Overall Measure of Organizational Learning.

| Model | df | MS | F | p | | |
|-------------------------------------|------------|----------------|---------------------|----------------|-------------------|-----------------|
| Regression | 18 | 1.45 | 4.38 | < .01 | | |
| Residual | 361 | .33 | | | | |
| Total | 379 | | | | | |
| <u>Variables in the Equation</u> | | | | | | |
| Variable | R | R ² | R ² Adj. | Standard Error | Standardized Beta | p |
| ALTSI Factors | .42 | .18 | .14 | .57 | | < .01 |
| Transfer Design | | | | | -.02 | .68 |
| Environmental Obstacles to Transfer | | | | | .02 | .65 |
| Personal Outcomes-Positive | | | | | -.16 | < .01 |
| Peer Support | | | | | .05 | .42 |
| Supervisor Sanction | | | | | -.09 | .05 |
| Supervisor Support | | | | | .03 | .61 |
| Motivation to Transfer | | | | | -.06 | .25 |
| Learner Readiness | | | | | .07 | .20 |
| Content Validity | | | | | .11 | .07 |
| Job Space and Transfer Consequence | | | | | .12 | .03 |
| Opportunity to use | | | | | .07 | .25 |
| Capacity for Transfer | | | | | -.05 | .27 |
| Effort-Performance Expectations | | | | | .08 | .17 |
| Feedback/Advice | | | | | < .01 | .96 |
| Performance-Outcomes Expectations | | | | | .09 | .13 |
| Change | | | | | < .01 | .87 |
| Feedback/Help | | | | | .22 | < .01 |
| Self-Efficacy | | | | | -.04 | .57 |

Hierarchical regression analysis revealed that the training-specific block of factors was statistically significant ($F_{12, 402} = 5.31, p < .01$). This block of factors had a multiple R value of .37 with an R^2 of .14 indicating that this group of factors enabled the researcher to explain 14% of the variance in an overall measure of organizational learning (see Table 42). When the second block of factors (training-in-general) was entered into the model, it was found to make a

significant contribution to the model. The multiple R increased to .42, and the R^2 change for this block of factors was .04, indicating that this group of factors collectively added 4% of the variance to the total explained variance. This R^2 change was determined to be a statistically significant increase in the explained variance (F change = 3.52, $p < .01$) (see Table 42).

Table 42. Hierarchal Multiple Regression Analysis of an Overall Measure of Organizational Learning.

| Model | | df | MS | F | p | | |
|-------------------------------------|------------|----------------|---------------------|-----------------------|-------------|-------------|-----------------|
| 1 ^a | Regression | 12 | 1.80 | 5.32 | < .01 | | |
| | Residual | 402 | .34 | | | | |
| | Total | 414 | | | | | |
| 2 ^b | Regression | 18 | 1.59 | 4.85 | < .01 | | |
| | Residual | 396 | .33 | | | | |
| | Total | 414 | | | | | |
| <u>Variables in the Equation</u> | | | | | | | |
| Variable | R | R ² | R ² Adj. | R ² Change | F change | Stand. Beta | p |
| <u>Training-specific block</u> | .37 | .14 | .08 | .14 | 5.32 | | < .01 |
| Transfer Design | | | | | | .04 | .55 |
| Environmental Obstacles to Transfer | | | | | | .01 | .91 |
| Personal Outcomes-Positive | | | | | | -.19 | < .01 |
| Peer Support | | | | | | .09 | .12 |
| Supervisor Sanction | | | | | | -.15 | < .01 |
| Supervisor Support | | | | | | .09 | .11 |
| Motivation to Transfer | | | | | | -.03 | .60 |
| Learner Readiness | | | | | | .04 | .47 |
| Content Validity | | | | | | .11 | .08 |
| Job Space and Transfer Consequence | | | | | | .16 | < .01 |
| Opportunity to use | | | | | | .11 | .08 |
| Capacity for Transfer | | | | | | -.02 | .72 |
| <u>Training-in-general block</u> | .42 | .18 | .11 | .04 | 3.52 | | < .01 |
| Transfer Design | | | | | | -.03 | .70 |
| Environmental Obstacles to Transfer | | | | | | < .01 | .84 |
| Personal Outcomes-Positive | | | | | | -.14 | < .01 |
| Peer Support | | | | | | .04 | .46 |
| Supervisor Sanction | | | | | | -.10 | < .01 |
| Supervisor Support | | | | | | .04 | .44 |
| Motivation to Transfer | | | | | | -.07 | .28 |
| Learner Readiness | | | | | | .05 | .31 |

(table cont.)

| | | | | | | | |
|------------------------------------|--|--|--|--|--|-------|-------|
| Content Validity | | | | | | .10 | .08 |
| Job Space and Transfer Consequence | | | | | | .10 | .02 |
| Opportunity to use | | | | | | .07 | .19 |
| Capacity for Transfer | | | | | | -.05 | .39 |
| Effort-Performance Expectations | | | | | | .07 | .26 |
| Feedback/Advice | | | | | | < .01 | .99 |
| Performance-Outcomes Expectations | | | | | | .05 | .20 |
| Change | | | | | | .02 | .83 |
| Feedback/Help | | | | | | .18 | < .01 |
| Self-Efficacy | | | | | | < .01 | .95 |

Note. a: The training-specific factors.

b: The training-in-general factors.

Knowledge Indeterminacy.

The second dependent variable examined was knowledge indeterminacy. Multiple regression analysis with full model entry revealed statistically significant results ($F_{18, 414} = 4.32, p < .01$). The ALTSI factors explained 16% of the variability in the dependent variable (see Table 43). Standardized beta weights suggest that environmental obstacles to transfer, personal-outcomes positive, feedback/help, and self-efficacy were significant predictors of knowledge indeterminacy.

Table 43. Multiple Regression Analysis of Knowledge Indeterminacy.

| Model | df | MS | F | p | | |
|-------------------------------------|------------|----------------|---------------------|----------------|-------------------|-----------------|
| Regression | 18 | 1.88 | 4.44 | < .01 | | |
| Residual | 414 | .42 | | | | |
| Total | 432 | | | | | |
| <u>Variables in the Equation</u> | | | | | | |
| Variable | R | R ² | R ² Adj. | Standard Error | Standardized Beta | p |
| <u>ALTSI Factors</u> | .40 | .16 | .13 | .65 | | < .01 |
| Transfer Design | | | | | < .01 | .93 |
| Environmental Obstacles to Transfer | | | | | .13 | .01 |
| Personal Outcomes-Positive | | | | | -.14 | .01 |
| Peer Support | | | | | -.05 | .39 |
| Supervisor Sanction | | | | | -.09 | .06 |
| Supervisor Support | | | | | .05 | .38 |
| Motivation to Transfer | | | | | .08 | .11 |

(table cont.)

| | | | | | | |
|------------------------------------|--|--|--|--|-------|-------|
| Learner Readiness | | | | | .04 | .44 |
| Content Validity | | | | | .08 | .21 |
| Job Space and Transfer Consequence | | | | | .03 | .55 |
| Opportunity to use | | | | | .02 | .71 |
| Capacity for Transfer | | | | | -.06 | .19 |
| Effort-Performance Expectations | | | | | .05 | .46 |
| Feedback/Advice | | | | | .02 | .78 |
| Performance-Outcomes Expectations | | | | | .06 | .25 |
| Change | | | | | < .01 | .94 |
| Feedback/Help | | | | | .24 | < .01 |
| Self-Efficacy | | | | | .12 | .03 |

Hierarchical regression analysis revealed that the training-specific block of factors was statistically significant ($F_{12, 420}, p < .001$). This block of factors had a multiple R value of .29 with an R^2 of .09, indicating that this group of factors enabled the researcher to explain 9% of the variance in knowledge Indeterminacy. When the second block of factors (training-in-general) was entered into the model, it was found to make a significant contribution to the model. The multiple R increased to .40, and the R^2 change for this block of factors was .07 indicating that this group of factors collectively added 7% of the variance to the total explained variance. This R^2 change was determined to be a statistically significant increase in the explained variance ($F_{change} = 6.19, p < .01$) (see Table 44).

Table 44. Hierarchical Multiple Regression Analysis of Knowledge Indeterminacy.

| Model | | df | MS | F | p | | |
|----------------------------------|------------|----------------|------------------------|--------------------------|-------------|----------------|---|
| 1 ^a | Regression | 12 | 1.51 | 3.32 | < .01 | | |
| | Residual | 420 | .45 | | | | |
| | Total | 432 | | | | | |
| 2 ^b | Regression | 18 | 1.88 | 4.44 | < .01 | | |
| | Residual | 414 | .42 | | | | |
| | Total | 432 | | | | | |
| <u>Variables in the Equation</u> | | | | | | | |
| Variable | R | R ² | R ² Adj. | R ² Change | F change | Stand. Beta | p |

(table cont.)

| | | | | | | | |
|-------------------------------------|------------|------------|------------|------------|-------------|-------|-----------------|
| <u>Training-specific block</u> | .29 | .09 | .06 | .09 | 3.32 | | < .01 |
| Transfer Design | | | | | | .10 | .16 |
| Environmental Obstacles to Transfer | | | | | | .11 | .03 |
| Personal Outcomes-Positive | | | | | | -.13 | .02 |
| Peer Support | | | | | | .01 | .77 |
| Supervisor Sanction | | | | | | -.11 | .01 |
| Supervisor Support | | | | | | -.03 | .06 |
| Motivation to Transfer | | | | | | .02 | .50 |
| Learner Readiness | | | | | | .08 | .60 |
| Content Validity | | | | | | .06 | .14 |
| Job Space and Transfer Consequence | | | | | | .05 | .19 |
| Opportunity to use | | | | | | -.03 | .38 |
| Capacity for Transfer | | | | | | -.02 | .50 |
| <u>Training-in-general block</u> | .40 | .16 | .13 | .07 | 6.19 | | < .01 |
| Transfer Design | | | | | | < .01 | .93 |
| Environmental Obstacles to Transfer | | | | | | .12 | .01 |
| Personal Outcomes-Positive | | | | | | -.14 | .01 |
| Peer Support | | | | | | -.05 | .39 |
| Supervisor Sanction | | | | | | -.08 | .05 |
| Supervisor Support | | | | | | .05 | .37 |
| Motivation to Transfer | | | | | | -.09 | .11 |
| Learner Readiness | | | | | | .04 | .43 |
| Content Validity | | | | | | .07 | .20 |
| Job Space and Transfer Consequence | | | | | | .03 | .55 |
| Opportunity to use | | | | | | .02 | .70 |
| Capacity for Transfer | | | | | | -.06 | .18 |
| Effort-Performance Expectations | | | | | | .04 | .45 |
| Feedback/Advice | | | | | | .01 | .77 |
| Performance-Outcomes Expectations | | | | | | .06 | .25 |
| Change | | | | | | < .01 | .93 |
| Feedback/Help | | | | | | .24 | < .01 |
| Self-Efficacy | | | | | | .12 | .03 |

Note. a: The training-specific factors.

b: The training-in-general factors.

Learning Latitude.

The third dependent variable examined was learning latitude. Multiple regression analysis with full model entry revealed statistically significant results ($F_{18, 414} = 1.97, p = .01$). The ALTSI factors explained 8% of the variability in the dependent variable (see Table 45). Standardized beta weights suggested that personal-outcomes positive and feedback/advice was the significant predictor of learning latitude.

Table 45. Multiple Regression Analysis of Learning Latitude.

| Model | df | MS | F | p | | |
|-------------------------------------|------------|----------------|---------------------|----------------|-------------------|------------|
| Regression | 18 | 1.62 | 1.97 | .01 | | |
| Residual | 414 | .82 | | | | |
| Total | 432 | | | | | |
| <u>Variables in the Equation</u> | | | | | | |
| Variable | R | R ² | R ² Adj. | Standard Error | Standardized Beta | p |
| <u>ALTSI Factors</u> | .28 | .08 | .04 | .91 | | .01 |
| Transfer Design | | | | | .01 | .36 |
| Environmental Obstacles to Transfer | | | | | < .01 | .89 |
| Personal Outcomes-Positive | | | | | -.14 | .01 |
| Peer Support | | | | | .05 | .34 |
| Supervisor Sanction | | | | | -.04 | .46 |
| Supervisor Support | | | | | .01 | .76 |
| Motivation to Transfer | | | | | -.02 | .67 |
| Learner Readiness | | | | | .06 | .20 |
| Content Validity | | | | | .11 | .08 |
| Job Space and Transfer Consequence | | | | | .03 | .49 |
| Opportunity to use | | | | | -.03 | .57 |
| Capacity for Transfer | | | | | -.02 | .70 |
| Effort-Performance Expectations | | | | | .04 | .49 |
| Feedback/Advice | | | | | -.12 | .03 |
| Performance-Outcomes Expectations | | | | | .06 | .27 |
| Change | | | | | .02 | .72 |
| Feedback/Help | | | | | .08 | .21 |
| Self-Efficacy | | | | | .07 | .29 |

Hierarchical regression analysis revealed that the training-specific block of factors was statistically significant ($F_{12, 420}, p < .01$). This block of factors had a multiple R value of .25 with an R^2 of .06, indicating that this group of variables explained 6% of the total variance in learning latitude. When the second block of factors (training-in-general) was entered into the model, it made a non-significant contribution to the model. The multiple R increased to .28, and the R^2 change for this block of factors was .02, indicating that this group of factors collectively

added 2% to the total explained variance. This R^2 change was determined to be a statistically non-significant increase in the total explained variance (F change = 1.38, p = .22) (see Table 46).

Table 46. Hierarchical Multiple Regression Analysis of Learning Latitude.

| Model | | df | MS | F | p | | |
|-------------------------------------|------------|----------------|---------------------|-----------------------|-------------|-------------|-----------------|
| 1 ^a | Regression | 12 | 1.87 | 3.32 | < .01 | | |
| | Residual | 420 | .83 | | | | |
| | Total | 432 | | | | | |
| 2 ^b | Regression | 18 | 1.62 | 1.97 | .01 | | |
| | Residual | 414 | .82 | | | | |
| | Total | 432 | | | | | |
| <u>Variables in the Equation</u> | | | | | | | |
| Variable | R | R ² | R ² Adj. | R ² Change | F change | Stand. Beta | p |
| <u>Training-specific block</u> | .25 | .06 | .03 | .06 | 2.26 | | < .01 |
| Transfer Design | | | | | | .10 | .14 |
| Environmental Obstacles to Transfer | | | | | | -.02 | .68 |
| Personal Outcomes-Positive | | | | | | -.14 | .01 |
| Peer Support | | | | | | .08 | .17 |
| Supervisor Sanction | | | | | | -.04 | .32 |
| Supervisor Support | | | | | | .03 | .53 |
| Motivation to Transfer | | | | | | < .01 | .96 |
| Learner Readiness | | | | | | .07 | .16 |
| Content Validity | | | | | | .11 | .06 |
| Job Space and Transfer Consequence | | | | | | .03 | .51 |
| Opportunity to use | | | | | | -.03 | .54 |
| Capacity for Transfer | | | | | | < .01 | .88 |
| <u>Training-in-general block</u> | .28 | .08 | .04 | .02 | 1.38 | | .22 |
| Transfer Design | | | | | | .06 | .35 |
| Environmental Obstacles to Transfer | | | | | | < .01 | .89 |
| Personal Outcomes-Positive | | | | | | -.14 | .01 |
| Peer Support | | | | | | .05 | .34 |
| Supervisor Sanction | | | | | | -.03 | .46 |
| Supervisor Support | | | | | | .01 | .76 |
| Motivation to Transfer | | | | | | -.02 | .67 |
| Learner Readiness | | | | | | .06 | .20 |
| Content Validity | | | | | | .11 | .08 |
| Job Space and Transfer Consequence | | | | | | .03 | .49 |
| Opportunity to use | | | | | | -.03 | .57 |
| Capacity for Transfer | | | | | | -.01 | .70 |
| Effort-Performance Expectations | | | | | | .04 | .49 |

(table cont.)

| | | | | | | | | | |
|-----------------------------------|--|--|--|--|--|--|--|-----|-----|
| Feedback/Advice | | | | | | | | -12 | .03 |
| Performance-Outcomes Expectations | | | | | | | | .06 | .27 |
| Change | | | | | | | | .01 | .72 |
| Feedback/Help | | | | | | | | .07 | .21 |
| Self-Efficacy | | | | | | | | .06 | .29 |

Note. a: The training-specific factors.

b: The training-in-general factors.

Organizational Unity.

The fourth dependent variable examined was organizational unity. Multiple regression analysis with full model entry revealed statistically significant results ($F_{18, 414} = 3.86, p < .001$). The ALTSI factors explained 14% of the total variability in organizational unity (see Table 47). Standardized beta weights suggest that personal-outcomes positive; peer support, supervisor sanctions, and job space & transfer consequences were the significant predictors of this dependent variable.

Table 47. Multiple Regression Analysis of Organizational Unity.

| Model | df | MS | F | p | | |
|-------------------------------------|------------|----------------|---------------------|----------------|-------------------|-----------------|
| Regression | 18 | 3.44 | 3.86 | < .001 | | |
| Residual | 414 | .89 | | | | |
| Total | 432 | | | | | |
| <u>Variables in the Equation</u> | | | | | | |
| Variable | R | R ² | R ² Adj. | Standard Error | Standardized Beta | p |
| ALTSI Factors | .38 | .14 | .11 | .94 | | < .01 |
| Transfer Design | | | | | -.04 | .54 |
| Environmental Obstacles to Transfer | | | | | -.08 | .09 |
| Personal Outcomes-Positive | | | | | -.18 | < .01 |
| Peer Support | | | | | .12 | .03 |
| Supervisor Sanction | | | | | -.13 | < .01 |
| Supervisor Support | | | | | .03 | .58 |
| Motivation to Transfer | | | | | -.07 | .19 |
| Learner Readiness | | | | | .08 | .11 |
| Content Validity | | | | | .06 | .25 |
| Job Space and Transfer Consequence | | | | | .12 | .03 |
| Opportunity to use | | | | | .11 | .06 |

(table cont.)

| | | | | | | |
|-----------------------------------|--|--|--|--|-------|-----|
| Capacity for Transfer | | | | | -.02 | .70 |
| Effort-Performance Expectations | | | | | < .01 | .90 |
| Feedback/Advice | | | | | .07 | .19 |
| Performance-Outcomes Expectations | | | | | .08 | .16 |
| Change | | | | | -.01 | .78 |
| Feedback/Help | | | | | .06 | .27 |
| Self-Efficacy | | | | | -.02 | .77 |

Hierarchical regression analysis revealed that the training-specific factors were statistically significant ($F_{12, 420}, p < .001$). This block of factors had a multiple R value of .36, with an R^2 of .13, indicating that this group of factors explained 13% of the total variance in organizational unity. When the second block of factors (training-in-general) was entered into the model, it made a significant contribution to the model. The multiple R increased to .38, and the R^2 change for this block of factors was .01, indicating that this group of factors collectively added 1% of the variance to the total explained variance. This R^2 change was determined to be a statistically significant increase in the explained variance ($F_{change} = 1.36, p = .02$) (see Table 48).

Table 48. Hierarchical Multiple Regression Analysis of Organizational Unity.

| Model | | df | MS | F | p | | |
|-------------------------------------|------------|----------------|------------------------|--------------------------|-------------|----------------|------------------|
| 1 ^a | Regression | 12 | 4.56 | 5.09 | < .001 | | |
| | Residual | 420 | .90 | | | | |
| | Total | 432 | | | | | |
| 2 ^b | Regression | 18 | 3.45 | 3.86 | < .001 | | |
| | Residual | 414 | .89 | | | | |
| | Total | 432 | | | | | |
| <u>Variables in the Equation</u> | | | | | | | |
| Variable | R | R ² | R ² Adj. | R ² Change | F change | Stand. Beta | p |
| <u>Training-specific block</u> | .36 | .13 | .10 | .13 | 5.09 | | < .001 |
| Transfer Design | | | | | | -.01 | .84 |
| Environmental Obstacles to Transfer | | | | | | -.07 | .14 |
| Personal Outcomes-Positive | | | | | | -.17 | < .01 |
| Peer Support | | | | | | .15 | < .01 |
| Supervisor Sanction | | | | | | -.13 | < .01 |
| Supervisor Support | | | | | | .05 | .36 |

(table cont.)

| | | | | | | | |
|-------------------------------------|------------|------------|------------|------------|-------------|-------|------------|
| Motivation to Transfer | | | | | | .05 | .26 |
| Learner Readiness | | | | | | .06 | .22 |
| Content Validity | | | | | | .07 | .23 |
| Job Space and Transfer Consequence | | | | | | .14 | < .01 |
| Opportunity to use | | | | | | .13 | .02 |
| Capacity for Transfer | | | | | | -.01 | .75 |
| Training-in-general block | .38 | .14 | .11 | .01 | 1.36 | | .02 |
| Transfer Design | | | | | | -.04 | .54 |
| Environmental Obstacles to Transfer | | | | | | -.08 | .09 |
| Personal Outcomes-Positive | | | | | | -.18 | < .01 |
| Peer Support | | | | | | .12 | .03 |
| Supervisor Sanction | | | | | | -.13 | < .01 |
| Supervisor Support | | | | | | .03 | .58 |
| Motivation to Transfer | | | | | | -.07 | .19 |
| Learner Readiness | | | | | | .08 | .11 |
| Content Validity | | | | | | .06 | .25 |
| Job Space and Transfer Consequence | | | | | | .12 | .03 |
| Opportunity to use | | | | | | .11 | .06 |
| Capacity for Transfer | | | | | | -.02 | .70 |
| Effort-Performance Expectations | | | | | | < .01 | .90 |
| Feedback/Advice | | | | | | .07 | .19 |
| Performance-Outcomes Expectations | | | | | | .08 | .16 |
| Change | | | | | | -.01 | .78 |
| Feedback/Help | | | | | | .06 | .27 |
| Self-Efficacy | | | | | | -.02 | .77 |

Note. a: The training-specific factors.

b: The training-in-general factors.

Innovation.

The fifth dependent variable examined was innovation. Multiple regression analysis with full model entry revealed statistically significant results ($F_{18, 408} = 4.84, p < .001$). The ALTSI factors explained 16% of the variability in innovation (see Table 49). Standardized beta weights suggested that personal outcomes-positive, supervisor sanctions, job space & transfer consequences were the significant predictors of this dependent variable.

Table 49. Multiple Regression Analysis of Innovation.

| Model | <u>df</u> | <u>MS</u> | <u>F</u> | <u>p</u> |
|------------|-----------|-----------|----------|----------|
| Regression | 18 | 2.20 | 4.84 | < .001 |
| Residual | 408 | .45 | | |

(table cont.)

| Total | 426 | | | | | |
|-------------------------------------|------------|----------------|------------------------|-------------------|----------------------|------------------|
| <u>Variables in the Equation</u> | | | | | | |
| Variable | R | R ² | R ² Adj. | Standard Error | Standardized Beta | p |
| <u>ALTSI Factors</u> | .40 | .16 | .12 | .66 | | < .001 |
| Transfer Design | | | | | -.06 | .36 |
| Environmental Obstacles to Transfer | | | | | .03 | .55 |
| Personal Outcomes-Positive | | | | | -.16 | < .01 |
| Peer Support | | | | | .06 | .27 |
| Supervisor Sanction | | | | | -.09 | .04 |
| Supervisor Support | | | | | .05 | .38 |
| Motivation to Transfer | | | | | -.01 | .88 |
| Learner Readiness | | | | | -.01 | .91 |
| Content Validity | | | | | .10 | .09 |
| Job Space and Transfer Consequence | | | | | .17 | < .01 |
| Opportunity to use | | | | | .05 | .34 |
| Capacity for Transfer | | | | | < .01 | .99 |
| Effort-Performance Expectations | | | | | .11 | .06 |
| Feedback/Advice | | | | | -.01 | .82 |
| Performance-Outcomes Expectations | | | | | < .01 | .94 |
| Change | | | | | .03 | .51 |
| Feedback/Help | | | | | .20 | < .01 |
| Self-Efficacy | | | | | -.08 | .17 |

Hierarchical regression analysis revealed that the training-specific block of factors was statistically significant ($F_{12, 414}, p < .001$). This block of factors had a multiple R value of .35, with an R^2 of .12, indicating that this group of factors explained 12% of the total variance in innovation. When the second block of factors (training-in-general) was entered into the model, it made a significant contribution to the model. The multiple R increased to .40, and the R^2 change for this block of variables was .04, indicating that this group of factors collectively added 4% of the variance to the total explained variance. This R^2 change was determined to be a statistically significant increase in the explained variance ($F_{change} = 3.09, p < .01$) (see Table 50).

Table 50. Hierarchal Multiple Regression Analysis of Innovation.

| Model | | df | MS | F | p | | |
|-------------------------------------|------------|----------------|------------------------|--------------------------|-------------|----------------|------------------|
| 1 ^a | Regression | 12 | 2.20 | 4.84 | < .001 | | |
| | Residual | 414 | .45 | | | | |
| | Total | 426 | | | | | |
| 2 ^b | Regression | 18 | 1.92 | 4.35 | < .001 | | |
| | Residual | 408 | .44 | | | | |
| | Total | 426 | | | | | |
| <u>Variables in the Equation</u> | | | | | | | |
| Variable | R | R ² | R ² Adj. | R ² Change | F change | Stand. Beta | p |
| <u>Training-specific block</u> | .35 | .12 | .10 | .12 | 4.84 | | < .001 |
| Transfer Design | | | | | | -.01 | .87 |
| Environmental Obstacles to Transfer | | | | | | .02 | .56 |
| Personal Outcomes-Positive | | | | | | -.16 | < .01 |
| Peer Support | | | | | | .09 | .11 |
| Supervisor Sanction | | | | | | -.10 | .02 |
| Supervisor Support | | | | | | .08 | .11 |
| Motivation to Transfer | | | | | | .01 | .82 |
| Learner Readiness | | | | | | -.01 | .85 |
| Content Validity | | | | | | .10 | .08 |
| Job Space and Transfer Consequence | | | | | | .21 | < .01 |
| Opportunity to use | | | | | | .08 | .18 |
| Capacity for Transfer | | | | | | .02 | .55 |
| <u>Training-in-general block</u> | .40 | .16 | .12 | .04 | 3.09 | | < .01 |
| Transfer Design | | | | | | -.06 | .36 |
| Environmental Obstacles to Transfer | | | | | | .03 | .55 |
| Personal Outcomes-Positive | | | | | | -.16 | < .01 |
| Peer Support | | | | | | .06 | .27 |
| Supervisor Sanction | | | | | | -.09 | .04 |
| Supervisor Support | | | | | | .05 | .38 |
| Motivation to Transfer | | | | | | -.01 | .88 |
| Learner Readiness | | | | | | -.01 | .91 |
| Content Validity | | | | | | .10 | .09 |
| Job Space and Transfer Consequence | | | | | | .17 | < .01 |
| Opportunity to use | | | | | | .05 | .34 |
| Capacity for Transfer | | | | | | < .01 | .99 |
| Effort-Performance Expectations | | | | | | .11 | .06 |
| Feedback/Advice | | | | | | -.01 | .82 |
| Performance-Outcomes Expectations | | | | | | < .01 | .94 |
| Change | | | | | | .03 | .51 |
| Feedback/Help | | | | | | .20 | < .01 |

(table cont.)

| | | | | | | | | | |
|---------------|--|--|--|--|--|--|--|-------|-----|
| Self-Efficacy | | | | | | | | - .08 | .17 |
|---------------|--|--|--|--|--|--|--|-------|-----|

Note. a: The training-specific factors.
b: The training-in-general factors.

Summary for Research Question Four.

Research question four asked if learning transfer system factors explained a significant portion of the variance in an overall measure of organizational learning, knowledge indeterminacy, learning latitude, organizational unity, and innovation. Learning transfer system factors explained 18% of the variance in an overall measure of organizational learning. The training-specific factors contributed 14% of the total explained variance while training-in-general factors added an additional 4% to the total explained variance. Personal outcomes-positive; supervisor sanctions; job space & transfer consequences; and feedback/help had significant beta weights.

Learning transfer system factors explained 16% of the variance in knowledge indeterminacy. The training-specific factors contributed 9% of the explained variance while training-in-general factors added an additional 7% to the total explained variance. Environmental obstacles to transfer, personal-outcomes positive, feedback/help, and self-efficacy were significant predictors of knowledge indeterminacy.

Learning transfer system factors explained 8% of the variance in learning latitude. The training-specific factors explained 6% of the variance; however, the training-in-general factors contributed only 2% to the total explained variance. Personal-outcomes positive and feedback/advice had significant beta weight.

Learning transfer system factors explained 14% of the variance in organizational unity. The training-specific factors contributed 13% of the total variance while training-in-general factors added an additional 1% to the total explained variance. Personal outcomes-positive, peer

support, supervisor sanctions, and job space & transfer consequences had significant beta weights.

Finally, learning transfer system factors explained 16% of the variance in innovation. The training-specific factors contributed 12% of the total variance while training-in-general factors added an additional 4% to the total explained variance. Personal outcomes-positive, supervisor sanctions, and job space & transfer consequences had significant beta weights.

CHAPTER 5

DISCUSSION

Construct Validation

The primary purpose of this study was to establish a valid and reliable Arabic version of the Learning Transfer System Inventory (ALTSI) for use in Jordan. The original LTSI is well-grounded in previous research and theory and has exhibited fairly robust psychometric qualities. Previous research in the U. S. has established the construct validity (Holton et al., 2000), convergent/divergent validity (Bookter, 1999), and criterion-related validity of some of the instrument's scales (Bates, 2001; Bates et al., 2000; Seyler et al., 1998). In addition, the LTSI has shown evidence of cross-cultural factor validity among different cultures including Thailand (Yamhill, 2001) and Taiwan (Chen, 2003).

The results of the factor analysis indicated that 18 latent factors with 73 items emerged from the Jordanian data collected with the ALTSI. In the training-specific domain, 12 factors emerged with 49 items and closely matched the factors found in the original LTSI (Holton et al., 2000). Environmental obstacles to transfer and job space & transfer consequences emerged as a result of a combination of two factors each. In the training-in-general domain, six factors emerged with 24 items and closely matched those factors found in the original LTSI. The feedback construct split into two factors where one measures the feedback in terms of a verbal versus actual help. Results suggest that the Arabic version of the LTSI can provide reliable and internally consistent measurement for learning transfer system constructs in Jordan.

These results are consistent with other cross-cultural instrument validation research done with the LTSI. For example, Chen (2003) validated the LTSI in Taiwanese with a sample of 583 trainees from 20 different organizations. The same factor analysis procedures were employed

and resulted in validation of 15 factors (transfer design and opportunity to use emerged as one factor and was named transferability) that showed acceptable reliabilities ranging from .65-.92. Yamnill (2001), as well, validated the LTSI with a sample of 1029 subjects from 60 different organizations in Thailand. The results of the factor analysis showed that 16 factors were valid in Thailand and were closely similar to the original factors found in the LTSI. Taken together with the results of the present study, these findings suggest nearly all the constructs assessed by the LTSI may be robust across cultures.

The ALTSI is beneficial to HRD practice and research in Jordan. From the practical standpoint, Jordanian organizations can use the ALTSI in several ways including:

1. To assess potential problems with transfer prior to conducting a major training/learning intervention. The ALTSI can be administered prior to designing and delivering training as part of the needs assessment process to discover those factors that might hinder learning transfer. For example, if supervisors are not supportive of the application of new training on the job then the HRD function should be concerned first with delivering interventions aimed at changing supervisor's attitudes toward new training or skills associated with effectively supporting learning transfer.
2. To evaluate the effectiveness of existing training programs. The ALTSI has a section that is tailored only to that specific training program. Many training programs in the past were evaluated by asking trainees whether or not they liked the training. The ALTSI goes beyond that by tabbing the design and delivery of training (e.g., similarity of the content of the training with what will be used on the job), the application of training of training on the job (e.g., the opportunities the trainees were provided with to use training on the job), the attitude of the organization's work force toward the new training (e.g.,

supervisor and peer support), the policies of the organization in supporting new training (e.g., the reward system), and the motivation level of trainees in general toward adjusting to new training. These evaluative tools can provide us with additional information why the training program did or did not work.

3. To investigate known transfer problems. The ALTSI can be used at any point in time to point out possible obstacles to learning transfer. The organization can then take the necessary actions to correct for such problems and to better able link training to individual performance. For example, if the motivation level of employees seems like a possible problem, then providing a reward system that is encouraging might be a possible solution.
4. To target interventions designed to enhance transfer. The ALTSI can point out strong factors to enhance transfer. For example, if the organization is know for its team-based environment, then peer support might be a factor that should be capitalized on.
5. To incorporate evaluation of transfer as part of regular employee assessments. To ensure the effectiveness of training programs, employees can be offered packages which incorporate their ability to use and apply training on the job as part of their evaluation.

The ability of Jordanian organizations to use the ALTSI effectively can reap many benefits to the growth, development and sustainability of organizations as well as to the economic growth of the whole nation. The ability of organizations to limit unnecessary expenses, develop effective and profitable training programs, enhance individual and organizational performance is very vital to their survival and competitiveness. Such combined efforts can contribute greatly to the economic growth of the nation as a whole by developing and nurturing the expertise and competencies of the national workforce.

From a research standpoint, this investigation is important because it represents an important effort to draw attention to the importance of learning transfer research in Jordan and open up new avenues of investigation. Also, this research represents an important effort to disseminate and share HRD tools and expertise across geographic and cultural boundaries. This is critically important given the global nature of business today and the internationalization of the field of HRD. For example, creating an Arabic version of the LTSI will enable HRD practitioners in Jordan to investigate the factors that influence transfer and to more fully evaluate the effectiveness of training.

It also has the potential to enable the comparison of transfer systems across geographic and cultural boundaries and to help us learn more about how learning and performance are linked and facilitated. Understanding this linkage may be even more critical in developing economies where effective learning – performance linkages are perhaps not as well understood or pursued but nevertheless have the potential to dramatically improve individual performance and organizational competitiveness.

Certainly the study of learning transfer can draw attention to the importance of learning transfer in the viability of organizations and the economy as a whole in Jordan and spur greater intent and effort in understanding training effectiveness. Moreover, knowing that many international and multinational organizations are expanding overseas, the local and international HRD functions, will gain deeper understanding of the transfer systems that exists in the Arabic cultures, develop interventions to enhance learning transfer, and ultimately improve organizational learning and performance.

On the other hand, HRD in the U. S. will have further proofs to the validity and reliability of the LTSI psychometric properties. The LTSI can be used to guide the efforts of the HRD

function in enhancing training effectiveness and diagnose early problems with learning transfer. Such effort will have a great benefit to the organization as a whole by contributing to the bottom line results as well as overall learning and may provide further evidence to the credibility of the HRD function.

The Learning Transfer System and Group Differences

In terms of research questions two and three, the Multivariate Analysis of Variance (MANOVA) indicated that the learning transfer system perceptions were significantly different across individual variables (e.g., educational level and years of experience) and situational variables (e.g., types of training, choice of training, sector of the organization, and task of the organization). These results are generally consistent with previous research (Chen, 2003; Holton, Chen, & Naquin, 2002; Yamnill, 2001) where perceptions of the transfer systems differed across individual and situational variables. However, the learning transfer system perceptions did not differ across gender and age, meaning that organizations need not to be too concerned with gender and/or age differences when designing training. It appeared that males and females from different age groups seemed to have the same perceptions with regard to learning transfer systems. Overall, the results show that transfer systems are not homogeneous, but differ somewhat depending on multiple factors.

Individual Differences

Individual variables (e.g., educational level and work experience) can have an impact on how people perceive transfer systems. Research to understand why perceptions of the learning transfer system factors vary across individual difference variables may provide insight into the influence of such variables on the transfer systems in organizations. This study documented that individual differences are associated with how people perceive transfer systems in organizations.

For example, the results of this study indicated that employees with lower levels of education reported higher levels of motivation to transfer training on the job than employees with higher levels of education. They were also more likely to perceive that their transfer efforts will result in some kind of performance improvement, which in turn will lead to a desirable outcome (e.g., salary increase). Employees with lower levels of education also perceived lower levels of resistance in the workplace to the transfer of learning (e.g., higher levels of openness to change), and perceived the content of training as more consistent with their job requirements.

These findings suggest that employees with lower educational levels - working in a supportive environment (e.g., personal outcomes-positive) and provided with the right training (content validity) have high expectations for the value of training and are well motivated to try to improve work through learning. This lower educational level/high expectation and motivation pattern is consistent with what we would expect from employees with low educational levels who may have recognized that training can help them perform their jobs better. This suggests they may see training and its application on the job as one mean of compensating for less formal education when compared to their co-workers. HRD practitioners in Jordan should capitalize on the KSA's of employees with lower education levels to keep their motivational level up to standards by providing different incentives (e.g., literacy training programs, paid college education, and work-related conference attendance).

Results also suggested that people with various job tenures perceived transfer systems differently. Specifically, employees with a long work experience reported higher levels of motivation to transfer, more opportunities to practice with learning on the job, and also perceived their work group to be more open to change. This suggests that employees who have been with the company for extended periods of time are better able to see the relevance of training program

contents to their job requirements, and to transfer it and apply it on the job, than those with minimum work experience. These results are generally consistent with previous research (Chen, 2003; Donovan, Hannigan, & Crowe, 2001). For example, Donovan et al. (2001) suggested that those employees who had been in the company the longest believed that they were more prepared for training and that training content reflected what will be used on the job.

These findings suggest, in general, that variations in learning transfer system perceptions by job tenure may mean that employees who have been with the company longer are more prepared psychologically to deal with new situations as they arise, more familiar with their jobs and job-related improvements, and have established strong relationships within their companies and workgroups which may help them to overcome obstacles to learning transfer. Finally, organizations in Jordan should attempt to partner employees with minimum work experience with those experienced workers to enhance their level of confidence and motivation.

Situational Differences

Learning transfer system perceptions were also found to be significantly different across several situational variables including types of training, choice of training, sector of the organization, and task of the organization. The examination of the learning transfer system perceptions across training types revealed that 11 of the 18 factors were significantly different depending on the type of training provided by the organization. In the present study, respondents who participated in technical training appeared to have significantly more positive transfer system perceptions than respondents who participated in other types of training. This suggests that the nature of training had an influence on employees' perceptions of elements of the transfer system. For example, it suggests that technical training, because of its practical job-relatedness can influence perceptions of several important transfer factors such as the opportunity to apply

training on the job. This suggests that organizations providing technical training have the best configuration of learning transfer systems. The National Center for Human Resource Development (NCHRD) in Jordan can use such information to develop ideal training programs with unique configurations. Best practices can then be developed and disseminated to organizations operating in Jordan.

The results also showed that employees valued voluntary training over mandatory training. On one hand, these results are somewhat surprising to the extent we would expect that mandatory training would be valued over voluntary training. Some have suggested, for example, that mandatory training sends a message to employees that such training is central to the achievement of organizational objectives which, in turn, should increase employees' training-related motivation (Tsai, 2003). However, in the present study, employees who received voluntary training had higher levels of motivation and expectations than those who participated in mandatory training. These findings are consistent with research indicating that the act of choosing training encourages the perception that training offers some positive utility. Results from a number of studies indicate that trainees allowed some degree of choice in training were generally more satisfied with training, showed higher motivation to learn, and scored higher on achievement results (see Baldwin, Magjuka, & Loher, 1991; Clark, Dobbins, & Ladd, 1993; Mathieu, Tannenbaum, & Salas, 1992).

It is clear that freedom of choice may have produced intrinsic satisfaction and generated the belief that training should be attended for its own sake to gain knowledge that is beneficial to employees' jobs. Such intrinsic satisfaction might be the reason behind the high levels of expectations and motivation of those who attended voluntary training.

The examination of the transfer systems perceptions across sector of the organization revealed that the private sector organizations seemed to have stronger transfer systems than public sector organizations. Employees from the private sector had more supportive environments where they had the opportunity to use training on the job, received feedback about their progress, and had less supervisor sanctions than did the public sector employees. This finding is expected due to the fact that the private sector in Jordan is more concerned with performance (result-oriented), therefore, a supportive environment is expected in the private sector in the form of feedback and opportunity to use learning on the job. Moreover, the private sector usually offers training courses with the expectation that it will result in performance improvements whereas the public sector may offer training courses without considerations to the bottom line. The NCHRD in Jordan should nurture and develop human capital and how it is connected to the bottom line results. Also, more efforts should take place in the public sector to eliminate obstacles to transfer such as supervisors' sanctions.

Finally, perceptions of the learning transfer systems also varied across task of the organization. The high-tech sector appeared to have the strongest transfer system. This may be due to the fact that the high-tech sector is more of a technology-based, results-oriented, and innovative environment when compared to the other industries such as the banking sector or the insurance sector. This findings support the idea that different types of organizations may have different cultures which might weaken or strengthen the transfer of learning.

In general, the findings suggest that the LTSI has potential as a diagnostic tool in Jordan. This study demonstrated that the ALTSI can be used to diagnose the transfer systems in Jordanian organizations and to further discover the main factors that either inhibit or support learning transfer. Such findings can help organizations more fully benefit from training

investments and realize training's full potential by realizing contributions to organizational goals and objectives. HRD practitioners can use the LTSI as an evaluation tool to provide information about system deficiencies within the organizations. For example, if it was uncovered that content validity of training is somewhat not at the required level, then we can intervene by building training programs that will reflect what will be used on the job, thus enhancing transfer.

To add further, we need to shed the light on the fact that each organization is expected to have differences in its best configuration of learning transfer because of cultural differences. Thus not all organizations should have or build the same kinds of transfer systems (Holton & Baldwin, 2000). For example, an organization with a strong team-based culture may recognize peer support as a more dominant predictor of learning transfer than supervisor support. In this case capitalizing on peer support would be of advantage to the organization.

Finally, consideration should also be given to individual differences and situational differences to build a strong transfer system within a particular organization. For example, the organizations may receive higher investments in the long-run when they invest in improving their employees' abilities, skills and education. By doing so, the organization may offer education and skill packages to their employees on a regular basis as part of their employee development.

The Learning Transfer System and Organizational Learning

The present study reported on an initial exploratory examination of the relationship between the learning transfer system perceptions and selected organizational learning measures. The objective was to empirically examine the ability of the ALTSI factors to account for a significant portion of the total variance in the five measures of organizational learning including

knowledge indeterminacy, learning latitude, organizational unity, innovation, and an overall measure.

This study has documented for the first time that a linkage existed between these two construct domains (learning transfer and organizational learning). Findings indicated that the learning transfer systems accounted for a significant portion of the explained variance in the perceived organizational learning. For example, ALTSI factors explained 18% of the variance in an overall measure of organizational learning, 16% in knowledge indeterminacy, 8% in learning latitude, 14% in organizational unity, and 16% in innovation.

Results suggested that higher levels of learning transfer were associated with higher levels of organizational learning. Factors such as personal-outcomes positive, feedback, supervisor sanctions, peer support, job space & transfer consequences, and environmental obstacles to transfer have contributed significantly to the explained variance in measures of organizational learning (as shown by their significant regression weights). Findings also indicated that the learning transfer systems can account for a significant portion of the explained variance in the perceived organizational learning. This indeed has established the criterion validity of the ALTSI.

These findings are important from a theoretical standpoint because they expand our understanding about how the learning transfer system variables fit with other learning-related variables and constructs. By examining the relationship between LTSI variables and organizational learning variables this research has expanded the nomological network of these variables. This is important because organizational learning literature is “startling unclear” about how learning organization strategies are to improve critical organizational outcomes (Kaiser, 2000). This research provides an initial glimpse of what may be a valuable linkage between

learning transfer systems and organizational learning. Secondly, the study links two constructs that have generated a lot of interest in the HRD and organizational behavior literature thereby expanding their nomological networks. Finally, there has been little if any research that has examined variables affecting the relationship between learning transfer systems and organizational learning variables in Arabic cultures, such as that found in Jordan. This research, therefore, represents a milestone in this kind of cross-cultural research by showing that learning transfer systems and organizational learning can be fruitfully examined in cultures quite different from that in the U.S.

Finally, these two construct domains should be addressed more fully in research on their influence on subjective and objective measures of organizational performance, thus expanding the nomological network. It is a well-known fact that organizations place a great deal of focus on the contribution of investments in training to the bottom line. It is believed that linking learning transfer to such measures is powerful evidence of the predictive validity of learning transfer in the viability of organizations. We should also mention that other factors may have contributed to the explained variance such as culture, politics, economic status, and family.

Recommendations for Future Research

The present study's recommendation for future research was based on the suggestions proposed by Benson (1998) of the strong program for construct validation as well as the researcher recommendations.

Clearly the purposive and convenient sampling techniques used in this study created limitations on the generalizability of the findings. Future research should employ random sampling techniques. The causal relationship between learning transfer systems and

organizational learning measures would benefit from future research employing more rigorous research designs (e.g., longitudinal designs).

The present study documented that the learning transfer system perceptions varied depending on situational variables and individual variables. Future research should study the relationship between situational variables and individual variables and their joint effect on the learning transfer systems.

In addition, research directed at improving the psychometric qualities of certain ALTSI scales is warranted. There is a need to increase the number of items on a few factors and avoid writing items that have negative connotations. As noticed in Table 14 and 16, job space & transfer consequences, opportunity to use training, and feedback/help had only three items, while capacity for transfer had two items. Moreover, score reliability is still not high enough for resistance/openness to change ($\alpha = .53$), capacity for transfer ($\alpha = .55$), and job space & transfer consequences ($\alpha = .48$) and requires further validation. In short, further efforts to improve the reliabilities on some ALTSI scales (e.g., by increasing the number of items) may be desirable, if the scales are to be more widely used in Jordan. Moreover, there is a need to validate the definition of each construct in Jordan by employing various methods such as interviews, focus groups, and surveys. For example, two constructs in the training-specific domain (environmental obstacles to transfer and job space & transfer consequences) and the feedback/help and feedback/advice constructs from the training-in-general domain need further investigation.

The second recommendation would be to add more factors to the ALTSI that may specifically pertain to the Jordanian culture and thereby impact learning transfer within that culture. The cultural differences alone suggest that may be other learning transfer system factors such as organizational commitment and job involvement that may be important to measure in the

Jordanian culture specifically or Arabic cultures in general. A qualitative effort that includes interviews and focus groups may be helpful in uncovering those factors.

After the structure of the ALTSI has been enhanced, a confirmatory factor analysis (CFA) would be needed to fully confirm the latent structure of the ALTSI. CFA methodology is necessary to confirm that those items found to belong to a certain factor in the initial exploratory factor analysis actually exist. Once confirmed, the ALTSI can be explored with a different sample to ensure that the factor structure exists in the Jordanian culture. Moreover, we need to make sure that the ALTSI is administered directly after training rather than up to six months after training like the case in the present study. Path modeling and structural equation modeling are other techniques that could be used to demonstrate the predictive relationship and its direction among the ALTSI constructs in the Jordanian culture. These techniques could be used as a first step toward theory development.

The fourth recommendation would be to establish the criterion validity of the ALTSI in Jordan by establishing its relationship with other important outcomes in the field of HRD such as performance. For example, one might focus on a specific training program such as technical training to test for the relationship between learning transfer system factors and objective and subjective performance measures. Such procedures will add credibility to the measuring instrument by establishing its criterion validity. Furthermore, the convergent and divergent validity of the ALTSI can be established by establishing the relationship between the ALTSI constructs and similar other constructs.

The final recommendation would involve comparing the responses from the Jordanian culture with those from the American culture or other cultures, after employing invariance testing techniques. Invariance testing allows comparison of results across different sampling

parameters to determine how similar or different the results are. This is an important technique in establishing the replicability of results for future research.

REFERENCES

- Argyris, C., & Schon, D. (1978). *Organizational learning: A theory of action perspective*. Reading, MA: Addison-Wesley.
- Ary, D., Jacob, L. C., & Razavieh, A. (1996). *Introduction to research in education*. (5th ed.). Fort Worth, TX: Harcourt Brace College Publishers.
- ASTD (2002). ASTD highlights international training trends in its 2002 international comparisons report. http://www.astd.org/virtual_community/press_room/ICRreport.html.
- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, *41*(1), 63-105.
- Baldwin, T. T., & Magjuka, R. J. (1991). Organizational training and signals of importance: Linking pretraining perceptions to intentions to transfer. *Human Resource Development Quarterly*, *2*(1), 25-36.
- Baldwin, T. T., & Magjuka, R. J., & Loher, B. T. (1991). The perils of participation: Effects of choice of training on trainee motivation and learning. *Personnel Psychology*, *44*, 51-65.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review*, *84*, 51-67.
- Banville, D., Desrosiers, P., & Genet-Volet, Y. (2000). Translating Questionnaires and inventories using a cross-cultural translating technique. *Journal of Teaching in Physical Education*, *19*, 374-387.
- Barling, J., & Beattie, R. (1983). Self-efficacy beliefs and sales performance. *Journal of Organizational Behavioral Management*, *5*(1), 41-51.
- Bass, B. M., & Vanghn, J. A. (1966). *Training in industry: The management of learning*. Belmont, CA: Wadsworth.
- Bates, R. A. (1997). *The impact of training content validity, organizational commitment, learning, performance utility, and transfer climate on transfer of training in an industrial setting*. Unpublished Doctoral Dissertation, Louisiana State University, Baton Rouge.
- Bates, R. A. (2001). Public sector training participation: an empirical investigation. *International Journal of Training and Development*, *5*(2), 136-150.
- Bates, R. A., & Holton, E. F. (2000). The relationship between learning transfer system perceptions and basic workplace skills. *Academy of Human Resource Development Annual Conference Proceedings, USA*, 935-941.

- Bates, R. A., Holton, E. F., & Burnett, M. F. (1999). Assessing the impact of influential observations on multiple regression analysis in human resource research. *Human Resource Development Quarterly*, 10(4), 343-363.
- Bates, R.A., Holton, E.F., & Seyler, M. A. (1998). Factors affecting transfer of training in an industrial setting. *Academy of Human Resource Development Annual Conference Proceedings, USA*, 345-359.
- Bates, R.A., Holton, E.F., Seyler, M. 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), 19-42.
- Benson, J. (1998). Developing a strong program of construct validation: A test anxiety example. *Educational Measurement, Issues and Practice*, 17(1), 10-20.
- Benson, J., & Nasser, F. (1998). On the use of factor analysis as a research tool. *Journal of Vocational Education Research*, 23(1), 13-33.
- Berry, J. W. (1969). On cross-cultural comparability. *International Journal of Psychology*, 4(2), 119-128.
- Bookter, A. I. (1999). *Convergent and divergent validity of the learning transfer questionnaire*. Unpublished Doctoral Dissertation. Louisiana State University, Baton Rouge.
- Brinkerhoff, R. D., & Montesino, M. U. (1995). Partnership for training transfer: Lessons from a corporate study. *Human Resource Development Quarterly*, 6(3), 263-274.
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of cross-cultural psychology*, 1(3), 185-216.
- Brislin, R. W. (1980). Translation and content analysis of oral and written materials. In H. C. Triandis & J. W. Berry (Eds.), *Handbook of cross-cultural psychology: Methodology* (pp. 389-444).
- Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), *Field methods in cross-cultural research* (pp. 137-164). Beverly Hills, CA: Sage Publications.
- Brislin, R. W., Lonner, W. J., & Thorndike, R. M. (1973). *Cross-cultural research methods*. New York: John Wiley & Sons.
- Broad, M. L., & Newstrom, J. W. (1992). *Transfer of Training: Action-Packed Strategies to Ensure High Payoff from Training Investments*. Reading, MA: Addison-Wesley.
- Bullinger, M., Anderson, R., Cella, D., & Aaronson, N. (1993). Developing and evaluating cross-cultural instruments from minimum requirements to optimal models. *Quality of life research*, 2, 451-459.

- Bunch, K. J. (2001). Organizational culture and training effectiveness. *Proceedings of the Academy of Human Resource Development, USA*, p. 957-961.
- Burke, W., & Litwin, G. (1992). A causal model of organizational performance and change. *Journal of Management*, 18(3), 523-545.
- Business and Investment in Jordan (1995). *Privatization trends in Jordan*. Central Bank of Jordan.
- Butcher, J. N. (1982). Cross-cultural research methods in clinical psychology. In P. Kendall & J. N. Butcher (Eds.), *Handbook of research methods in clinical psychology* (pp. 273-308). New York: Wiley Interscience.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105.
- Central Bank of Jordan. (1994). *Monthly statistical bulletin. National Center for Human Resource Development*.
- Chen, H. C. (2003). *Cross-cultural construct validation of the learning transfer system inventory in Taiwan*. Unpublished doctoral dissertation, Louisiana State University, Baton Rouge.
- Clark, C. S., Dobbins, G. H., & Ladd, R. T. (1993). Exploratory field study of training motivation: Influence of involvement, credibility, and transfer climate. *Group and Organization Management* 18(3), 292-307.
- Colquitt, J. A., Lepine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology*, 58(5), 678-707.
- Cormier, S. M., & Hagman, J. D. (1987). *Transfer of learning: Contemporary research and applications*. San Diego, CA: Academic Press.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52(4), 281-302.
- Dixon, N. (1992). Organizational learning: A review of the literature with implications for HRD professionals. *Human Resource Development Quarterly*, 3, 29-49.
- Dixon, N. (1994). *The organizational learning cycle: How can we learn collectively?* New York: McGraw-Hill.

- Donovan, P., Hannigan, K., & Crowe, D. (2001). The learning transfer system approach to estimating the benefits of training: Empirical evidence. *Journal of European Industrial Training*, 25(2), 221-228.
- Eckensberger, L. H. (1994). On the social psychology of cross-cultural research. In A. M. Bouvy, F. Van De Vijver, P. Boski, & P. Schmitz (Eds.), *Journeys into cross-cultural psychology* (pp. 31-40). Amsterdam: Swets & Zeitlinger.
- Eden, D., & Ravid, G. (1982). Pygmalion versus self-expectancy: Effects of instructor-and self-expectancy on trainee performance. *Organizational Behavior and Human Performance*, 30, 351-364.
- Ellis, H. C. (1965). *The transfer of learning*. New York: Macmillan.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272-299.
- Facteau, J. D., Dobbins, G. H., Russell, J. E. A., Ladd, R. T., & Kudisch, J. D. (1995). The influence of general perceptions of the training environment on pretraining motivation and perceived training transfer. *Journal of Management*, 21(1), 1-25.
- Fisher, S. L., & Ford, J. K. (1998). Differential effects of learner efforts and goal orientation on two learning outcomes. *Personal Psychology*, 51, 397-420.
- Fleishman, E. A. (1955). Leadership climate, human relations training, and supervisory behavior. *Personnel Psychology*, 6, 205-222.
- Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement assessment instruments. *Psychological Assessment*, 7(3), 286-299.
- Ford, K. J., & Quinones, M. A. (1992). Factors affecting the opportunity to perform trained tasks on the job. *Personnel Psychology*, 45, 511-526.
- Ford, K. J., & Quinones, M. A., Sego, D., & Sorra, J. (1992). Factors affecting the opportunity to use trained skills on the job. *Personnel Psychology*, 45, 511-527.
- Ford, J. K., Kozlowski, S., Kraiger, K., Salas, E., & Teachout, M. (1997). *Improving training effectiveness in work organizations*. Mahwah, NJ: Erlbaum.
- Fouad, N., & Bracken, B. A. (1986). Cross-cultural translation and validation of two U.S. psycho educational assessment instruments. *School Psychology International*, 7, 167-172.
- Froman, L. (1977). Some motivational determinants of trainee effort and performance: An investigation of expectancy theory. *Dissertation Abstracts International* (UMI No. 7723975).

- Gagne, R. M. (1970). *The Conditions of Learning*. New York: Holt, Rinehart, & Winston.
- Gardner, R. C. (2001). *Psychological statistics using SPSS for windows*. Upper Saddle River, NJ: Prentice-Hall, Inc.
- Garavaglia, P. L. (1993). How to ensure transfer of training. *Training and Development*, 47(1), 63-68.
- Georgenson, D. L. (1982). The problem of transfer calls for partnership. *Training and Development Journal*, 36(10), 75-78.
- George, D., & Mallery, P. (2003). *SPSS for windows step by step: A simple guide and reference 11.0 update*. Boston, MA: Pearson Education, Inc.
- Gielen, E. W. M. (1995). *Transfer of training in corporate settings*. Unpublished doctoral dissertation, University of Twente, the Netherlands.
- Gist, M. E. (1987). Self-efficacy: Implications for organizational behavior and human resource management. *Academy of Management Review*, 12, 472-485.
- Gist, M. E., Stevens, C. K., & Bavetta, A. G. (1991). Effects of self-efficacy and post training intervention on the acquisition and maintenance of complex interpersonal skills. *Personnel Psychology*, 44, 837-862.
- Glidden-Tracey, C., & Greenwood, A. K. (1997). A validation study of the Spanish self-directed search using back-translation procedures. *Journal of Career Assessment*, 5(1), 105-113.
- Goldstein, I. L., & Musicante, G. R. (1986). The applicability of a training transfer model to issues concerning rater training. In E. A. Locke (Ed.), *generalizing from laboratory to field settings* (pp. 309-330). Lexington, MA: Lexington Books.
- Gorsuch, R.L. (1997). Exploratory factor analysis: its role in item analysis. *Journal of Personality Assessment*, 68(3), 532-560.
- Guillemin, F., Bombardier, C., & Beaton, D. (1993). Cross-cultural adaption of health-related quality of life measures: Literature review and proposed measures. *Journal of Clinical Epidemiology*, 46, 1417-1432.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis*. (5th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Hansen, J. C. (1987). Cross-cultural research on vocational interests. *Measurement and Evaluation in Counseling and Development*, 19, 163-176.
- Harris, R. J. (1985). *A premier of multivariate statistics* (2nd ed.). Orlando, FL: Academic Press.

- Headd, B. (2000). The characteristics of small-business employees. *Monthly Labor Review*, *1*, 13-18.
- Herrera, R. S., DelCampo, R. L., & Ames, M. H. (1993). A serial approach for translating family science instrumentation. *Family Relations*, *42*, 357-360.
- Hicks, W. D., & Klimoski, R. J. (1987). The process of entering training programs and its effect on training outcomes. *Academy of Management Journal*, *30*, 542-552.
- Hinkle, D. E., Wiersma, W., & Jurs, S. G. (1998). *Applied statistics for the behavioral sciences* (4th ed.). New York: Houghton Mifflin.
- Hofstede, G. (1984). *Culture's Consequences: International Differences in work-related Values*. Newbury Park, CA: Sage Publications, Inc.
- Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations*. Thousand Oaks, CA: Sage Publications, Inc.
- Holton, E. F. III. (1996). The flawed four-level evaluation model. *Human Resource Development Quarterly*, *7*(1), 5-21.
- Holton, E. F. III, & Baldwin, T. T. (2000). Making transfer happen: an action perspective on learning transfer systems. *Advances in Developing Human Resources*, *8*, 1-6.
- Holton, E. F. III, & Bates, R. A. (2002). *The LTSI administration's guide*. School of Human Resource Education and Workforce Development. Baton Rouge, LA.
- Holton, E. F. III, & Kaiser, S. M. (2000). Relationship between learning organization strategies and performance driver outcomes. In *Proceedings of the 2000 Academy of Human Resource Development Annual Meeting, Raleigh, NC*. Baton Rouge, LA: AHRD.
- Holton, E. F. III, Bates, R. A., & Ruona, W. E. A. (2000). Development of a generalized learning transfer system inventory. *Human Resource Development Quarterly*, *11*(4), 333-361.
- Holton, E. F. III, Bates, R. A., Seyler, D. L., & Carvalho, M. B. (1997). Toward a construct validation of a transfer climate instrument. *Human Resource Development Quarterly*, *8*(2), 95-113.
- Holton, E. F. III, Chen, H. C., & Naquin, S. S. (2002). An examination of learning transfer system characteristics across organizational settings. In R. F. Poell (Ed.), *Cutting edge: Outstanding papers from the 2001 annual research conference* (pp. 80-90). Bowling Green, OH: Academy of Human Resource Development.
- Holton, E. F. III, Chen, H. C., & Naquin, S. S. (in press). An examination of learning transfer system characteristics across organizational settings. *Human Resource Development Quarterly*.

- Hui, C., & Triandis, H. C. (1985). Measurement in cross-cultural psychology: A review and comparison of strategies. *Cross Cultural Psychology*, 16, 131-15.
- Hulin, C. (1987). A psychometric theory of evaluations of items and scale translations-fidelity across languages. *Journal of Cross-Cultural Research*, 18(2), 115-142.
- Jones, A.P., & James, L. R. (1979). Psychological climate: Dimensions and relationships of individual and aggregated work environment perception. *Organizational Behavior and Human Performance*, 23, 201-250.
- Jones, P. S., Lee, J. W., Phillips, L. R., Zhang, X. E., & Jaceldo, K. B. (2001). An adaptation of Brislin's translation model for cross-cultural research. *Nursing Research*, 50(5), 300-304.
- Jordan Economics (2001). Economic trends in Jordan. *National Center for Human Resource Development*.
- Kaiser, S. M. (2000). *Mapping the learning organization: Exploring a model of organizational learning*. Unpublished doctoral dissertation, Louisiana State University, Baton Rouge.
- Kozlowski, S. & Hults, B. M. (1987). An exploration of climates for technical updating and performance. *Personnel Psychology*, 40, 539-563.
- Kozlowski, S., & Salas, E. (1997). *A multilevel organizational systems approach for the implementation and transfer of training*. Mahwah, NJ: Erlbaum.
- Kuchinke, P. K. (1995). Managing learning for performance. *Human Resource Development Quarterly*, 6(3), 1-25.
- Laker, D. R. (1990). Dual dimensionality of training transfer. *Human Resource Development Quarterly*, 1(3), 209-223.
- Lawler, E. E. (1973). *Motivation in work organizations*. Monterey, CA: Brooks/Cole.
- Lawler, E. E. (1986). *High involvement Management*. San Francisco: Jossey-Bass.
- Locke, E. A. (1968). Toward a theory of task motivation in organizations. *Organizational Behavior and Human Performance*, 3, 157-189.
- Lodahl, T. M., & Kejner, M. (1965). The definition and measurement of job involvement. *Journal of Applied Psychology*, 49, 24-33.
- Lomi, C. (1992). Evaluation of a Swedish version of the arthritis self-efficacy scale. *Scandinavian Journal of Caring Sciences*, 6, 132-138.

- Luthans, F., & Davis, T. (1979). Behavioral self-management: The missing link in managerial effectiveness. *Organizational Dynamics*, 8(1), 42-60.
- Masri, M. W. (1998). Human resources development strategy in Jordan. *National Center for Human Resource Development series*, 57, 66.
- Mathieu, J. E., Martineau, J. W., & Tannenbaum, S. I. (1993). Individual and situational influences on the development of self-efficacy: Implications for training effectiveness. *Personnel Psychology*, 46, 125-147.
- Mathieu, J. E., Tannenbaum, S. I., & Salas, E. (1992). Individual and situational influences on measures of training effectiveness. *Academy of Management Journal*, 35(4), 828-847.
- Mathieu, J. E., & Zajac, D. M. (1990). A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychological Bulletin*, 108(2), 171-194.
- McGee, W., & Thayer, P. W. (1961). *Training in business and industry*. New York: Wiley.
- Morgan, R. B., & Casper, W. J. (2000). Examining the factor structure of participant reactions to training: A multidimensional approach. *Human Resource Development Quarterly*, 11(3), 301-317.
- Neff, D., Wall, J., & Reynolds, W. (1992). An assessment of vocational and technical education in Jordan. *National Center for Human Resource Development*.
- Nevis, E., DiBella, A., & Gould, J. (1995). Understanding organizations as learning systems. *Sloan Management Review*, 36(2), 73-85.
- Nida, E. (1964). *Toward a science of translating*. Leiden, Netherlands: E. J. Brill.
- Noe, R. A. (1986). Trainees' attributes and attitudes: Neglected influence on training effectiveness. *Academy of Management Review*, 11, 736-749.
- Noe, R. A., & Ford, J. K. (1992). Emerging issues and new directions for training research. *Research in Personnel and Human Resource Management*, 10, 345-384.
- Noe, R. A., & Schmitt, N. (1986). The influence of trainee attitudes on training effectiveness: Test of a model. *Personnel Psychology*, 39, 497-523.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge creating company*. New York: Oxford University Press.
- Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York: McGraw-Hill.

- Pedhazur, E. J. (1997). *Multiple regression in behavioral research* (3rd ed.). Orlando, FL: Harcourt Brace, Inc.
- Phillips, J. M., & Gully, S. M. (1997). Role of goal orientation, ability, need for achievement, and locus of control in the self-efficacy and goal setting process. *Journal of Applied Psychology, 82*, 792-802.
- Prieto, A. J. (1992). A method for translation of instruments to other languages. *Adult Education Quarterly, 43*, 1-14.
- Pritchard, R.D., & Karasick, B.W. (1973). The effects of organizational climate on managerial job performance and job satisfaction. *Organizational Behavior and Human Performance, 9*, 126-146.
- Quinines, M. A., & Ford, K. J. (1995). The effects of individual and transfer environment characteristics on the opportunity to perform trained tasks. *Training Research Journal, 1*, 29-48.
- Richman-Hirsch, W. L. (2001). Posttraining interventions to enhance transfer: The moderating effects of the work environments. *Human Resource Development Quarterly, 12*(2), 105-120.
- Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991). *Measures of personality and attitudes*. San Diego: Academic Press.
- Roe, R. A. (1997). Assumptions and dilemmas in training. *Applied Psychology: An International Review*.
- Rouiller, J. Z., & Goldstein, I. L. (1993). The relationship between organizational transfer climate and positive transfer of training. *Human Resource Development Quarterly, 4*(4), 377-390.
- Royer, J. M. (1979). Theories of the transfer of learning. *Educational Psychologist, 14*, 53-69.
- Ruona, W., Leimbach, M., Holton, E. F., & Bates, R. (1999). *The relationship between learner reactions and predictors of learning transfer: Implications for evaluation*. Proceedings of the Academy of Human Resource Development Annual Meeting, Arlington, VA.
- Saks, A. M. (1995). Longitudinal field investigation of the moderating and mediating effects of self-efficacy on the relationship between training and newcomer adjustment. *Journal of Applied Psychology, 80*, 221-225.
- Salas, E., & Cannon-Bowers, J. A. (2001). The science of training: A decade of progress. *Annual Review of Psychology, 3*, 471-506.

- Schein, E. (1985). *Organizational culture and leadership*. San Francisco: Jossey-Bass Publishers.
- Sechrest, L., Fay, T. L., & Zaidi, H. S. M. (1972). Problems of translation in cross-cultural research. *Journal of Cross-Cultural Psychology*, 3(1), 41-56.
- Seyler, D. L., Holton, E. F., Bates, R. A., Burnett, M. F., & Carvalho, M. A. (1998). Factors affecting transfer of training. *International Journal of Training and Development*, 2(1), 2-16.
- Sperber, A., Devellis, R. F., & Boehlecke, B. (1994). Cross-cultural translation: Methodology and validation. *Journal of Cross-Cultural Psychology*, 25(4), 501-524.
- Storey, D. (1994). *Understanding the small business sector*. London: Thompson Business Press.
- Swanson, R. A., & Holton, E. F. (2001). *Foundations of Human Resource Development*. San Francisco: Berrett-Koehler Publishers, INC.
- Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, 43, 399-441.
- Thorndike, E.L., & Woodworth, R. S. (1901). The influence of improvement in one mental function upon the efficiency of other functions. *Psychological Review*, 8, 247-261.
- Tinsley, H. E., & Tinsley, D. J. (1987). Uses of factor analysis in counseling psychology research. *Journal of Counseling Psychology*, 34(4), 414-424.
- Torraco, R. J. (1998). The future of pluralism. *Journal of Social Issues*, 32, 179-208.
- Tracey, J. B., Tannenbaum, S. I., & Kavanagh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, 80, 239-52.
- Tracey, B. J., Hinkin, T. R., Tannenbaum, S., & Mathieu, J. E. (2001). The influence of individual characteristics and the work environment on varying levels of training outcomes. *Human Resource Development Quarterly*, 12(1), 5-23.
- Triandis, H. C. (1976). The future of pluralism. *Journal of Social Issues*, 32, 179-208.
- Tsai, W. C. (2003). Perceived importance as a mediator of the relationship between training assignment and training motivation. *Personnel Review*, 32(2), 151-163.
- Vallerand, R. J. (1989). Toward a methodology of cross-cultural validation of psychological questionnaires: Implication for research. *Psychologie Canadienne*, 30, 662-680.
- Van de Ven, A. H. (1986). Central problems in the management of innovation. *Management Science*, 32(5), 590-607.

- Vroom, V. H. (1964). *Work and Motivation*. New York: John Wiley & Sons.
- Werner, J. M., O'Leary-Kelly, Baldwin, T. T., & Wexley, K. N. (1994). *Human Resource Development Quarterly*, 5(2), 169-183.
- Wexley, K. N., & Baldwin, T. T. (1986). Posttraining strategies for facilitating positive transfer: An empirical exploration. *Academy of Management Journal*, 29(3), 503-520.
- Xiao, J. (1996). The relationship between organizational factors and the transfer of training in the electronic industry in Shenzhen, China. *Human Resource Development Quarterly*, 7, 55-86.
- Yamhill, S. (2001). *Factors affecting transfer of training in Thailand*. Unpublished doctoral dissertation, University of Minnesota, Twin Cities.
- Yang, K. S., & Bond, M. H. (1980). Ethnic affirmation by Chinese bilinguals. *Journal of Cross-Cultural Psychology*, 11, 411-425.

APPENDIX A

**FACT SHEET, LEARNING TRANSFER SYSTEM INVENTORY
(LTSI), ORGANIZATIONAL LEARNING SCALES, AND DEMOGRAPHIC
VARIABLES**

FACT SHEET

Dear participant,

My name is Samer Khasawneh. I am a Ph. D. student in the Human Resource Education Department, Louisiana State University. I am doing my dissertation research on validating an Arabic version of the Learning Transfer System Inventory (LTSI) that was developed by researchers in the U. S. The LTSI measures the factors that influence trainees' ability to transfer what they learn in training to their work-settings. Measurement of these factors improves training effectiveness and positively influences individual and organizational performance.

The attached instrument has three sections. The first section is labeled the LTSI which has two parts: the first part pertains to your perception about that specific training program you have recently attended. The second part pertains to your perception about all training programs in general. The second section of the survey asks for your beliefs and views about items related to whether or not your organization has some type of learning system in place. The final section asks for your demographic information.

Your organization has chosen to participate in the study. Your participation in the study is also voluntary. Neither your name nor your organization name will be identified in the study. Moreover, please be advised that all of your responses to this instrument will remain anonymous and will not be disclosed under any circumstances. Only aggregated results will be published.

Finally, the instrument contains items that are dependent on your perception only, so please answer as honestly as possible. There is no right or wrong answer. The instrument will take approximately 20 minutes to complete.

Thank you for your participation. If you have any questions, please do not hesitate to let me know.

Sincerely,

Samer Khasawneh

Learning Transfer System Inventory

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion about training.

| | | |
|-----------------------------|--------------------|--------------------------------------|
| 1. Strongly Disagree | 2. Disagree | 3. Neither Agree Nor Disagree |
| 4. Agree | | 5. Strongly Agree |

**For the following items, please think about THIS SPECIFIC TRAINING PROGRAM:
Please indicate the type of training attended.....**

- | | | | | | |
|--|---|---|---|---|---|
| 1. Prior to the training, I knew how the program was supposed to affect my performance. | 1 | 2 | 3 | 4 | 5 |
| 2. Training will increase my personal productivity. | 1 | 2 | 3 | 4 | 5 |
| 3. When I leave training, I can't wait to get back to work to try what I learned. | 1 | 2 | 3 | 4 | 5 |
| 4. I believe that training will help me do my current job better. | 1 | 2 | 3 | 4 | 5 |
| 5. I get excited when I think about trying to use my new learning on my job. | 1 | 2 | 3 | 4 | 5 |
| 6. If I successfully use my training, I will receive a salary increase. | 1 | 2 | 3 | 4 | 5 |
| 7. If I use this training, I am more likely to be rewarded. | 1 | 2 | 3 | 4 | 5 |
| 8. I am likely to receive some 'perks' if I use my newly learned skills on the job. | 1 | 2 | 3 | 4 | 5 |
| 9. Before the training, I had a good understanding of how it would fit my job-related development. | 1 | 2 | 3 | 4 | 5 |
| 10. I knew what to expect from the training before it began. | 1 | 2 | 3 | 4 | 5 |
| 11. I don't have time to try to use this training. | 1 | 2 | 3 | 4 | 5 |
| 12. Trying to use this training will take too much energy away from my other work. | 1 | 2 | 3 | 4 | 5 |
| 13. The expected outcomes of this training were clear at the beginning of the training. | 1 | 2 | 3 | 4 | 5 |
| 14. Employees in this organization are penalized for not using what they have learned in training. | 1 | 2 | 3 | 4 | 5 |

Please turn to the next page

| | | |
|-----------------------------|--------------------|--------------------------------------|
| 1. Strongly Disagree | 2. Disagree | 3. Neither Agree Nor Disagree |
| 4. Agree | | 5. Strongly Agree |

For the following items, please think about THIS SPECIFIC TRAINING PROGRAM:

- | | | | | | |
|---|---|---|---|---|---|
| 15. If I use what I learn in training, it will help me get higher performance ratings. | 1 | 2 | 3 | 4 | 5 |
| 16. Employees in this organization receive various 'perks' when they utilize newly learned skills on the job. | 1 | 2 | 3 | 4 | 5 |
| 17. If I do not use my training I am unlikely to get a raise. | 1 | 2 | 3 | 4 | 5 |
| 18. I am more likely to be recognized for my work if I use this training. | 1 | 2 | 3 | 4 | 5 |
| 19. My workload allows me time to try the new things I have learned. | 1 | 2 | 3 | 4 | 5 |
| 20. There is too much happening at work right now for me to try to use this training. | 1 | 2 | 3 | 4 | 5 |
| 21. If I do not use new techniques taught in training I will be reprimanded. | 1 | 2 | 3 | 4 | 5 |
| 22. Successfully using this training will help me get a salary increase. | 1 | 2 | 3 | 4 | 5 |
| 23. If I do not utilize my training I will be cautioned about it. | 1 | 2 | 3 | 4 | 5 |
| 24. When employees in this organization do not use their training it gets noticed. | 1 | 2 | 3 | 4 | 5 |
| 25. I have time in my schedule to change the way I do things to fit my new learning. | 1 | 2 | 3 | 4 | 5 |
| 26. Someone will have to change my priorities before I will be able to apply my new learning. | 1 | 2 | 3 | 4 | 5 |
| 27. I wish I had time to do things the way I know they should be done. | 1 | 2 | 3 | 4 | 5 |
| 28. My colleagues appreciate my using new skills I have learned in training. | 1 | 2 | 3 | 4 | 5 |
| 29. My colleagues encourage me to use the skills I have learned in training. | 1 | 2 | 3 | 4 | 5 |
| 30. At work, my colleagues expect me to use what I learn in training. | 1 | 2 | 3 | 4 | 5 |
| 31. My colleagues are patient with me when I try out new skills or techniques at work. | 1 | 2 | 3 | 4 | 5 |
| 32. My supervisor meets with me regularly to work on problems I may be having in trying to use my training. | 1 | 2 | 3 | 4 | 5 |
| 33. My supervisor meets with me to discuss ways to apply training on the job. | 1 | 2 | 3 | 4 | 5 |

Please turn to the next page

1. Strongly Disagree

2. Disagree

3. Neither Agree Nor Disagree

4. Agree

5. Strongly Agree

For the following items, please think about THIS SPECIFIC TRAINING ROGRAM:

- | | | | | | |
|--|---|---|---|---|---|
| 34. My supervisor will object if I try to use this training on the job. | 1 | 2 | 3 | 4 | 5 |
| 35. My supervisor will oppose the use of techniques I learned in this training. | 1 | 2 | 3 | 4 | 5 |
| 36. My supervisor thinks I am being less effective when I use the techniques taught in this training. | 1 | 2 | 3 | 4 | 5 |
| 37. My supervisor shows interest in what I learn in training. | 1 | 2 | 3 | 4 | 5 |
| 38. My supervisor opposes the use of the techniques I learned in training. | 1 | 2 | 3 | 4 | 5 |
| 39. My supervisor sets goals for me which encourage me to apply my training on the job. | 1 | 2 | 3 | 4 | 5 |
| 40. My supervisor lets me know I am doing a good job when I use my training. | 1 | 2 | 3 | 4 | 5 |
| 41. My supervisor will not like it if I do things the way I learned in this training. | 1 | 2 | 3 | 4 | 5 |
| 42. My supervisor doesn't think this training will help my work. | 1 | 2 | 3 | 4 | 5 |
| 43. My supervisor helps me set realistic goals for job performance based on my training. | 1 | 2 | 3 | 4 | 5 |
| 44. My supervisor would use different techniques than those I would be using if I use my training. | 1 | 2 | 3 | 4 | 5 |
| 45. My supervisor thinks I am being ineffective when I use the techniques taught in training. | 1 | 2 | 3 | 4 | 5 |
| 46. My supervisor will probably criticize this training when I get back to the job. | 1 | 2 | 3 | 4 | 5 |
| 47. The instructional aids (equipment, illustrations, etc.) used in training are very similar to real things I use on the job. | 1 | 2 | 3 | 4 | 5 |
| 48. The methods used in training are very similar to how we do it on the job. | 1 | 2 | 3 | 4 | 5 |
| 49. I like the way training seems so much like my job. | 1 | 2 | 3 | 4 | 5 |
| 50. I will have the things I need to be able to use this training. | 1 | 2 | 3 | 4 | 5 |
| 51. I will be able to try out this training on my job. | 1 | 2 | 3 | 4 | 5 |
| 52. The activities and exercises the trainers used helped me know how to apply my learning on the job. | 1 | 2 | 3 | 4 | 5 |

Please turn to the next page

1. Strongly Disagree

2. Disagree

3. Neither Agree Nor Disagree

4. Agree

5. Strongly Agree

For the following items, please think about THIS SPECIFIC TRAINING ROGRAM:

- | | | | | | |
|---|---|---|---|---|---|
| 53. It is clear to me that the people conducting the training understand how I will use what I will learn. | 1 | 2 | 3 | 4 | 5 |
| 54. The trainer(s) used lots of examples that showed me how I could use my learning on the job. | 1 | 2 | 3 | 4 | 5 |
| 55. The way the trainer(s) taught the material made me feel more confident I can apply it. | 1 | 2 | 3 | 4 | 5 |
| 56. The resources I need to use what I learned will be available to me after training. | 1 | 2 | 3 | 4 | 5 |
| 57. I will get opportunities to use this training on my job. | 1 | 2 | 3 | 4 | 5 |
| 58. What is taught in training closely matches my job requirements. | 1 | 2 | 3 | 4 | 5 |
| 59. The situations used in training are very similar to those I encounter on my job. | 1 | 2 | 3 | 4 | 5 |
| 60. There are enough human resources available to allow me to use skills acquired in training. | 1 | 2 | 3 | 4 | 5 |
| 61. At work, budget limitations will prevent me from using skills acquired in training. | 1 | 2 | 3 | 4 | 5 |
| 62. Our current staffing level is adequate for me to use this training. | 1 | 2 | 3 | 4 | 5 |
| 63. It will be hard to get materials and supplies I need to use the skills and knowledge learned in training. | 1 | 2 | 3 | 4 | 5 |

**Please complete questions 64 – 89 on the following pages.
Note that these items have new instructions
Please read them carefully**

| | | | | |
|-----------------------------|--------------------|--------------------------------------|--|--|
| 1. Strongly Disagree | 2. Disagree | 3. Neither Agree Nor Disagree | | |
| | 4. Agree | 5. Strongly Agree | | |

For the following items, please THINK ABOUT TRAINING IN GENERAL in your Organization

- | | | | | | |
|---|---|---|---|---|---|
| 64. The organization does not really value my performance. | 1 | 2 | 3 | 4 | 5 |
| 65. My job performance improves when I use new things that I have learned. | 1 | 2 | 3 | 4 | 5 |
| 66. The harder I work at learning, the better I do my job. | 1 | 2 | 3 | 4 | 5 |
| 67. For the most part, the people who get rewarded around here are the ones that do something to deserve it. | 1 | 2 | 3 | 4 | 5 |
| 68. When I do things to improve my performance, good things happen to me. | 1 | 2 | 3 | 4 | 5 |
| 69. Training usually helps me increase my productivity. | 1 | 2 | 3 | 4 | 5 |
| 70. People around here notice when you do something well. | 1 | 2 | 3 | 4 | 5 |
| 71. The more training I apply on my job, the better I do my job. | 1 | 2 | 3 | 4 | 5 |
| 72. My job is ideal for someone who likes to get rewarded when they do something really good. | 1 | 2 | 3 | 4 | 5 |
| 73. People in my group generally prefer to use existing methods, rather than try new methods learned in training. | 1 | 2 | 3 | 4 | 5 |
| 74. Experienced employees in my group ridicule others when they use techniques they learn in training. | 1 | 2 | 3 | 4 | 5 |
| 75. People in my group are open to changing the way they do things. | 1 | 2 | 3 | 4 | 5 |
| 76. People in my group are not willing to put in the effort to change the way things are done. | 1 | 2 | 3 | 4 | 5 |
| 77. My workgroup is reluctant to try new ways of doing things. | 1 | 2 | 3 | 4 | 5 |
| 78. My workgroup is open to change if it will improve our job performance. | 1 | 2 | 3 | 4 | 5 |
| 79. After training, I get feedback from people on how well I am applying what I learn. | 1 | 2 | 3 | 4 | 5 |
| 80. People often make suggestions about how I can improve my job performance. | 1 | 2 | 3 | 4 | 5 |

Please turn to the next page

| | | | | |
|-----------------------------|--------------------|--------------------------------------|--|--|
| 1. Strongly Disagree | 2. Disagree | 3. Neither Agree Nor Disagree | | |
| | 4. Agree | 5. Strongly Agree | | |

For the following items, please THINK ABOUT TRAINING IN GENERAL in your Organization

- | | | | | | |
|---|---|---|---|---|---|
| 81. I get a lot of advice from others about how to do my job better. | 1 | 2 | 3 | 4 | 5 |
| 82. I am confident in my ability to use new skills at work. | 1 | 2 | 3 | 4 | 5 |
| 83. I never doubt my ability to use newly learned skills on the job. | 1 | 2 | 3 | 4 | 5 |
| 84. I am sure I can overcome obstacles on the job that hinder my use of new skills or knowledge. | 1 | 2 | 3 | 4 | 5 |
| 85. At work, I feel very confident using what I learned in training even in the face of difficult or taxing situations. | 1 | 2 | 3 | 4 | 5 |
| 86. People often tell me things to help me improve my job performance. | 1 | 2 | 3 | 4 | 5 |
| 87. When I try new things I have learned, I know who will help me. | 1 | 2 | 3 | 4 | 5 |
| 88. If my performance is not what it should be, people will help me improve. | 1 | 2 | 3 | 4 | 5 |
| 89. I regularly have conversations with people about how to improve my performance. | 1 | 2 | 3 | 4 | 5 |

ORGANIZATIONAL LEARNING SCALES

Knowledge Indeterminacy Scale: Measures the perceived belief that knowledge is not fixed, but is in fact unbounded and incalculable, and any individual may be a source of knowledge, while no one person knows all things.

| | | |
|-------------------------|---------------------------|-----------------------------|
| 1. Not true | 2. Mostly not true | 3. Somewhat not true |
| 4. Somewhat true | 5. Mostly true | 6. True |

Please respond to the following questions by circling the appropriate answer.

- | | | | | | | |
|--|---|---|---|---|---|---|
| We develop better solutions to problems when we work together in groups. | 1 | 2 | 3 | 4 | 5 | 6 |
| It's important for some people to question the way the things are done when the current practices need to be challenged. | 1 | 2 | 3 | 4 | 5 | 6 |
| Learning occurs when we accept that no one person can know all the answers. | 1 | 2 | 3 | 4 | 5 | 6 |
| We can predict where things appear to be headed in our industry. | 1 | 2 | 3 | 4 | 5 | 6 |
| The nature of work today makes it essential to work and learn with people in different parts of the organization. | 1 | 2 | 3 | 4 | 5 | 6 |

Learning Latitude Scale (Risk-taking): Measures the perceived license, within a recognized range, for learning freedom enabling individuals to be independent thinkers and to both promote and try new ideas.

| | | |
|-------------------------|---------------------------|-----------------------------|
| 1. Not true | 2. Mostly not true | 3. Somewhat not true |
| 4. Somewhat true | 5. Mostly true | 6. True |

Please respond to the following questions by circling the appropriate answer.

To be successful, we need to take risks and try new things, as long as site and personal safety are not compromised. 1 2 3 4 5 6

Long term outcomes are just as important as short term results. 1 2 3 4 5 6

It is more important to learn from mistakes than to blame people who make them. 1 2 3 4 5 6

It is good to be an independent thinker here. 1 2 3 4 5 6

Organizational Unity Scale: Measures the perceived belief that all organizational members are of one mind working toward recognized common goals for the benefit of the organization and all its constituents.

| | | |
|-------------------------|---------------------------|-----------------------------|
| 1. Not true | 2. Mostly not true | 3. Somewhat not true |
| 4. Somewhat true | 5. Mostly true | 6. True |

Please respond to the following questions by circling the appropriate answer.

- People here trust each other enough to be honest about what they think. 1 2 3 4 5 6
- The most important thing is to find the best ideas, regardless of the source. 1 2 3 4 5 6
- People here believe in doing what is best for the organization, even if it is not best for their unit. 1 2 3 4 5 6
- Everyone should have a common understanding of organizational goals. 1 2 3 4 5 6
- Being flexible is considered essential in our organization. 1 2 3 4 5 6

Innovation Scale: Measures the perceived ability of the organization to adopt and/or create new ideas and to implement ideas in the development of new and better products, services, and work processes and procedures.

| | | |
|-------------------------|---------------------------|-----------------------------|
| 1. Not true | 2. Mostly not true | 3. Somewhat not true |
| 4. Somewhat true | 5. Mostly true | 6. True |

Please respond to the following questions by circling the appropriate answer.

| | | | | | | |
|---|---|---|---|---|---|---|
| We can point to numerous new products/services that have come from new ideas within the organization. | 1 | 2 | 3 | 4 | 5 | 6 |
| We have improved the quality of our products/services by continuously looking for new and better ways to do things. | 1 | 2 | 3 | 4 | 5 | 6 |
| We have adopted new ideas from outside the organization to become more competitive. | 1 | 2 | 3 | 4 | 5 | 6 |
| We are good at using unfamiliar idea to spark our own ideas on how to stay competitive. | 1 | 2 | 3 | 4 | 5 | 6 |
| We can respond to changes in customers' demands for new products/services more quickly today. | 1 | 2 | 3 | 4 | 5 | 6 |
| We are a better organization because we are always thinking of new ways to improve work practices. | 1 | 2 | 3 | 4 | 5 | 6 |
| New and different ideas are seen as opportunities for learning better ways to do things. | 1 | 2 | 3 | 4 | 5 | 6 |
| Our ability to successfully implement new ideas is the key to our strengths in our markets. | 1 | 2 | 3 | 4 | 5 | 6 |
| We have not been able to develop successful new products/services from new things we have learned. | 1 | 2 | 3 | 4 | 5 | 6 |

DEMOGRAPHIC VARIABLES

Learning Transfer System Inventory

Section Three: Demographic Questions

Please answer the following questions about yourself by checking the appropriate space.

1. What is your gender?
--- Male --- Female

2. What is your current age?
--- Under 21
--- 21-29 years
--- 30-39 years
--- 40-44 years
--- 45 years and above

3. What is your level of education?
--- Less than high school
--- High school graduate
--- Bachelor's degree
--- Master's degree
--- Doctoral degree
--- Other (Please specify) -----

4. What are your total years of experience in the current organization?

5. What is the type of training program you attended?

6. Was the training on which you based your responses to this survey
--- Voluntary --- Mandatory, (check one).

APPENDIX B

LTSI SCALE DEFINITIONS AND DESCRIPTIONS

LEARNING TRANSFER SYSTEM INVENTORY (LTSI)

SCALE DEFINITIONS

Usage Notes:

The Learning Transfer System Inventory (LTSI) is a fourth generation instrument and is based on extensive research. The scale definitions listed below are sound based on factor analysis with a database of over 2,500 respondents representing a wide variety of industries, jobs, company types, and levels of employees. Because we are continually working to improve the statistical properties of the scales, some new items have been added to certain scales. Please note that these are used for research purposes and should not be tabulated in your results.

| Factor | LTSI Item Numbers | For Research Purposes Only USERS IGNORE |
|--|--------------------------|--|
| Specific Training Program Scales | | |
| Learner Readiness | 1, 9, 10, 13 | |
| Motivation to Transfer Learning | 2, 3, 4, 5 | |
| Personal Outcomes-Positive | 6, 16, 17, | 7, 8, 15, 18, 22 |
| Personal Outcomes-Negative | 14, 21, 23, 24 | |
| Personal Capacity for Transfer | 19, 25, 26, 27 | 11, 12, 20 |
| Peer Support | 28, 29, 30, 31 | |
| Supervisor/Manager Support | 32, 33, 37, 39, 40, 43 | |
| Supervisor/Manager Sanctions | 38, 44, 45, | 34, 35, 36, 41, 42, 46 |
| Perceived Content Validity | 47, 48, 49, 58, 59 | |
| Transfer Design | 52, 53, 54, 55 | |
| Opportunity to Use Learning | 56, 60, 61, 63 | 50, 51, 57, 62 |
| Training in General Scales | | |
| Transfer Effort—Performance Expectations | 65, 66, 69, 71 | |
| Performance—Outcomes Expectations | 64, 67, 68, 70, 72 | |
| Resistance/Openness to Change | 73, 74, 75, 76, 77, 78 | |
| Performance Self-Efficacy | 82, 83, 84, 85 | |
| Feedback/Performance Coaching | 79, 86, 87, 89 | 80, 81, 88 |

LTSI SCALE DESCRIPTIONS

| Scale Name | Scale Definition | Scale Description |
|--|---|---|
| Trainee Characteristics Scales | | |
| <i>Learner Readiness</i> | The extent to which individuals are prepared to enter and participate in a training program. | This factor addresses the degree to which the individual had the opportunity to provide input prior to the training, knew what to expect during the training, and understood how training was related to job-related development and work performance. |
| <i>Performance Self-Efficacy</i> | An individual's general belief that they are able to change their performance when they want to. | The extent to which individuals feel confident and self-assured about applying new abilities in their jobs, and can overcome obstacles that hinder the use of new knowledge and skills. |
| Motivation Scales | | |
| <i>Motivation to Transfer Learning.</i> | The direction, intensity and persistence of effort toward utilizing in a work setting skills and knowledge learned in training. | The extent to which individuals are motivated to utilize learning in their work. This includes the degree to which individuals feel better able to perform, plan to use new skills and knowledge, and believe new skills will help them to more effectively perform on-the-job |
| <i>Transfer Effort— Performance Expectations</i> | The expectation that effort devoted to transferring learning will lead to changes in job performance. | The extent to which individuals believe that applying skills and knowledge learned in training will improve their performance. This includes whether an individual believes that investing effort to utilize new skills has made a difference in the past or will affect future productivity and effectiveness. |

| | | |
|---|---|---|
| <i>Performance—Outcomes Expectations</i> | The expectation that changes in job performance will lead to outcomes valued by the individual. | The extent to which individuals believe the application of skills and knowledge learned in training will lead to recognition they value. This includes the extent to which organizations demonstrate the link between development, performance, and recognition, clearly articulate performance expectations, recognize individuals when they do well, reward individuals for effective and improved performance, and create an environment in which individuals feel good about performing well. |
| Work Environment Scales | | |
| <i>Feedback/Performance Coaching</i> | Formal and informal indicators from an organization about an individual's job performance | The extent to which individuals receive constructive input, assistance, and feedback from people in their work environment (peers, employees, colleagues, managers, etc.) when applying new abilities or attempting to improve work performance. Feedback may be formal or informal cues from the workplace. |
| <i>Supervisor/Manager Support</i> | The extent to which managers support and reinforce the use of learning on-the-job. | This includes managers' involvement in clarifying performance expectations after training, identifying opportunities to apply new skills and knowledge, setting realistic goals based on training, working with individuals on problems encountered while applying new skills, and providing feedback when individuals successfully apply new abilities. |
| <i>Supervisor/Manager Sanctions</i> | The extent to which individuals perceive negative responses from managers when applying skills learned in training. | This includes when managers oppose the use of new skills and knowledge, use techniques different from those taught in training, do not |

| | | |
|---|---|--|
| | | assist individuals in identifying opportunities to apply new skills and knowledge, or provide inadequate or negative feedback when individuals successfully apply learning on-the-job. |
| <i>Peer Support</i> | The extent to which peers reinforce and support use of learning on-the-job. | This includes the degree to which peers mutually identify and implement opportunities to apply skills and knowledge learned in training, encourage the use of or expect the application of new skills, display patience with difficulties associated with applying new skills, or demonstrate appreciation for the use of new skills |
| <i>Resistance/Openness to Change</i> | The extent to which prevailing group norms are perceived by individuals to resist or discourage the use of skills and knowledge acquired in training. | This includes the work groups' resistance to change, willingness to invest energy to change, and degree of support provided to individuals who use techniques learned in training. |
| <i>Personal Outcomes-Positive</i> | The degree to which applying training on the job leads to outcomes that are positive for the individual. | Positive outcomes include: increased productivity and work effectiveness, increased personal satisfaction, additional respect, a salary increase or reward, the opportunity to further career development plans, or the opportunity to advance in the organization. |
| <i>Personal Outcomes—Negative.</i> | The extent to which individuals believe that applying skills and knowledge learned in training will lead to outcomes that are negative. | Negative outcomes include: reprimands, penalties, peer resentment, too much new work, or the likelihood of not getting a raise if newly acquired skills are utilized |
| Ability Scales | | |
| <i>Opportunity to Use Learning</i> | The extent to which trainees are provided with or obtain resources and tasks on the job enabling them to use the skills taught in training. | This includes an organization providing individuals with opportunities to apply new skills, resources needed to use new skills (equipment, |

| | | |
|--|--|---|
| | | information, materials, supplies), and adequate financial and human resources. |
| <i>Personal Capacity for Transfer</i> | The extent to which individuals have the time, energy and mental space in their work lives to make changes required to transfer learning to the job. | This factor addresses the extent to which individuals' work load, schedule, personal energy, and stress-level facilitate or inhibit the application of new learning on-the-job. |
| <i>Perceived Content Validity</i> | The extent to which the trainees judge the training content to accurately reflect job requirements. | This factor addresses the degree to which skills and knowledge taught are similar to performance expectations as well as what the individual needed to perform more effectively. It also addresses the extent to which instructional methods, aids, and equipment used in training are similar to those used in an individual's work environment. |
| <i>Transfer Design.</i> | The extent to which training has been designed to give trainees the ability to transfer learning to job application and the training instructions match the job requirements | The extent to which the training program is designed to clearly link learning with on-the-job performance through the use of clear examples, methods similar to the work environment, and activities and exercises that clearly demonstrate how to apply new knowledge and skills. |

APPENDIX C

OBJECTIVE EVALUATION INSTRUMENT FOR THE ORIGINAL LTSI ITEMS AND THE BACK-TRANSLATED ITEMS

Instructions:

In this instrument, there are two objective measures: Comparability of Language and Similarity of Interpretability.

Comparability of Language refers to the similarity of words, phrases, and sentences (Not at all comparable = 1 to Extremely comparable = 7).

Similarity of Interpretability refers to the degree to which the two sentences should be interpreted as having the same meaning, even if the wording is not the same (Not at all similar = 1 to Extremely similar = 7).

Please compare the pair of sentences and rate them on both scales by circling the appropriate response.

| | | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|---|---|---|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 1 | Prior to the training, I knew how the program was supposed to affect my performance. | Before training started I knew how much the program will influence my work performance. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | Training will increase my personal productivity. | The training will increase my personal productivity. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | When I leave training, I can't wait to get back to work to try what I learned. | Once I finish training, I am excited about trying what I learned. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | I believe that training will help me do my current job better. | I believe that training will increase my efficiency at work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | I get excited when I think about trying to use my new learning on my job. | I get excited when I think of using what I learned in my work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | If I successfully use my training, I will receive a salary increase. | I will get a raise if I use my training well. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | If I use this training, I am more likely to be rewarded. | I may get a reward for using this training | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | I am likely to receive some 'perks' if I use my newly learned skills on the job. | There is a good chance to get some benefits if I use what I learned. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | Before the training, I had a good understanding of how it would fit my job-related development. | Before I started my training I knew how it would influence my work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|---|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 10 | I knew what to expect from the training before it began. | Before I started training I knew what to expect from it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | I don't have time to try to use this training. | I do not have enough time to use my training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | Trying to use this training will take too much energy away from my other work. | Trying to use my training will affect my other work duties. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | The expected outcomes of this training were clear at the beginning of the training. | The expected benefits of this training will be clear from the beginning. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | Employees in this organization are penalized for not using what they have learned in training. | The workers in this organization are punished if they do not use what they learned in training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | If I use what I learn in training, it will help me get higher performance ratings. | I will be better in my work if I use what I learned. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | Employees in this organization receive various 'perks' when they utilize newly learned skills on the job. | The workers in this organization get different benefits when they use the new training on the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | If I do not use my training I am unlikely to get a raise. | I will not get a raise if I don't use my training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | I am more likely to be recognized for my work if I use this training. | People will recognize me if I use my training on the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|---|---|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 19 | My workload allows me time to try the new things I have learned. | I have enough time to use what I learned on the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | There is too much happening at work right now for me to try to use this training. | There is too much going on at work right now for me to try to use this training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21 | If I do not use new techniques taught in training I will be reprimanded. | If I don't use the new techniques, which I learned, I will be punished. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22 | Successfully using this training will help me get a salary increase. | I will get a raise if I use my training on the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23 | If I do not utilize my training I will be cautioned about it. | If I don't use my training, I will be warned about it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24 | When employees in this organization do not use their training it gets noticed. | When workers in this organization do not use their training, they get noticed. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25 | I have time in my schedule to change the way I do things to fit my new learning. | I have time in my schedule to change the way I do things to accommodate my new learning. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26 | Someone will have to change my priorities before I will be able to apply my new learning. | Someone will have to change my priorities at work before I am able to apply what I learned from training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27 | I wish I had time to do things the way I know they should be done. | I hope I had enough time to do things in the way I recognize they should be done. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|---|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 28 | My colleagues appreciate my using new skills I have learned in training. | My co-workers appreciate my using the new skills I learned in training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29 | My colleagues encourage me to use the skills I have learned in training. | My co-workers encourage me to use the skills that I learned in training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30 | At work, my colleagues expect me to use what I learn in training. | My co-workers expect me to use what I learned in training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31 | My colleagues are patient with me when I try out new skills or techniques at work. | My co-workers are so patient with me when I try to practice the new techniques at work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32 | My supervisor meets with me regularly to work on problems I may be having in trying to use my training. | My boss always meets with me to solve the problems which I may face during the application of my training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33 | My supervisor meets with me to discuss ways to apply training on the job. | My boss usually discuss with me on how to use my new training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34 | My supervisor will object if I try to use this training on the job. | My boss will disagree with me if I use this training on the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35 | My supervisor will oppose the use of techniques I learned in this training. | My boss will disagree with me if I use what I learned during training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36 | My supervisor thinks I am being less effective when I use the techniques taught in this training. | My boss thinks I will be less effective if I use what I learned during training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|--|---|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 37 | My supervisor shows interest in what I learn in training. | My boss shows interest in what I learn in training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 38 | My supervisor opposes the use of the techniques I learned in training. | My boss disagrees to my use of what I learned in training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 39 | My supervisor sets goals for me which encourage me to apply my training on the job. | My boss put objectives for me which helps me use my training on the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 40 | My supervisor lets me know I am doing a good job when I use my training. | My boss tells me I am doing a good job when I use my training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 41 | My supervisor will not like it if I do things the way I learned in this training. | My boss dislikes my practice of things in the way that I learned. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 42 | My supervisor doesn't think this training will help my work. | My boss thinks that my training will not help me at work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 43 | My supervisor helps me set realistic goals for job performance based on my training. | My boss helped me put practical aims for performance based on my training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 44 | My supervisor would use different techniques than those I would be using if I use my training. | My boss uses different techniques from the one that I will use if I use my training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 45 | My supervisor thinks I am being ineffective when I use the techniques taught in training. | My boss thinks that I will be not effective when I use the new techniques that I learned in training. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|--|---|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 46 | My supervisor will probably criticize this training when I get back to the job. | When I get back to the job, it is probable that my boss will criticize this training. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 47 | The instructional aids (equipment, illustrations, etc.) used in training are very similar to real things I use on the job. | The visual aids used in this training (e.g., machines, projector ...etc.) are similar to the actual things I use on my job. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 48 | The methods used in training are very similar to how we do it on the job. | The techniques, which are used in the training, are like what we use at work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 49 | I like the way training seems so much like my job. | I like that this training is much like my work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 50 | I will have the things I need to be able to use this training. | I will get what I need to be able to use my training. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 51 | I will be able to try out this training on my job. | I will be able to use this training at my work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 52 | The activities and exercises the trainers used helped me know how to apply my learning on the job. | The practices and the things, which the instructors used, helped me to use my training at work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 53 | It is clear to me that the people conducting the training understand how I will use what I will learn. | It is obvious that the instructors know how I will use what I learned. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 54 | The trainer(s) used lots of examples that showed me how I could use my learning on the job. | The instructors used a lot of examples to show me how to use my training at work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|---|--|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 55 | The way the trainer(s) taught the material made me feel more confident I could apply it. | The way the instructors taught the material made me feel more confident that I will be able to apply it. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 56 | The resources I need to use what I learned will be available to me after training. | The resources that I will need to use what I learned will be available to me after the training. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 57 | I will get opportunities to use this training on my job. | I will get opportunities to use this training on my job. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 58 | What is taught in training closely matches my job requirements. | The training content is similar to what I will be doing on my job. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 59 | The situations used in training are very similar to those I encounter on my job. | The cases used in the training course are so close to the cases which I face during my work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 60 | There are enough human resources available to allow me to use skills acquired in training. | There are enough people at work which help me use what I learned in training. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 61 | At work, budget limitations will prevent me from using skills acquired in training. | The limited budget at work will prevent me from using what I learned. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 62 | Our current staffing level is adequate for me to use this training. | I will be able to use my training on the job since we have enough people to work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 63 | It will be hard to get materials and supplies I need to use the skills and knowledge learned in training. | It will not be easy to get the supplies I need to use what I learned. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|--|--|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 64 | The organization does not really value my performance. | My organization does not value my work performance. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 65 | My job performance improves when I use new things that I have learned. | My performance will improve if I use the new things I learned. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 66 | The harder I work at learning, the better I do my job. | As much as I learn as much as my work will improve. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 67 | For the most part, the people who get rewarded around here are the ones that do something to deserve it. | People get rewarded if they do something valuable to the organization. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 68 | When I do things to improve my performance, good things happen to me. | Good things happen to me when I attempt to improve my performance. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 69 | Training usually helps me increase my productivity. | Training usually helps me to be better at my work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 70 | People around here notice when you do something well. | The people around here always notice when you do something well. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 71 | The more training I apply on my job, the better I do my job. | As much as I use my training at work as much as my work will gets better. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 72 | My job is ideal for someone who likes to get rewarded when they do something really good. | My job is ideal for those people who like to get rewarded when they do a good job. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|---|--|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 73 | People in my group generally prefer to use existing methods, rather than try new methods learned in training. | In general, my work group prefers to use what they know more than trying to use new things. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 74 | Experienced employees in my group ridicule others when they use techniques they learn in training. | Experienced workers in my work group ridicule others when they use new techniques learned from training. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 75 | People in my group are open to changing the way they do things. | The workers in my group are open to change the way things are done around here. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 76 | People in my group are not willing to put in the effort to change the way things are done. | The workers in my group don't like to put any effort to change the way of the work. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 77 | My workgroup is reluctant to try new ways of doing things. | My group at work hesitant to try new ways of doing things. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 78 | My workgroup is open to change if it will improve our job performance. | My group at work supports change if it leads to improvements in performance. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 79 | After training, I get feedback from people on how well I am applying what I learn. | After training, I received feedback from people on how well I am applying what I learn. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 80 | People often make suggestions about how I can improve my job performance. | People usually give me some ideas on how to improve my work performance. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 81 | I get a lot of advice from others about how to do my job better. | I received a lot of advice on how to do my work better. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|---|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 82 | I am confident in my ability to use new skills at work. | I am sure that I am able to use new skills at my job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 83 | I never doubt my ability to use newly learned skills on the job. | I have no doubt that I am able to use the new skills at work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 84 | I am sure I can overcome obstacles on the job that hinder my use of new skills or knowledge. | I am sure that I will pass any obstacles that may prevent my use of new skills on the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 85 | At work, I feel very confident using what I learned in training even in the face of difficult or taxing situations. | At work, I feel confident to use what I learned in training in the face of difficult situations. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 86 | People often tell me things to help me improve my job performance. | People always tell me things to improve my performance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 87 | When I try new things I have learned, I know who will help me. | I know who will help me when I try to use the new things which I learned. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 88 | If my performance is not what it should be, people will help me improve. | If my work performance is not the way it should be, then people will help me to improve. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 89 | I regularly have conversations with people about how to improve my performance. | I always discuss with people how to improve my work performance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 90 | We develop better solutions to problems when we work together in groups. | We develop better solutions to problems when we work together in groups. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|----|--|---|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 91 | It's important for some people to question the way the things are done when the current practices need to be challenged. | It is important for some people to ask about the ways things are getting done when the current practices need to be challenged. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 92 | Learning occurs when we accept that no one person can know all the answers. | Learning takes place when we accept that no one knows everything. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 93 | We can predict where things appear to be headed in our industry. | We can predict where things are heading in our industry. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 94 | The nature of work today makes it essential to work and learn with people in different parts of the organization. | The nature of work today makes it essential to work and learn with different people in our organization. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 95 | To be successful, we need to take risks and try new things, as long as site and personal safety are not compromised. | To be successful, we need to face risks and try new things as far as work site and personal safety are not affected. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 96 | Long-term outcomes are just as important as short-term results. | Long-term results are as important as short-term results. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 97 | It is more important to learn from mistakes than to blame people who make them. | It is more important to learn from mistakes than to blame those who caused them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 98 | It is good to be an independent thinker here. | It is a good thing to be an independent thinker in our organization. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 99 | People here trust each other enough to be honest about what they think. | In this organization, people trust each other to be honest about what they believe. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|-----|---|---|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 100 | The most important thing is to find the best ideas, regardless of the source. | The best thing is to find the best ideas regardless of the source. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 101 | People here believe in doing what is best for the organization, even if it is not best for their unit. | People here believe to do what is best for the organization even though it may be not best for their departments. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 102 | Everyone should have a common understanding of organizational goals. | Everyone should have mutual understanding of the goals of the organization. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 103 | Being flexible is considered essential in our organization. | It is important to be flexible in our organization. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 104 | We can point to numerous new products/services that have come from new ideas within the organization. | We can point out products and services that came from different new ideas within our organization. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 105 | We have improved the quality of our products/services by continuously looking for new and better ways to do things. | We have improved the quality of our own products and services through continuous search for new and best ways to do things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 106 | We have adopted new ideas from outside the organization to become more competitive. | We have adopted new ideas from outside the organization to be more competitive. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 107 | We are good at using unfamiliar idea to spark our own ideas on how to stay competitive. | We are good at using new ideas to spark our own thinking to remain competitive. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 108 | We can respond to changes in customers' demands for new products/services more quickly today. | We are able to respond to changes in customers' needs for products and services faster today. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | Comparability of Language | | | | | | | Similarity of Interpretability | | | | | | |
|-----|--|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Not at all comparable = 1 Moderately comparable = 4 Extremely comparable = 7 | | | | | | | Not at all similar = 1 Moderately similar = 4 Extremely similar = 7 | | | | | | |
| 109 | We are a better organization because we are always thinking of new ways to improve work practices. | We are a better organization because we always think of new ways to improve work practices. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 110 | New and different ideas are seen as opportunities for learning better ways to do things. | New and different ideas are seen as a chance to learn better ways to do things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 111 | Our ability to successfully implement new ideas is the key to our strengths in our markets. | Our ability to perform new ideas successfully is the key to our strengths in our markets. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 112 | We have not been able to develop successful new products/services from new things we have learned. | We were not able to grow our products and services from the new things that we have learned. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

APPENDIX D

RESULTS OF THE OBJECTIVE EVALUATION

Table 1

Descriptive Statistics for Comparability of Language Measure

| Item | N | Range | Minimum | Maximum | Mean | SD |
|------|----|-------|---------|---------|------|-------|
| 33 | 22 | 4 | 2 | 6 | 3.77 | 1.343 |
| 66 | 22 | 4 | 2 | 6 | 3.91 | 1.342 |
| 41 | 22 | 6 | 1 | 7 | 3.95 | 1.495 |
| 60 | 22 | 5 | 1 | 6 | 4.09 | 1.540 |
| 22 | 22 | 6 | 1 | 7 | 4.14 | 1.521 |
| 59 | 22 | 5 | 1 | 6 | 4.18 | 1.468 |
| 09 | 22 | 5 | 1 | 6 | 4.18 | 1.259 |
| 35 | 22 | 5 | 2 | 7 | 4.18 | 1.680 |
| 71 | 22 | 4 | 2 | 6 | 4.23 | 1.343 |
| 08 | 22 | 6 | 1 | 7 | 4.23 | 1.631 |
| 06 | 22 | 6 | 1 | 7 | 4.32 | 1.555 |
| 43 | 22 | 4 | 3 | 7 | 4.32 | 1.287 |
| 36 | 22 | 5 | 2 | 7 | 4.36 | 1.465 |
| 39 | 22 | 6 | 1 | 7 | 4.36 | 1.620 |
| 27 | 22 | 5 | 2 | 7 | 4.41 | 1.563 |
| 18 | 22 | 5 | 2 | 7 | 4.41 | 1.532 |
| 19 | 22 | 5 | 1 | 6 | 4.41 | 1.436 |
| 67 | 22 | 3 | 3 | 6 | 4.41 | 1.054 |
| 17 | 22 | 5 | 2 | 7 | 4.45 | 1.792 |
| 84 | 22 | 5 | 2 | 7 | 4.45 | 1.471 |
| 47 | 22 | 5 | 2 | 7 | 4.55 | 1.438 |
| 82 | 22 | 5 | 2 | 7 | 4.59 | 1.764 |
| 07 | 22 | 6 | 1 | 7 | 4.59 | 1.532 |
| 01 | 22 | 5 | 2 | 7 | 4.64 | 1.560 |
| 34 | 22 | 5 | 2 | 7 | 4.64 | 1.497 |
| 62 | 22 | 6 | 1 | 7 | 4.68 | 1.492 |
| 13 | 22 | 3 | 3 | 6 | 4.73 | .935 |
| 48 | 22 | 6 | 1 | 7 | 4.73 | 1.486 |
| 76 | 22 | 5 | 2 | 7 | 4.73 | 1.453 |
| 83 | 22 | 5 | 2 | 7 | 4.77 | 1.602 |
| 32 | 22 | 5 | 2 | 7 | 4.77 | 1.232 |
| 61 | 22 | 4 | 3 | 7 | 4.77 | 1.660 |
| 24 | 22 | 5 | 2 | 7 | 4.77 | 1.232 |
| 38 | 22 | 5 | 2 | 7 | 4.82 | 1.402 |
| 52 | 22 | 5 | 2 | 7 | 4.82 | 1.368 |
| 44 | 22 | 6 | 1 | 7 | 4.86 | 1.521 |
| 95 | 22 | 4 | 3 | 7 | 4.86 | 1.457 |
| 53 | 22 | 6 | 1 | 7 | 4.86 | 1.457 |
| 58 | 22 | 4 | 3 | 7 | 4.91 | 1.151 |
| 65 | 22 | 5 | 2 | 7 | 4.95 | 1.362 |

| | | | | | | |
|-----|----|---|---|---|------|-------|
| 73 | 22 | 5 | 2 | 7 | 4.95 | 1.397 |
| 112 | 22 | 4 | 3 | 7 | 4.95 | .999 |
| 31 | 22 | 4 | 3 | 7 | 5.00 | .976 |
| 69 | 22 | 4 | 3 | 7 | 5.00 | 1.380 |
| 26 | 22 | 5 | 2 | 7 | 5.05 | 1.253 |
| 49 | 22 | 5 | 2 | 7 | 5.05 | 1.362 |
| 50 | 22 | 4 | 3 | 7 | 5.09 | 1.109 |
| 51 | 22 | 5 | 2 | 7 | 5.09 | 1.444 |
| 75 | 22 | 5 | 2 | 7 | 5.09 | 1.269 |
| 85 | 22 | 4 | 3 | 7 | 5.09 | 1.109 |
| 16 | 22 | 5 | 2 | 7 | 5.09 | 1.306 |
| 21 | 22 | 4 | 3 | 7 | 5.09 | 1.065 |
| 03 | 22 | 5 | 2 | 7 | 5.14 | 1.424 |
| 04 | 22 | 4 | 3 | 7 | 5.14 | 1.283 |
| 45 | 22 | 4 | 3 | 7 | 5.14 | 1.207 |
| 100 | 22 | 4 | 3 | 7 | 5.18 | 1.259 |
| 78 | 22 | 3 | 4 | 7 | 5.18 | 1.140 |
| 103 | 22 | 4 | 3 | 7 | 5.18 | 1.368 |
| 14 | 22 | 5 | 2 | 7 | 5.18 | 1.220 |
| 92 | 22 | 5 | 2 | 7 | 5.18 | 1.368 |
| 05 | 22 | 4 | 3 | 7 | 5.23 | 1.343 |
| 42 | 22 | 4 | 3 | 7 | 5.23 | 1.307 |
| 72 | 22 | 4 | 3 | 7 | 5.23 | 1.270 |
| 86 | 22 | 4 | 3 | 7 | 5.23 | 1.193 |
| 63 | 22 | 5 | 2 | 7 | 5.27 | 1.279 |
| 40 | 22 | 4 | 3 | 7 | 5.32 | 1.211 |
| 12 | 22 | 4 | 3 | 7 | 5.32 | 1.086 |
| 70 | 22 | 4 | 3 | 7 | 5.32 | 1.249 |
| 99 | 22 | 4 | 3 | 7 | 5.32 | 1.086 |
| 55 | 22 | 4 | 3 | 7 | 5.32 | 1.393 |
| 46 | 22 | 5 | 2 | 7 | 5.36 | 1.293 |
| 89 | 22 | 3 | 4 | 7 | 5.36 | 1.177 |
| 25 | 22 | 4 | 3 | 7 | 5.36 | 1.255 |
| 56 | 22 | 4 | 3 | 7 | 5.36 | 1.497 |
| 64 | 22 | 3 | 4 | 7 | 5.36 | .953 |
| 88 | 22 | 3 | 4 | 7 | 5.41 | 1.054 |
| 37 | 22 | 4 | 3 | 7 | 5.41 | 1.141 |
| 15 | 22 | 4 | 3 | 7 | 5.41 | 1.221 |
| 81 | 22 | 4 | 3 | 7 | 5.45 | 1.262 |
| 94 | 22 | 4 | 3 | 7 | 5.45 | 1.184 |
| 110 | 22 | 4 | 3 | 7 | 5.45 | 1.184 |
| 28 | 22 | 3 | 4 | 7 | 5.45 | 1.057 |
| 102 | 22 | 4 | 3 | 7 | 5.50 | 1.225 |
| 23 | 22 | 3 | 4 | 7 | 5.50 | 1.058 |
| 104 | 22 | 3 | 4 | 7 | 5.50 | 1.300 |
| 10 | 22 | 5 | 2 | 7 | 5.55 | 1.503 |

| | | | | | | |
|-----|----|---|---|---|------|-------|
| 87 | 22 | 3 | 4 | 7 | 5.55 | .912 |
| 97 | 22 | 3 | 4 | 7 | 5.55 | 1.057 |
| 101 | 22 | 3 | 4 | 7 | 5.55 | .963 |
| 107 | 22 | 3 | 4 | 7 | 5.55 | 1.224 |
| 108 | 22 | 3 | 4 | 7 | 5.55 | 1.101 |
| 54 | 22 | 5 | 2 | 7 | 5.55 | 1.262 |
| 111 | 22 | 3 | 4 | 7 | 5.55 | .963 |
| 80 | 22 | 3 | 4 | 7 | 5.59 | 1.141 |
| 77 | 22 | 3 | 4 | 7 | 5.64 | .902 |
| 11 | 22 | 4 | 3 | 7 | 5.64 | 1.293 |
| 30 | 22 | 3 | 4 | 7 | 5.68 | 1.041 |
| 74 | 22 | 3 | 4 | 7 | 5.68 | 1.041 |
| 91 | 22 | 3 | 4 | 7 | 5.68 | 1.171 |
| 106 | 22 | 4 | 3 | 7 | 5.68 | 1.171 |
| 68 | 22 | 3 | 4 | 7 | 5.68 | .945 |
| 20 | 22 | 3 | 4 | 7 | 5.73 | 1.077 |
| 93 | 22 | 3 | 4 | 7 | 5.73 | 1.077 |
| 57 | 22 | 3 | 4 | 7 | 5.77 | 1.270 |
| 98 | 22 | 4 | 3 | 7 | 5.77 | .869 |
| 29 | 22 | 3 | 4 | 7 | 5.86 | 1.037 |
| 105 | 22 | 2 | 5 | 7 | 5.86 | .774 |
| 79 | 22 | 3 | 4 | 7 | 5.91 | .971 |
| 96 | 22 | 3 | 4 | 7 | 6.00 | 1.113 |
| 90 | 22 | 3 | 4 | 7 | 6.09 | 1.269 |
| 109 | 22 | 3 | 4 | 7 | 6.14 | .990 |
| 02 | 22 | 3 | 4 | 7 | 6.32 | 1.086 |

Table 2

Descriptive Statistics for Similarity of Interpretability Measure

| Item | N | Range | Minimum | Maximum | Mean | SD |
|------|----|-------|---------|---------|------|-------|
| 66 | 22 | 5 | 2 | 7 | 4.27 | 1.667 |
| 71 | 22 | 5 | 2 | 7 | 4.82 | 1.563 |
| 35 | 22 | 6 | 1 | 7 | 4.86 | 1.781 |
| 22 | 22 | 5 | 2 | 7 | 4.91 | 1.688 |
| 60 | 22 | 5 | 2 | 7 | 5.00 | 1.414 |
| 33 | 22 | 5 | 2 | 7 | 5.09 | 1.377 |
| 13 | 22 | 4 | 3 | 7 | 5.14 | 1.207 |
| 67 | 22 | 4 | 3 | 7 | 5.14 | 1.125 |
| 27 | 22 | 5 | 2 | 7 | 5.18 | 1.593 |
| 41 | 22 | 4 | 3 | 7 | 5.18 | 1.296 |
| 34 | 22 | 5 | 2 | 7 | 5.23 | 1.510 |
| 43 | 22 | 3 | 4 | 7 | 5.23 | .973 |
| 95 | 22 | 6 | 1 | 7 | 5.27 | 1.667 |
| 45 | 22 | 4 | 3 | 7 | 5.32 | 1.492 |
| 39 | 22 | 3 | 4 | 7 | 5.32 | .995 |
| 18 | 22 | 5 | 2 | 7 | 5.36 | 1.590 |
| 65 | 22 | 4 | 3 | 7 | 5.45 | 1.262 |
| 09 | 22 | 3 | 4 | 7 | 5.45 | .858 |
| 36 | 22 | 3 | 4 | 7 | 5.45 | 1.101 |
| 07 | 22 | 4 | 3 | 7 | 5.50 | 1.406 |
| 19 | 22 | 3 | 4 | 7 | 5.50 | .913 |
| 38 | 22 | 3 | 4 | 7 | 5.55 | 1.101 |
| 44 | 22 | 4 | 3 | 7 | 5.55 | 1.335 |
| 59 | 22 | 3 | 4 | 7 | 5.55 | 1.143 |
| 24 | 22 | 5 | 2 | 7 | 5.55 | 1.595 |
| 69 | 22 | 4 | 3 | 7 | 5.55 | 1.184 |
| 73 | 22 | 4 | 3 | 7 | 5.55 | 1.335 |
| 04 | 22 | 4 | 3 | 7 | 5.59 | 1.333 |
| 08 | 22 | 4 | 3 | 7 | 5.59 | 1.098 |
| 21 | 22 | 4 | 3 | 7 | 5.59 | 1.182 |
| 32 | 22 | 3 | 4 | 7 | 5.59 | 1.098 |
| 47 | 22 | 5 | 2 | 7 | 5.59 | 1.333 |
| 112 | 22 | 6 | 1 | 7 | 5.59 | 1.501 |
| 76 | 22 | 4 | 3 | 7 | 5.64 | 1.255 |
| 85 | 22 | 3 | 4 | 7 | 5.64 | 1.136 |
| 12 | 22 | 4 | 3 | 7 | 5.68 | 1.249 |
| 37 | 22 | 4 | 3 | 7 | 5.68 | 1.427 |
| 62 | 22 | 3 | 4 | 7 | 5.73 | .935 |
| 68 | 22 | 4 | 3 | 7 | 5.73 | 1.241 |
| 64 | 22 | 4 | 3 | 7 | 5.77 | 1.110 |

| | | | | | | |
|-----|----|---|---|---|------|-------|
| 70 | 22 | 3 | 4 | 7 | 5.82 | .958 |
| 84 | 22 | 5 | 2 | 7 | 5.82 | 1.332 |
| 01 | 22 | 5 | 2 | 7 | 5.82 | 1.402 |
| 94 | 22 | 3 | 4 | 7 | 5.82 | 1.181 |
| 17 | 22 | 5 | 2 | 7 | 5.86 | 1.781 |
| 23 | 22 | 5 | 2 | 7 | 5.86 | 1.424 |
| 26 | 22 | 4 | 3 | 7 | 5.86 | 1.283 |
| 83 | 22 | 3 | 4 | 7 | 5.86 | .941 |
| 86 | 22 | 4 | 3 | 7 | 5.86 | 1.320 |
| 16 | 22 | 5 | 2 | 7 | 5.86 | 1.125 |
| 99 | 22 | 3 | 4 | 7 | 5.91 | 1.151 |
| 100 | 22 | 3 | 4 | 7 | 5.91 | .971 |
| 63 | 22 | 3 | 4 | 7 | 5.91 | .921 |
| 06 | 22 | 4 | 3 | 7 | 5.95 | 1.290 |
| 52 | 22 | 3 | 4 | 7 | 5.95 | 1.174 |
| 92 | 22 | 4 | 3 | 7 | 5.95 | 1.174 |
| 111 | 22 | 4 | 3 | 7 | 6.00 | 1.195 |
| 89 | 22 | 3 | 4 | 7 | 6.00 | .926 |
| 72 | 22 | 3 | 4 | 7 | 6.00 | 1.024 |
| 102 | 22 | 3 | 4 | 7 | 6.00 | 1.069 |
| 31 | 22 | 2 | 5 | 7 | 6.05 | .785 |
| 42 | 22 | 3 | 4 | 7 | 6.05 | 1.090 |
| 107 | 22 | 3 | 4 | 7 | 6.05 | .950 |
| 108 | 22 | 3 | 4 | 7 | 6.05 | .950 |
| 101 | 22 | 3 | 4 | 7 | 6.05 | .950 |
| 50 | 22 | 3 | 4 | 7 | 6.09 | 1.151 |
| 61 | 22 | 3 | 4 | 7 | 6.09 | .750 |
| 82 | 22 | 3 | 4 | 7 | 6.09 | 1.019 |
| 48 | 22 | 2 | 5 | 7 | 6.14 | .774 |
| 49 | 22 | 4 | 3 | 7 | 6.14 | 1.082 |
| 46 | 22 | 3 | 4 | 7 | 6.14 | 1.037 |
| 87 | 22 | 3 | 4 | 7 | 6.14 | 1.037 |
| 88 | 22 | 3 | 4 | 7 | 6.14 | .889 |
| 75 | 22 | 3 | 4 | 7 | 6.18 | .907 |
| 14 | 22 | 2 | 5 | 7 | 6.18 | .773 |
| 30 | 22 | 3 | 4 | 7 | 6.18 | .958 |
| 58 | 22 | 4 | 3 | 7 | 6.18 | .958 |
| 11 | 22 | 3 | 4 | 7 | 6.18 | .853 |
| 28 | 22 | 3 | 4 | 7 | 6.18 | .907 |
| 40 | 22 | 3 | 4 | 7 | 6.18 | .958 |
| 78 | 22 | 4 | 3 | 7 | 6.18 | 1.053 |
| 15 | 22 | 3 | 4 | 7 | 6.23 | 1.020 |
| 56 | 22 | 3 | 4 | 7 | 6.23 | .922 |
| 91 | 22 | 3 | 4 | 7 | 6.23 | .973 |
| 110 | 22 | 2 | 5 | 7 | 6.27 | .767 |
| 25 | 22 | 3 | 4 | 7 | 6.27 | .935 |

| | | | | | | |
|-----|----|---|---|---|------|-------|
| 54 | 22 | 2 | 5 | 7 | 6.27 | .767 |
| 80 | 22 | 3 | 4 | 7 | 6.27 | 1.032 |
| 93 | 22 | 2 | 5 | 7 | 6.27 | .883 |
| 55 | 22 | 3 | 4 | 7 | 6.32 | .839 |
| 51 | 22 | 3 | 4 | 7 | 6.32 | 1.129 |
| 03 | 22 | 3 | 4 | 7 | 6.32 | .780 |
| 05 | 22 | 4 | 3 | 7 | 6.32 | 1.041 |
| 103 | 22 | 2 | 5 | 7 | 6.32 | .839 |
| 57 | 22 | 3 | 4 | 7 | 6.36 | .953 |
| 74 | 22 | 3 | 4 | 7 | 6.36 | 1.002 |
| 53 | 22 | 3 | 4 | 7 | 6.36 | .848 |
| 104 | 22 | 4 | 3 | 7 | 6.36 | 1.049 |
| 81 | 22 | 2 | 5 | 7 | 6.36 | .658 |
| 77 | 22 | 3 | 4 | 7 | 6.41 | .959 |
| 96 | 22 | 6 | 1 | 7 | 6.41 | 1.368 |
| 20 | 22 | 4 | 3 | 7 | 6.45 | 1.101 |
| 79 | 22 | 2 | 5 | 7 | 6.45 | .800 |
| 98 | 22 | 2 | 5 | 7 | 6.45 | .739 |
| 106 | 22 | 2 | 5 | 7 | 6.45 | .671 |
| 109 | 22 | 2 | 5 | 7 | 6.45 | .800 |
| 10 | 22 | 2 | 5 | 7 | 6.50 | .673 |
| 97 | 22 | 2 | 5 | 7 | 6.50 | .598 |
| 105 | 22 | 2 | 5 | 7 | 6.59 | .590 |
| 02 | 22 | 3 | 4 | 7 | 6.73 | .703 |
| 29 | 22 | 1 | 6 | 7 | 6.73 | .456 |
| 90 | 22 | 2 | 5 | 7 | 6.77 | .528 |

APPENDIX E

ARABIC TRANSLATION OF THE FACT SHEET, LTSI ITEMS, ORGANIZATIONAL LEARNING ITEMS, AND DEMOGRAPHIC VARIABLES

ألسلام عليكم ورحمت الله وبركاته

انا الباحث سامر خصاونة ، طالب دكتوراة في جامعة لويزيانا-الولايات المتحدة الامريكية- قسم تنمية المصادر البشرية والقيادة. اقوم بتحكيم اداة الدراسة. هذه الاداة معدة من قبل مجموعة من الباحثين المهتمين في الموضوع في الولايات المتحدة الامريكية. عنوان الاداة "نظام تحويل او ترجمة التعلم".. تستخدم هذه الاداة لقياس العوامل التي تؤثر في قدرة المتدربين على ترجمة او تحويل ما قد تم تعلمه اثناء التدريب الى واقعا عمليا في مواقع العمل. حيث ان قياس مثل هذه العوامل يحسن ويطور فعالية التدريب ويؤثر بشكل ايجابي على الافراد والاداء التنظيمي.

الاداة المرفقة تحتوي على ثلاث اقسام. القسم الاول معنون بـ اداة قياس نظام تحويل التعلم والتي تشتمل على جزئين: الجزء الاول يتعلق برويتك للبرنامج التدريبي الذي حضرته مؤخراً. الجزء الثاني يتعلق برويتك لجميع برامج التدريب بشكل عام . ألقسم الثاني من الاداة يسأل عن اعتقاداتك ووجهة نظرك حول اذا ما كانت المؤسسة التنظيمية التي تعمل بها فيها اي نوع من نظام التعلم . الجزء الاخير يسأل عن معلوماتك الشخصية.

تم اختيار منظمتك للمشاركة في في الدراسة. مشاركتك في هذه الدراسة تطوعي . لن يتم تحديد اسمك او اسم منظمتك في الدراسة. اجابتك ستكون مستقلة تماما ولن يتم ارفاقها بالدراسة تحت اي ظرف. اخيرا، اداة الدراسة تشتمل عل فقرات تعتمد على رؤيتك فقط ، ارجو الاجابة عنها بكل موضوعية وصدق ما امكن. لا توجد هناك اسئلة تحتاج للاجابة بنعم او لا . اداة الدراسة لا تحتاج لاكثر من 20 دقيقة للاجابة عليها. اشكر مشاركتكم.... ارجو عدم التردد بطرح اي اسؤال او اقتراح ترونيه .

الباحث

سامر خصاونة

التعليمات: أرجاء وضع دائرة حول الإجابة الأكثر توافقاً مع آرائك أو شعورك نحو آخر برنامج تدريب شاركت به .

| الرقم | الفقرة | 5 موافق بشدة | 4 موافق | 3 محايد | 2 غير موافق | 1 غير موافق بشدة |
|-------|--------|--------------|---------|---------|-------------|------------------|
|-------|--------|--------------|---------|---------|-------------|------------------|

| | | | | | | |
|----|---|---|---|---|---|---|
| 1 | قبل التدريب عرفت كيف كان مفترضا أن يؤثر على أدائي. | 5 | 4 | 3 | 2 | 1 |
| 2 | التدريب سيرفع معدل إنتاجي الشخصي. | 5 | 4 | 3 | 2 | 1 |
| 3 | عندما أغانر التدريب أتلهف بالعودة الاعملي لكي أجرب ما تعلمته. | 5 | 4 | 3 | 2 | 1 |
| 4 | أعتقد أن التدريب سيساعدني في أداء وظيفتي المعتادة بشكل أفضل. | 5 | 4 | 3 | 2 | 1 |
| 5 | أشعر بالإثارة عندما أفكر في محاولة استخدام ما تعلمت من التدريب في وظيفتي. | 5 | 4 | 3 | 2 | 1 |
| 6 | إذا ما قمت باستخدام تدريبي بنجاح سأحصل على اضافة في راتي. | 5 | 4 | 3 | 2 | 1 |
| 7 | إذا استخدمت تدريبي سأحصل على الأغلب على مكافأة. | 5 | 4 | 3 | 2 | 1 |
| 8 | سأحصل على بعض الفوائد إذا ما استخدمت مهاراتي الجديدة في وظيفتي. | 5 | 4 | 3 | 2 | 1 |
| 9 | قبل أن أتدرب كان لدي الإدراك الكافي لمدى تأثير هذا التدريب في التطوير الخاص بعملي. | 5 | 4 | 3 | 2 | 1 |
| 10 | عرفت ما أتوقع من التدريب قبل أن يبدأ . | 5 | 4 | 3 | 2 | 1 |
| 11 | ليس لدي الوقت الكافي لمحاولة استخدام هذا التدريب. | 5 | 4 | 3 | 2 | 1 |
| 12 | محاولة تطبيق هذا التدريب سيستهلك طاقة كافية من عملي. | 5 | 4 | 3 | 2 | 1 |
| 13 | النتائج المتوقعة لهاذا التدريب كانت واضحة منذ بداية التدريب . | 5 | 4 | 3 | 2 | 1 |
| 14 | لقد تم معاينة الموظفين في هذه المنظمة لعدم استخدامهم ما تعلموه في التدريب. | 5 | 4 | 3 | 2 | 1 |
| 15 | إذا ما استخدمت ما تعلمته في التدريب سيساعدني ذلك في أن أحصل على تقييمات أعلى في عملي. | 5 | 4 | 3 | 2 | 1 |

التعليمات: أرجاء وضع دائرة حول الإجابة الأكثر توافقاً مع آرائك أو شعورك نحو آخر برنامج تدريب شاركت به .

| الرقم | الفقرة | 5 موافق بشدة | 4 موافق | 3 محايد | 2 غير موافق | 1 غير موافق بشدة |
|-------|--------|--------------|---------|---------|-------------|------------------|
|-------|--------|--------------|---------|---------|-------------|------------------|

| | | | | | | |
|----|--|---|---|---|---|---|
| 16 | يحصل الموظفون في هذه المنظمة على فوائد متباينة عند استخدامهم المهارات الجديدة في عملهم. | 5 | 4 | 3 | 2 | 1 |
| 17 | سأكون غير محظوظ في الحصول على علاوة إذا لم أستخدم تدريبي. | 5 | 4 | 3 | 2 | 1 |
| 18 | على الأرجح سأكون أكثر احتراماً في عملي إذا قمت باستخدام تدريبي . | 5 | 4 | 3 | 2 | 1 |
| 19 | مسؤولياتي في العمل سوف تسمح لي أن أحاول تطبيق الأشياء الجديدة التي تعلمتها. | 5 | 4 | 3 | 2 | 1 |
| 20 | لدي في الوقت الحالي أعمال كثيرة تحول دون استخدام هذا التدريب. | 5 | 4 | 3 | 2 | 1 |
| 21 | إذا لم أستخدم التقنيات الحديثة المتعلمة في التدريب ستم مساءلتي. | 5 | 4 | 3 | 2 | 1 |
| 22 | إذا ما نجحت في استخدام هذا التدريب سأنجح في الحصول على زيادة الراتب. | 5 | 4 | 3 | 2 | 1 |
| 23 | سأحصل على إنذار إذا لم أستخدم هذا التدريب. | 5 | 4 | 3 | 2 | 1 |
| 24 | سيلاحظ موظفي المنظمة إذا لم أستخدم هذا التدريب. | 5 | 4 | 3 | 2 | 1 |
| 25 | لدي الوقت في جدول مواعيدي لتغيير طريقتي في عمل الأشياء ليكون ذلك ملائماً لتدريبي الجديد. | 5 | 4 | 3 | 2 | 1 |
| 26 | سيجب على شخص ما أن يغير أولوياتي قبل أن أكون قادراً على أن أستخدم معرفتي الجديدة. | 5 | 4 | 3 | 2 | 1 |
| 27 | أتمنى لو أن لدي الوقت الكافي لعمل الأشياء بالطريقة التي يجب أن تعمل بها. | 5 | 4 | 3 | 2 | 1 |
| 28 | يقدر زملائي استخدامي للمهارات الجديدة التي تعلمتها في التدريب. | 5 | 4 | 3 | 2 | 1 |
| 29 | يشجعني زملائي على استخدام المهارات التي تعلمتها في التدريب. | 5 | 4 | 3 | 2 | 1 |

التعليمات: أُرِجاء وضع دائرة حول الإجابة الأكثر توافقاً مع آرائك أو شعورك نحو آخر برنامج تدريب شاركت به .

| 1 غير موافق بشدة | 2 غير موافق | 3 محايد | 4 موافق | 5 موافق بشدة | الفقرة | الرقم |
|---------------------------|-------------------|------------|------------|--------------------|--------|-------|
|---------------------------|-------------------|------------|------------|--------------------|--------|-------|

| | | | | | | |
|---|---|---|---|---|--|----|
| 1 | 2 | 3 | 4 | 5 | يتوقع زملائي أن أقوم باستخدام ما تعلمته في التدريب. | 30 |
| 1 | 2 | 3 | 4 | 5 | زملائي صبورين عند محاولتي استخدام المهارات والتقنيات الجديدة في العمل. | 31 |
| 1 | 2 | 3 | 4 | 5 | مشرفي يساعدني في حل المشاكل التي تواجهني عند محاولة استخدام تدريبي. | 32 |
| 1 | 2 | 3 | 4 | 5 | مشرفي يجتمع معي لمناقشة طرق تطبيق تدريبي في الوظيفة. | 33 |
| 1 | 2 | 3 | 4 | 5 | سيعارض مشرفي إذا ما حاولت استخدمت هذا التدريب في العمل. | 34 |
| 1 | 2 | 3 | 4 | 5 | سيعارض مشرفي استخدام التقنيات التي تعلمتها في هذا التدريب. | 35 |
| 1 | 2 | 3 | 4 | 5 | يعتقد مشرفي أنني سأكون أقل فعالية عندما استخدم التقنيات التي تعلمتها في هذا التدريب. | 36 |
| 1 | 2 | 3 | 4 | 5 | يهتم مشرفي فيما تعلمته في التدريب. | 37 |
| 1 | 2 | 3 | 4 | 5 | يعارض مشرفي استخدام التقنيات التي تعلمتها في التدريب. | 38 |
| 1 | 2 | 3 | 4 | 5 | وضع لي مشرفي أهدافاً مما شجعتني لتطبيق تدريبي في الوظيفة. | 39 |
| 1 | 2 | 3 | 4 | 5 | أعلمني مشرفي أنني أقوم بعمل جيد عندما استعمل تدريبي. | 40 |
| 1 | 2 | 3 | 4 | 5 | لن يرغب مشرفي في عمل الأشياء بالطريقة التي تعلمتها في التدريب. | 41 |
| 1 | 2 | 3 | 4 | 5 | يعتقد مشرفي أن تدريبي هذا لن يساعدني في العمل. | 42 |
| 1 | 2 | 3 | 4 | 5 | يساعدني مشرفي على وضع أهداف لتحسين ادائي بناء على تدريبي. | 43 |

التعليمات: أُرْجاء وضع دائرة حول الإجابة الأكثر توافقاً مع آرائك أو شعورك نحو آخر برنامج تدريب شاركت به .

| 1 غير موافق بشدة | 2 غير موافق | 3 محايد | 4 موافق | 5 موافق بشدة | الفقرة | الرقم |
|---------------------------|-------------------|------------|------------|--------------------|--------|-------|
|---------------------------|-------------------|------------|------------|--------------------|--------|-------|

| | | | | | | |
|---|---|---|---|---|--|----|
| 1 | 2 | 3 | 4 | 5 | يستعمل مشرفي تقنيات مختلفة عن التي سوف أستخدمها إذا استعملت تدريبي. | 44 |
| 1 | 2 | 3 | 4 | 5 | يعتقد مشرفي أنني سأكون غير فعّال عند استخدامي التقنيات المتعلمة في التدريب. | 45 |
| 1 | 2 | 3 | 4 | 5 | ستفقد مشرفي على -الأرجح- هذا التدريب عندما أعود إلى العمل. | 46 |
| 1 | 2 | 3 | 4 | 5 | المساعدات التعليمية مثل (الجهاز، الإيضاحات، ... الخ) المستخدمة في التدريب متشابهة جداً للأشياء التي استخدمها في العمل. | 47 |
| 1 | 2 | 3 | 4 | 5 | الطرق المستخدمة في التدريب تشبه لما نقوم به في العمل. | 48 |
| 1 | 2 | 3 | 4 | 5 | أحب الطريقة التي يكون فيها تدريبي متناسق مع عملي. | 49 |
| 1 | 2 | 3 | 4 | 5 | سأحصل على الأشياء والتي تساعدني لأكون قادراً على استخدام هذا التدريب. | 50 |
| 1 | 2 | 3 | 4 | 5 | سأكون قادراً على استخدام هذا التدريب في عملي. | 51 |
| 1 | 2 | 3 | 4 | 5 | النشاطات والتمارين التي يستخدمها المدربون ساعدتني في معرفة كيفية تطبيق تعليمي في العمل. | 52 |
| 1 | 2 | 3 | 4 | 5 | من الواضح أن الأشخاص القائمين على التدريب يدركون كيف سأستخدم ما تعلمت. | 53 |
| 1 | 2 | 3 | 4 | 5 | استخدم المدرب (المدربون) كثيراً من الأمثلة التي تبين كيف أستطيع استخدام تعليمي في الوظيفة. | 54 |
| 1 | 2 | 3 | 4 | 5 | الطريقة التي يعلم بها المدرب (المدربون) المادة التي جعلتني أشعر بثقة أكبر أنه باستطاعتي تطبيقها. | 55 |
| 1 | 2 | 3 | 4 | 5 | المصادر التي احتاجها لأستخدام ما تعلمت متاحة لي بعد التدريب. | 56 |
| 1 | 2 | 3 | 4 | 5 | ستتاح لي الفرص لاستخدام هذا التدريب. | 57 |

التعليمات: أرجاء وضع دائرة حول الإجابة الأكثر توافقاً مع آرائك أو شعورك نحو آخر برنامج تدريب شاركت به .

| الرقم | الفقرة | 5 موافق بشدة | 4 موافق | 3 محايد | 2 غير موافق | 1 غير موافق بشدة |
|-------|--------|--------------------|------------|------------|-------------------|---------------------------|
|-------|--------|--------------------|------------|------------|-------------------|---------------------------|

| | | | | | | |
|----|--|---|---|---|---|---|
| 58 | الذي يعلم في التدريب يتقارب جداً مع متطلبات عملي. | 5 | 4 | 3 | 2 | 1 |
| 59 | الحالات المستخدمة في التدريب تتشابه جداً لتلك التي أواجهها في عملي. | 5 | 4 | 3 | 2 | 1 |
| 60 | هناك موارد بشرية كافية متوفرة والتي تسمح لي استعمال المهارات المكتسبة في التدريب. | 5 | 4 | 3 | 2 | 1 |
| 61 | محددات الميزانية في العمل ستمنعني من استخدام المهارات المكتسبة في التدريب. | 5 | 4 | 3 | 2 | 1 |
| 62 | مستوانا الوظيفي الحالي كافي لي لاستعمال هذا التدريب. | 5 | 4 | 3 | 2 | 1 |
| 63 | سيكون من الصعب الحصول على المواد والمساعدات التي احتاجها في استعمال المهارات والمعرفة المتعلمة في التدريب. | 5 | 4 | 3 | 2 | 1 |

متى حضرت اخر تدريب:

الجزء الثاني: أرجاء وضع دائرة حول الإجابة الأكثر توافقاً مع آرائك أو شعورك نحو التدريب بشكل عام في منطمتك .

| الرقم | الفقرة | 5 موافق بشدة | 4 موافق | 3 محايد | 2 غير موافق | 1 غير موافق بشدة |
|-------|--------|--------------------|------------|------------|-------------------|---------------------------|
|-------|--------|--------------------|------------|------------|-------------------|---------------------------|

| | | | | | | |
|----|---|---|---|---|---|---|
| 64 | منظمتي لا تقدر أدائي بشكل جدي. | 5 | 4 | 3 | 2 | 1 |
| 65 | أدائي الوظيفي يتحسن إذا قمت باستخدام الأشياء الجديدة التي تعلمتها. | 5 | 4 | 3 | 2 | 1 |
| 66 | كلما عملت بجد في تعليمي كلما أنجزت عملي بشكل أفضل. | 5 | 4 | 3 | 2 | 1 |
| 67 | في الغالب الأشخاص الأكثر استحقاقاً للمكافأة هم أولئك الذي يعملون شيئاً يستحقون المكافأة عليه. | 5 | 4 | 3 | 2 | 1 |
| 68 | عندما أحسن أدائي فإن أشياء جيدة تحصل لي. | 5 | 4 | 3 | 2 | 1 |
| 69 | إن التدريب يساعدني دائماً في رفع أداء عملي. | 5 | 4 | 3 | 2 | 1 |
| 70 | إن الأشخاص من حولك يلاحظون عندما تعمل شيئاً جيداً. | 5 | 4 | 3 | 2 | 1 |
| 71 | كلما زاد التدريب الذي أطبقه في وظيفتي كلما كان عملي أفضل. | 5 | 4 | 3 | 2 | 1 |
| 72 | إن عملي مثالي بالنسبة لأي شخص يكافأ عندما يقوم بعمل شيء جيد. | 5 | 4 | 3 | 2 | 1 |
| 73 | يفضل الأشخاص في مجموعتي -بشكل عام- الطرق المتوفرة على محاولة طرق جديدة المتعلمة في التدريب. | 5 | 4 | 3 | 2 | 1 |
| 74 | ينتقد الموظفون ذوو الخبرة في مجموعتي الآخرين لاستعمالهم التقنيات المتعلمة في التدريب. | 5 | 4 | 3 | 2 | 1 |
| 75 | إن الأشخاص في مجموعتي مرنين لتغيير الطريقة التي يعملون بها الأشياء. | 5 | 4 | 3 | 2 | 1 |
| 76 | إن الأشخاص في مجموعتي لا يأملون في تقديم المجهود ولتغيير طريقة عمل الأشياء. | 5 | 4 | 3 | 2 | 1 |
| 77 | تعارض مجموعتي في العمل محاولة الطرق الجديدة في عمل الأشياء. | 5 | 4 | 3 | 2 | 1 |

الجزء الثاني: أرجاء وضع دائرة حول الإجابة الأكثر توافقاً مع آرائك أو شعورك نحو التدريب بشكل عام في منظمتك .

| الرقم | الفقرة | 5 موافق بشدة | 4 موافق | 3 محايد | 2 غير موافق | 1 غير موافق بشدة |
|-------|--------|--------------------|------------|------------|-------------------|---------------------------|
|-------|--------|--------------------|------------|------------|-------------------|---------------------------|

| | | | | | | |
|----|--|---|---|---|---|---|
| 78 | مجموعتي في العمل منفتحة للتغير إذا ما اثبت تحسين أدائنا الوظيفي. | 5 | 4 | 3 | 2 | 1 |
| 79 | أصبحت لدي المرجعية بعد التدريب حول تطبيقي الجيد لما تعلمت. | 5 | 4 | 3 | 2 | 1 |

| | | | | | | |
|----|---|---|---|---|---|---|
| 80 | يعطي الناس -عادة- اقتراحات لي حول كيفية تحسين أدائي. | 5 | 4 | 3 | 2 | 1 |
| 81 | حصلت على كثير من النصيحة من الآخرين حول القيام بعملتي بشكل أفضل. | 5 | 4 | 3 | 2 | 1 |
| 82 | أنا على ثقة في قدرتي على استعمال مهارات جديدة في العمل. | 5 | 4 | 3 | 2 | 1 |
| 83 | لا يوجد لدي شك في قدرتي على استخدام المهارات الجديدة في الوظيفة. | 5 | 4 | 3 | 2 | 1 |
| 84 | أنا متأكد من قدرتي على تخطي العقبات في الوظيفة التي تمنع استعمالي للمهارات أو المعرفة الجديدة. | 5 | 4 | 3 | 2 | 1 |
| 85 | في العمل أشعر بالثقة الكبيرة باستخدام ما تعلمت في التدريب إما في مواجهة الصعوبات أو المواقف الصعبة. | 5 | 4 | 3 | 2 | 1 |
| 86 | يخبرني الناس دائماً الأشياء التي تساعدني في تحسين أدائي الوظيفي. | 5 | 4 | 3 | 2 | 1 |
| 87 | أعرف من يساعدني عندما أحاول الأشياء الجديدة التي تعلمتها. | 5 | 4 | 3 | 2 | 1 |
| 88 | إذا ما كان أدائي ليس كما يجب أن يكون يساعدني الناس على التحسن. | 5 | 4 | 3 | 2 | 1 |
| 89 | أقوم بالمناقشات مع الناس بشكل منتظم حول رفع مستوى أدائي. | 5 | 4 | 3 | 2 | 1 |

ألقسم الثاني من الاداة يسأل عن اعتقادك ووجهة نظرك حول اذا ما كانت المؤسسة التنظيمية التي تعمل بها فيها اي نوع من نظام التعلم.

ربما غير صحيح = 3 غالباً غير صحيح = 2 غير صحيح = 1
صحيح = 6 غالباً صحيح = 5 ربما صحيح = 4

| الرقم | الفقرة | 6 | 5 | 4 | 3 | 2 | 1 |
|-------|---|---|---|---|---|---|---|
| 90 | نطور حلول أفضل للمشاكل عندما نعمل معا في المجموعات. | 6 | 5 | 4 | 3 | 2 | 1 |
| 91 | مهم لبعض الناس أن يسألوا عن الطريفة التي تعمل بها الأشياء وأن يتحدثوا الممارسات الحالية. | 6 | 5 | 4 | 3 | 2 | 1 |
| 92 | يحدث التعلم عندما نقبل أنه لا يمكن لشخص واحد أن يعرف كل الأجابات. | 6 | 5 | 4 | 3 | 2 | 1 |
| 93 | يمكن أن نتنبأ أين سنكون في المستقبل. | 6 | 5 | 4 | 3 | 2 | 1 |
| 94 | طبيعة العمل أ ليوم تجعله أساسي للعمل والتعلم مع الناس في الأجزاء المختلفة من المنظمة. | 6 | 5 | 4 | 3 | 2 | 1 |
| 95 | لنكون ناجحين نحتاج لأستغلال الفرص ومحاولة الأشياء الجديدة طالما موقع العمل والسلامة الشخصية غير متأثرة. | 6 | 5 | 4 | 3 | 2 | 1 |
| 96 | نتائج المدة الطويلة بمثل أهمية نتائج المدة القصيره. | 6 | 5 | 4 | 3 | 2 | 1 |
| 97 | انه مهم أن نتعلم من الأخطاء وان لأ نلوم الناس الذين يعملونهم . | 6 | 5 | 4 | 3 | 2 | 1 |
| 98 | انه جيد أن تكون مفكرا مستقلاً هنا. | 6 | 5 | 4 | 3 | 2 | 1 |
| 99 | يثق الناس في بعضهم البعض هنا بدرجة كافييه ليكونوا امينين بما يعتقدوا . | 6 | 5 | 4 | 3 | 2 | 1 |
| 100 | أ هم شيء هو ايجاد أفضل الأفكار بصرف النظر عن المصدر . | 6 | 5 | 4 | 3 | 2 | 1 |
| 101 | الناس هنا يفعلون ما هو الأفضل للمنظمة حتى لو كان غير مناسب لوحدثهم . | 6 | 5 | 4 | 3 | 2 | 1 |
| 102 | يجب ان يكون لدى الجميع تفاهم مشترك لأهداف المنظمة. | 6 | 5 | 4 | 3 | 2 | 1 |
| 103 | المرونة في العمل تعتبر شيء اساسي. | 6 | 5 | 4 | 3 | 2 | 1 |

ألقسم الثاني من الاداة يسأل عن اعتقادك ووجهة نظرك حول اذا ما كانت المؤسسة التنظيمية التي تعمل بها فيها اي نوع من نظام التعلم.

ربما غير صحيح = 3 غالباً غير صحيح = 2 غير صحيح = 1
صحيح = 6 غالباً صحيح = 5 ربما صحيح = 4

| الرقم | الفقرة | 6 | 5 | 4 | 3 | 2 | 1 |
|-------|---|---|---|---|---|---|---|
| 104 | يمكن ان نشير الى منتجات/خدمات جاءت من الأفكار الجديدة خلال المنظمة. | 6 | 5 | 4 | 3 | 2 | 1 |
| 105 | لقد حسنا جودة منتجاتنا/خدماتنا باستمرار البحث عن الطرق الجديدة والأفضل لعمل الأشياء. | 6 | 5 | 4 | 3 | 2 | 1 |
| 106 | لقد تبيننا الأفكار الجديدة من خارج المنظمة لنكون اكثر تنافسية. | 6 | 5 | 4 | 3 | 2 | 1 |
| 107 | نحن جيدون في استخدام فكرة غريبة لأشغال افكارنا على كيفية البقاء منافسين. | 6 | 5 | 4 | 3 | 2 | 1 |
| 108 | نحن قادرون على الاستجابة للتغيرات في احتياجات العملاء لخدمات/منتجات جديدة اسرع اليوم. | 6 | 5 | 4 | 3 | 2 | 1 |
| 109 | نحن منظمة مثالية لأننا دائما نفكر بطرق جديدة لتحسين ممارسات العمل. | 6 | 5 | 4 | 3 | 2 | 1 |
| 110 | الأفكار الجديدة والمختلفة نراها كفرص لتعلم طرق افضل لعمل الأشياء. | 6 | 5 | 4 | 3 | 2 | 1 |
| 111 | قدرتنا لتنفيذ الأفكار الجديدة بنجاح هي المفتاح الى قوتنا في اسواقنا. | 6 | 5 | 4 | 3 | 2 | 1 |
| 112 | نحن لم نكن قادرين على ان نطور منتجات/خدمات من الأشياء الجديدة التي قد تعلمناها. | 6 | 5 | 4 | 3 | 2 | 1 |

ألقسم الثاني من الاداة يسأل عن اعتقادك ووجهة نظرك حول اذا ما كانت المؤسسة التنظيمية التي تعمل بها فيها اي نوع من نظام التعلم.

ربما غير صحيح = 3 غالبا غير صحيح = 2 غير صحيح = 1
صحيح = 6 غالبا صحيح = 5 ربما صحيح = 4

1- ما هو جنسك: ذكر ---- أنثى -----

2- ما هو عمرك الحالي؟
--- اقل من 21 سنة

--- 21-29 سنة

--- 30-39 سنة

--- 40-44 سنة

--- 45 سنة واكثر

3- ما هو مستواك التعليمي؟

--- اقل من مستوى المدرس العليا

--- خريج مدرسة عليا

--- شهادة البكالوريوس

--- شهادة الماجستير

--- شهادة الدكتوراة

--- مؤهلات اخرى (ارجو تحديدها)-----

4- ما هو مجمل سنوات خبرتك في المنظمة او المؤسسة الحالية؟-----

5- ما هو هي نوعية البرامج التي حضرت؟

6- هل كان التدريب الذي حضرت والذي تمت اجابتك على هذه الاداة بناءً عليه؟

--- اجباري

--- تطوعي

APPENDIX F

BEGINNING AND ENDING COMMUNALITIES FOR ITEMS OF THE TRAINING-SPECIFIC SECTION, TRAINING-IN-GENERAL SECTION, AND ORGANIZATIONAL LEARNING SECTION

Training-Specific Section

| Item | Beginning Communalities | Ending Communalities |
|------|-------------------------|----------------------|
| 1 | .46 | .40 |
| 2 | .43 | .40 |
| 3 | .47 | .45 |
| 4 | .46 | .49 |
| 5 | .43 | .43 |
| 6 | .68 | .70 |
| 7 | .71 | .74 |
| 8 | .74 | .79 |
| 9 | .50 | .49 |
| 10 | .44 | .44 |
| 11 | .38 | .54 |
| 12 | .32 | .30 |
| 13 | .45 | .52 |
| 14 | .47 | .41 |
| 15 | .44 | .36 |
| 16 | .50 | .39 |
| 17 | .40 | .32 |
| 18 | .50 | .41 |
| 19 | .24 | .15 |
| 20 | .34 | .35 |
| 21 | .53 | .58 |
| 22 | .42 | .35 |
| 23 | .51 | .47 |
| 24 | .48 | .41 |
| 25 | .29 | .20 |
| 26 | .24 | .18 |
| 27 | .38 | .36 |
| 28 | .61 | .56 |
| 29 | .66 | .68 |
| 30 | .64 | .66 |
| 31 | .54 | .48 |
| 32 | .58 | .52 |
| 33 | .58 | .55 |
| 34 | .61 | .51 |
| 35 | .64 | .53 |
| 36 | .66 | .67 |
| 37 | .49 | .47 |
| 38 | .56 | .57 |
| 39 | .54 | .52 |
| 40 | .60 | .61 |
| 41 | .42 | .28 |
| 42 | .56 | .53 |

| | | |
|----|-----|-----|
| 43 | .51 | .49 |
| 44 | .41 | .35 |
| 45 | .52 | .48 |
| 46 | .36 | .25 |
| 47 | .50 | .47 |
| 48 | .49 | .47 |
| 49 | .50 | .43 |
| 50 | .54 | .44 |
| 51 | .67 | .62 |
| 52 | .62 | .64 |
| 53 | .61 | .60 |
| 54 | .55 | .54 |
| 55 | .58 | .55 |
| 56 | .47 | .44 |
| 57 | .52 | .44 |
| 58 | .54 | .49 |
| 59 | .54 | .53 |
| 60 | .49 | .43 |
| 61 | .48 | .53 |
| 62 | .36 | .23 |
| 63 | .53 | .58 |

Training-in-General Section

| Item | Beginning Communalities | Ending Communalities |
|------|-------------------------|----------------------|
| 64 | .13 | .09 |
| 65 | .46 | .48 |
| 66 | .50 | .46 |
| 67 | .62 | .72 |
| 68 | .64 | .72 |
| 69 | .51 | .52 |
| 70 | .47 | .41 |
| 71 | .49 | .49 |
| 72 | .55 | .58 |
| 73 | .14 | .13 |
| 74 | .21 | .28 |
| 75 | .16 | .15 |
| 76 | .23 | .35 |
| 77 | .16 | .20 |
| 78 | .15 | .12 |
| 79 | .35 | .25 |
| 80 | .59 | .60 |
| 81 | .53 | .51 |
| 82 | .43 | .44 |

| | | |
|----|-----|-----|
| 83 | .49 | .60 |
| 84 | .49 | .52 |
| 85 | .46 | .46 |
| 86 | .49 | .54 |
| 87 | .42 | .38 |
| 88 | .42 | .31 |
| 89 | .43 | .41 |

Organizational Learning Section

| Item | Beginning Communalities | Ending Communalities |
|------|-------------------------|----------------------|
| 90 | .21 | .20 |
| 91 | .27 | .35 |
| 92 | .22 | .28 |
| 93 | .32 | .32 |
| 94 | .35 | .42 |
| 95 | .46 | .51 |
| 96 | .54 | .66 |
| 97 | .53 | .64 |
| 98 | .43 | .49 |
| 99 | .62 | .64 |
| 100 | .68 | .77 |
| 101 | .59 | .64 |
| 102 | .58 | .54 |
| 103 | .49 | .45 |
| 104 | .43 | .49 |
| 105 | .46 | .45 |
| 106 | .34 | .32 |
| 107 | .47 | .54 |
| 108 | .52 | .55 |
| 109 | .53 | .54 |
| 110 | .52 | .60 |
| 111 | .48 | .62 |

APPENDIX G
LETTER OF PERMISSION



LOUISIANA STATE UNIVERSITY
School of Human Resource Education & Workforce Development
Human Resource & Leadership Development Program
Baton Rouge, LA 70803-5477

January 29, 2003

Samer Khasawneh
School of Human Resource Education and Workforce Development
Louisiana State University

Samer:

The purpose of this letter is to formally grant you permission to use the Learning Transfer Systems Inventory (LTSI) for the purpose of data collection for your doctoral dissertation.

Good luck!

Sincerely,

Dr. Reid Bates
Associate Professor
Louisiana State University
School of Human Resource Education and Workforce Development
Human Resource and Leadership Development Program

VITA

Samer A. Khasawneh was born in Amman, Jordan, on May 16, 1969. He holds a bachelor degree of science in finance from Yarmouk University of Jordan, and a Master of Science degree in general administration from Central Michigan University, Michigan. In fall of 2000, Samer began his graduate study in the Louisiana State University Department of Human Resource Education doctoral program.

Samer's current research interests include learning transfer, adult learning, technology integration in education, teaching and learning styles, instructional design and development with technology, research methods, evaluation and statistical analysis appropriate methods and procedures. He will receive the degree of Doctor of Philosophy at the August 2004 Commencement.