

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

Samer Khasawneh, Reid Bates and Elwood F. Holton III

The purpose of this study was to translate and validate an Arabic version of the Learning Transfer System Inventory (LTSI) for use in Jordan. The study also investigated the perceptions of transfer system characteristics across selected individual and situational variables. The LTSI was administered to 450 employees of 28 different public and private sector organizations operating in Jordan. Principal axis factoring with oblique rotation was used to uncover the underlying structure of the Arabic version of the LTSI. Results showed a latent factor structure that is highly consistent with the English version of the LTSI. Results also indicated that transfer system perceptions differed across levels of education, years of experience, types of training, choice of training, sector of the organization and task of the organization. Implications for the field of human resource development are also provided.

The world has become a globalized economic system where countries with high levels of technology, finance and information have more advantages in controlling the sources of human capital, raw materials and product development and distribution. Jordan, a small but strategic country, plugged into the world economic system by privatizing its economy to attract foreign investments, is pursuing further steps in

□ Samer Khasawneh, Assistant Professor, School of Educational Sciences, The Hashemite University, PO Box 150459, Zarqa, Jordan 13115. Email: HSA1group@yahoo.com. Reid Bates, Associate Professor, School of Human Resource Education and Workforce Development, 107 Old Forestry, Louisiana State University, Baton Rouge, LA 70803, USA. Email: rabates@lsu.edu. Elwood F. Holton III, 240A Old Forestry, Louisiana State University, Baton Rouge, LA, USA. Email: eholt2@lsu.edu

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developing human capital in both private and public sectors (Central Bank of Jordan, 1994). 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).

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 as much 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). In short, Jordanian organizations – as with US organizations – see investment in training activities as critical for continuously improving individual job performance and overall organizational success.

The challenge of such investments, however, is assuring that the training that occurs can be transferred into on-the-job performance. Although virtually no research has been done on learning transfer in organizations operating in Jordan or other Middle Eastern countries, it is likely that these organizations face similar transfer challenges to their Western counterparts. For example, in organizations operating in the US the transfer problem – or the inability of individuals to take what is learned in training and transfer it to improved job performance – is so pervasive that there is rarely a learning-to-performance situation in which such a problem does not exist (Broad & Newstrom, 1992). Although the precise amount of transfer that occurs across training programs has not been empirically determined, the most cited estimate is that only 10–15 per cent of learning is ultimately applied on the job.

The transfer problem has generated a good deal of research interest in HRD. Since Baldwin and Ford's (1988) landmark review of transfer research over a decade ago, a good deal of progress has been made in understanding the complex of factors that can influence learning transfer in the workplace. For example, a range of research has focused on understanding the various dimensions of training design that can influence transfer (e.g. Goldstein & Musicante, 1986; Kraiger *et al.*, 1995). Other research has examined a range of individual difference variables including readiness for training (Tannenbaum & Yukl, 1992), efficacy beliefs (Eden & Kinnar, 1991) and even workplace literacy (Bates and Holton, in press). Another stream of research has examined the influence of work environment factors such as interpersonal support (Bates *et al.*, 2000), opportunity to transfer (Ford *et al.*, 1992) and culture (Tracey *et al.*, 1995).

Researchers have concluded that a systems perspective 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 *et al.*, 1993). For example, Holton *et al.* (2000) conceptualized a model of training transfer, which included a more comprehensive 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.

Recently, Holton *et al.* (2000) have devoted some attention to developing a psychometrically sound instrument that can measure some of the key system factors influencing learning transfer in organizations. Their efforts have led to the development of the Learning Transfer Systems Inventory (LTSI). The LTSI is currently the only validated instrument available that measures a comprehensive set of learning transfer system factors (Holton *et al.*, 2000). It is based on a theoretical framework that views individual performance improvement from training as a function of four sets of elements: (1) secondary elements, (2) ability/enabling elements, (3) motivation elements and (4) environmental elements (see Figure 1). Nested within these four domains are measures addressing a set of 16 variables (Table 1).

The LTSI has gone through several developmental iterations, and research has provided evidence of the instrument's construct (Bookter, 1999; Holton *et al.*, 2000) and criterion-related validity (Bates, 2001; Bates *et al.*, 2000). More recent research suggests that the LTSI may also have cross-cultural applicability (e.g. Chen, 2003; Yamnill, 2001).

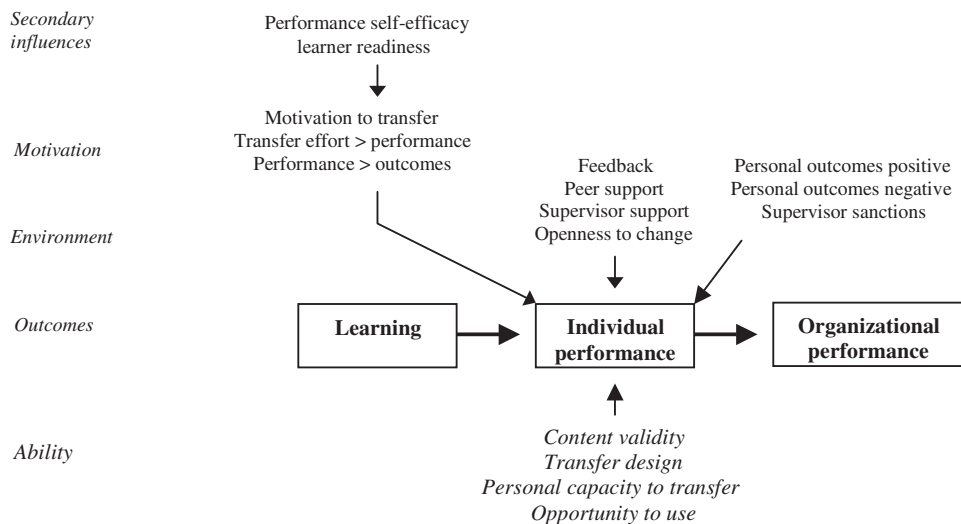


Figure 1: Conceptual model of the Learning Transfer System Inventory (LTSI).

The LTSI has value both from a research and an applied perspective. In terms of research, Holton *et al.* (2000) have argued that the development of a valid and generalizable set of transfer system scales is important because it would reduce the need for redundant instrument design and it would provide a sound foundation for cross-study comparisons of the transfer process. From a practical perspective, defining and accurately measuring factors affecting learning transfer helps the field of HRD move beyond the question of *whether or not* training works to *why* training works and how the outcomes from training might be improved. For example, the LTSI has been used before training as a diagnostic tool for discovering unknown and potential transfer problems and for identifying leverage points for change. It has been used as an additional evaluative tool following training to obtain additional information about why a training program did or did not work. In addition, the LTSI can be used to investigate known transfer of training problems, as a means of targeting interventions designed to enhance transfer, as a mechanism for incorporating evaluation of transfer into regular employee assessments and as an assessment tool for identifying knowledge and skills needed by supervisors and trainers to support learning transfer (Holton, 1996).

For Jordanian organizations, access to instruments such as the LTSI is critical. The capacity to assess transfer and transfer-related factors would not only help provide a more complete understanding of training effectiveness in Jordanian organizations, but accurate assessment is a critical first step if organizations are to realize the full benefit from training investments. The goal of the present research is to extend the cross-cultural applicability of the LTSI to organizations operating in Arabic cultures with a specific focus on Jordan. This study is guided by the following research questions:

1. Will the construct validation of an Arabic version of the LTSI (ALTSI) using an exploratory factor analysis result in an interpretable factor structure that is consistent with the original LTSI?
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)?

Table 1: Constructs in the Learning Transfer System Inventory

Construct	Sample items
Secondary elements	
Performance self-efficacy	I am confident in my ability to use new skills at work.
Learner readiness	Before the training, I had a good understanding of how it would fit my job-related development.
Motivation elements	
Motivation to transfer	I get excited when I think about trying to use my training on my job.
Transfer effort-performance	My job performance improves when I use new things I have learned.
Performance outcomes	When I do things to improve my performance, good things happen to me.
Environmental elements	
Feedback	After training, I get feedback from people about how well I am applying what I learned.
Peer support	My colleagues encourage me to use the skills that I have learned in training.
Supervisor support	My supervisor sets goals for me that encourage me to apply my training on the job.
Openness to change	People in my group are open to changing the way they do things.
Personal outcomes positive	Employees in this organization receive various 'perks' when they utilize newly learned skills on the job.
Personal outcomes negative	If I do not utilize my training, I will be cautioned about it.
Supervisor sanctions	My supervisor opposes the use of techniques I learned in training.
Ability/enabling elements	
Content validity	What is taught in training closely matches my job requirements.
Transfer design	The activities and exercises that the trainers used helped me know how to apply my training on the job.
Capacity for transfer	My workload allows me time to try the new things that I have learned.
Opportunity to use	The resources I need to use what I have learned will be available to me after training.

Methodology and research design

Population and sample

The population for this study included public and private sector organizations operating in Jordan. The sample was chosen to be as heterogeneous as possible to ensure organizational mixture. Initial access to the organizations was gained through personal contacts. Because of limited access to subjects in Jordan, both purposive sampling and convenient sampling (Ary *et al.*, 1996) were used. Specifically, organizations were included in the study if they had provided some type of employee training within 6 months prior to our initial contact and were willing to participate in the study. Twenty-eight organizations participated and provided an initial sample of 500 employees. Data were collected from 450 subjects for a response rate of 90 per cent.

Instrumentation

The LTSI is an 89-item instrument with two sections. The first section of the LTSI contains items measuring 11 constructs representing factors affecting the specific training program that respondents have completed. Respondents were directed 'to think about this specific training program' when responding to these items. The constructs in this section are program specific in that they are expected to vary depending on the training program. The second section of the LTSI contains 26 items measuring five constructs that refer to factors that reflect respondents' general experience with training in the organization. Respondents were directed to 'think about training in general in your organization' when responding to these items. Respondents were asked to rate the items on a Likert-type scale ranging from 1 = strongly disagree to 5 = strongly agree.

Instrument translation

To ensure the equivalence of the meaning of the items and constructs between the Arabic and English versions of the LTSI, a rigorous translation process was used that included forward and backward translation, subjective and objective evaluations of the translated items and pilot testing. The goal of the translation process was to produce an Arabic version of the LTSI with items that were equivalent *in meaning* to the original English version. Equivalent translations emphasize functional equivalence or the equivalence of the meaning of items across the original and translated instruments rather than word-for-word duplication. Functional equivalence is seen as increasing the likelihood that the instrument will operate in a new target culture much as it did in the original culture in which it was developed. The translation process is summarized below.

Forward and backward translation

Two translators bilingual in English and Arabic separately translated the English version of the LTSI into Arabic (forward translation). These translators were instructed to retain both the form (language) and the meaning of the items as close to the original as possible but to give priority to meaning equivalence and they agreed to use common language in the translation. The two translations were then compared to assess the item-by-item consistency. In the case of discrepancies or disagreements, the items were discussed and revised until a consensus was reached. When the Arabic translation was finalized, the instrument was then back-translated (from Arabic to English) by two other people bilingual in English and Arabic following the same comparison and revision process.

Subjective evaluation

The back-translated items were evaluated by one of the original LTSI authors to ensure that the item meanings were equivalent in both the original English versions and the back-translated version. If differences in meaning were found between items, those items were put through the forward and back-translation process again until the LTSI author was satisfied that there was substantial meaning equivalence.

Objective evaluation

Following the subjective evaluation, a more quantitative process was implemented in which a group of 19 native English speakers (HRD graduate students and other HRD professionals) rated the equivalence of meaning between the original LTSI items and the back-translated items. These reviewers compared the back-translated items with the original items and rated the functional equivalence of each pair using a 7-point Likert-type rating scale with anchors ranging from 1 (not at all similar in meaning) to

7 (very similar in meaning). Items with mean ratings below four would have been put through the forward, back-translation and subjective evaluation process again. However, no mean ratings fell below this threshold.

Pilot test

The ALTSI was pilot tested with a group of 12 employees in Jordan to collect feedback about instrument content and usage. This feedback did not lead to any substantive changes.

Data collection

The ALTSI was administered in Jordan to employees at varying time lengths following an episode of organizational training. The time of administration varied from directly after training to 6 months after training. When distributed immediately after a training program, either the researchers 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 and were then returned to the researchers. Responses were anonymous.

Data analysis

Exploratory (common) factor analysis was used to identify the latent construct structure of the ALTSI and to provide some evidence of construct validity. Common factor analysis is considered more appropriate than principal component analysis when the objective is the identification of latent structures (Nunnally & Bernstein, 1994) and more accurate than principal components analysis when the data correspond to the assumptions of the common factor model (Fabrigar *et al.*, 1999). Oblique rotation was employed because of its suitability for latent variable investigation when latent variables may or may not be orthogonal (Hair *et al.*, 1998). The initial criterion used to determine the number of factors to retain was an eigenvalue greater than or equal to one.

Multivariate analysis of variance (MANOVA) was used to assess the extent to which learning transfer system perceptions differed across individual, organizational and training factors. MANOVA 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 this analysis, scale scores for the ALTSI constructs were treated as the dependent variables and the different levels of the categorical variables (e.g. age, level of education and type of training) were treated as the independent variables. In cases where significant differences among levels of the independent variables were detected, MANOVA analysis was then followed with univariate analysis of variance (ANOVA) and post-hoc comparisons utilizing Tukey's test at an alpha level of 0.05. 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).

Results

Sample

The 450 respondents were almost equally divided between males and females. The participants in this sample were predominantly aged 30 and older (71.4 per cent), and the majority of the respondents held a bachelor's degree (69.1 per cent). Forty-two per cent of the respondents had work experiences that ranged between 4 and 10 years. A slight majority of the respondents (61.8 per cent) worked in private organizations.

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?' To answer this question, the training-specific and training-in-general sections of the LTSI were factor analysed separately as each represents a different domain of constructs. The examination of the Measure of Sampling Adequacy (MSA) and Bartlett's Test of Sphericity indicated that the data in both construct domains were suitable for factor analysis.

The training-specific domain

The 63 items in the training-specific section produced an item-to-respondent ratio of approximately 7:1, well within the recommended ratio for factor analysis. The MSA for individual items was examined first in order to exclude any that did not meet the minimum recommended value of 0.60 or higher (Hair *et al.*, 1998). Five items failed to meet this criterion and were deleted from further analysis.

Several criteria were used to determine how many factors should be extracted including the eigenvalue greater than one rule, a visual inspection of both the scree plot and the evaluation of several trial solutions. The initial analysis was run without specifying how many factors should be retained. This procedure resulted in 15 factors explaining 62.86 per cent of the common variance. However, this factor structure did not appear to be the best representation of the data because of multiple and substantial cross-loadings and latent factors that were difficult to interpret.

Based on these results and on the visual inspection of the scree plot, the next analysis was run by specifying 12 factors to be extracted. A 12-factor solution appeared to provide a more meaningful representation of the data (see Table 2). The 12-factor solution explained 57.24 per cent of the common variance and the examination of the residual correlation matrix showed no substantial residuals, suggesting that the 12-factor structure was appropriate and that the extraction of more or fewer factors would not improve the structures representation of the data. Items were retained on factors if they had a minimum loading of 0.30 but were not retained if they had a cross-loading above 0.20. Using these criteria, 49 items of the original 63 items were retained on the ALTSI. To a large extent, the original factor structure of the LTSI was replicated. Ten of the 12 factors matched those of the original LTSI. However, personal outcomes

Table 2: Factor loadings, eigenvalues and variance explained for the ALTSI training-specific factors

Training-specific factors											
1 Transfer design $\alpha = 0.87$		2 Environmental obstacles to transfer $\alpha = 0.72$		3 Personal outcomes positive $\alpha = 0.85$		4 Peer support $\alpha = 0.85$		5 Supervisor sanction $\alpha = 0.71$		6 Supervisor support $\alpha = 0.85$	
Items	Loading	Items	Loading	Items	Loading	Items	Loading	Items	Loading	Items	Loading
52	0.73	63	0.72	7	0.87	29	-0.80	35	0.72	39	0.75
54	0.67	61	0.65	8	0.87	30	-0.78	36	0.71	40	0.72
51	0.63	42	0.53	6	0.82	28	-0.63	34	0.56	33	0.69
53	0.62	38	0.49	15	0.32	31	-0.55	41	0.53	43	0.65
55	0.57									32	0.59
50	0.36									37	0.57
Eigenvalues/percentage of variance explained											
11.31		3.28		2.86		2.50		2.40		1.91	
19.50		5.66		4.94		4.31		4.14		3.30	

ALTSI = Arabic Version of the Learning Transfer System Inventory.

negative did not emerge, and two factors (environmental obstacles to transfer and job space/transfer consequences) appeared to combine scales from the original English version of the instrument.

In sum, the loading of items was characterized by an interpretable simple structure, meaning that it has high loadings on one factor and minimum cross-loadings on the rest of the factors. Factor loadings for items retained in this solution ranged from 0.33 to 0.87 with an average loading of 0.59 on the major factor and 0.05 on the rest of the factors. All factors had an acceptable reliability ranging from 0.70–0.87, with an average alpha of 0.74.

Training-in-general domain

This section of the instrument contained 26 items. The item to variables ratio was approximately 21:1, again well within the recommended ratio for factor analysis. All individual items in the training-in-general domain had an acceptable MSA value above 0.60 (Hair *et al.*, 1998), and the MSA for this section as a whole was 0.85, indicating that it was appropriate for factor analysis. The initial examination of the eigenvalues greater than one suggested the presence of seven factors, explaining 60.78 per cent of the total variance. This factor structure showed a split in two of the original constructs (feedback and effort-performance expectations). The feedback factor split into two different types of feedback. The first type of feedback (feedback/advice) was related to verbal feedback received from fellow workers in the form of verbal advice. The second type of feedback (feedback/help) was related to actual physical help or assistance that trainees received from fellow workers. The second factor that split (effort-performance expectations) did not have a justifiable conceptual or theoretical basis.

Based on these results and on the examination of the scree plot, a six-factor solution was forced. The six-factor solution explained 56.85 per cent of the common variance and appeared to be the best representation of the data (Table 3). The examination of the residual matrix showed very low correlations, suggesting that the extraction of additional factors may not be appropriate. This analysis retained 24 of the original 26 items (see Table 3). The overall reliabilities were above the minimum level (0.70) except for the *resistance/openness to change* factor, which yielded an alpha of 0.53.

7 Motivation to transfer $\alpha = 0.76$		8 Learner readiness $\alpha = 0.75$		9 Content validity $\alpha = 0.77$		10 Job space and transfer consequences $\alpha = 0.48$		11 Opportunity to use training $\alpha = 0.70$		12 Capacity for transfer $\alpha = 0.55$	
Items	Loading	Items	Loading	Items	Loading	Items	Loading	Items	Loading	Items	Loading
3	0.63	13	0.69	47	-0.61	22	0.46	56	0.50	12	0.72
4	0.61	10	0.68	48	-0.57	23	0.44	57	0.43	11	0.53
2	0.57	9	0.60	49	-0.47	25	0.33	60	0.33		
5	0.56	1	0.54	58	-0.44						
				59	-0.40						
	1.80		1.55		1.52		1.37		1.36		1.33
	3.10		2.67		2.61		2.37		2.36		2.29

Table 3: Factor loadings, eigenvalues and variance explained for the ALTSI training-in-general factors

Training-in-general factors											
1		2		3		4		5		6	
Effort-performance expectations $\alpha = 0.79$		Feedback/advice $\alpha = 0.79$		Performance-outcomes expectations $\alpha = 0.83$		Resistance/openness to change $\alpha = 0.53$		Feedback/help $\alpha = 0.73$		Self-efficacy $\alpha = 0.80$	
Items	Loading	Items	Loading	Items	Loading	Items	Loading	Items	Loading	Items	Loading
66	0.76	81	0.76	67	-0.84	76	0.59	88	-0.83	83	-0.83
65	0.64	80	0.73	68	-0.81	74	0.52	89	-0.57	84	-0.66
69	0.59	79	0.49	72	-0.68	77	0.44	87	-0.48	82	-0.59
71	0.53	86	0.45	70	-0.30	73	0.34			85	-0.56
						78	0.30				
				Eigenvalues/percentage of variance explained							
	6.62		2.26		1.94		1.56		1.28		1.13
	24.45		8.71		7.45		6.00		4.90		4.34

ALTSI = Arabic version of the Learning Transfer System Inventory.

Table 4: Multivariate tests of significance, effect size and power for all variables in questions two and three

Variable	Pillai's Trace value	F	d.f.	Sig.	Effect size	Power
Gender	0.05	1.21	18	0.25	0.05	0.82
Age	0.22	1.21	72	0.11	0.05	0.99
Level of education	0.28	1.58	72	<0.01	0.07	0.99
Years of experience	0.21	1.69	54	<0.01	0.07	0.99
Types of training	0.83	2.43	144	<0.01	0.10	0.99
Choice of training	0.12	2.85	18	<0.01	0.12	0.99
Sector of organization	0.12	2.82	18	<0.01	0.12	0.99
Task of organization	0.79	2.70	126	<0.01	0.11	0.99

Research questions two and three

Research question two investigated whether or not perceptions of the transfer system differed systematically across individual variables including gender, age, level of education and years of experience in the current organization. No significant differences in learning transfer system perceptions were found across gender or age levels (Table 4). Significant differences were found across levels of education and work experience. With regard to levels of education, respondents with 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 for 11–17 years rated effort-performance expectations higher than did respondents who have worked for 4–10 years. Respondents who have worked for less than 4 years and more than 17 years rated motivation to transfer higher than did respondents who have worked for 4–10 years. Respondents who have worked for less than 4 years had less environmental obstacles to transfer. Finally, respondents who have worked for more than 17 years rated resistance/openness to change higher than did respondents who have worked for 11–17 years.

Research question three asked if learning transfer system perceptions differed across situational level variables including types of training, choice of training, sector of organization and task of organization. Data (Table 4) indicated that 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 did those who received interpersonal training, customer relations training, new employee training, web page design, computer/library training, safety, and accidents and 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 did 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 did those from the public sector. Moreover, public sector respondents reported significantly higher levels of supervisor sanctions and environmental obstacles to transfer than did those in the private sector. Finally, respondents who worked in the high-tech industry had higher ratings across all transfer system factors than did the other sectors.

Discussion

The primary purpose of this study was to establish a valid and reliable ALTSI for use in Jordan. The results of the factor analysis indicated that 18 latent factors with 73

items emerged from the Jordanian data. For the training-specific domain, 12 factors emerged with 49 items that paralleled with the factors found in the original LTSI. Environmental obstacles to transfer and job space and 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.

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 0.65 to 0.92. Yamnill (2001) 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 that most of the constructs assessed by the LTSI may be robust across cultures.

Results also indicated that the learning transfer system perceptions in this Jordanian sample differed significantly across individual (educational level and years of experience) and situational variables (types of training, choice of training, sector of the organization and task of the organization). These results are consistent with other research (Chen, 2003; Holton *et al.*, in press; Yamnill, 2001), suggesting that learning transfer systems are not homogeneous and can vary substantially depending on multiple factors including organization type, type of training and degree of choice provided in training attendance.

In general, results showed that individual variables can have an impact on how people perceive transfer systems. Specifically, employees with lower levels of education reported higher levels of motivation to transfer training on the job than did 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 and provided with job-relevant training 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 suggest that employees with low educational levels recognize and embrace the idea that training can help them improve their work performance. They may, for example, see training and its application on the job as a means of compensating for less formal education when compared to their co-workers.

The results also suggested that people with various levels of job experience perceived learning transfer systems differently. Specifically, employees with relatively more 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 relatively longer periods of time may be better able to see the job relevance of training programs and have established stronger interpersonal relationships within their companies and workgroups that help them overcome learning transfer barriers.

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 did respondents who participated in other types of training. This suggests that the nature of training had an influence on employees' perceptions of the elements of the transfer system. For example, it may be 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.

The results also showed that employees valued voluntary training over mandatory training. On the one hand, these results are somewhat surprising to the extent that we would expect that mandatory training may be more valued than 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 who 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 *et al.*, 1991; Clark *et al.*, 1993; Mathieu *et al.*, 1992).

It is clear that freedom of choice for employees in Jordan 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 the motivation of those who attended voluntary training.

The examination of the transfer systems perceptions across the sector of the organization revealed that the private sector organizations in Jordan seemed to have stronger transfer systems than did public sector organizations. Employees from the private sector reported more supportive environments where they had the opportunity to use training on the job, received feedback about their progress and had less supervisory resistance to transfer than did public sector employees. In addition, perceptions of the learning transfer systems also varied across the task of the organization.

The private sector high-tech organizations in Jordan appeared to have the most supportive transfer systems of all the organizations included in this study. This may be because high-tech organizations in Jordan are highly innovative with an emphasis on ongoing results-oriented improvement. Both of these findings support the idea that different types of organizations have different cultures that, depending on their nature, can weaken or strengthen the organizational learning transfer systems. Furthermore, these findings suggest that, because of differences in organizational culture, organizations can exhibit substantial variations in what is the best learning transfer system configuration. Thus, not all organizations should have or build the same kinds of transfer systems (Holton & Baldwin, 2003). 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.

Implications for the field of HRD

Although further research and development directed at improving the psychometric qualities of the ALTSI is warranted, this research suggests that the ALTSI may offer a considerable benefit to organizations and HRD practice and research in Jordan. 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 to open up new avenues of investigation. Also, this research represents an impor-

tant 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 ALTSI will enable HRD practitioners in Jordan to investigate the factors that influence transfer and to more fully evaluate the effectiveness of training.

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 supervisors' 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 on the job (e.g. the opportunities that the trainees were provided with to use training on the job), the attitude of the organization's workforce 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 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 known 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 that 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 and 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.

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.

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