

Reconceptualizing the Learning Transfer Conceptual Framework: Empirical Validation of a New Systemic Model

Constantine Kontoghiorghes
Cyprus International Institute of Management

The main purpose of this study was to examine the validity of a new systemic model of learning transfer and thus determine if a more holistic approach to training transfer could better explain the phenomenon. In all, this study confirmed the validity of the new systemic model and suggested that a high performance work system could indeed serve as a catalyst to successful learning transfer.

Keywords: Motivation to Learn, Motivation to Transfer, Learning Transfer

In recent years the topic of learning transfer has become very popular among HRD researchers. Aside from being a relatively new topic that provides numerous research opportunities, its popularity can also be attributed to its importance in terms of HRD practice, as well as the failure rates many ascribe to it. As it has been widely reported in the literature, training investments often fail to deliver the desired and expected outcome. It has been reported that despite the vast amounts of money organizations spend on employee training, only about 10 % to 15% of it is actually transferred back to the workplace (Baldwin & Ford, 1988; Broad & Newstrom, 1992; Burke & Baldwin, 1999; Facticeau, Dobbins, Russell, Ladd, & Kudisch, 1995). Hence, through different approaches researchers have attempted to offer better explanations of the learning transfer phenomenon and thus provide answers with regard to what factors can facilitate or impede the learning transfer process.

In general, the majority of training transfer research relies on mostly two conceptual models when explaining the learning transfer process. These two conceptual models are based on Vroom's (1964) expectancy theory and the Baldwin and Ford (1988) transfer of training model. Expectancy theory, as applied to training transfer, suggests that employees will be motivated to attend HRD programs and try to learn from them if they believe: a) their efforts will result in learning the new skills or information presented in the program; b) attending the program and learning new skills will increase their job performance; and, c) doing so will help them obtain desired outcomes or prevent unwanted outcomes (DeSimone, Werner, & Harris, 2002).

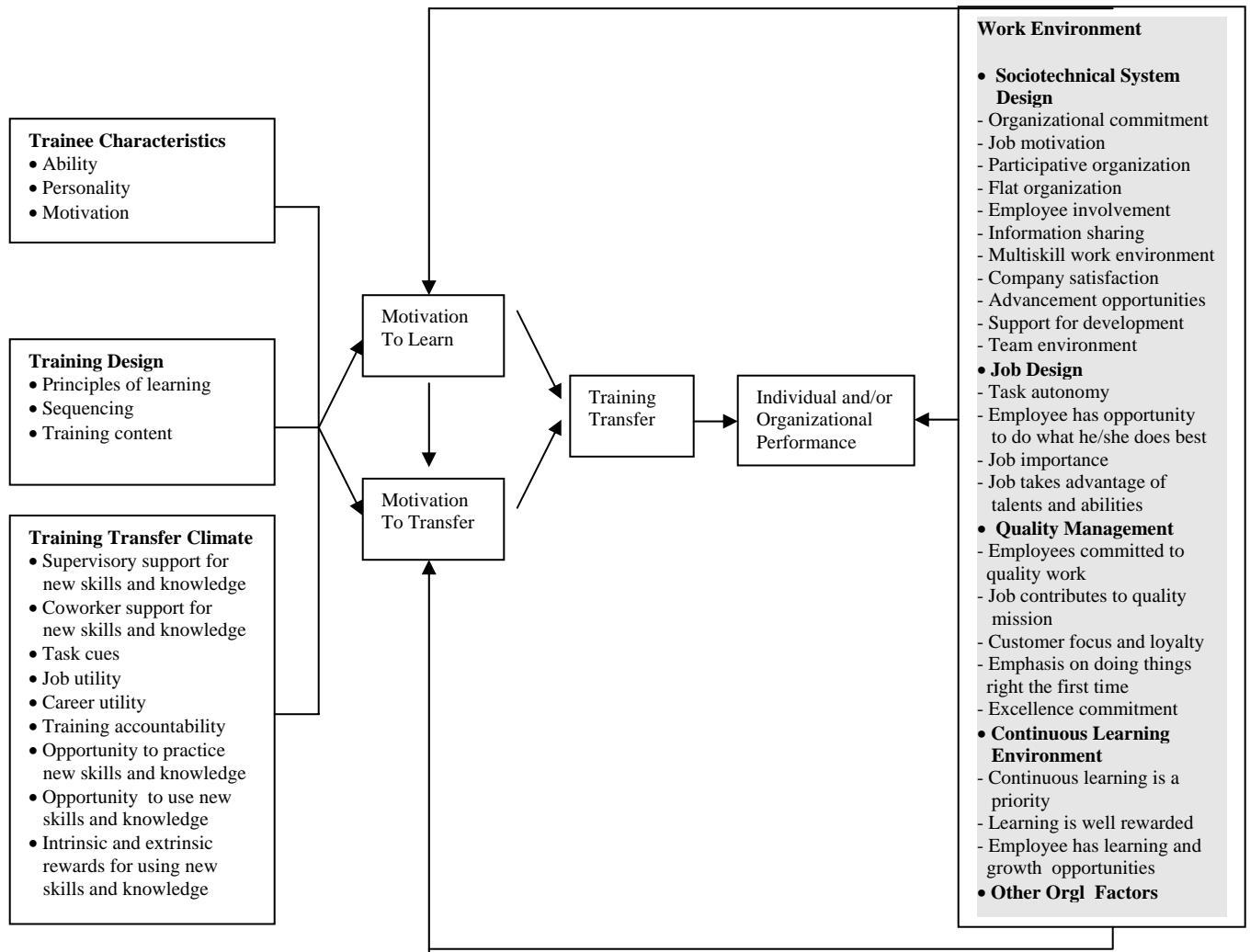
Baldwin and Ford's model asserts that the effectiveness of a training intervention is contingent upon many variables. Training design, trainee characteristics, and work-environment characteristics are considered to be the most important sets of variables. Under the training design dimension one is concerned with principles of learning, sequencing of training content, and training content. Trainee characteristics refer to such personal traits as ability, personality, and motivation. The work environment under the Baldwin and Ford model is viewed in terms of the level of support the trainee receives from his or her supervisor and coworkers when acquiring and using new skills, knowledge, and behaviors. Further, under the work environment dimension one is concerned with the extent to which the trainee has the opportunity to use and practice what he or she has learned in training.

In terms of research, the following factors have been found by researchers to facilitate the learning transfer process: self-efficacy (Ford, Quinones, Segó, & Sorra, 1992; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991); principles of learning used (Decker, 1982); ability (Robertson & Downs, 1979); supervisory and coworker support for training (Clark, Dobbins, & Ladd, 1993; Facticeau, Dobbins, Russell, Ladd, & Kudisch, 1995; Kontoghiorghes, 2001a; Tharenou, 2001); the similarity of training content with actual task performed (Axtell, Maitlis, & Yearta, 1997; Kontoghiorghes, 2002; Rouiller & Goldstein, 1993); intrinsic and extrinsic rewards for using the newly learned skills and knowledge (Rouiller & Goldstein, 1993; Kontoghiorghes, 2001a; Tracey, Tannenbaum, & Kavanagh, 1995); training accountability (Kontoghiorghes, 2002); job utility—the perceived usefulness of training for attainment of career goals (Clark et al., 1993); career utility—the perceived usefulness of training in facilitating the attainment of job goals (Clark et al., 1993); job involvement (Mathieu, Tannenbaum, Salas, 1992; Noe & Schmitt, 1986); organizational commitment (Facticeau et al., 1995; Kontoghiorghes, 2002); motivation to learn (Holton, Bates, & Ruona, 2000; Kontoghiorghes, 2002; Mathieu & Martineau, 1997; Tracey, Hinkin, Tannenbaum, & Mathieu, 2001); and, motivation to transfer (Facticeau et al., 1995; Kontoghiorghes, 2002; Ruona, Leimbach, Holton, Bates, 2002; Tannenbaum et al., 1991; Warr, Allan, & Birdi, 1999).

Schematically, the conceptual framework that has traditionally governed learning transfer research is displayed in the non-shaded area of Figure 1 (Kontoghiorghes, 2002). A close look at the diagram will reveal most factors studied under the traditional conceptual framework pertain mostly to trainee characteristics, and attributes that are directly related to the training context or training related outcomes. Furthermore, the work environment is defined

in terms of characteristics that mainly describe the training transfer climate. Hence, one can argue that the conceptual framework of traditional training transfer thinking treats training as a non-systemic phenomenon, independent of the variables that affect performance. Thus, important non-training related organizational factors that directly or indirectly influence performance, and hence the trainee's belief that training can actually result in enhanced performance, are excluded from current training transfer research designs.

Figure 1. Traditional Vs Systemic Model of Training Transfer



A recent study that attempted to investigate the learning transfer phenomenon in more holistic terms was that conducted by Kontoghiorghes (2002). What differentiated this study from the previous ones is that it took a more systemic approach toward learning transfer and incorporated in its design sociotechnical (STS) and quality management (QM) dimensions that were perceived to affect employee and organizational performance as well. In all, this study incorporated in its design variables from the following learning and organizational dimensions: training transfer climate; learning climate; management practices; employee involvement; organizational structure; communication systems; reward systems; job design; job motivation; organizational commitment; job satisfaction; innovation practices; technology management; teamwork climate; ethical work culture; quality management; and process improvement climate. Given that the ultimate goal of training is to improve performance, the underlying assumption of this study was that motivation to learn and motivation to transfer learning back to the job not only would be influenced by the immediate learning environment but by organizational variables that are perceived to also influence employee and organizational performance. In short, organizational commitment, task cues, and coworker commitment to quality work were found to be the strongest predictors of motivation to learn. Motivation

to learn, a motivating job, and being expected to use the newly learned skills and knowledge on the job were found to be the most important predictors of motivation to transfer. Other STS and QM variables that were found to significantly predict motivation to learn and/or transfer were task autonomy, participative organization, customer loyalty, excellence commitment, opportunities for advancement, and rewards for teamwork.

In summary, the Kontoghiorghes (2002) study suggested that the work environment as it relates to performance, and not necessarily to training transfer climate, could be another critical dimension for training effectiveness. The significance of the work environment can be highlighted by the fact that nine of the eleven predictors of the motivation to learn regression model, as well as five out of six for the motivation to transfer model pertained to organizational environment variables and not the training transfer or learning climate. This finding exemplified the systemic nature of training effectiveness and demonstrated the importance of the organizational climate when addressing the learning transfer issue.

The expanded conceptual framework of training transfer as derived from the results of the Kontoghiorghes (2002) study is depicted in Figure 1 via the shaded component representing the work environment. As shown, the expanded model provides a more holistic interpretation of the learning transfer process and identifies individual and organizational performance as the common link between learning transfer and work environment characteristics. In other words, this new conceptual model for learning transfer provides the answers to the questions of how and why the work environment is an important component of learning transfer. Given that the ultimate desired outcome of training interventions is to improve individual and organizational performance, the more the work environment is conducive to high performance, the more the trainee will believe that his or her learning efforts will result in an attainable and desirable outcome. This in turn will translate into higher levels of motivation to learn during training and motivation to transfer learning back to the job. A limitation of the Kontoghiorghes (2002) study was the fact that the data was collected from a single source with a predominantly salaried female population. Thus, replication of the study in different organizational settings and industries in order to determine the validity of the results and proposed model was recommended.

Purpose of the Study

The main purpose of this study was to replicate the Kontoghiorghes (2002) study in another organization and industry and thus determine the extent to which the previous findings and proposed conceptual model of learning transfer could be validated in a different setting. Furthermore, this study attempted to expand on the earlier study by also identifying the main learning transfer climate and work environment predictors of training transfer, in addition to those pertaining to motivation to learn and motivation to transfer learning back to the job.

Research Questions

This study attempted to answer the following research questions:

1. Which of the organizational and learning climate variables incorporated in the study can serve as key predictors of motivation to learn during training?
2. Which of the organizational and learning climate variables incorporated in the study can serve as key predictors of motivation to transfer learning back to the workplace?
3. Which of the organizational and learning climate variables incorporated in the study can serve as key predictors of training transfer?
4. What is the relationship between motivation to learn, motivation to transfer, and training transfer?
5. To what extent are the results of this study are in agreement with those of the Kontoghiorghes (2002) study?

Methodology

Instrument

The instrument of this study consisted of a 109 Likert item questionnaire, which was designed to assess the organization in terms of the earlier described dimensions. Many of the dimensions were assessed with scales that were described in previous literature or research (Buckingham & Curt; 1999; Hackman & Oldham, 1980; Kontoghiorghes, 2003; Kontoghiorghes, 2002; Kontoghiorghes, 2001a; Kontoghiorghes, 2001b; Kontoghiorghes & Dembeck, 2001; Lindsay & Petrick, 1997; Macy & Izumi, 1993; Pasmore, 1988; Rouiller & Goldstein, 1993; Tracey, Tannenbaum, & Kavanagh, 1995; Whitney & Pavett, 1998), while several were designed specifically for this study. The instrument utilized a six-point scale that ranged from “strongly disagree” to “strongly agree”. The first version of the questionnaire, which consisted of 99 Likert items, was originally pilot-tested on a group of 15

participants for clarity. Furthermore, a group of seven experts reviewed the instrument for content validity. Upon revision, the instrument was then administered to a group of 129 members of four different organizations. Reliability tests were conducted and the instrument was further refined and expanded to 108 items. The instrument was next administered to 505 employees of three different organizations. Upon further refinement and expansion the instrument was then used for the purposes of this study. As stated earlier, in its final format the instrument consisted of 109 Likert items.

Subjects

The sampling frame of this study consisted of 300 employees of the information technology division of a large automaker in the United States. Given that 198 of the prospective participants returned the survey, the response rate was calculated at 66%. In all, 75.1% of the respondents were males and 24.9% females. In terms of education, 21.2% had a high school degree, 20.7% an associates degree, 43% a bachelors degree, and 14.5% a masters degree. One respondent did not indicate an educational level. In terms of position held in the organization, the frequency distribution identified 2.0% of the respondents as senior management personnel, 7.7% as middle managers, 13.3% as supervisors, 41.3% as salaried professionals, 1.5% as administrative personnel, and 34.2% as contract employees.

Data Analysis

With regard to data analysis, the instrument was construct validated through a principal components analysis, which utilized a varimax rotation. The generated factors were in turn used to build stepwise regression models for motivation to learn, motivation to transfer, and training transfer. Thus, through stepwise regression analysis the most important training transfer, sociotechnical, and quality management dimensions for motivation to learn, motivation to transfer, and training transfer were identified, prioritized and described. It should be noted that only factors that had an eigenvalue of 1 or greater were retained for this study.

Results and Findings

Principal Component Analysis

The principal component analysis that utilized a varimax rotation produced a 13-factor solution that accounted for 68.9% of the total variance. The sample size utilized for the principal components analysis was 178 for which the critical value for significant loadings was calculated at $|0.38|$. Each rotated component had loadings above the critical value, with 0.383 being the lowest factor loading. In all, the factorial solution was able to differentiate between the assessed dimensions and thus construct validated the scales used. The reliabilities of the produced factors as well as the number of items comprising each factor are shown in Table 1. As shown, the majority of the factors had a coefficient alpha in the 0.73 to 0.89 range. The only exception was the Knowledge Management factor (Factor 13; coefficient alpha = .57), which was found to exhibit a relatively low reliability and was thus excluded from further analysis.

Table 1. *Reliability Coefficients of Produced Factors*

Factor	Number of Items	Coefficient Alpha
1. Job motivation and satisfaction	10	0.81
2. Open communications between departments	10	0.89
3. Rewards and recognition for new ideas and performance	9	0.88
4. Positive learning transfer climate	7	0.82
5. High performance team environment	5	0.83
6. Technology management	4	0.86
7. Risk taking and innovation driven culture	5	0.85
8. Supervisory support for personal development	3	0.77
9. Quality driven culture	6	0.80
10. Information Sharing	2	0.76
11. Internal Customer focus	4	0.75
12. Job to quality awareness	3	0.73
13. Knowledge management	2	0.57

Motivation to Learn Regression Model

As it is shown in Table 2, the stepwise regression model incorporated in its design four of the possible 12 factors as well as the organizational commitment variable. In all, the independent variables accounted for 37.4% of that total variance. At 4.8% shrinkage is considered very small thus reflecting a cross-validated regression model. Accounting 26% of the total variance the positive learning transfer factor proved to be the strongest predictor of the

dependent variable. The other independent variables selected by the regression model were awareness of how one's job contributes to the organization's quality mission, rewards and recognition for new ideas and good performance, the extent to which the employee functions in a system that promotes risk taking and innovation, and the extent to which the employee is committed to the organization.

Table 2. *Stepwise Regression Model of Motivation to Learn*^{a,b,c}

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1 Positive learning transfer climate	.510	.260	.256	.946
2 Job to quality awareness	.561	.315	.307	.913
3 Rewards and recognition for new ideas & performance	.581	.338	.327	.900
4 Risk taking and innovation driven culture	.596	.355	.340	.891
5 Organizational commitment	.611	.374	.356	.881

^a. Dependent Variable: Motivation to learn; N = 177

^b. Method: Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

^c. F = 20.5, p < 0.001

Motivation to Transfer Regression Model

As shown in Table 3, the four independent variables selected by the motivation to transfer learning back to the job regression model accounted for 46.9% of the total variance. Again, as in the case of motivation to learn, a positive learning transfer climate was found to be the strongest predictor. The remaining three variables in the model reflected the extent to which the employee found his or her job motivating and satisfying, was committed to the organization, and was motivated to learn during training. At 2.5% shrinkage is very small and indicative of a cross-validated model.

Table 3. *Stepwise Regression Model of Motivation to Transfer Learning Back to the Job*^{a,b,c}

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1 Positive learning transfer climate	.520	.271	.267	.818
2 Job motivation and satisfaction	.632	.399	.393	.744
3 Organizational commitment	.666	.443	.433	.719
4 Motivation to learn	.685	.469	.457	.703

^a. Dependent Variable: Motivation to transfer learning back to the job; N = 177

^b. Method: Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

^c. F = 38.27, p < 0.001

Training Transfer Regression Model

Table 4 depicts the stepwise regression model for the training transfer variable. As shown, the eight independent variables in the model accounted for 49% of the total variance. Once again, a positive learning transfer climate was found to be the strongest predictor in the model and accounted half of the total variance explained. The remaining independent variables in the model pertained to the various work environment dimensions assessed by the instrument. The only exception was the motivation to transfer variable, which accounted for 1.3% of the total variance. It is worth noting that although motivation to learn was included in the selection process it failed to load onto the model. In terms of shrinkage, at 4.9% it is again found to be very small thus providing cross-validation evidence for the regression model.

Table 4. *Stepwise Regression Model of Training Transfer*^{a,b,c}

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1 Positive learning transfer climate	.495	.245	.240	.955
2 Organizational commitment	.610	.373	.365	.873
3 High performance team environment	.627	.393	.383	.861
4 Job motivation and satisfaction	.645	.416	.403	.847
5 Job to quality awareness	.663	.440	.424	.832
6 Risk taking and innovation driven culture	.680	.462	.443	.818
7 Quality driven culture	.690	.477	.455	.809
8 Motivation to transfer	.700	.490	.466	.801

^a. Dependent Variable: Training transfer; $N = 177$

^b. Method: Stepwise (Criteria: Probability-of-F-to-enter $\leq .050$, Probability-of-F-to-remove $\geq .100$).

^c. $F = 20.87$, $p < 0.001$

Conclusions and Recommendations

Taking a close look at the generated regression models of the motivation to learn, motivation to transfer, and training transfer variables will reveal that the strongest predictor of each one of the dependent variables was the factor that pertained to a positive learning transfer climate. This was an expected finding, which in turn validated the importance of a positive training transfer climate when training effectiveness is desired. It is worth noticing that the training transfer factor accounted no less than 50% of the explained variance in each of the respective regression model. However, what is also worth noticing is the critical importance of the work environment, and the organizational culture in particular, when explaining the training transfer phenomenon. In all, the results of this study confirmed those of the Kontoghiorghes (2002) study and demonstrated the systemic nature of training transfer.

In terms of the individual dependent variables, aside from a positive learning transfer climate, motivation to learn was also found to be significantly related to such factors as awareness of how one's job contributes to the organization's quality mission, rewards for recognition for new ideas and performance, risk taking and innovation driven culture, as well as organizational commitment. Given that these factors have been often found by research to influence employee and organizational performance, it is safe to conclude that an employee's motivation to learn during training will not only be affected by the extent to which the work environment is conducive to learning transfer, but to high performance and commitment as well. As far as motivation to transfer learning back to the job is concerned, the results of this study confirmed once again its close association to a positive learning transfer climate and validated the findings of the Kontoghiorghes (2002) study which found it to be highly associated with job motivation and satisfaction as well as organizational commitment. Thus, it is once again safe to conclude that motivation to transfer is closely related to work environment variables that are not usually covered by typical learning transfer research.

The close association of successful training transfer with a high performance organizational culture is exemplified further by the results pertaining to the training transfer regression model. As shown in Table 4, in addition to a positive learning transfer climate and motivation to transfer, successful training transfer was found to be significantly predicted by such factors as organizational commitment, a high performance team environment, job motivation and satisfaction, awareness of how one's job contributes to the organization's quality mission, a risk taking and innovation driven culture, as well as a quality driven culture. Collectively these factors characterize a high performance work system and demonstrate that training transfer cannot be studied in isolation. Since the ultimate desired outcome of any training intervention is to improve performance, it can be expected that organizational factors that impact individual or organizational performance to also have a moderating effect on successful training transfer. Thus, exclusion of such organizational factors from training transfer research designs may lead to limited understanding of the training transfer phenomenon.

Contribution to New Knowledge in HRD

As it was stated earlier, one of the main purposes of this study was to examine the validity of a new systemic model for learning transfer. In all, the results of this study suggest that a more systemic training transfer conceptual

framework that incorporates in its design work environment dimensions, which in turn influence individual and/or organizational performance, could indeed better explain the training transfer phenomenon and training effectiveness in general. Moreover, the findings of this study support the argument made by Kontoghiorghes with regard to expectancy theory as applied to training transfer. In particular, it was argued that expectancy theory can be better utilized in the training transfer literature if it is applied at two different but nested levels: the training context level; and, the individual and/or organizational performance level. At the first level, or the training context level, one is concerned with the degree to which the trainee believes that a) his or her efforts will result in actual learning; b) learning can indeed be transferred back to job, given the realities of the training transfer climate; and c) application of new skills and knowledge is directly linked to intrinsic and extrinsic rewards. At the second level, or the employee/organizational performance level, one is concerned with the degree to which the employee believes that a) application of new skills and knowledge can indeed lead to enhanced individual and/or organizational performance, given the realities of the work environment and organizational culture; and b) enhanced individual and/or organizational performance can lead to desired and valued outcomes. In sum, this study contributes new knowledge to the field of HRD by presenting to scholars an expanded and more holistic conceptual framework of the training transfer phenomenon and providing practitioners an additional set of variables to consider when evaluating training program effectiveness.

Limitations and Future Research

The main limitation of this study is that the data was gathered from a single source. Thus, gathering more data from multiple sources in different industries will further assist in the validation of this and the previously conducted study. Moreover, the results of this study once again ascertained the close relationship between the work environment and successful learning transfer. However, not all possible organizational factors that could directly or indirectly influence motivation to learn, motivation to transfer, and learning transfer have been incorporated in this study. Hence, further research that identifies and describes additional organizational factors that could influence the learning transfer process can assist in better explaining of the learning transfer phenomenon.

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