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The Influence of Individual Characteristics and the Work Environment on Varying Levels of Training Outcomes

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Keywords

motivation, training, hierarchy, relationships, effectiveness

Disciplines

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Comments

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The Influence of Individual Characteristics and the Work Environment on Varying Levels of Training Outcomes

Developing and conducting effective training programs is no easy task. Careful consideration must be given to a seemingly infinite number of variables and issues. Fortunately there is a great deal of information in both the training literature and the instructional design and education literatures that can be used as guide and reference. Factors associated with the training context, such as appropriate sequencing and opportunities for practice, have been shown to be critical in effective training programs (for example, Gagne and Dick, 1983; Goldstein, 1991). In addition, researchers have found that variables outside the training context, such as pretraining motivation (for example, Mathieu, Tannenbaum, and Salas, 1992) may influence training preparation, performance, and transfer. Although there is still much to be learned, this attention to factors beyond content, design, and implementation has provided a much clearer understanding of the variables that may influence training effectiveness.

One area of research that has been particularly insightful is on the antecedents of training preparation and performance. Several studies have examined various individual and organizational factors that influence pretraining motivation and relevant training outcomes. For example, Quinones (1995) found that an individual's pretraining self-efficacy is significantly related to motivation to learn, and that motivation has a direct influence on knowledge and skill acquisition. Similarly, Mathieu, Tannenbaum, and Salas (1992) found that perceptions of situational constraints have a negative effect on pretraining motivation, which in turn influences training reactions and learning.

The Current Study

To further this area of research, we integrated the results from previous studies to develop and test a model that links several individual and organizational factors outside the immediate training context with two training effectiveness measures. Specifically, we examined: (1) the influence of job involvement, organizational commitment, and the work environment on pretraining self-efficacy; (2) the link between pretraining self-efficacy and pretraining motivation; (3) the influence of pretraining motivation on two levels of training reactions and learning; and (4) the hierarchical relationships between the levels of training reactions and learning. By examining the influence of individual- and aggregate-level variables on pretraining preparation, and the direct and mediated relationships among pretraining motivation and training outcomes, we will attempt to validate, clarify, and extend previous research to understand better the factors that influence training effectiveness. Figure 1 depicts the model that was examined in the current study.

Each hypothesized path is indicated by a two-number index. The first number corresponds to the endogenous variable and the second number refers to the exogenous variable. A rationale for the relationships between each of the variables in the model is presented in the following paragraphs.

Pretraining Motivation and Self-Efficacy.

Kirkpalrick (1967) argued that training reactions and learning are two criteria that may be used for evaluating the effectiveness of any training program. It is fairly well accepted that learning, which may be partially defined in terms of knowledge acquisition, can occur only when individuals have both the ability ("can do") and the desire ("will do") to acquire new knowledge (Noe, 1986; Wexley and Latham, 1991). Although a number of studies have examined the "can do" factors (for example, ability), few have considered the "will do" factors. One of those that may influence learning as well as training reaction is pretraining motivation.

Noe and Schmitt (1986) conducted one of the first studies to explore the influence of pretraining motivation. These researchers found that a composite measure, including three distinct though related dimensions of motivation (that is, effort-performance expectancies, performance-outcome expectancies, and motivation to learn), was significantly related to learning and that learning had a significant influence on a measure of job performance. These results demonstrate the importance of pretraining motivation for training effectiveness and have been replicated in subsequent research efforts (for example, Baldwin, Magjuka, and Loher, 1991; Mathieu, Tannenbaum, and Salas, 1992; Tannenbaum, Mathieu, Salas, and Cannon-Bowers, 1991).

Self-efficacy is another variable that may be important for training preparation and performance. Self-efficacy refers to an individuals belief that he or she can perform a specific task (Bandura, 1977), and it is considered to be an important part of the motivation process (for example, Locke and Latham, 1990). Pretraining self-efficacy refers to the belief that an individual can acquire knowledge and skills during training. If individuals believe they possess the capacity for learning, it is likely they will make the effort to acquire relevant knowledge and skills.

As already noted, Quinones (1995) found a significant relationship between self-efficacy and motivation to learn, operationalized as an “El” (that is, effort-performance) expectancy. In addition, the results showed that self-efficacy and pretraining motivation mediated the relationship between individual characteristics, such as attributions about past performance, and learning and behavioral outcomes of training. Other research has shown significant relationships between pretraining self-efficacy and performance- outcome expectancies (Tannenbaum, Mathieu, Salas, and Cannon-Bowers, 1991) and between self-efficacy and training performance (Gist, Schwoerer, and Rosen, 1989). For the current study we attempted to replicate Quinones’s finding that

pretraining self-efficacy will have a direct impact on motivation to learn, measured as effort-performance expectancies (P5, 4 in Figure 1). We were particularly interested to see if Quinones's results, which were based on data gathered from a student sample in a laboratory setting, could be replicated using data gathered from a field setting

Individual Influences on Pretraining Self-Efficacy.

Gist and Mitchell (1992) argued that self-efficacy may be influenced by a number of internal (that is, individual) and external (that is, situational or work-related) variables. One individual factor that may have an impact on pretraining self-efficacy is organizational commitment. Louis, Posner, and Powell (1973) found a significant relationship between perceptions of the value of training and organizational commitment. This finding suggests that the investment and effort in providing useful training programs may heighten an individual's awareness of the importance of training, as well as feelings of worth and value to the organization, which builds commitment. Thus, if individuals are committed to their organization, due in part to perceptions of the value of training, then it is likely that they will also have positive pretraining perceptions of self-efficacy Initial support for the link between organizational commitment and pretraining self-efficacy (P4,2 in Figure 1) was demonstrated by Tannenbaum, Mathieu, Salas, and Cannon-Bowers (1991). However, additional research is needed to confirm this finding.

A second individual factor that may influence pretraining self-efficacy is job involvement. Job involvement is defined as "the degree to which the job situation is central to the individual and his or her identity" (Blau, 1985, p. 34). Individuals who are highly involved in their jobs should value opportunities to participate in activities, such as training, that are designed to enhance their job situation. It follows that individuals with high job involvement will develop high levels of pretraining self-efficacy if the training is specific and relevant to their job. To date, the link

between job involvement and pretraining self-efficacy (P4,l in Figure 1) has not been explored.

It should be noted that prior research on the relationship between job involvement and pretraining motivation has been mixed. Noe and Schmitts (1986) study supported this relationship. However, the study by Mathieu, Tannenbaum, and Salas (1992) did not. One reason for their nonsignificant finding was that the trainees may not have viewed the training (a program designed to enhance proofreading skills) as particularly enriching to their jobs. Indeed, Mathieu, Tannenbaum, and Salas reasoned that "proofreading simply may not be energizing to a highly involved employee, although other types of training may be" (p. 842). Thus, job involvement may influence pretraining self-efficacy when the training is important to one's job.

Work-Related Influences on Pretraining Self-Efficacy.

Goldstein (1991) stated that the work environment may have a substantial influence on an individual's motivation to learn and subsequent performance during training. Indeed, a few studies have shown that characteristics of the work environment, such as the amount of choice afforded to individuals to attend a training program, may have a direct influence on their motivation to learn, as well as knowledge and skill acquisition (for example, Hicks and Klimoski, 1987; Baldwin, Magjuka, and Loher, 1991). The extent to which the work environment supports learning and development activities can vary' significantly across organizational settings (Tannenbaum, 1997). Thus, this variance must be taken into account in order to understand why training efforts succeed or fail. However, although research in this area has been useful, a unifying framework is needed to examine and understand the major elements of the work environment that may influence an individuals preparation for training.

For the current study, we argue that there are three related dimensions of the work environment, represented by a single construct that may influence an individuals pretraining

self-efficacy (P4, 3 in Figure 1) and subsequent performance during training. These three dimensions were derived in part from diagnostic theories of organizations (for example, Nadler and Tushman, 1980; Daft, 1983), which define work contexts in terms of social, job-related and technical, and organizational systems, as well as prior research on transfer-of- training climate (for example, Tracey, 1998). This classification scheme provides a parsimonious foundation for examining the major elements of the work environment that may influence training effectiveness and supports the model developed by Gist and Mitchell (1992) regarding the influence of situational factors on self-efficacy.

The first dimension of the work environment that may influence pretraining self-efficacy is managerial support. This dimension is part of an organization's social system. The professional and personal relationships between managers and their subordinates can send strong messages about the value and importance of training. Managers who articulate their support for training can positively influence an individual's confidence in gaining relevant knowledge and skills from professional development opportunities and thus motivate that person for training. Cohen (1990) found that trainees with supportive supervisors entered training with stronger beliefs that it would be useful. These perceptions of value may boost self-efficacy, and in turn, enhance training performance.

The second dimension of the work environment that may influence pretraining self-efficacy is job support. This dimension is part of an organizations job-related technical system. The nature of work assignments and the design of jobs can create substantial demands and pressures on employees, which can have a significant impact on the extent to which they are prepared for training. If a job does not allow for flexibility and growth, then individuals may not have much confidence that developmental opportunities will be beneficial. In a study on training

transfer, Ford, Quinones, Sego, and Sorra (1992) found that trainees had differential opportunities to perform trained tasks, which had a subsequent impact on the transfer of training. It is likely that the nature and type of job assignments may also have an influence on perceptions of pretraining self-efficacy.

The third dimension of the work environment that may influence pretraining self-efficacy is organizational support. Formal organizational systems, such as the appraisal and reward systems, may play an important role in preparing individuals for training. Baldwin and Magjuka (1991) found that when trainees understood they would be held accountable for learning, they reported greater intentions to use their training on the job. This finding suggests that the use of formal procedures to account for newly acquired knowledge and skills may “cue" individuals that training is important and that they will be expected to demonstrate their training on the job. Moreover, if individuals believe there is a link between training and rewards, then it is likely they will be enthusiastic about training and be willing to make an effort to acquire desired knowledge and skills.

As noted earlier, we argue that these three work-related supports for training represent a single underlying construct. Although these dimensions may be conceptually distinct, they are related. For example, if trainees have job assignments that are conducive to pretraining preparation, it is also likely that their supervisors will provide support and encouragement to attend training. Thus, “support” may become a generalized or universal phenomenon. Prior studies that have examined the impact of the work environment on training outcomes have collapsed multiple measures into a single scale. For example, Tracey, Tannenbaum, and Kavanagh (1995) found that four dimensions of an organizations transfer-of-training climate more accurately reflected a single climate construct. Therefore, the work environment will be considered as a single factor in the

current study.

This discussion suggests that if individuals are involved in their jobs and committed to their organization and if the work environment provides support for training, then they will believe they can benefit from training and subsequently be prepared and willing to learn. And if individuals are prepared and motivated to learn during training, then it is likely they will acquire new knowledge and skills.

In addition to assessing the influences of individual and work-related variables, another way to further our understanding of factors that influence desired training outcomes is to consider the manner in which knowledge acquisition and other effectiveness criteria have been examined. For example, traditional views of learning in the training field do not adequately address the complexities of the knowledge acquisition process. This shortcoming has some important implications for assessing training effectiveness. We will now discuss the utility of a more comprehensive explanation of training outcomes as well as the influence of pretraining motivation on different types and levels of training outcomes.

Levels of Training Outcomes.

Most of the research on training evaluation has relied on Kirkpatricks (1967) four-level typology to explain the effectiveness of training. However, although Kirkpatrick's seminal work has been quite useful, the four-level typology has been criticized for a number of deficiencies, particularly its lack of specificity. Conceptualizing and measuring training effectiveness as changes in verbal knowledge, for example, oversimplifies the complexity of the learning process. To address this issue, Kraiger, Ford, and Salas (1993) presented a comprehensive classification scheme of learning outcomes that extends Kirkpatrick's work and provides a great deal of needed clarity. Using research carried out by scholars in the instructional psychology field, Kraiger, Ford,

and Salas developed a ***construct-oriented approach*** to training evaluation that classifies learning outcomes into three major categories: skill- based or behaviorally based learning, cognitive learning, and affective learning. In each category, they identified a variety of specific outcomes that may be differentiated by level. For example, skill-based outcomes may be understood in terms of "compilation" and "automaticity." Compilation represents a basic level of behavioral learning that may be assessed in terms of performance speed or number of performance errors. Automaticity reflects a higher level of learning and can be measured in terms of interference problems and the ability to perform multiple tasks simultaneously.

The need to examine a more detailed explanation of learning outcomes is evident when we consider the impact of motivation on cognitive skill development. Cognitive skill development refers to the extent and type of knowledge acquired, as well as the organization and relationships between elements of knowledge. Most explanations of cognitive learning (for example, Anderson, 1982) argue that declarative knowledge is the most fundamental level of cognition (that is, knowledge about "what"). Once a basic cognitive understanding is achieved, then individuals may proceed to higher levels of cognitive development, such as knowledge organization and application. However, as noted by Kraiger, Ford, and Salas (1993), declarative knowledge "is a necessary but not sufficient condition for higher-order skill development" (p. 313). This contingency is important because it suggests that factors beyond the acquisition of declarative knowledge play a role in developing higher-level cognitive skills. In addition to ability, one factor may be an individuals pre-learning or pretraining motivation. Indeed, earlier research has found a direct relationship between pretraining motivation and declarative knowledge (for example, Mathieu, Tannenbaum, and Salas, 1992). Therefore, we included this link in the proposed model (P8,5 in Figure 1).

If motivation is important for acquiring fundamental levels of knowledge, then it can also be argued that an individual's willingness to make an effort is an important antecedent for gaining higher levels of understanding and cognition. In fact, one may acquire a basic understanding of a particular concept or idea without particularly high levels of motivation. However, motivation may be critical to gaining a more thorough understanding. Thus, we proposed that pretraining motivation would have a direct influence on a procedural level or application level of knowledge acquisition (P9,5 in Figure 1). We also specified a link between declarative knowledge and application-based knowledge based on prior research supporting the hierarchical relationships between levels of learning (P9,8 in Figure 1).

We also considered varying levels of reactions-based outcomes. Recent training research suggests that there are at least two different types of training reactions, affective and utility reactions. Affective reactions refer to the extent to which a trainee likes or enjoys the training, whereas utility reactions refer to the perceived applicability or usefulness of the training for subsequent job performance (Alliger, Tannenbaum, Bennett, Traver, and Shotland, 1997; Warr and Bunce, 1995). With respect to the proposed model, individuals who enter training with greater self-efficacy, and in turn, greater motivation to learn, should be more attentive and focused during training and thus more likely to enjoy the learning experience and perceive it to be valuable (P6,5 and P7,5 in Figure 1, respectively).

The final two linkages in our proposed model are based on the recent meta-analysis by Alliger, Tannenbaum, Bennett, Traver, and Shotland (1997). These researchers found that the average correlation between affective reactions and utility reactions was 0.34, suggesting that if individuals enjoy the learning experience, they may also view it as useful (P7,6 in Figure 1). In addition, they found that utility reactions were correlated with measures of immediate learning.

Thus, individuals may be more likely to learn if they perceive that training has relevance for their job and professional development (P8,7 in Figure 1). The latter result is particularly important because it supports a hierarchical link between training reactions and learning outcomes, a finding that has received little support in the research literature until quite recently.

Method

In order to understand more comprehensively how and why training efforts are successful or not successful, consideration must be given to the factors that may affect pretraining motivation and to the subsequent impact of pretraining motivation on training outcomes. This study extends prior research by examining a unique set of individual and organizational variables on pretraining self-efficacy, the influence of pretraining motivation on different levels of training reactions and knowledge acquisition, and the hierarchical relationships between levels of training outcomes.

Sample.

The study was conducted in a private organization that owns and operates about forty hotels located throughout the southern United States. Over an eight-month period, approximately 250 managers were scheduled to attend a basic managerial knowledge and skills training program. These managers held entry-level to midlevel positions in all major functional areas of the hotels, including the rooms division (for example, front desk, housekeeping, security) and food and beverages (for example, restaurant, room service, conference sendees, accounting, sales, and human resources). These trainees were all potential participants in this study. To be included in the final sample, questionnaire responses had to be received from the trainee and his or her supervisor or a managerial coworker. The final sample included 115 managerial trainees and 305 supervisors and coworkers; in total, 420 managers from ten properties participated in this study.

For the trainee sample, the average age was thirty-one, and 51 percent were female. The

trainees had been with the company an average of 2.3 years and had been in their current position an average of 1.7 years. The supervisor-coworker sample was slightly older (thirty-four years) and had worked in the organization and in their current position longer than the trainees (4.1 and 3.2 years, respectively).

Training.

The focal program for this study was a course on basic managerial knowledge and skills that was offered on a voluntary basis eleven times during the eight-month time period. This two-and-a-half-day program was conducted by the company's human resources department and focused on equal employment opportunity legislation, selection procedures, train-the- trainer, performance management, and leadership skills. Multiple training methods were used throughout the course, including discussion and demonstration, role-plays, audiovisual programs, and games.

Procedure.

Approximately one week before every training session, each trainee received a packet of surveys. They were instructed to complete one of the surveys and submit the additional surveys to their direct supervisor and two of their managerial coworkers. These surveys assessed all of the constructs described in the preceding section of this article except training outcomes. All participants were instructed to return completed surveys to the corporate office in sealed envelopes via interoffice mail. Completed surveys were then forwarded to us throughout the course of this project. Immediately after training, the trainees completed an additional survey that assessed training outcomes. These surveys were sent directly to us by the trainers.

Measures.

Response choice alternatives for all measures except knowledge acquisition ranged from 1 (strongly disagree) to 5 (strongly agree).

Job Involvement. Job involvement was measured using the twelve-item scale developed by Lodahl and Kejner (1965). An example item was, "The most important things that happen to me involve my present job."

Organizational Commitment.

Organizational commitment was assessed using Meyer and Allen's (1984) eight-item affective commitment subscale. An example item was, "I enjoy discussing my organization with people outside it."

Work Environment.

To assess the participants' perceptions of the work environment, fourteen items based on the work of Tracey, Tannenbaum, and Kavanagh (1995) were used. Five items measured the participants' perceptions of management support. An example was, "Managers give recognition and credit to those who apply new knowledge and skills to their work." Four items were used to assess job support. An example was, "Job assignments are designed to promote personal development." Five items were used to assess organizational support. An example was, "This organization rewards employees for using newly acquired knowledge and skills on the job." Scale scores were formed by aggregating responses from the trainees, their supervisor, and their coworkers. A discussion of the empirical support for combining the subscales follows.

Pretraining Self-Efficacy.

Pretraining self-efficacy was assessed using ten items that were developed by Tannenbaum, Mathieu, Salas, and Cannon-Bowers (1991). An example was, "I do well in activities where 1 have to remember lots of information."

Pretraining Motivation.

Pretraining motivation was assessed using nine items based on Vroom's (1964)

effort-performance expectancy notion. The items were developed specifically for the current study and asked participants about their willingness to make an effort during the upcoming training program. An example was, “If I can’t understand some part of [title of training program], I will try harder."

Reactions.

Reactions to training were assessed using fifteen items included in the study by Mathieu, Tannenbaum, and Salas (1992). Nine items were used to assess the participants’ utility reactions to the program. An example was, “This training will have a positive impact on my job performance.” The remaining six items assessed the participants’ affective reactions to the program. An example was, “I am pleased I attended this training.”

Learning.

Learning was assessed using scores from a posttraining test. This test contained two different types of items that were derived from a content analysis of the training materials by the authors, and then subjected to review by the trainers to ensure content relevance. Eleven multiple-choice items were developed to assess the trainees’ declarative knowledge of the essential facts and concepts of the training program. An example item was, “Communication of performance results: (a) should occur only during the formal evaluation interview; (b) should be an ongoing process; (c) should only occur at the employee’s request; (d) may lead to unrealistic expectations.” In addition, eleven short-answer and essay questions were developed to assess the trainees’ ability to apply the course information to situations that they would encounter when they returned to their jobs. An example item was, “Why is it important to get an exit interview from every person that leaves [company name]?” All items were scored by the authors. The maximum score for the declarative knowledge test was 11; the maximum score for the application-based test

was 26.

Analyses.

First, a confirmatory factor analysis was conducted to assess the extent to which the three dimensions of the work environment reflected a single construct. This analysis was conducted using LISREL, a software program that provides an efficient method for assessing the fit of a given model. Second, within-group interrater agreement indices (James, Demaree, and Wolf, 1984) were computed to examine the level of agreement among respondents about the work environment. Next, descriptive statistics were computed for all variables. Then, internal consistency reliability estimates and interscale correlations were calculated. Finally, the fit of the proposed model was again tested using LISREL, following the procedures offered by Anderson and Gerbing (1988). The primary advantage of LISREL is that it tests the relationships among all variables under consideration simultaneously. The results not only provide an indication of the strength of the relationships among the variables (in terms of standardized beta weights, similar to regression output) but also provide an indication of the correspondence between the proposed model and the observed data.

Anderson and Gerbing (1988) suggested a two-step approach to model evaluation that considers a series of nested models and sequential chi-square difference tests. This approach provides an opportunity to determine if alternative models may be supported. In the current study, step one involved an assessment of the hypothesized model. This step provides an initial test of the posited relationships. For step two, we analyzed a null latent model in which all parameters within the proposed model were constrained (that is, no relationships exist among the variables under consideration) and then tested the “next most likely” constrained and unconstrained alternatives. The subsequent steps provide an indication of whether the initial model should be

reconceptualized.

For the constrained model, the path between utility reactions and declarative knowledge was eliminated. It can be argued that individuals may view training to be irrelevant to their jobs and yet still acquire new knowledge and skills. This logic is similar to the unequivocal findings on the relationship between job satisfaction and job performance (see Cranny, Smith, and Stone, 1992), which show that individuals can achieve high levels of performance without being satisfied with their jobs (and vice versa).

For the unconstrained model, a path between job involvement and pretraining motivation was specified. As already noted, individuals who are involved in their jobs should look forward to opportunities to enhance their professional growth and development. Thus, in addition to having increased pretraining self-efficacy, highly involved individuals may be quite willing to make an effort during training programs that may help advance their career.

Four indexes were used to evaluate the fit of the models: the goodness-of- fit index (GFI), the confirmatory fit index (CFI), the incremental fit index (IFI), and the root mean square residual (RMSR). The GFI indicates the relative amount of covariance among the latent variables that are collectively accounted for by a hypothesized model. The CFI is a normed fit index of a model's goodness of fit with the observed sample covariance matrix. The IFI also provides an indication of the proportion of total covariance accounted for by a model, and can be used to indicate the relative change in fit between two or more theoretical models. Finally, the RMSR provides an indicator of the difference between the observed and predicted correlation matrices.

It should be noted that chi-square values for the hypothesized and nested models were also computed. However, this statistic will not be used to assess model fit because it is quite sensitive to sample size. Rather, it will be used to assess whether the nested models are more viable than the

hypothesized model (that is, using a chi-square difference test, discussed in the following section).

Results

To determine whether the three dimensions of the work environment should be collapsed into a single scale, a confirmatory factor analysis using LISREL 8.03 (Joreskog and Sorbom, 1993) was conducted. Group-level scale (mean) scores were used as indicators of an underlying work environment construct. The fit of the one-factor model was evaluated using the sample variance-covariance matrix as input and a maximum likelihood solution. The overall chi-square was statistically significant ($x^2 = 12.19$; $df = 1$; $p < .01$), the GFI was 0.93, the CFI was 0.90, the IF1 was 0.90, and the RMSR was 0.05. Although the chi-square was statistically significant, all other indices support a one-factor model. Therefore, all further analyses utilized a single work environment scale.

To evaluate support for using an aggregate-level of analysis for the work environment scale, the within-group inter-rater agreement index developed by James, Demaree, and Wolf (1984) was used. The average index across all groups (N = 115) was 0.74, which demonstrates a moderately high degree of agreement on the nature of the work environment and supports the aggregate nature of this construct.

Means, standard deviations, internal consistency reliability estimates, and correlations among all measures are reported in Table 1.

Table 1 shows that job involvement, organizational commitment, and the aggregate measure of the work environment were significantly correlated with pretraining self-efficacy (0.32 to 0.34, $p < .05$) and that self-efficacy was significantly correlated with pretraining motivation (0.51, $p < .05$). Table 1 also shows that pretraining motivation was significantly correlated with both reaction measures (0.46 for affective and 0.44 for utility; $p < .05$) and the application-based

test score (0.63, $p < .05$). However, the correlation between pretraining motivation and the declarative knowledge test score was not significant (-0.14, $p > .05$).

To test the fit of the hypothesized model, a structural equations analysis was conducted using TISREL 8.03 (Joreskog and Sorbom, 1993). As before, model fit was evaluated using the sample variance-covariance matrix and a maximum likelihood solution. The initial results showed that the overall chi-square was statistically significant ($x^2 = 77.25$; $df = 22$; $p < .01$), the GFI was 0.88, the CFI was 0.83, the IF1 was 0.83, and the RMSR was 0.09. In addition, all path coefficients except one (organizational commitment to pretraining self-efficacy) were significant at $p < .05$. Although the fit indices were below the conventionally accepted value of 0.90 (see Bollen, 1989), the results demonstrated moderate support for the model. In addition, a chi- square difference test showed a significantly better fit for the hypothesized model compared with the latent null model ($p < .05$). The results for the hypothesized model are depicted in Figure 2.

The fit of the nested models was also evaluated using the sample variance- covariance matrix and a maximum likelihood solution. For the next most likely constrained model, the overall chi-square was statistically significant ($X^2 = 80.62$; $df = 23$; $p < .01$), the GFI was 0.88, the CFI was 0.82, the IFI was 0.83, and the RMSR was 0.09. All but two path coefficients (organizational commitment to pre-training self-efficacy and pretraining motivation to declarative knowledge) were significant at $p < .05$, and a chi-square difference test demonstrated a significantly worse fit for the constrained model compared with the hypothesized model ($p < .05$).

For the next most likely unconstrained model the overall chi-square was statistically significant ($x^2 = 63.08$; $df = 21$; $p < .01$), the GFI was 0.90, the CFI was 0.87, the IFI was 0.87, and the RMSR was 0.07. All path coefficients except one (organizational commitment to pretraining self-efficacy) were significant at $p < .05$, and a chi-square difference test demonstrated a

significantly better fit for the unconstrained model compared with the hypothesized model ($p < .05$).

One additional model was also examined. Modification indices from the analysis of the unconstrained model supported the inclusion of a path between the work environment and pretraining motivation. We initially hypothesized that pretraining self-efficacy would mediate the relationship between perceptions of the work environment and pretraining motivation. It can also be argued that the work environment may have a direct influence on an individual's motivation to learn. As noted earlier, there is some empirical support for this contention (for example, Baldwin and Magjuka, 1991), although the measures used in prior research are quite different from the one used in the current study.

For the revised model, the overall chi-square was statistically significant ($X^2 = 58.38$; $df = 20$; $p < .01$), the GFI was 0.91, the CFI was 0.88, the IFI was 0.89, and the RMSR was 0.06. All path coefficients except one were significant at $p < .05$, and a chi-square difference test demonstrated a significantly better fit for the revised model compared with the unconstrained model *($p < .05$).* Although these results are encouraging, we should emphasize that this analysis was exploratory and provides support for one of several potential models that could account for the relationships between the variables under consideration.

Figure 3 presents the results for the revised model.

Table 2 presents a summary of the fit indices from each of the analyses.

Discussion

Although training design, content, and implementation are vitally important to effective training, it is evident that factors outside the training context must also be considered. This study provided an opportunity to validate, integrate, and extend prior research that has examined the

influence of individual and organizational characteristics on training effectiveness criteria. There are several noteworthy findings from this study. First, our results provided insights into the process by which individuals become prepared for training. Our findings are consistent with Noe and Schmitts (1986) study that showed a significant relationship between job involvement and motivation to learn during training. However, the results also indicated that job involvement is important for developing pretraining self-efficacy—a key antecedent of pretraining motivation. That is, a focus on tasks and responsibilities and high levels of care and concern for exceeding performance demands shape an individual's confidence to learn as well as willingness to learn. Therefore, the process by which individuals become prepared for training appears to be a more complex phenomenon than previously believed.

Another important finding was the significant relationship between the work environment measure and the pretraining self-efficacy and pretraining motivation measures. As noted earlier, prior research has linked elements of the work environment to training-related outcomes (for example, Tracey, Tannenbaum, and Kavanagh, 1995). The current results provide additional evidence that work settings have a broad influence on training and development activities, including an individual's preparation for training. Moreover, it appears that models of training effectiveness must incorporate a multilevel framework, such as the meso-organizational approach advocated by House and Rousseau and colleagues (for example, House, Rousseau, and Thomas-Hunt, 1991; Rousseau and House, 1994). This perspective considers the influence of situational conditions on individual and group processes and incorporates a multilevel approach to inquiry and understanding. Adopting this perspective may be quite beneficial for developing a more integrative understanding of the variables that affect training preparation, performance, and transfer.

Finally, also important was the support for the hierarchical relationships between the varying levels of training outcomes. The results from the confirmatory factor analysis of the proposed model showed that affective reactions were significantly related to utility reactions, utility reactions were significantly related to declarative knowledge, and declarative knowledge was significantly related to application-level knowledge. It appears that prior research, which has shown nonsignificant findings between reactions and learning criteria, can now be explained by a lack of consideration for different levels or types of effectiveness criteria. This result is consistent with Alliger, Tannenbaum, Bennett, Traver, and Shotlands (1997) meta-analysis and supports Kirkpatrick's (1967) original propositions on the hierarchical nature of the relationships among the four primary training criteria. Reactions to training and learning play a critical role in the training process. Positive reactions may influence an individual's willingness to use newly acquired knowledge and to attend future training programs, and learning is a fundamental requirement for transferring training to the workplace. However, the reliance on unidimensional measures of training reactions and learning does not accurately account for the multifaceted nature of these outcomes. This study demonstrated that multiple dimensions of relevant training outcomes should be considered in order to gain a more complete understanding of training effectiveness.

We should emphasize that those in the instructional psychology field have advocated for the use of a multidimensional perspective on learning for many years. Yet training researchers have only begun to consider the benefits of a multidimensional perspective on learning outcomes. Kraiger, Ford, and Salas (1993) noted that ''traditionally, knowledge acquisition in the training domain has been assessed by achievement tests administered at the end of training. Trainees may be presented with a series of questions in either multiple choice or true-false format and are

required to indicate whether each stimulus exists in memory" (p. 313). Although this type of assessment may be appropriate for certain types of training (for example, policy and procedure training), it fails to capture the extent to which individuals can apply their newly acquired information. Researchers must carefully consider the types of measures that are used when evaluating knowledge acquisition, because instruments that assess only the fundamental level may not provide a clear indication of the extent of learning.

Implications for Future Research.

One of the salient implications of this study is that personnel and process-oriented changes in the workplace may be needed to enhance training effectiveness. For example, attention should be given to the design and structure of jobs so that individuals have the necessary time and opportunity to prepare for training, as well as to use new knowledge and skills when they return to the work setting. In addition, there may be a need to craft specific policies on training that communicate and reinforce their importance. Consideration should also be given to the manner in which the work environment may influence informal (that is, on-the-job), team, and self-directed learning efforts. Task-, social-, and organization-related variables may have a profound impact on these types of learning contexts and should be fully understood before implementing training programs.

This study also provided some insights that may facilitate future research on factors that influence training effectiveness. Future research should examine the impact of pretraining motivation on other types and levels of effectiveness criteria, such as skill-based or behaviorally based outcomes. The impact of additional individual and organizational characteristics on pretraining self-efficacy and pretraining motivation should also be considered. For example, the strategies that individuals use to prepare for training, as well as to transfer training to the

workplace, should be examined. Warr and Bunce (1995) found that use of analytical learning strategies during training was significantly related to learning scores. Thus, differences in "preparation strategies"—analytical, behavioral, or otherwise—may have differential effects on pretraining self-efficacy and pretraining motivation. Finally, as suggested earlier, consideration should be given to measurement requirements that are associated with the assessment of multilevel models of training effectiveness. For example, it is critical to demonstrate empirical support for aggregating data that are used to represent group- or organization-level constructs. In addition, hierarchical linear modeling and related assessment techniques may be quite useful in addressing the challenges of multilevel research on training effectiveness.

Limitations.

Although this study led to some important results, several limitations should be noted. First, inferences of causality should be interpreted cautiously given the correlational design of this study. Flowever, because the data were collected at two different time periods, there is some support for the predictive relationship between the pretraining variables and training outcomes. It should also be noted that the relationships between job involvement, work commitment, pretraining self-efficacy and pretraining motivation may be somewhat inflated due to single-source bias.

Second, although the data were collected from managers across ten different hotel properties, the generalizability of the results may be somewhat limited because the managers were employees of a single corporation. In addition, they were fairly young and had relatively limited job tenure. The findings should be replicated in other companies that employ different types of training programs and trainees.

Finally, a lack of significant findings between the declarative knowledge measure and

other variables included in the study is troublesome. A Kolmogorov-Smirnov test demonstrated that the variance for this measure was not normally distributed. Attempts to remedy this problem by transforming the raw data (for example, log linear, square root, and so on) were unsuccessful. In addition, the mean score for this measure was high (83 percent), indicating that the test was quite easy. Therefore, the results on declarative learning variable may be misleading and should be reexamined in future research.

Conclusion

Training has been, and will continue to be, a valuable tool for managing many current and future challenges. To enhance the return on training investments it is crucial to look beyond the classroom in order to understand how and why training works or does not work. This study highlighted the importance of several individual and work-related factors for training preparation and demonstrated the differential effects of motivation on varying levels of training reactions and knowledge acquisition. Although additional research is required, this study takes a step toward the development of a more comprehensive understanding of training effectiveness.

Table 1. Means, standard deviations, internal consistency reliabilities, and correlations among all variables.

	Mean	*SD*	*α*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Work environment	4.19	.49	.86								
2. Job involvement	3.26	.66	.90	.24							
3. Organization commitment	3.76	.66	.75	.33	.39						
4. Pretraining self-efficacy	4.17	.55	.86	.33	.34	.32					
5. Pretraining motivation	4.15	.56	.87	.36	.45	.37	.51				
6. Affective reactions	4.66	.44	.85	.35	.09	.26	.23	.46			
7. Utility reactions	4.25	.49	.87	.29	.20	.24	.41	.44	.70		
8. Declarative knowledge	9.17	1.38	—	.14	-.02	.19	.06	-.14	-.15	.09	
9. Application knowledge	15.26	2.54	—	.29	.23	.24	.44	.63	.40	.44	.16

Note: For correlations .23 and above, $p < .05$

Table 2. Fit indices from analyses of nested models.

Models	***df***	X^2	*GFI*	*CFI*	*IFI*	RMSR
1. Hypothesized	21	77.25	.88	.83	.83	.09
2. Constrained	22	80.62	.88	.82	.83	.09
3. Unconstrained	23	63.08	.90	.87	.87	.07
4. Latent null	33	320.86	.57	.10	.11	.25
5. Revised model	20	58.38	.91	.88	.89	.06

Note: N = 115; all chi-square values p < .05. GFl = goodness-of-fit index, CFl = confirmatory fit index, IFI = incremental fit index, RMSR = root mean square residual.

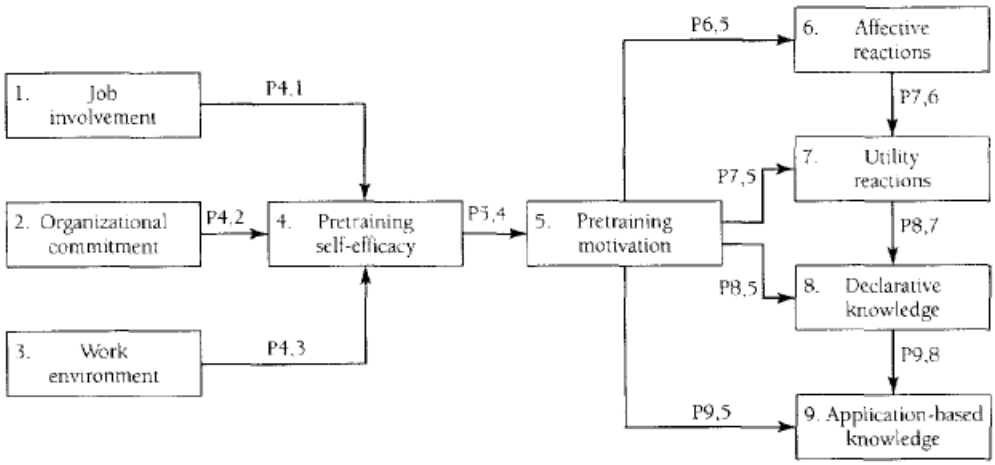
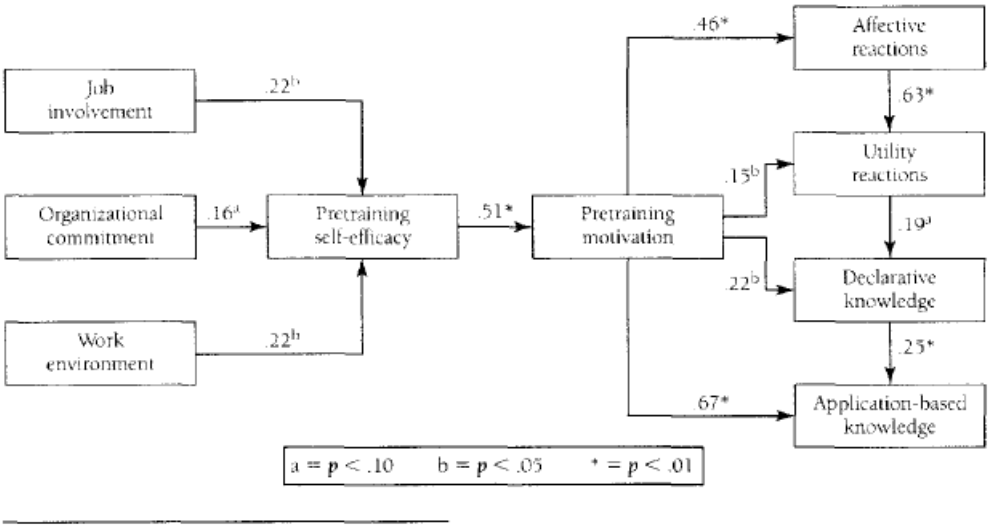
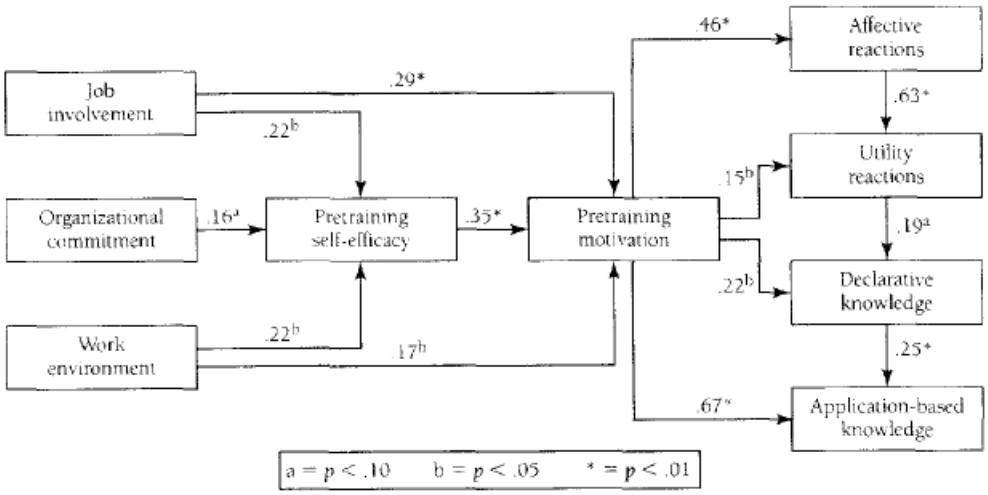


Figure 1. Hypothesized model.



Note: a = $p < .10$; b = $p < .05$, * = $p < .01$.

Figure 2. Results from hypothesized model.



Note: a = $p < .10$; b = $p < .05$; * = $p < .01$.

Figure 3. Results from revised model.

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