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TRANSFER OF TRAINING:
AN INVESTIGATION WITHIN A TEAM WORK ENVIRONMENT

By
Lee E. Weyant

A DISSERTATION

Submitted to
Wayne Huizenga Graduate School of Business and Entrepreneurship
Nova Southeastern University

in partial fulfillment of the requirements
for the degree of

DOCTOR OF BUSINESS ADMINISTRATION
HUMAN RESOURCES MANAGEMENT

2000

A Dissertation
entitled

TRANSFER OF TRAINING:
AN INVESTIGATION WITHIN A TEAM WORK ENVIRONMENT

By

Lee E. Weyant

We hereby certify that this Dissertation submitted by Lee E. Weyant conforms to acceptable standards, and as such is fully adequate in scope and quality. It is therefore approved as the fulfillment of the Dissertation requirements for the degree of Doctor of Business Administration, Human Resources Management.

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Nova Southeastern University
2000

CERTIFICATION STATEMENT

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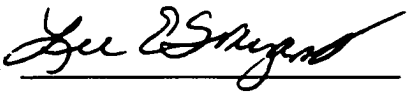
Signed 

Lee E. Weyant

ABSTRACT

TRANSFER OF TRAINING:
AN INVESTIGATION WITHIN A TEAM WORK ENVIRONMENT

by

Lee E. Weyant

American businesses spend billions of dollars annually to train their employees in new knowledge, skills, and attitudes. Such financial investments require a reasonable rate of return as measured by the amount of training transferred to the workplace. Additionally, businesses are adopting teams as the organizational paradigm to enhance organizational effectiveness. Integrating Noe's (1986) and Facteau et al.'s (1995) conceptualization of training effectiveness with the sociotechnical systems theory (STS), this study investigates the transfer of training within a team work environment. Specifically, two research questions posit relationships between an individual's attitude toward training, the sociotechnical attributes of the team work environment, his/her motivation to learn, and his/her perceived transfer of training.

Using a questionnaire, team members (N=128) from a specific Northeastern United States location of a national retailer serve as the target population. The variables of interest are statistically tested using factor analysis, Pearson correlational analysis, and multiple regression analysis. Five of seven null hypotheses are rejected. The two hypotheses failing to be rejected involve the relationship of the technical attributes of the team work environment to an individual's motivation to learn and his/her perceived transfer of training. The other hypotheses show positive relationships between an individual's attitude toward training, the social structure of teams, his/her motivation to learn and his/her perceived transfer of training.

Results of this study are consistent with previous research (Facteau et al., 1995). These findings represent several implications for HRD professionals involving instructional design and organizational policies. Finally, this study recommends future research activities involving the individual components underlying the factors of a team work environment and the self-directed nature of adults on the transfer process.

ACKNOWLEDGEMENTS

The accomplishment of this endeavor is anything but an individualistic activity. Throughout, I have received enormous support, encouragement, and critique. To those individuals I say thank you.

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I wish to thank the faculty and staff of Nova Southeastern University for their invaluable support and encouragement during my doctoral studies.

Finally, but not least, I wish to thank my family for their endurance and patience. Especially, I wish to thank my partner in life, Charlotte Weyant. I dedicate this dissertation to her for the tremendous strength she has given me to accomplish such an undertaking.

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CHAPTER I

INTRODUCTION

Background of the Problem

Training involves learning skills in one area for application in another environment (Broad & Newstrom, 1992; Ellis, 1965; Goldstein, 1993; Huczynski & Lewis, 1980). The literature considers an individual's motivation as an important factor in the learning process (Facteau, Dobbins, Russell, Ladd, & Kudish, 1995; Fisher, Schoenfeldt, & Shaw, 1996; Goldstein, 1993; Mathieu, Tannenbaum, & Salas, 1992; Noe, 1986; Noe & Schmitt, 1986; Quinones, 1995). The ability to transfer training from the learning environment to the work environment is just as important since this is where companies can gain a competitive advantage through the use of intellectual capital.

Broad & Newstrom (1992, p. 6) defines transfer of training as "the effective and continuing application, by trainees to their jobs, of the knowledge and skills gained in training." The problem for American businesses is to ensure that the training

an individual receives is applied to the job. With companies spending nearly $61 billion per year on training and receiving about a 10 percent return on this investment in terms of behavioral change on the job, companies face a problem of understanding the factors affecting the transfer of training (Baldwin & Ford, 1988; Facteau et al., 1995; Goldstein, 1993; "Industry Report", 1998; Noe, 1986; Noe & Schmitt, 1986).

Understanding these factors is important because today's managers face a myriad of challenges impacting the effectiveness of their organizations. These challenges have occurred because of changes in workforce demographics, technology, and global competition (Bassi & Van Buren, 1998; Noe, Hollenbeck, Gerhart, & Wright, 1994; Weisbord, 1987). For example, Table 1 illustrates how the demographic makeup of the American workforce has shifted with ever increasing numbers of women and minorities in the workforce from 1982 to 1993. Furthermore, the Bureau of Labor Statistics, as cited by Fullerton (1995) projects that women as a percent of the civilian workforce will continue to be greater than men from 1994 to 2005. Similarly, minorities as a percent of the civilian workforce will continue to be greater than whites during the same projected decade.

Table 1

Civilian labor force by gender and race, 1982 to 1993

Demographics	1982	1993	Percent Increase
Men	62,450	69,633	11.5
Women	47,755	58,407	22.3
White	96,143	109,359	13.7
Black	11,331	13,943	23.1
Hispanic	6,734	10,377	54.1
Asian	2,729	4,742	73.8

[Numbers in thousands]

Note. Adapted from "The 2005 Labor Force: Growing, But Slowly," by H. N. Fullerton, Jr., 1995, November, Monthly Labor Review, 118, p. 30.

Not only has the American workforce become more diverse, the workforce is growing older because of the baby boom that occurred immediately after WWII and again in the mid-1970's. According to the Bureau of Labor Statistics, as cited by Fullerton (1995), the 25 to 54 age group increased 31% from 1982 to 1993. On the other hand, the Bureau of Labor Statistics projects that this age group will increase by nearly 8% from 1994 to 2005 while the 55 and older age group will increase by 42% (Fullerton, 1995).

Demographic shifts are not the only change facing corporate America. The American economy is shifting from an era of physical labor and industrial strength to an era where knowledge, education, and training become competitive advantages (Bassi &

Van Buren, 1998). This increased technology requires new skills and training. For example, from 1981 to 1993 the number of workers receiving formal training increased by 45% according to Bassi, Benson, & Cheney (1996). Similarly, a 1997 American Society for Training and Development (ASTD) study of 540 organizations reports 65 percent of these companies had increased training efforts from 1992 to 1994 (Bassi & Van Buren, 1998). The general impact of information technology has been to reduce supervisory control, empower employees, decimate entire industries and occupations, and require a highly trained workforce (Goldstein, 1989; Freedman, 1994; Schein, 1972).

Finally, America's dominance in the world marketplace has been challenged from several sources. First, the economies of Japan and Europe ravaged by the Second World War have become dynamic competitors in the global economy. Additionally, Third World and Eastern European nations are adapting the free-market economic model (Alkhafaji, 1995). Finally, the economic growth of China, the Pacific Rim nations, and South American nations will approach double-digit rates during the next decade ("Globalization", 1996).

Turbulent times require different organizational approaches. For example, researchers from the Tavistock Institute in London recognized this nearly 50 years ago during their studies of the British coal mining industry. The Tavistock researchers noticed

that productivity improved in those mining operations where the work layout complemented the contributions of the workers. Specifically, the researchers observed gains where the work was designed around small groups of miners working in teams with autonomy over the basic work procedures (Pasmore, 1995). From this study and others involving the weaving industry in India, the Tavistock researchers combined the views of Lewin's group dynamics with the concepts of systems theory to conceptualize the organization as a sociotechnical system (Katz & Kahn, 1978; Pasmore & Sherwood, 1978; Weisbord, 1987). That is, Sociotechnical Systems Theory (STS) follows "an open systems approach that seeks to optimize the relationship between the social and technical systems of an organization" (Beekun, 1989, p. 877-878). Therefore, under an STS perspective the needs of the employees (social system) blend with the tools and techniques (technical system) of the organization (Cummings, 1978/1976; Fox, 1995; Katz & Kahn, 1978; Weisbord, 1987).

Companies adopting an STS perspective follow several guiding principles. One of these principles, minimum critical specification, has led to the idea of work group autonomy (Beekun, 1989; Cherns, 1976). Under this concept, autonomous work groups "have day-to-day responsibility for managing themselves and the work they do with a minimum of direct supervision" (Fisher, 1993, p. 15). This concept has manifested

itself under a variety of names such as Autonomous Work Groups (AWGs), Self-Directed Work Teams (SDWTs), and Teams. According to Training magazine (1997, October), nearly half of all U. S. organizations with over 100 employees use teams.

Another STS principle, multifunctionality, allows the various components of the organization to perform more than one function within the organization (Cherns, 1976). This principle leads to a multiskilled workforce competing in the world economy based on its ability to create knowledge, not the ability to amass large capital expenditures for the factors of production (Sorohan, 1993). Creating and sustaining a multiskilled workforce requires the organization to concentrate part of its limited resources on employee development and training.

Statement of the Problem

The compelling forces of change increase the demand for effective employee training. Broad & Newstrom (1992) define training as the development of "new skills and knowledge that are expected to be applied immediately upon (or within a short time after) arrival or return to the job" (p. 5). In 1998, American companies reportedly spend nearly $61 billion in formal company sponsored employee training ("Industry Report", 1998). This expenditure represents a continued increase in yearly training.

As a percent of payroll, training expenditures have risen from 2.1 percent in 1995 to 2.27 percent in 1996 (Bassi & Van Buren, 1998). Furthermore, Benson (1997), citing a Bureau of Labor Statistics survey, states that informal, just-in-time employee training approaches $48 billion per year. Past studies report about 10 percent of these expenditures provide behavioral changes on the job (Baldwin & Ford, 1988; Facteau, Dobbins, Russell, Ladd, & Kudish, 1995). Because of this low return on investment, organizations seek an understanding of the phenomena that will enhance the application of the skills learned in training to the workplace. Broad & Newstrom (1992) define this transfer of training as "the effective and continuing application by trainees to their jobs, of the knowledge and skills gained in training both on and off the job" (p. 6). This definition suggests organizations need to develop a work environment that encourages individuals to apply their newly acquired skills.

Theoretical Framework

Organizational issues, like the transfer of training, require the blending of various organizational behavioral theories to explain the many relationships. Over a decade ago, Noe (1986) developed a conceptual framework for understanding the transfer of training by combining the Expectancy theory with

Kirkpatrick's Hierarchical Training Evaluation model. Noe hypothesized trainability as "a function of three factors: ability, motivation, and perceptions of the work environment [Trainability = f(Ability, Motivation, Work Environment Perceptions)]" (p. 737). Noe viewed a multidimensional work environment consisting of a social and task context directly influencing an individual's motivation to learn, motivation to transfer the training to the job, and performance (p. 745).

Facteau et al. (1995) following Noe's premise also noted the importance of the work environment on training transfer. From their study, Facteau et al. found support for their hypotheses that the environmental support variables were related to an individual's pretraining motivation and the individual's perceived transfer of training. Additionally, their research supported the view that the environment is multidimensional consisting of a task and social component. Finally, Facteau et al. suggest that their findings should be explored from the perspective of self-managed work teams.

The present research follows the theoretical base established by Noe and extended by Facteau et al. Specifically, the work environment is conceptualized as an antecedent to training motivation and perceived transferred training behavior (Figure 1).

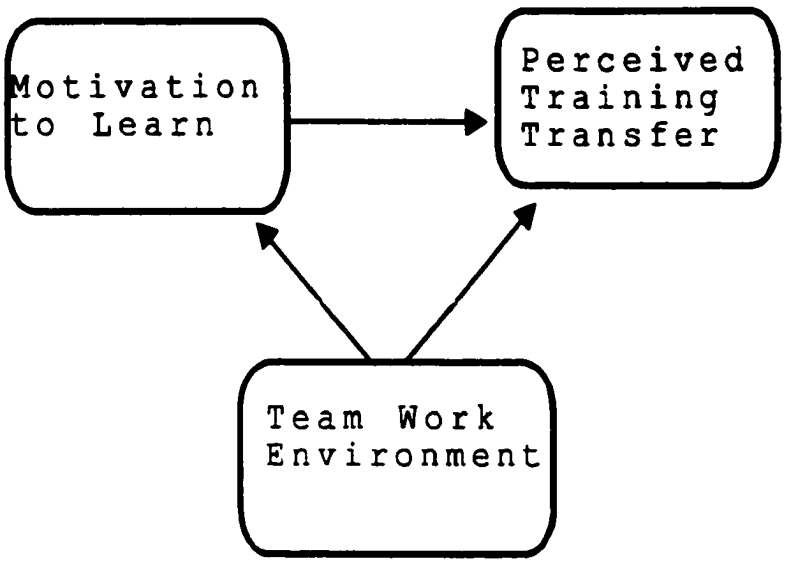

Figure 1. Framework for Transfer of Training

The multidimensional work environment conceptualized by Noe and Facteau et al. clearly parallels Sociotechnical Systems Theory. Incorporating a sociotechnical work environment is congruent with organizational change initiatives such as self-directed work teams to meet the numerous challenges faced by American businesses. Facteau et al. (1995) believe organizational structures such as autonomous work groups, or teams, should be studied for effectiveness in training transfer. Specifically, their study demonstrates the importance of a favorable work environment consisting of a social support from different organizational constituents and a task component. (Facteau et al., 1995).

STS traces its lineage from Systems Theory, a theory whose

premise is an understanding of the interrelationships among component parts and its environment (Kast & Rosenzweig, 1970; Katz & Kahn, 1970; Tilles, 1967; von Bertalanffy, 1968). Figure 2 shows the basic components of Systems Theory.

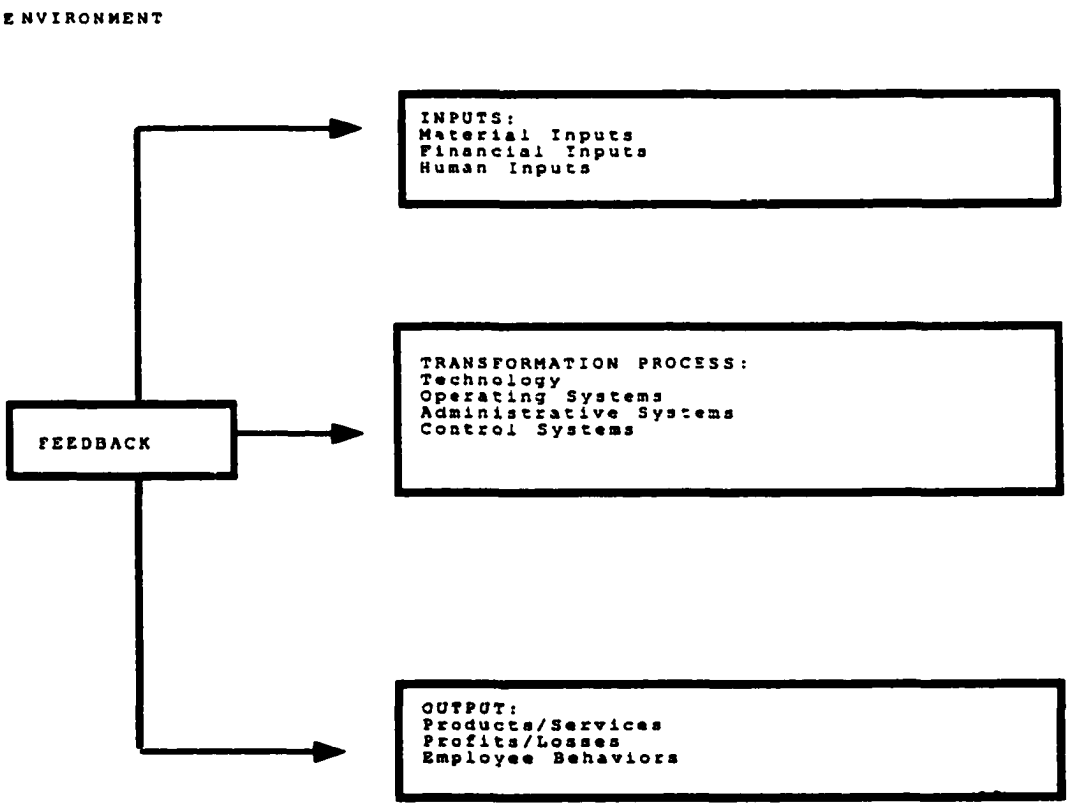

Figure 2. Systems Theory (Adapted from Management (5th ed.) by R. W. Griffin, 1996, Boston, MA: Houghton Mifflin; Organization and Management: A Systems Approach by F. E. Kast & J. E. Rosenzweig, 1970, New York, NY: McGraw-Hill.

Purpose of the Study

The purpose of this study is three-fold. First, this study provides an integrated model by combining Noe's conceptualization of training effectiveness with sociotechnical systems theory. Specifically, Noe and colleagues (Facteau et. al., 1995; Mathieu et al., 1992; Noe & Schmitt, 1986) and subsequent researchers of his model, describe the work environment as a multidimensional concept consisting of social and task components. Accordingly, Noe and colleagues describe the social component as support from others within the workplace including recognition and feedback. Additionally, this group of researchers describes the task component from the perspective of available tools, supplies, and financial support. Sociotechnical systems theory describes these two components in similar fashion (Cherns, 1976; Cummings, 1978a, 1978b; Katz & Kahn, 1978; Kelly, 1978; Pasmore, Francis, Haldeman, & Shani, 1982). The substantive difference between these lines of research lies in the relationship of the components. That is, Noe and colleagues treat the social and task components of the work environment as mutually exclusive entities. Sociotechnical systems theory considers these two components as independent but correlative (Cummings, 1978a, 1978b). Figure 3 illustrates the difference in perspective between the traditional work environment and the sociotechnical

work environment.

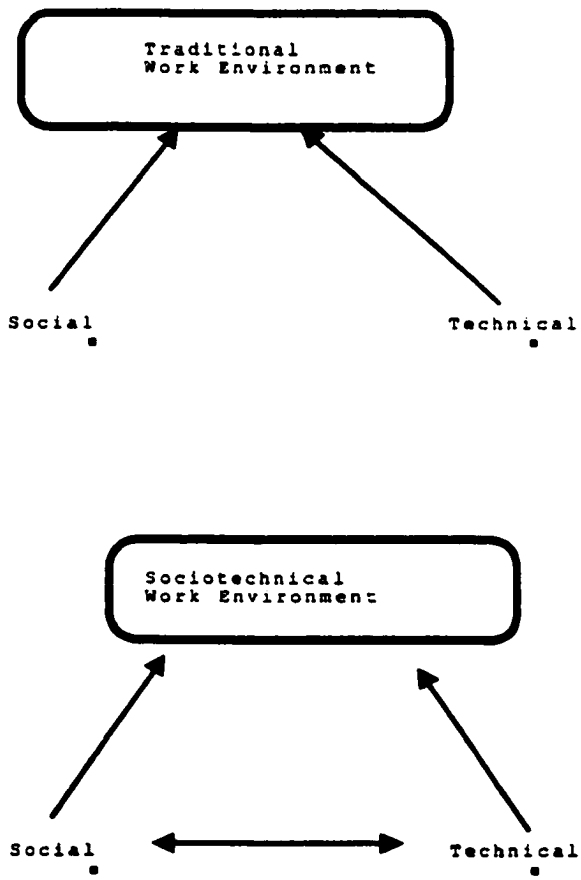

Figure 3. Traditional Work Environment versus Sociotechnical Work Environment

Second, this study investigates the sociotechnically designed work environment on the transference of training by individuals within the workplace. Sociotechnically designed work environments are known by several names including autonomous work groups, self-managing groups, self-directed work teams, or simply teams (Cohen, Ledford, & Spreitzer, 1996; Cummings, 1978a, 1978b; Fisher, 1993; Guzzo & Dickson, 1986; Kelly, 1978; Pasmore et al., 1982; Wall, Kemp, Jackson, & Clegg, 1986). The present research study addresses the work environment as an antecedent to two major factors of Noe's training effectiveness model. The team work environment is viewed as an antecedent to an individual's motivation to learn new skills during a training activity. Additionally, the team work environment and the individual's motivation to learn are viewed as an antecedent to an individual's perceived transfer of new skills to the job. The theoretical framework for this line of research in traditionally managed organizations is provided by Noe and his colleagues. Likewise, the theoretical framework for considering the influence of groups on organizational effectiveness is provided by a variety of researchers including Cohen et al. (1996).

Third, the present study considers an individual's attitudes toward training as an antecedent to their motivation to learn. This premise follows the work of Noe and colleagues along similar

theoretical lines. For instance, research suggests four dimensions of individual attitudes are important to an individual's motivation to learn. These dimensions include the perceived reputation of the training activity, whether or not the training is mandated, and the perceived intrinsic and extrinsic rewards (Facteau et al., 1995).

The present research study combines Noe's concept of training effectiveness with Sociotechnical Systems theory. The primary emphasis of this research is on the role a sociotechnically designed work environment has on an individual's motivation to learn new skills and to subsequently transfer those skills to the job. Additionally, this research considers the influence of an individual's attitudes on his/her motivation to learn new skills. Figure 4 illustrates this hypothesized relationships for the transfer of training within a team work environment.

Justification of Study

The current literature highlights the limited research concerning the work environment as a variable of interest in the transfer of training. Even with this lack of attention regarding the influence of the work environment on transferring training, researchers continue to call for additional research in this

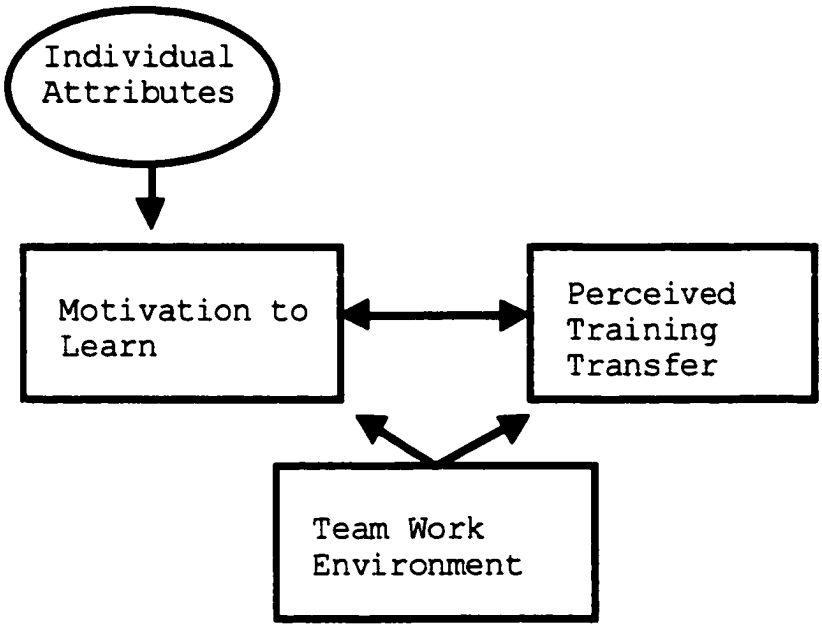

Figure 4. Hypothesized Framework for the Transfer of Training within a Team Work Environment

area. For example, Noe & Schmitt (1986) advocate additional studies concerning "trainees' perceptions concerning work-group support and reinforcement" (p. 521). Other researchers such as Facteau et al. (1995), Rouiller & Goldstein (1993) and Tracey, Tannenbaum, & Kavanaugh (1995) echo the theme for additional research involving a supportive work environment. Therefore, there is a need to investigate the influence of supportive work environments like teams on the transfer of training.

More studies of the supportive work environment provide one avenue for research, but also more analysis and research is needed on organizational structures themselves. Current

researchers are studying the shift in organizational structures from hierarchical to such participative structures as autonomous work groups, self-directed work groups, or teams. Facteau et al. (1995) argue such organizational structures should be studied for effectiveness in training transfer.

This study addresses a weaknesses identified in the training literature. Specifically, this study considers Noe's view of the work environment as a function of training effectiveness from a sociotechnically perspective. That is, the work environment consists of two independent, interactive components: social and technical (Cummings, 1978a, 1978b; Pasmore et al., 1982). Previous research concerning Noe's model suggests major variables of interest. For instance, Facteau et al. (1995) suggests an individual's attitude toward training affects his/her motivation to learn. This attitude comes from the individual's perceived reputation of the training activity, the nature of organizational compliance in attending training activities, and the perceived intrinsic and extrinsic rewards. Additionally, previous research suggests the work environment influences both an individual's motivation to learn and an individual's perceived transfer of training (Facteau et al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986; Rouiller & Goldstein, 1993; Tracey et al., 1995). The previous research focuses on the relationship of the work environment in a traditionally managed organization. The

relationship of a sociotechnically designed, team work environment has received little empirical research. Cohen et al.'s (1996) study addresses the broad issue of teams as influential to the effectiveness of organizations.

Research Question

This study addresses the basic question - How does a team work environment influence the transfer of training? Researching this question poses some inherent followup questions, which this study will also address:

1. Are there relationships between an individual's motivation to learn, an individual's attitude toward training, the sociotechnical attributes of the work environment in which he/she works, and his/her perceived transfer of training within a team work environment?

2. Are there relationships between an individual's attitude toward learning, the sociotechnical attributes of the team work environment in which the individual works, and his/her motivation to learn?

Definition of Terms

The following definitions apply to this study:

Motivation to learn describes "a specific desire on the part of the trainee to learn the content of the training program" (Noe & Schmitt, 1986, p. 501).

Training "consists of instructional experiences provided primarily by employers for employees to develop new skills and knowledge that are expected to be applied immediately upon (or within a short time after) arrival on or return to the job" (Broad & Newstrom, 1992, p. 5).

Transfer of Training is "the effective and continuing application by trainees to their jobs, of the knowledge and skills gained in training - both on and off the job" (Broad & Newstrom, 1992, p. 6).

Self-Directed Work Teams (SDWTs) are "A group of employees who have day-to-day responsibility for managing themselves and the work they do with a minimum of direct supervision" (Fisher, 1993, p. 15).

Teams consist of "a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable" (Katzenbach & Smith, 1993, p. 45).

Summary

American businesses face a variety of challenges due to changing demographics, technological innovation, and increased global competition. These challenges cause managers to evaluate their organizational structures. For most of this century, organizations could manage under a "Father Knows Best" philosophy where an individual's brawn became the asset of value for the organization. Today, in the Information Age, the prevalent managerial philosophy is one where an individual's intellectual capacity becomes the asset of organizational value. Therefore, organizations need to design their work environments to enhance the overall value and performance of individuals. Nearly a half century ago the researchers of the Tavistock Institute describe organizational effectiveness through the merging of the human, social system, with the available production methods, the technical system. This sociotechnical system work environment provides a work place where autonomous work groups, or teams, enhance the performance of the organization.

Organizational challenges and organizational redesign combine to increase the need for training. American businesses competing in the Information Age spend nearly $61 billion to train and develop their employees ("Industry Report", 1998). The rate of this expenditure continually increases and achieves a

relatively low, 10 percent, rate of return on the investment. Therefore, companies seek an understanding of the relationships enhancing or inhibiting the transfer of training.

Noe (1986) provides managers with a model for understanding training effectiveness. Noe's model seeks to combine organizational behavior theory with Kirkpatrick's training evaluation model. Under this model, Noe describes training effectiveness as a function of ability, motivation, and the work environment. According to Noe's premise, the work environment is an antecedent to an individual's motivation to learn. This work environment consists of two components -- social and technical. Noe's description of the work environment parallels STS's except for the interrelationship of the factors. Noe, and the subsequent researchers of his model, view the factors of the work environment as mutually exclusive. STS, on the other hand, views the social and technical factors as mutually correlated.

Facteau et al. (1995) extend Noe's model along two major points. First, they draw together previous research on Noe's model concerning the influence of an individual's attitude on his/her motivation to learn. Specifically, they describe the individual's attitude as a multidimensional concept including perception of training reputation, compliance in training attendance, intrinsic incentives, and extrinsic incentives.

Their other major extension of Noe's model centers on the

factors influencing an individual's perceived transference of training. First, the researchers hypothesize the individual's motivation to learn serves as an antecedent to an individual's perceived transfer of training. Second, they hypothesize the work environment is an antecedent to the transfer of training.

Noe's model, and the subsequent research, follows training effectiveness from the perspective of a traditionally managed work environment. American businesses are experimenting with different organizational structures to enhance organizational effectiveness. Cohen et al. (1996) argue for the effectiveness gained by teams, a sociotechnically designed work environment. Therefore, the present study addresses the need to understand training effectiveness within a team work environment.

CHAPTER II

REVIEW OF LITERATURE

Transfer of Training

Goldstein (1993, p. 3) defines training as "the systematic acquisition of skills, rules, concepts, or attitudes that result in improved performance in another environment." Organizations must be concerned about two major aspects of training. First, the organization needs to focus on the design of the instructional system for the individual to learn the necessary skills, concepts, and attitudes. Second, the organization needs to focus on the environment where the trainee can, and does, transfer his/her new skills to the job. Either of these broad organizational concerns provides researchers with numerous issues to pursue. However, it is the latter organizational issue which draws the attention of this study. The rationale for focusing on the transfer issue versus the instructional design concern is simple.

Organizations do not necessarily plan and develop an instructional design system to support their training efforts. Too often the instructional design is a loose confederation of seminars, workshops, and on-the-job training which is more often than not an informal process. Yet companies expect their employees to apply their new skills from this type of instructional design. Therefore company focus is on the visible transfer process and not the hidden design process.

This study adopts the transfer of training perspective. Moreover, this study focuses on those variables identified in previous research as having an influence on the effectiveness of training within organizations. Specifically, this study uses Noe's (1986) work as a base to establish a framework for the transfer of training within organizations. This general framework provides the variables upon which the research literature is reviewed. Consequently, this chapter focuses on three main variables from the research literature - motivation to learn, perceived transfer of training, and work environment.

Training Effectiveness

Noe's (1986) framework for understanding the transfer of training combines an expectancy theory viewpoint with Kirkpatrick's hierarchical training evaluation model. According

to Kirkpatrick (1996b), training evaluation follows a four-step hierarchical model -- reaction, learning, behavior, results. These steps measure an individual's feelings about the training, the amount of acquired knowledge or skills of the trainee, the transfer of newly acquired skills to the job, and the impact of training on individual and organizational performance (Kirkpatrick, 1996b).

Kirkpatrick's evaluation model provides human resource managers a common base to assess training activities. This commonality does not lack criticism over the issue of empirical support, however. For example, Alliger & Janak's (1989) review of the training literature shows, in part, the genesis of this criticism. The authors outline three basic assumptions about Kirkpatrick's model. First, the model assumes a hierarchical relationship between the levels. Second, the model assumes a causal linkage between the levels. Third, the model assumes a positive intercorrelation between the levels. Their research challenges these assumptions. Searching the training literature from 1959 to 1988, the authors find only 203 articles reporting training evaluation results of which only 8 articles report intercorrelations among two or more levels of Kirkpatrick's model (Alliger & Janak, 1989). Citing Clement (1982), Alliger & Janak note the lack of correlation supporting Kirkpatrick's model comes from other variables such as motivation, context of transfer, and

trainee attitudes.

Holton (1996) and Swanson (1997) also criticize the atheoretical nature of Kirkpatrick's model. Holton criticizes the simplicity of Kirkpatrick's model because of the lack of empirical research. Swanson argues the individual steps of Kirkpatrick's model do not represent hierarchical levels of evaluation, rather domains of interest with different assumptions. While a relationship between satisfaction, learning, and performance may exist, Swanson warns the relationship cannot and should not be assumed to be direct and positive.

After criticizing Kirkpatrick's model for the lack of empirical research, Holton (1996) proposes an alternative model for the purposes of guiding future empirical research on training evaluation. Holton's revised model incorporates three of Kirkpatrick's levels of evaluation -- learning, individual performance (behavior), and organizational results. Furthermore, Holton's model includes Noe's conceptualization of the influences of motivation to learn and motivation to transfer training as influences on the various levels of evaluation. Consequently, Holton's criticism provides a refinement of Kirkpatrick's basic premise. Whether or not, this refinement provides a better understanding of the training process is beyond the scope of this study. Holton's model and Kirkpatrick's model both address

relationships between the feelings individual's have toward learning, the extent of the learning, the change in behavior for an individual to apply the new skills on the job, and the impact of those behavioral changes on the performance of the organization. Hence, to maintain the proper scope of the current study, Noe's conceptualization of trainability as a function of ability, motivation, and perceptions of the work environment remains the basic theoretical framework. Specifically, Noe's hypothesis of the relationships between the work environment, motivation to learn new skills, and the motivation to transfer these skills to the work place remains intact.

Noe's study focuses on the trainability factors receiving the least empirical study - motivation and work environment (p. 737). Noe's purpose, therefore, is to identify those attributes influencing an individual's motivation to learn and apply newly acquired skills on the job (p. 738). One such attribute is a hypothesized relationship between motivation and the work environment. A relationship Noe considers important is the motivation to learn new skills and to transfer those skills to the job. For instance, Noe defines the work environment as consisting of a social component and a task component. The social component focuses on the support supervisors and peers provide concerning reinforcement of newly acquired skills. On the other hand, the task component focuses on the extent

production methods and financial constraints support the acquisition and transference of training.

Noe's view of the work environment clearly parallels the ideas expressed by the Sociotechnical Systems Theory (STS), although Noe does not specifically discuss this theory in the development of his model. For example, STS defines the social and technical components similarly to Noe with one exception. STS work design is based on a principle of joint optimization of the social and technical aspects of work (Cherns, 1976; Cummings, 1978b; Pasmore & Sherwood, 1978). While Noe describes a favorable work environment as "consisting of a task component and a social component" (p. 744), he does not cite the STS literature. Rather, Noe cites other researchers, such as House, concerning the impact social influences (i.e. peers and supervisors) have on rewarding or punishing trainees for adapting attitudes or behavior obtained during training activities (p. 744). Figure 5 illustrates Noe's Model while Figure 6 shows the STS Model.

Facteau et al., (1995), building on the work of Noe, consider the influence of pretraining motivation as a factor in transferring training through attitudinal and environmental support variables. In their study of nearly 1,000 managers within a state government, Facteau et al. consider such

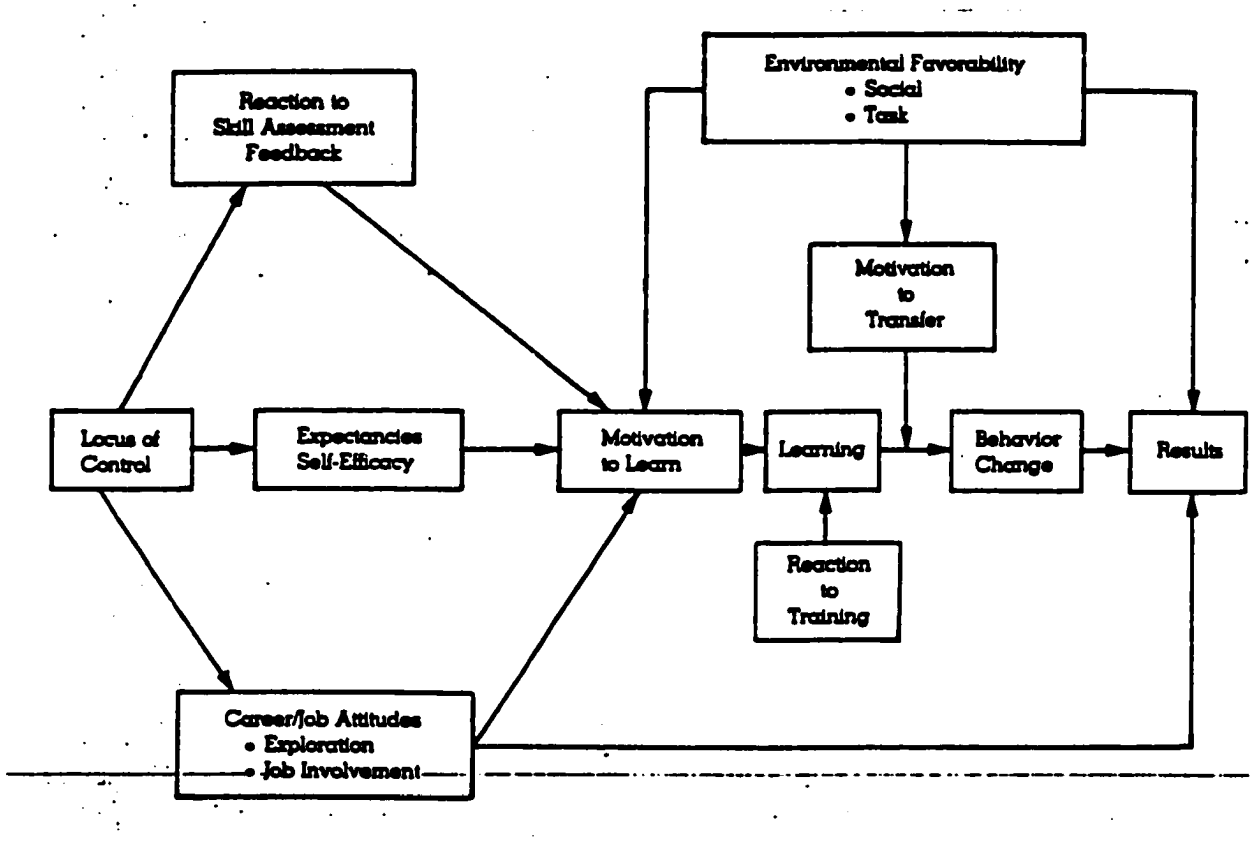

Figure 5. Noe's Model. From "Trainee's Attributes and Attitudes: Neglected Influences on Training Effectiveness," by R. A. Noe, 1986, Academy of Management Review, 11, 736-749.

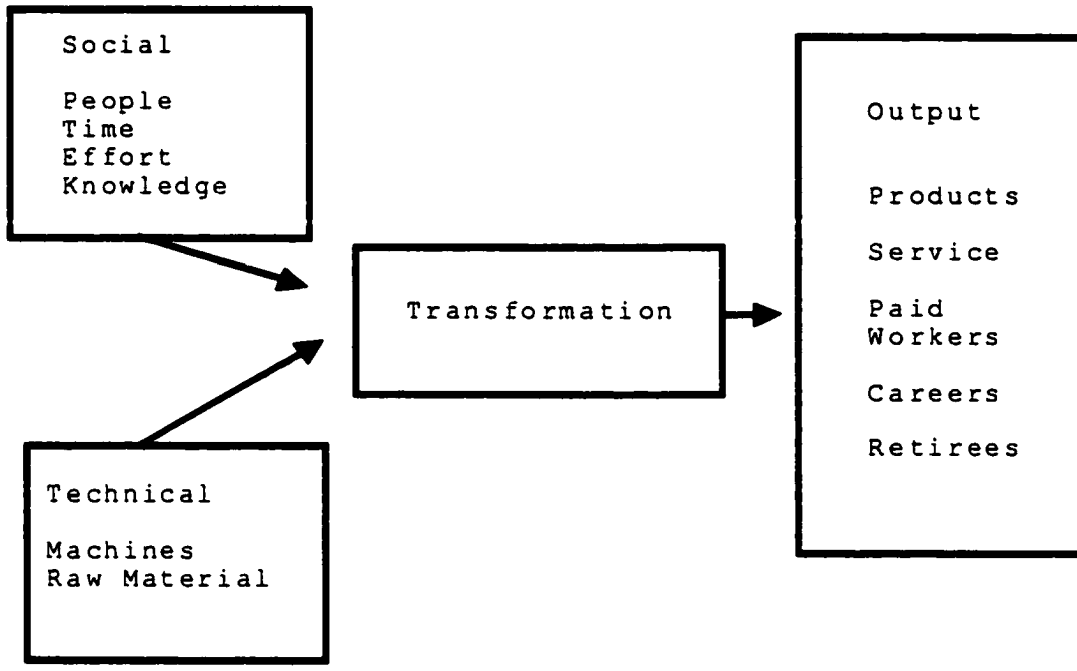

Figure 6. Sociotechnical Systems: Integration of Social and Technical Systems. From: Organizational Behavior: Managing People and Organizations (3rd ed.) by G. Moorhead & R. W. Griffin, 1992, Boston, MA: Houghton Mifflin Company

attitudinal factors as the perceived reputation of the training program, intrinsic and extrinsic incentives, and the amount of mandatory compliance for attending training activities. Additionally, Facteau et al. define a favorable work environment similar to Noe. That is, support from top management, supervisors, peers, and subordinates provide social support for training. On the other hand, Facteau et al. describe the technical systems as the tools, equipment, materials, supplies,

and financial resources that support or constrain training (p. 5). Like Noe, Facteau et al.'s conceptualization of the work environment parallels the STS perspective without citing the STS literature. Figure 7 shows Facteau's model.

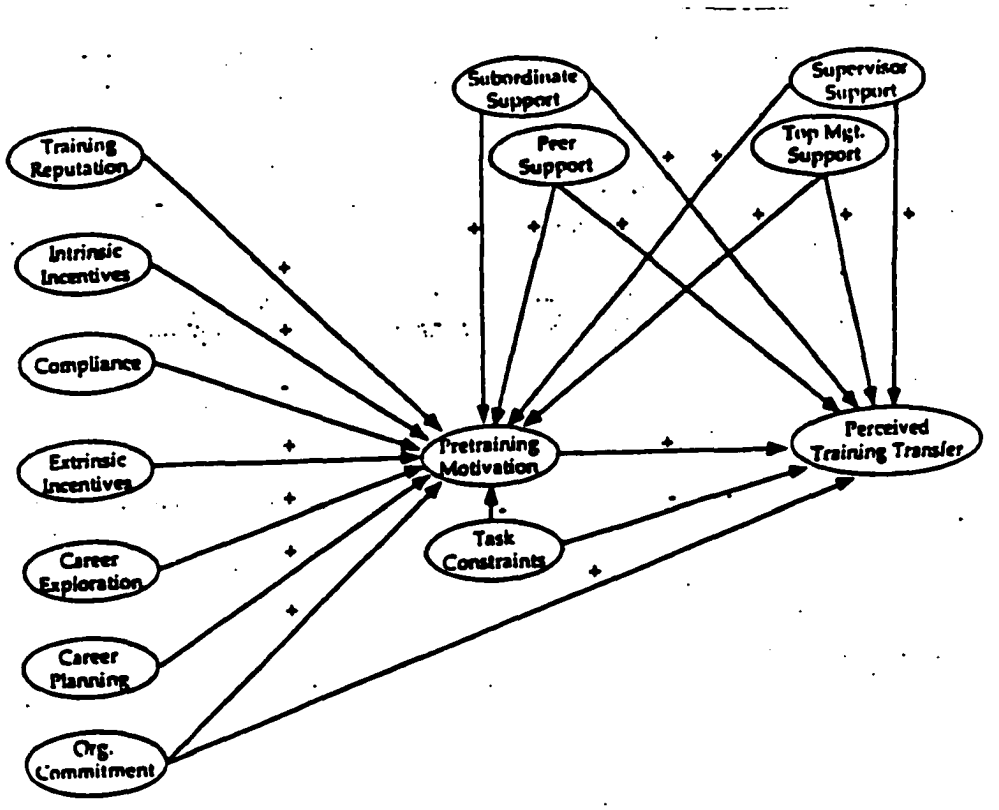

Figure 7. Facteau et al Model. From "The Influence of General Perceptions of the Training Environment on Pretraining Motivation and Perceived Training Transfer" by J. D. Facteau, G. H. Dobbins, J. E. Russell, R. T. Ladd, & J. D. Kudish, 1995, Journal of Management, 21, 1-25.

This present study, therefore, has a theoretical framework developed from Noe's model and extended by Facteau et al. Using Figure 8 as a guide, this chapter examines the literature concerning these individual components.

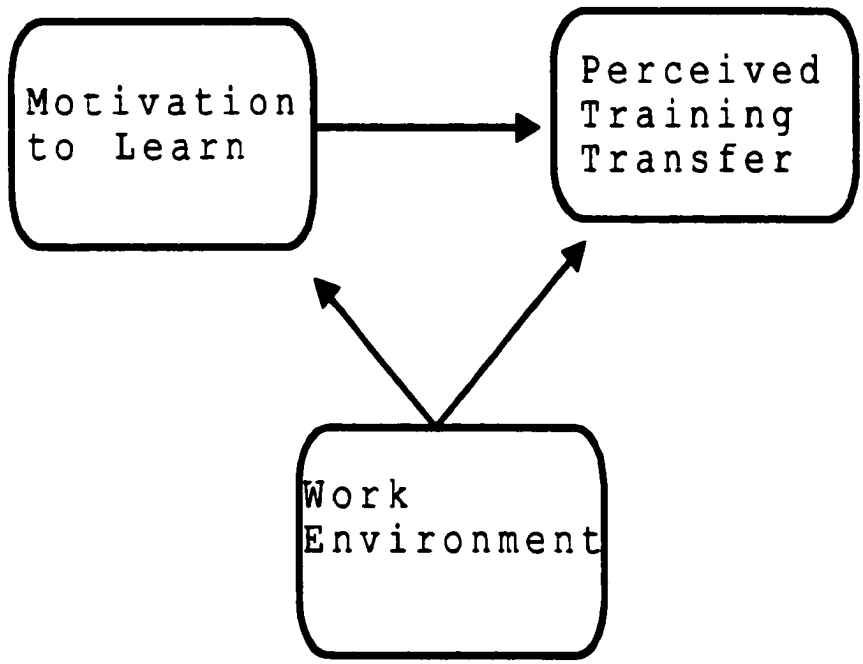

Figure 8. Framework for Transfer of Training

Motivation to Learn

American businesses spend billions of dollars annually on human resource development activities. These activities include various instructional opportunities to enhance the skills of company employees. Training, therefore, involves learning or a relatively permanent change of behavior (DeCecco, 1968; DeCenzo &

Robbins, 1996; Kassin, 1995; Moorhead & Griffin, 1998). Consequently, managers need an understanding of the training processes affecting organizational effectiveness.

This section reviews the research associated with the individual's motivation to learn new skills, knowledge, and attitudes. Specifically, this section reviews the literature concerning the preconditions to learning, Vroom's (1964/1982) theory, and individual attitudinal variables influencing training.

Preconditions to Learning

The literature suggests an individual's readiness to learn as a precondition to learning (DeCecco, 1968; Fisher et al., 1996; Goldstein, 1993; Knowles, 1975, 1980, 1984, 1990; Sherman, Bohlander, & Snell, 1996). For example, an individual's readiness to learn relates the individual's maturity and prerequisite experiences (DeCecco, 1968; Goldstein, 1993; Fisher et al., 1996; Sherman et al., 1996). Knowles (1975, 1980, 1984, 1990), on the other hand, addresses an individual's readiness to learn as part of his andragogical model of adult learning. For instance, Knowles' model focuses on those things adults need to know to handle real-life situations effectively (Knowles, 1990).

A second precondition to learning is the trainee's motivation (Goldstein, 1993; Fisher et al., 1996; Sherman, et

al., 1996). Citing Steers and Porter, Griffin (1999) defines motivation as the forces causing people to behave in certain ways. For organizations, understanding these forces guides individual behavior congruent with the organization's goals (Griffin, 1999). These behaviors lead to individual performance on the job where performance is a function of motivation, ability, and environment (Moorhead & Griffin, 1998; Vroom, 1964/1982).

Expectancy Theory

Vroom (1964/1982), citing the research of Tolman and Lewin, proposes a motivational theory that suggests motivation is a process governing choices made by individuals among alternative forms of activity. According to Vroom's theory, motivation depends on how much individual's want something and how likely individuals believe they will acquire the item of interest (Griffin, 1999). Vroom's theory is based on three interrelated components -- expectancy, instrumentality, valence. Vroom defines expectancy, as an individual's perception of the probability his/her effort will lead to desired performance. The second component, instrumentality, is an individual's perception of the probability his/her performance will result in desired outcomes according to Vroom. Finally, Vroom defines valence as the values an individual places on a specific outcome. Later

researchers use the term effort-to-performance expectancy to describe Vroom's expectancy and performance-to-outcome expectancy to describe Vroom's instrumentality (Cohen, 1990; Griffin, 1999; Lawler, 1973). Figure 9 shows the interrelationship of these components.

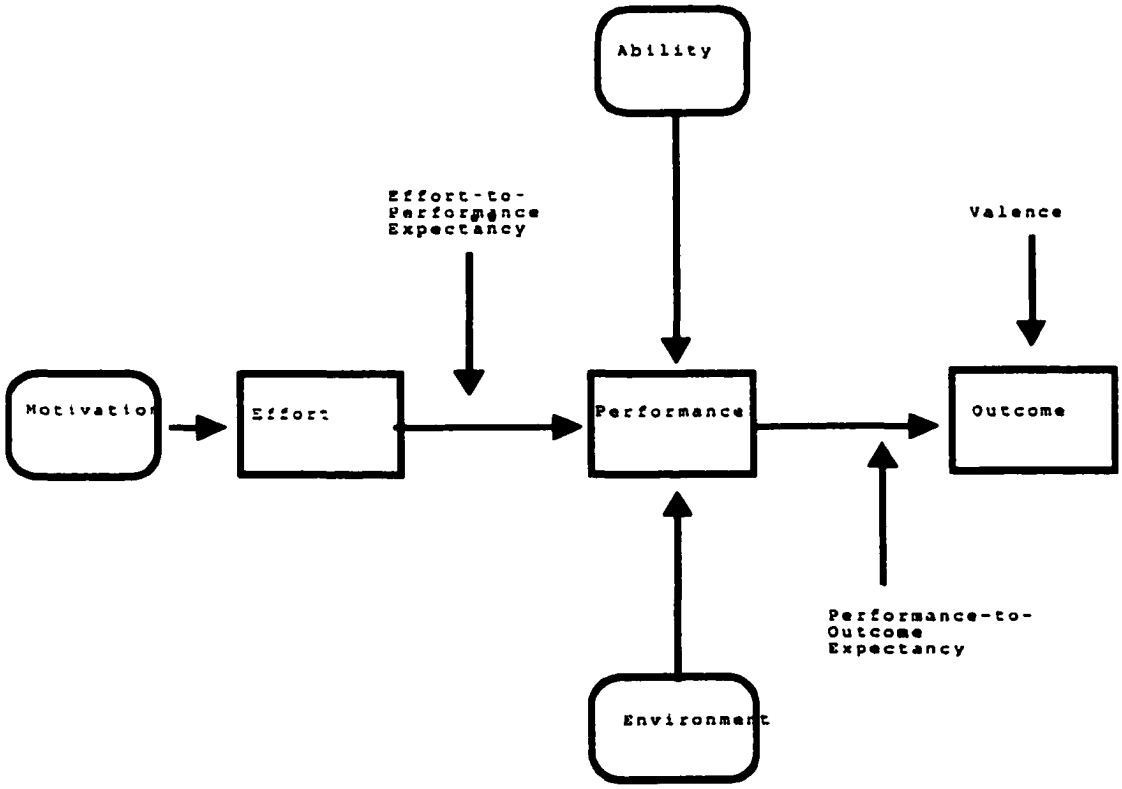

Figure 9. Vroom's Expectancy Theory (Griffin, 1999; Fischer, Schoenfeldt, & Shaw, 1996; Moorhead & Griffin, 1998)

Vroom's theory does not lack criticism. Focusing on job attitudes and satisfaction, Porter & Lawler (1968) argue Vroom's

theory focuses on an individual anticipating future outcomes at the exclusion of previous learning. Porter & Lawler raise additional criticism concerning a lack of specifics on how outcomes acquire their value for individuals. Finally, Campbell & Pritchard (1976) criticize the expectancy model because it lacks power as a predictor of behavior but the model serves as a useful tool for identifying variables of interest.

Even though Vroom's theory is criticized, researchers continue to refine it's basic notion. Porter and his colleague Lawler, for example, refine Vroom's theory through the introduction of rewards (Lawler & Porter, 1967/1969; Porter & Lawler, 1968). In their refinement of the theory, rewards are divided into intrinsic and extrinsic rewards. Intrinsic rewards are internally mediated such as feelings of accomplishment. Extrinsic rewards are organizationally controlled items such as pay, promotion, or security (Lawler & Porter, 1967/1969). These rewards for a given level of performance has a perceived value which helps to determine the effort expended by an individual to perform his/her job tasks. Lawler & Porter's (1967/1969) study of 148 managers in 5 different organizations finds intrinsic rewards relate stronger to performance than extrinsic rewards.

Galbraith & Cummings' (1969) empirical investigation of Vroom's theory supports the base theory. Their study parallels the Porter and Lawler description of intrinsic and extrinsic

outcomes (Lawler & Porter, 1967/1969; Porter & Lawler, 1968). Galbraith & Cummings modify the base theory to account for two independent valences -- valence through internal motivation and valence through external rewards. Even with this modification, Galbraith & Cummings find support for the interaction of valence and instrumentality in determining motivation.

Lawler (1973) offers another refinement to the expectancy theory. For example, Lawler redefines expectancy in Vroom's model as effort to performance (E÷P) expectancy and instrumentality as performance to outcome (P÷O) expectancy. According to Lawler, expectancy theory assumes the higher the (E÷P) expectancy and the higher relationship between performance and outcomes the greater the motivation. Table 2 shows the determinants of (E÷P) and (P÷O) expectancies according to Lawler (1973). Lawler's refinement of Vroom's model provides organizations with a framework for designing jobs. According to Lawler, jobs increase motivation when the jobs positively affect an individual's performance-to-outcome beliefs concerning good performance.

The Expectancy theory provides managers with a framework for understanding the motivation of their employees. According to this theory, an individual perceives his/her efforts will lead to some level of performance. Furthermore, the individual perceives this performance leads to outcomes which have an associated value

(Griffin, 1999). The literature suggests support for the Expectancy theory (Galbraith & Cummings, 1969; Lawler, 1973;

Table 2

Determinants of Expectancies

Effort-to-Performance (E÷P)	Performance-to-Outcome (P÷O)
Actual Situation	Actual Situation
Communication from Others	Communication from Others
Past experiences in similar situations	Past experiences in similar situations
Self Esteem	(E÷P) expectancies
	Belief in internal vs. external control
	Attractiveness of outcome

Note. Adapted from Motivation in Work Organizations by E. E. Lawler, III, 1963, Monterey, CA: Brooks/Cole.

Lawler & Porter, 1967/1969; Porter & Lawler, 1968). Since motivation is a precondition to learning, the application of the expectancy theory to training activities is a logical extension of the theory. According to Goldstein (1993), individuals perceive a value for training "if they believe the programs will permit them to achieve other outcomes" (p. 97).

Individual Attitude

Training focuses on the individual. The research literature provides a basis for understanding the preconditions to learning and motivational theory for why an individual responds to

particular stimuli. These issues provide an overview of individual behavior, but do not address the attitude toward training that the individual brings to the training equation.

Vroom's theory provides one insight into an individual's attitude toward training. For example, Vroom's theory involves the choices individuals make among alternative forms of voluntary activity (Vroom, 1964/1982, p. 6). Choice, in the training environment, involves the organization's policy relative to supporting training activities (Cohen, 1990). The literature suggests the amount of communication an individual receives about the training activity prior to attending the session is important to an individual's motivation to learn (Baldwin & Magjuka, 1991; Cohen, 1990; Hicks & Klimoski, 1987). For example, Cohen (1990) presents a conceptual study that includes choice as a pretraining factor affecting an individual's motivation to learn. Citing the research from goal setting, expectancy, and adult learning theories, Cohen argues that individuals perceiving a voluntary attendance policy for training activities have a higher level of motivation to learn. Hicks & Klimoski (1987) and Baldwin & Magjuka (1991), on the other hand, provide empirical support to their concepts on the relationship between choice and motivation to learn. Quinones (1995), on the other hand, frames the issue of training from the perspective of why an individual attends training. Is the individual attending for remedial training or

professional development? The specific reason for the training assignment provides the context for the outcome. Quinones argues for a link between the rationale for training and the individual's perception of the fairness of such assignment which influences an individual's motivation to learn. Also, Quinones proposes a linkage between training assignment and self-efficacy which influences motivation to learn.

Noe & Schmitt (1986) continue Noe's earlier study by providing an empirical test of a portion of Noe's model of training effectiveness. Their study of 60 educators attending a skills improvement training program focuses on the relationship of trainee motivation and training evaluation. Noe & Schmitt (1986) describe motivation to learn as "a specific desire on the part of the trainee to learn the content of the training program" (p. 501). Citing the research of Hicks and Ryman & Biersner, the authors present a supportive argument for a relationship between motivation to learn and learning. Additionally, Noe & Schmitt follow Noe's conceptualization of the antecedents to a trainee motivation to learn as reaction to skill assessment, expectancies, and career and job attitudes (p. 501).

Using a path analysis approach, Noe & Schmitt find little statistical support for several hypothesized relationships including the antecedents for motivation to learn. Path analysis assumes an initial model based on a theoretical base. This

methodology allows researchers to test alternative models if the original model lacks statistical support. According to Jöreskog & Sörbom (1993, p. 121) the original model can be modified within a class of models such that

> The goal is to find a model within this class of models that not only fits the data well statistically, taking all aspects of error into account, but that also has the property of every parameter having a substantively meaningful interpretation.

Noe & Schmitt's alternative model shows reaction to skill assessment and career attitudes as antecedents of motivation to learn as statistically significant. Their alternative model also shows similar mixed results for Kirkpatrick's training evaluation concept as their original model. However, Noe & Schmitt acknowledge the small sample size, 60, limit the power of their conclusions.

A second test of Noe's theory on training effectiveness by Mathieu et al., (1992) provide additional refinement. For example, Noe's base model suggests individual attitudes as an antecedent to an individual's motivation to learn. Mathieu et al. expand Noe's base theory by suggesting training motivation consists of two influences - individual and situational. The individual influences follow Noe's premise and consist of personal career planning and job involvement. Citing Blau, Mathieu et al. define job involvement as the degree to which an individual perceives the job as central to his/her identity. On

the other hand, Mathieu et al. consider the situational influences consist of choice in attending training and situational constraints. These job, or work environment, constraints include such issues as lack of materials, lack of information, and lack of financial resources (Mathieu et al., 1992; O'Connor et al., 1984; Peters & O'Connor, 1980). The premise for this constraint lies in the trainee's perception of being frustrated "if they developed new skills in training yet were not given adequate time, resources, and so forth, to apply what they learned to their jobs" (Mathieu et al., 1992, p. 842).

Using structural equation modeling techniques, Mathieu et al. (1992) find no support for the hypothesized antecedents of trainee motivation in the original model. The researchers develop an alternative model by dropping the individual influence (career planning and job involvement) of training motivation. This finding is counter to other research that suggests trainees involvement with training decisions enhance his/her motivation to learn (Clark, Dobbins, & Ladd, 1993; Goldstein, 1993). Also, the revised model does not include a direct relationship between assignment (choice in attending training) and motivation. The data for Mathieu et al.'s study suggests the revised model shows a direct relationship between assignment and reaction to training. Finally, the revised model maintains the relationship between situational constraints and motivation to learn.

Facteau et al., (1995) provide a third test of Noe's model. Their study of nearly 1000 governmental managers and supervisors, identify several attitudinal and environmental support variables affecting motivation to learn. For instance, they consider perceived reputation of the training program, or the trainee's perceived expectation about the quality of the training activity, as training attitudinal variable.

A second training attitudinal variable is the extent of training incentives, intrinsic and extrinsic, within the organization. Facteau et al. (1995) define intrinsic incentives as the extent to which the training meets personal needs or provides employees with growth opportunities (p. 3). On the other hand, the authors define extrinsic incentives as promotions, pay raises, and higher performance evaluations resulting from participating in the training activity (p. 3). Finally, Facteau et al. consider the amount of mandatory compliance, or the choice in attending training, as important training attitudinal variable.

An individual's attitude toward training is only one area of concern according to Facteau et al. for motivating learning. They also suggest career exploration, career planning, and organizational commitment as important individual attitudes affecting motivation to learn. Finally, the researchers consider two dimensions of the work environment as important influences on

an individual's motivation to learn. One dimension, following Noe's conceptual framework, is the social support from top management, supervisors, peers, and subordinates. Another dimension, the task element refers to the extent such characteristics of the work environment as tools and equipment, materials and supplies, and financial resources facilitate or constrain an employee's ability to learn new skills.

After studying the perceived training needs, preferences, and attitudes of nearly 1000 state government managers, Facteau et al. (1995) find mixed support concerning the relationship between the attitudinal variables, the work environment, and motivation to learn. First, they find support for their view of training attitudes as antecedents to pretraining motivation with one exception. The data supports training reputation, intrinsic incentives, and compliance as antecedents to pretraining motivation. On the other hand, their data does not support extrinsic incentives in the same manner.

Second, Facteau et al. (1995) find little support for the individual attitudes influencing pretraining motivation, except one. They find no support for the career exploration and career planning aspects of an individual's attitude. On the other hand, their study did find support for the organizational commitment, or relative strength of one's involvement with the organization.

Finally, the hypothesized relationship of the work

environment to pretraining motivation shows mixed results. They predict a positive relationship between supervisory, peer, subordinate, and top management support and an individual's motivation to learn. Yet their data supports only a positive relationship between the supervisory support element of the social construct and pretraining motivation. This finding is similar to Cohen's (1990) concept of supervisory support for a trainee's motivation to learn. Top management and subordinate social support relate to pretraining motivation opposite to the hypothesized relationship. Finally, social support from peers shows no significant relationship. Moreover, Facteau et al.'s (1995) study did not find a significant relationship with the task constraint element of the work environment.

Noe's (1986) model uses Vroom's theory to explain, in part, training effectiveness. Some research, including empirical tests of Noe's model, provides insight to the possible factors affecting an individual's motivation to learn. Other studies support attitudinal behaviors as important factors affecting an individual's motivation to learn (Cohen, 1990; Hicks & Klimoski, 1987; Facteau et al., 1995, Mathieu et al., 1992, Noe, 1986, Noe & Schmitt, 1986). For example, some studies suggest the level of choice, voluntary or mandatory, an individual has in attending training activities affects his/her motivation to learn (Baldwin & Magjuka, 1991; Cohen, 1990; Facteau et al., 1995; Hicks &

Klimoski, 1987; Noe & Schmitt, 1986; Quinones, 1995). Also, the literature supports the concept of intrinsic and extrinsic incentives as a factor of an individual's motivation to learn (Facteau et al., 1995). Finally, the literature supports Noe's model in terms of the work environment as an antecedent to motivation of learning (Cohen, 1990; Facteau et al., 1995).

Perceived Training Transfer

Training involves learning of skills in one area for application in another environment (Broad & Newstrom, 1992; Ellis, 1965; Goldstein, 1993; Huczynski & Lewis, 1980). The literature considers an individual's motivation as an important factor in the learning process (Facteau et al., 1995; Fisher et al., 1996; Goldstein, 1993; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986; Quinones, 1995). An additional factor involves the transfer of training from the learning environment to the work environment. With companies spending nearly $61 billion per year on training and receiving about a 10 percent return on this investment in terms of behavioral change on the job, companies face a problem of understanding the factors affecting the transfer of training (Baldwin & Ford, 1988; Facteau et al., 1995; Goldstein, 1993; "Industry Report", 1998; Noe, 1986; Noe & Schmitt, 1986). This section focuses on several theoretical

models that describe the interrelationship between the individual and the organization in providing a favorable transfer climate.

Noe's Concept

Noe's model blends organizational behavior with Kirkpatrick's training evaluation model to explain the transfer of training. Noe's model suggests a relationship between motivation to transfer and Kirkpatrick's behavioral change level of training evaluation. That is, an individual's motivation to learn the training content leads them to being motivated to transfer the new skills to the job. Noe defines motivation to transfer as "the trainees' desire to use the knowledge and skills mastered in the training program on the job" (p. 743).

Empirical tests of Noe's model find different support for the motivation to transfer variable. In the first empirical test of the model, Noe & Schmitt (1986) define motivation to transfer as "the trainee's desire to use the knowledge and skills mastered in the training program on the job" (p. 503). The individual's motivation to transfer learning comes from the trainee's perception that new skills improve job performance according to Noe & Schmitt. Consequently, motivation to transfer is a moderating variable between learning and behavioral change (p. 503). Furthermore, this moderating variable is a consequence of a favorable work environment according to Noe.

Using path analysis, Noe & Schmitt's (1986) study does not support the earlier hypothesized relationship between learning new skills and applying these new skills on the job. Additionally, an analysis of the residual correlations shows a high correlation between learning and motivation to transfer. This correlation, the author's state, comes from the inclusion of learning-gained scores in the calculation of the moderator variable (p. 514). Thus, in an analysis of alternative models available with the path analysis methodology, the researchers eliminate the motivation to transfer moderation from the data analysis. This analysis of alternative models provides the researchers an opportunity to access other possible models to which the collected data may fit and provide a reasonable explanation of the hypothesized relationships. However, Noe & Schmitt acknowledge their study's conclusions are limited because of the small sample size.

Facteau et al.'s Refinement

Facteau et al.'s (1995) empirical test of Noe's model describes this relationship between learning and behavioral change differently. The Facteau et al. study examines employee perceptions concerning his/her ability to transfer learned behaviors to the job. They hypothesize an individual's organizational commitment, motivation to learn, and work

environment factors are directly influencing an individual's perceived transfer of training. Like the motivation to learn variable, they suggest the work environment influences the transfer of training as two dimensional: social support and task constraints. Following the same definition as motivation to learn, they describe the social support for transfer coming from subordinates, peers, supervisors, and top management. Similarly, the task component involves the constraints of resources available to an organization. However, they find mixed support for the relationship involving the transfer of training. For instance, organizational commitment and the task component of the work environment do not show a significant relationship to transference of training. In terms of the social component of the work environment, subordinate, peer, and supervisory support show a direct relationship to training transfer. Support from subordinates and peers reflects a positive relationship while supervisory support shows a negative relationship while top management support is not significant. Finally, they find a strong relationship between motivation to learn and transference of training.

Xiao's (1996) study of the transfer of training within four Chinese electronics companies follows Noe's description of the work environment. That is, Xiao's workplace environment includes a physical and social context. This includes such factors as

rewards, supervision, and peer relationships as determinants of training transfer. Of these factors, Xiao finds that supervision contributes the most influence on an individual transferring training to the job (p. 69), while the effect of rewards does not appear significant.

Baldwin & Ford Model

Baldwin & Ford (1988) present a different model for understanding the transfer of training process. Their model of the transfer process consists of training input factors, training outcomes, and conditions of transfer (p. 64). The training input factors for this model include the characteristics of the trainee (e.g., ability, motivation), training design, and the work environment. The training outcomes for this model include the amount of learning by trainees during the training process and the individual's retention of the material. Finally, the conditions of transfer are influenced by these two general factors. First, the training input and outcome factors affect the ability of the individual to generalize the training information for use on the job. Second, these factors influence the ability of the individual to maintain his/her proficiency of newly acquired skills over time. Furthermore, Baldwin & Ford conceptualize the trainee and work environment characteristics directly influence the transfer of training. Broad & Newstrom

(1992) summarize this direct relationship between training input factors and the conditions to transfer as reflected in Table 3.

Table 3

Trainee and Work Environment Characteristics of Transfer

Trainee Characteristics	Work Environment Characteristics
Ability and aptitudes	Supportive Organizational Climate
Personality High Need for achievement Internal Locus of Control	PREcourse Discussion with boss
Motivation Trainee Confidence Desire to Succeed Optional Attendance High job involvement Strong belief in value of training High self expectancies	Opportunity to Use Knowledge and skills
	Posttraining goal setting and feedback

Note. Adapted from Transfer of Training by M. L. Broad & J. W. Newstrom, 1992, Reading, MA; Addison-Wesley.

The benefit of Baldwin & Ford's (1988) model is to supplement Noe's model with a general framework for reviewing the transfer literature. For example, prior to the publication of Noe's model, Baumgartel & Jeanpierre (1972) study the factors affecting a manager's attempt to apply new knowledge in his/her job assignment. A particular variable of interest in this study is adoptive effort, or the self-reported effort of individuals

trying to apply their new knowledge on the job. A focus of this study centers on the relationship between adoptive effort and organizational climate. For the purposes of their study, Baumgartel & Jeanpierre define the organizational climate in terms of the social aspects of the organizational structure. These social aspects include goal setting, a degree of managerial empathy for other employees, the degree of risk taking within the organization, organizational support for applying new skills, level of communication between hierarchical levels of the organization, and the financial resources available for training activities. Baumgartel & Jeanpierre conclude "Organizational climate is the single most important factor affecting the efforts of trained managers to apply new knowledge in the back-home setting" (p. 692-693).

Individual Characteristics

Another study prior to Noe's publication focuses on the characteristics of the trainee and the work environment. Huczynski & Lewis' (1980) study defines transfer of training as dependent upon the characteristics of the individual and the organizational context of the training. That is, does the individual have the ability and skills to transfer newly acquired learning to the workplace? Does the individual have the motivation to transfer his/her learning to the job? Huczynski &

Lewis (1980) argue motivation to transfer training depends on the trainee's perceived value for participating in the training course, and the perceived "value" of the organizational rewards an individual receives for "trying" new job skills. Finally, they suggest the work environment facilitates or inhibits the transfer process.

Their study of a management training program provides insight into personal characteristics affecting the transfer of training. For example, their study shows that individual's choosing to attend the training course enhances his/her motivation to transfer the training on the job. In addition, the study suggests that trainees discussing the course objectives with subordinate, peers, and supervisors enhances their motivation to transfer. Moreover, their study suggests supervisors can enhance the transfer process by encouraging trainees to try new skills on the job. Finally, Huczynski & Lewis contend that transfer of training is a consequence of an individual's belief the training improves his/her job performance.

The work environment under the Huczynski & Lewis model is a force field consisting of facilitating and inhibiting forces. Organizational control of these forces is the domain of management. Table 4 shows the factors management influences to provide a supportive work climate for the transfer of training.

Table 4

Facilitating and Inhibiting Factors of the Work Environment

Facilitating Factors	Inhibiting Factors
Management open to suggestions	Work Overload
Job Autonomy	Unplanned, crisis, work
Management listens to ideas	Difficulty communicating ideas to others
Management encourages use of new methods in the work place	High rate of change

Note. Adapted from "An Empirical Study Into the Learning Transfer Process in Management Training," by A. A. Huczynski & J. W. Lewis, 1980, Journal of Management Studies.

Transfer Climate

What factors create or inhibit a favorable climate to transfer training? Rouiller & Goldstein (1993) reveal a relationship between transfer climate and post-training behaviors. By studying 102 assistant managers in a management program, Rouiller & Goldstein establish a relationship between training, organizational transfer climate and unit performance. Specifically, they measure the organizational transfer climate by determining the situations and consequences that "either inhibit or help to facilitate the transfer of what has been learned in training into job situations" (Rouiller & Goldstein, 1993, p. 379). These situations include four cues (e.g., goal, social, task, self-control) and four consequences (e.g., positive feedback, negative feedback, punishment, no feedback).

Tracey et al. (1995), also, express interest in studying a favorable transfer climate to improve the transfer of training. Their study identifies the importance of two constructs of the work environment - transfer of training climate and the existence of continuous learning culture. In their study, they consider organizational characteristics such as managerial and peer support for training plus the performance appraisal system being used as means to enhance the transfer of training. Furthermore, they consider a continuous learning environment as an important construct similar to other researchers cited (e.g., Dubin, 1990; Noe & Ford, 1992; Rosow & Zager, 1988). Tracey et al.'s study suggests support for a direct relationship between the transfer of training climate, continuous learning culture, and posttraining behaviors.

Learning represents a major investment for American companies. The acquisition of new skills is not sufficient for success in today's competitive environment. Organizations' need to encourage employees to apply their newly acquired skills on the job. Some literature describes several factors supportive to the transfer environment. For example, researchers focus on the characteristics of individual trainees. One such characteristic is the amount of choice individuals have in choosing to attend training activities (Baldwin & Ford, 1988; Huczynski & Lewis, 1980). Another characteristic is the trainee's belief in the

perceived value of training (Baldwin & Ford, 1988; Huczynski & Lewis, 1980).

There is support in the literature for a relationship between the work environment and the perceived transfer of training. Research argues for the segregation of the work environment into a social and task component (Facteau et al., 1995; Noe, 1986; Noe & Schmitt, 1986). Following this definition of the work environment, the literature for the supportive nature of the social context comes from peers, subordinates, and supervision (Baldwin & Ford, 1988; Baumgartel & Jeanpierre, 1972; Facteau et al., 1995; Huczynski & Lewis, 1980; Noe, 1986; Noe & Schmitt, 1986; Xiao, 1996). Task component of the work environment is the constraint the organization imposes due to financial and operational decisions (Facteau et al., 1995; Noe, 1986; Noe & Schmitt, 1986).

Work Environment

Training effectiveness is a function of individual motivation and the work environment according to Noe (1986). The literature supports the importance of an individual's motivation to learn new skills and to transfer those skills to the job setting (Broad & Newstrom, 1992; Facteau et al., 1995; Goldstein, 1993). A question remains concerning Noe's assertion regarding

the influence of the work environment on transference of training. To examine this question Noe's conceptualization of the work environment should be reviewed. According to Noe (1986), a favorable work environment influences an individual's motivation to learn and to transfer the training. This favorable work environment consists of a social component and a task component.

The social component of the work environment involves the support trainees receive from the organization's social structure (Cummings, 1978; Pasmore & Sherwood, 1978). For example, do trainees receive support from supervisors, peers, and subordinates? This support may be in terms of providing trainees the opportunity to practice their newly acquired skills on the job. Also, Noe suggests the social structure of the organization rewards or punishes trainees for trying their newly acquired behaviors. Finally, does the organizational climate, or the attitudes of peers and supervisors toward training, encourage the transference of training.

Noe's second component of a favorable work environment focuses on the job. Accordingly, the task component is the "extent to which technological necessities such as proper tools and equipment, materials and supplies, and monetary support" (Noe, 1986, p. 744) facilitate or inhibit the transfer of skills. Noe cites Peters & O'Connor (1980) to support the constraints

task components pose on the transfer of skills. Table 5 lists the eight constraints Peters & O'Connor suggest influence individual motivation. Furthermore, Peters & O'Connor describe these constraints along three dimensions - unavailability, inadequate quantity, inadequate quality.

Noe's concept of a favorable work environment parallels the tenets of Sociotechnical Systems theory even though he never uses this terminology to frame his model. Therefore, to gain another perspective of Noe's work environment one needs to understand the basic tenets of the Sociotechnical Systems theory.

Sociotechnical Systems

The literature describes the basic system premise as a set of interrelated parts where the power of a system rests with its interaction with other systems, subsystems, and its environment (Ashmos & Huber, 1987; Kast & Rosenzweig, 1970; Katz & Kahn, 1978; Longenecker, 1970/1972; Tilles, 1963/1967; von Bertalanffy, 1968). This dynamic interchange between systems and their environment is defined as an "open system" according to von Bertalanfy (1968). The concept of a systems theory provides organizations with a framework for the design of their work environment. This framework growing from the research of the Tavistock Institute regards work design efforts as an

Table 5

Task Component Constraints

1	Job-Related Information	Information from the organizational structure needed to do the assigned job.
2	Tools & Equipment	Specific tools, equipment, and machinery needed to do the job.
3	Materials & Supplies	Materials and supplies needed to do the job.
4	Budgetary Support	Financial resources and budgetary support needed to do the assigned job.
5	Required Services from Others	The services and help from others needed to do the assigned job.
6	Task Preparation	Personal preparation, through previous education, formal company training, and relevant job experience, needed to do the assigned job.
7	Time Availability	Availability of the time needed to do the assigned job.
8	Work Environment	Physical aspects (e.g., lighting, ventilation, safety) of the immediate work environment needed to do the job

Note. Adapted from "Situational Constraints and Work Outcomes: The Influences of a Frequently Overlooked Construct," by L. H. Peters and E. J. O'Connor, 1980, Academy of Management Review.

interaction between the social and technical aspects of the organization (Cherns, 1976; Cummings, 1978b; Kast & Rosenzweig, 1970; Katz & Kahn, 1978; Kolodny & Kiggundu, 1980; Pasmore et al., 1982; Trist, 1959/1978). The social structure consists of human beings and their relationships within the organization;

the technical structure consists of the tools, facilities, techniques, and methods of doing the job (Cummings, 1978b; Kast & Rosenzweig, 1970; Pasmore et al., 1982).

Given the basic components of a sociotechnical system, the questions concerning theoretical principals and assumptions arise. Cherns (1976) proposes nine theoretical principles while Katz & Kahn (1978) outline six assumptions. The nine principles of sociotechnical system design include:

1. Compatibility between the work design and organizational objectives.
2. Minimal Critical Specification, or providing enough detail to understand what tasks needs to be accomplished, but not so much detail that stifle the individual's performance.
3. The Sociotechnical Criterion, or controlling variance near the source.
4. The Multifunctional Principle (Equifinality), or many ways exist to achieve the same objective.
5. Boundary Location, or involving the members of a work unit with the normal activities of the business so the managerial role can concentrate on providing the necessary resources.
6. Information Flow
7. Support Congruence. The social aspects of the

organization must "reinforce the behaviors which the organization structure is designed to elicit" (p. 790).

8. Design and Human Values. The work design effort must incorporate the needs and values of the human operators.
9. Incompletion. The design effort is a dynamic process.

Katz & Kahn (1978), on the other hand, outline the following theoretical assumptions:

1. completing a meaningful unit of work
2. control over task activities by those involved in the task
3. satisfactory relationships with those performing the task
4. homogeneity of skills within the group
5. homogeneity of prestige and status
6. individual choice in group membership

Noe's Work Environment

Noe's model of training effectiveness alludes to a sociotechnically designed work environment as a determinant of an individual's motivation to learn and perceived transfer of training. Noe's concept and the subsequent empirical tests of

his model describe a work environment consists of two components - social and task. These descriptions of the work environment are similar to the sociotechnical work environment (Table 6).

Table 6

Noe's Work Environment versus STS Work Environment

Noe's Work Environment [a]	STS Work Environment [b]
Social	Social
Support from peers, subordinates, supervisors	Human Beings
Rewards/punishment within the organizations	Relationship within organizations
Attitudes of supervisors and peers	
Task	Technical
Proper tools and equipment	Tools
Materials and Supplies	Facilities
Monetary Support	Techniques
Information flow	Methods

Note. [a] Sources: Facteau et al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986. [b] Sources: Cummings, 1976/1978; Kast & Rosenzweig, 1970; Pasmore et al., 1982.

This table illustrates the similarity between the two proposed concepts of the work environment. The difference is the interrelationship between these two components. Noe describes the components as individual elements of the work environment. STS, on the other hand, describes the integrated relationship of the social and technical components. This distinction of concepts is seen in the empirical studies of

Noe's model. Noe & Schmitt (1986) describe the multidimensional work environment but due to measurement considerations do not evaluate the significance of the work environment as proposed by Noe. Mathieu et al. (1992), also, describes the multidimensional work environment but focus only on the task component. Facteau et al.'s (1995) study is one empirical test where both components of Noe's work environment receive consideration. While Facteau et al.'s study provides organizations with an important understanding of the social and task components affecting the transfer of training, their study excludes the interrelationship between these two work environment components.

Team Research

American organizations are increasingly incorporating the team model into their work design. For example, the number of Fortune 1000 companies reporting the use of teams nearly doubled, to 47%, in a 3 year period from 1987 to 1990 (Cohen et al., 1996). Given such growth, the research on team effectiveness has been limited. Cohen et al. (1996) empirically test a model of team effectiveness. In this model Cohen et al. describe team effectiveness in terms of performance, employee attitudes about their quality of work life, and employee behavior. Additionally, the determinants of work team

effectiveness are hypothesized to be group task design, group characteristics, encouraging supervisory behaviors, and organizational context (p. 646).

The premise of STS theory rests on the interaction of two important variables - social and technical. These variables blend within a work design effort known as autonomous work groups to provide the mechanism for a successful work environment (Cohen et al., 1996; Cummings, 1978; Fisher, 1993; Guzzo & Dickson, 1996; Kelly, 1978; Pasmore et al., 1982; Wall et al., 1986). These autonomous work groups consist of multiskilled workers who possess all of the skills essential for the performance of a "whole" task, and decide their own allocation of labor (Kelly, 1978, p. 1071).

The work group becomes an important focus in a sociotechnically designed work environment. The literature identifies several important aspects of groups. For example, Cartwright & Zander (1960a) establish the existence of social norms within groups. Social norms include the "existence of customs, traditions, standards, rules, values, fashions, and other criteria of conduct" (p. 23). Additionally, some research focuses on the importance of group cohesiveness (Cartwright & Zander, 1960b; Tannenbaum, 1970). A third important aspect of groups is the importance of the organizational climate in implementing such organizational structures. For example,

organizational issues such as group based pay, performance data relevant to the group, and self-selection of group members tend to promote groups within organizations (Cummings, 1978).

Empirical tests of work groups adds to the understanding of this organizational phenomena. Kolodny & Kiggundu's (1980) empirical study of work groups within the tree harvesting industry tries to explain productivity variations through the development of a sociotechnical systems perspective. Under their analysis, the social component consists of several variables including organizational arrangements, leadership and supervision, group interaction, and group characteristics. On the other hand, the technical component includes "the competence with which mechanics, operators, and supervisor carry out their basic technical tasks" (p. 628).

Using a Systems Theory model, Gladstein (1984) studies group effectiveness within the communications industry. Gladstein hypothesizes that inputs consisted of group level and organizational level variables. For example, group level variable consists of the group composition (i.e. skills, organizational tenure, job tenure) and group structure (i.e. work norms, size). Furthermore, the organizational level consists of available resources and organizational structure including the amount of rewards for group performance and supervisory control. The group process includes such constructs

as open communication, supportiveness, and boundary management. Finally, the output, group effectiveness, consists of performance and satisfaction.

Gladstein's research involves 326 individuals from 100 teams within the marketing division of an organization within the communications industry. This study presents several conclusions. First, Gladstein suggests individual's have an implicit theory of how things should work effectively. However, this implicit theory may not be congruent with reality. For example, in Gladstein's research individuals "were attributing sales to their own interaction and experience, when it was market growth, low experience levels, and other unidentified variables that were determining sales revenue" (p. 512). Consequently, the variables chosen to predict group effectiveness may be useful in analyzing groups' as a whole but not necessarily for predicting group effectiveness. Second, the individual's participating in the study see the group process as having two components - intragroup processes and boundary management. That is, individuals see a difference between dealing with issues involving the working of the group and those items involving the interaction of the group to organizational environmental factors (p. 513). Finally, Gladstein finds the behaviors of groups affected by outside influences such as the actions of individuals from different hierarchical levels.

Russ-Eft's (1996) editorial in the Winter issue of Human Resources Development Quarterly evaluates the impact of teams within organizations. Citing various researchers, Russ-Eft identifies several factors critical for team success such as first-level management practices, team members' knowledge and skills, feedback and pay structures, and control and responsibility (p. 306). Additionally, Russ-Eft states the early research concerning teams produced "no solid information about the productivity or enhanced performance of teams" (p. 306) although the Tavistock Institute alludes to such gains. Citing more recent research, Sundstrom, DeMeuse, and Futrell (1990) for example, Russ-Eft states team effectiveness consists of performance and team viability. Performance as defined by Sundstrom, DeMeuse, and Futrell, as cited by Russ-Eft, is "the production of goods and services that are acceptable to customers within or outside of the organization" (p. 307). Furthermore, team viability is defined "as team members' satisfaction and the group's future prospects as a work unit" (p. 307). In another recent research study cited by Russ-Eft, Pritchard and colleagues developed a Productivity Measurement and Enhancement System (ProMES) to measure team productivity. Finally, Russ-Eft concludes that the definition of team performance is limited at best and when defined, team performance follows one of three avenues: "(1) the degree to

which the team meets expectations, (2) the ratings by team members or managers of various dimensions of team performance, and (3) the specific outputs of specific teams" (p. 309).

Using structural equation modeling, Cohen et al. (1996) find positive support for group task design, group characteristics, and employee involvement context to team effectiveness. On the other hand, their research study shows a negative relationship between encouraging supervisory behavior and the manager's rating of team performance. This result is counter to expectations. Cohen et al. explain this difference in expectations from several perspectives. First, the other variables that co-vary with encouraging supervisory behavior (group task design, employee involvement context, and group characteristics) may explain the relationship for the self-managing sample (p. 670). Second, supervisors may intercede with teams they perceive are not performing well. This intervention, according to Cohen et al.'s reference of Beekun (1989), may be counterproductive to team performance no matter how well-intended (p. 670). Third, senior management may perceive teams requiring supervisory help are not performing as well as teams who do not need as much help. Finally, Cohen et al. conclude that the employee involvement context has a strong relationship toward effectiveness followed by group task design and group characteristics (p. 669).

Some literature suggests a favorable work environment influences an individual's motivation to learn and an individual's transfer of newly acquired skills on the job (Facteau et al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986). Noe's model of training effectiveness argues the favorable work environment is multidimensional consisting of a social and task component. The social component consists of the support trainee's receive from supervisors, subordinates, and peers (Facteau et al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986). Task component, on the other hand, consists of such items as tools and equipment, materials and supplies, and monetary support (Facteau et al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986).

This multidimensional view of the work environment parallels the work environment described by sociotechnical systems theory. According to this theory, the work environment consists of the interaction between the social and technical components of the organization (Cherns, 1976; Cummings, 1978b; Kast & Rosenzweig, 1970; Katz & Kahn, 1978; Kolodny & Kiggundu, 1980; Pasmore et al., 1982; Trist, 1959/1978). The social structure consists of the people and their interpersonal relationship within the organization while the technical structure consists of the tools, methodologies, and fiscal support necessary to accomplish the work (Cummings, 1978b; Kast

& Rosenzweig, 1970; Pasmore et al., 1982). Furthermore, STS theory proposes that the organizational structure necessary to achieve a successful work environment is the autonomous work group, or teams (Cohen, et al., 1996; Cummings, 1978; Fisher, 1993; Guzzo & Dickson, 1996; Kelly, 1978; Pasmore et al., 1982; Wall et al., 1986). Vroom (1964/1982) summarizes the importance of the work group to an individual's motivation. Vroom states (p. 120)

> If the work group is believed by an individual to be instrumental to the attainment of positively valent outcomes, it will acquire positive valence for him; if, on the other hand, it is perceived to be instrumental to negatively valent outcomes, it will acquire negative valence for him.

Summary

Through an integration of Vroom's Expectancy Theory and Kirkpatrick's hierarchical levels of evaluation, Noe (1986) presents a model of training effectiveness as a function of ability, motivation, and favorable work environment. Some research, including empirical tests of Noe's model, suggest possible factors affecting an individual's motivation to learn. For example, some findings suggest the level of choice, voluntary or mandatory, an individual has in attending training activities affects his/her motivation to learn (Baldwin & Magjuka, 1991; Cohen, 1990; Facteau et al., 1995; Hicks &

Klimoski, 1987; Noe & Schmitt, 1986; Quinones, 1995). Also, some research supports the concept of intrinsic and extrinsic incentives as a factor of an individual's motivation to learn (Facteau et al., 1995). Finally, some research supports Noe's model in terms of the work environment as an antecedent to motivation of learning (Cohen, 1990; Facteau et al., 1995). Noe describes a favorable work environment in terms of a social component and a task component. According to this view of the work environment, the social component consists of the organizational support individuals receive from their supervisors, peers, subordinates, and top management (Facteau et al., 1995; Noe, 1986; Noe & Schmitt, 1986). Moreover, the task component of the work environment consists of such items as the tools and equipment, materials and supplies, and financial support (Facteau et al., 1995; Noe, 1986; Noe & Schmitt, 1986).

Training involves learning skills in one environment for application to another location (Broad & Newstrom, 1992; Ellis, 1965; Goldstein, 1993; Huczynski & Lewis, 1980). An individual's motivation to learn is an important factor in the learning process (Facteau et al., 1995; Fisher et al., 1996; Goldstein, 1993; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986; Quinones, 1995). Facteau et al. (1995), for instance, hypothesizes a direct relationship between an individual's motivation to learn and the individual's perceived transfer of

training. Finally, a favorable work environment consisting of a social and task component either encourages or inhibits the transference of training (Facteau et al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986).

Noe's model describes a favorable work environment as a multidimensional concept consisting of a social and task component. His description parallels the tenets of STS Theory where a correlative environment consisting of social and technical components enhance organizational effectiveness. For example, the description of the social structure focuses on human beings within their organization as well as their interpersonal relationships. Likewise, the STS description of the technical component focuses on the methodologies organizations use to accomplish jobs. A sociotechnically designed work environment uses work groups, or teams, as the basic organizational unit (Cohen et al., 1996; Cummings, 1978; Fisher, 1993; Guzzo & Dickson, 1986; Kelly, 1978; Pasmore et al., 1982; Wall et al., 1986).

The present study integrates some research for an understanding of the transfer of training within a team work environment. Noe's (1986) model and the refinement by Facteau et al.(1995) provide a theoretical base for the conceptualization of the transference issue. Likewise, some work group and team literature provides a theoretical framework

for understanding the dynamics of a collaborative work environment.

CHAPTER III

METHODOLOGY

Overview

Noe (1986) proposes a model of training effectiveness where trainability varies with ability, motivation, and a favorable work environment. Specifically, Noe hypothesizes that a favorable work environment consisting of a social and task component directly influences an individual's motivation to learn. Furthermore, he suggests that a favorable work environment influences an individual's motivation to transfer their learning to the work environment. Given the significance of the work environment as a factor in transferring training according to Noe, this current study extends Noe's basic premise by examining the transfer of training within a team work environment.

Noe's model forms the basis for several empirical studies (Facteau et al., 1995, Mathieu et al., 1992, Noe & Schmitt, 1986). Each study lends support for Noe's basic premise

concerning the relationship between a favorable work environment and an individual's transfer of training. Furthermore, most studies use a traditionally managed organization for their research population. Additionally, empirical studies of the relationship between the transfer of training and a team work environment are also limited in number. This current study addresses this deficiency through an investigation the following research questions:

1. Are there relationships between an individual's motivation to learn, an individual's attitudes toward training, the sociotechnical attributes of the work environment in which he/she works, and his/her perceived transfer of training within a team work environment?

2. Are there relationships between an individual's attitudes toward training, the sociotechnical attributes of the team work environment in which an individual works, and his/her motivation to learn?

Hypotheses

This study considers the research questions through the following hypotheses stated in the null (H_0) and alternative (H)

forms.

Research Question 1: Are there relationships between an individual's motivation to learn, an individual's attitude toward training, the sociotechnical attributes of the work environment in which he/she works, and his/her perceived transfer of training within a team work environment?

$H_0$1 There is no relationship between an individual's motivation to learn and his/her perceived transfer of training.

H1 There is a relationship between an individual's motivation to learn and his/her perceived transfer of training.

$H_0$2 There is no relationship between an individual's attitude toward training and an individual's perceived transfer of training.

H2 There is a relationship between an individual's attitude toward training and an individual's perceived transfer of training.

$H_0$3 There is no relationship between the social attributes of the work environment and an individual's perceived transfer of training.

H3 There is a relationship between the social attributes of the work environment and an individual's perceived transfer of training.

$H_0$4 There is no relationship between technical attributes of the work environment and an individual's perceived transfer of training.

H4 There is a relationship between technical attributes of the work environment and an individual's perceived transfer of training.

Figure 10 shows the hypothesized framework of the research elements.

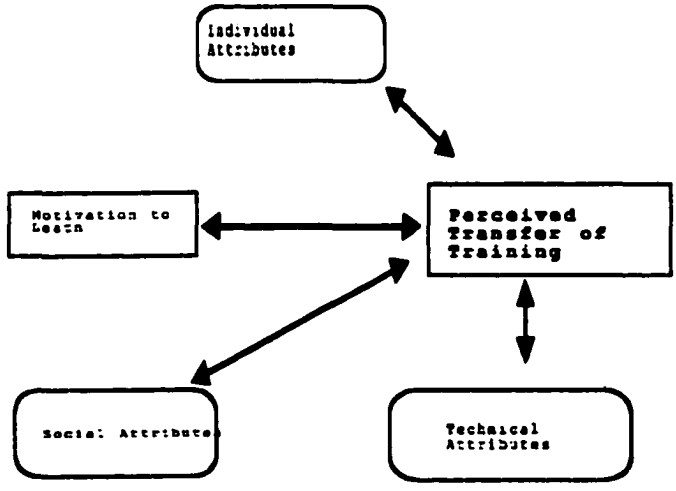

Figure 10. Relationship Between Motivation to Learn, Sociotechnical Attributes, and Perceived Transfer of Training

Research Question 2: Are there relationships between an individual's attitude toward training, the sociotechnical attributes of the team work environment in which an individual works, and his/her motivation to learn?

$H_0$5 There is no relationship between an individual's attitude toward training and his/her motivation to learn.

H5 There is a relationship between an individual's attitudes toward training and his/her motivation to learn.

$H_0$6 There is no relationship between the social attributes of the work environment and an individual's motivation to learn.

H6 There is a relationship between the social attributes of the work environment and an individual's motivation to learn.

$H_0$7 There is no relationship between the technical attributes of the work environment and an individual's motivation to learn.

H7 There is a relationship between the technical attributes of the work environment and an individual's motivation to learn.

Figure 11 shows the relationships between individual attitudes, sociotechnical attributes, and motivation to learn.

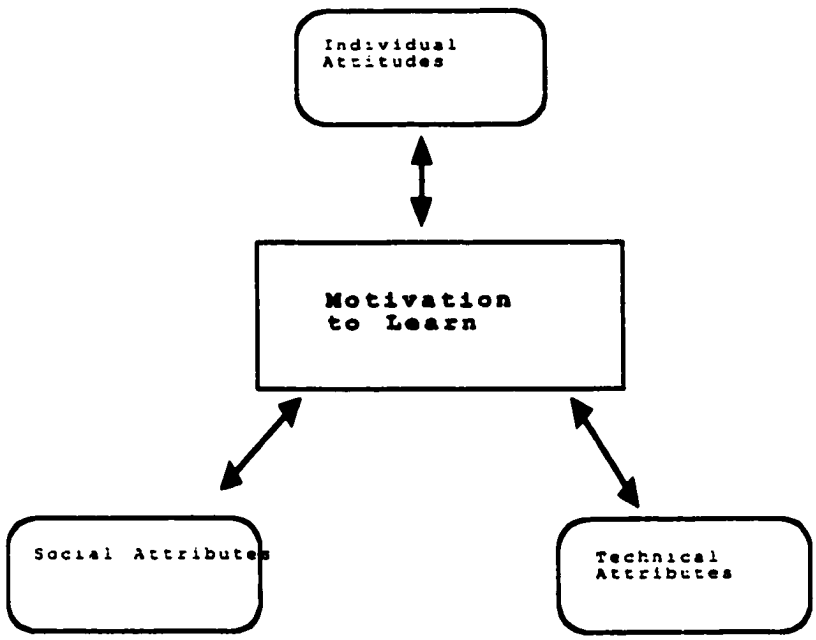

Figure 11. Relationship Between Individual Attitudes, Sociotechnical Attributes, and Motivation to Learn

Variables

Dependent Variable

Dependent variables are the outcomes or effects resulting from the manipulation of independent variables (Babbie, 1995; Isaac & Michael, 1995; Swanson, 1996). For this study, the

dependent variables are motivation to learn and perceived training transfer. Previous research (Baumgartel & Jeanpierre, 1972; Facteau et al., 1995; Huczynski & Lewis, 1980; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986; Tannenbaum et al., 1991) establishes the empirical framework.

Independent Variable

Independent variables cause the outcomes of the dependent variables (Babbie, 1995; Isaac & Michael, 1995; Swanson, 1996). Table 7 shows the relationships of the current study in terms of the hypotheses and the variables of interest.

Table 7

Relationship Between Hypotheses and Variables

Hypothesis	Independent Variable	Dependent Variable
1	Motivation to Learn (MTL)	Perceived Transfer of Training (PTT)
2	Individual Attitudes (IND)	
3	Social Attributes (SOC)	
4	Technical Attributes(TECH)	
5	Individual Attitudes (IND)	Motivation to Learn (MTL)
6	Social Attributes (SOC)	
7	Technical Attributes (TECH)	

The training literature supports the identified independent variables for the transference of training. For example, attitudinal behaviors are influential to an individual's motivation to learn (Hicks & Klimoski, 1987; Facteau et al.,

1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986). Specifically, the training literature argues an individual's choice in attending training, his/her perception of the training activities reputation, and his/her perceived intrinsic incentives influence his/her motivation to learn (Baldwin & Magjuka, 1991; Cohen, 1990; Facteau et al., 1995; Hicks & Klimoski, 1987; Huczynski & Lewis, 1980; Noe & Schmitt, 1986; Quinones, 1995).

Another series of independent variables influential to the transference of training involves the importance of the work environment (Baldwin & Ford, 1988; Facteau et. al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986). According to Noe (1986), the work environment, consisting of a social and task component, contributes to an individual's motivation to learn and their perceived transfer of training back on the job. This view parallels the tenets of a sociotechnically designed work environment. That is, the social component of the work environment consists of the human beings and their relationships within the organization; the technical structure consists of the tools, facilities, techniques, and methods of doing the job (Cummings, 1978b; Fox, 1995; Kast & Rosenzweig, 1970; Pasmore et al., 1982). Hence, the current study integrates Noe's framework and the STS theory to develop a

concept of the team work environment supportive of the transference of training.

The independent variables of the social attributes of the team work environment encompass the supportive behaviors of different organizational constituents and the social design of the work group. Managerial support, for instance, influences on an individual's motivation to learn and perceived transfer of training (Cohen et al., 1996; Facteau et al., 1995). Peer or team member support is also an influence on the individual's motivation to learn and perceived transfer of training (Cohen et al., 1996; Facteau et al., 1995). The social design of the work group includes group norms and expertise (Campion, Medsker, Higgs, 1993; Cherns, 1976; Cohen et al., 1996; Fisher, 1993; Katz & Kahn, 1978; Pasmore, 1995; Tesluk, Farr, Mathieu, & Vance, 1995). Work groups develop their own rules of behavior, or norms (Cohen et al., 1996; Fisher, 1993; Sundstrom, DeMeuse, & Futrell, 1990). Group expertise involves the composition of the group in terms of complementary skills (Campion et al., 1993; Cohen et al., 1996; Fisher, 1993; Katzenbach & Smith, 1993).

The final independent variable is the technical component of the work environment. Collectively the literature describes one element of the technical component as the organizational

constraints which influence an individual's motivation to learn and transfer of training. These constraints may include tools, physical facilities, budgetary limitations, and flow of information (Facteau et al., 1995; Noe, 1986; Peters & O'Connor, 1980). On the other hand, the task design of the work group include group autonomy and identity (Cohen et al., 1996; Cherns, 1976; Fisher, 1993; Sundstrom et al., 1990; Wall et al., 1986). Autonomy involves a level of self determination by the team for daily operational decisions (Cohen et al., 1996; Wall et al., 1986). Group identity is the degree to which a team completes a whole unit of work (Campion, et al., 1993; Cohen et al., 1996).

Population Sample

This study uses data from a survey instrument administered to employees of a national retailer. At the national level this organization has over 30 years experience in work teams. The specific site for this study has over six years experience using work teams. The specific population for this study comes from one of the company's retail stores located in the Northeastern United States employing nearly 350 employees in nine different work teams.

A systematic sampling design is used for this study. To achieve a minimum of 100 participants for this design,

1. A sampling interval of two is used to ensure half of the teams are chosen for this study.
2. To begin the sampling, each team is assigned a number from one to nine and a random number is used to determine the starting point within this team roster.
3. During their regularly scheduled team meeting, a cover letter (Appendix B) describing the study and a survey instrument (Appendix D) are distributed to the planned participants. Participants are given 20 minutes during this meeting to complete and return the survey.

Measurement of Variables

The selected instrument (Appendix D) contains the theoretical constructs reflecting the methodology for measuring the defined variables. Items on the instrument are designed for using a Likert five-point (1 = "Strongly Disagree", to 5 = "Strongly Agree") scale.

Dependent Variable

This study examines two dependent variables: Motivation to Learn and Perceived Training Transfer. Motivation to learn describes "a specific desire on the part of the trainee to learn the content of the training program" (Noe & Schmitt, 1986, p.

501). A nine-item survey adapted from Facteau et al. (1995) is the basis for measuring this variable. Perceived training transfer, the second dependent variable, describes an individual's perceptions of the extent to which he/she is able to transfer training back to his/her job (Facteau et al., p. 3). This study incorporates five-items adapted from Facteau et al. that measure this dependent variable.

Independent Variable

This study incorporates, several independent variables discussed in the literature. For example, this current study considers individual attitudinal behaviors - Perceived Training Reputation and Perceived Individual Intrinsic Incentives. Perceived training reputation focuses on the expectation an individual holds about the quality of the training activities and its job relevance (Facteau et al., 1995). This variable is measured using a survey developed by Facteau et al. Finally, intrinsic incentives measure an individual's belief that such benefits result from successfully completing training (Facteau et al., 1995, p. 9). Six items from Facteau et al.'s study measure this variable.

Other independent variables measure the team work environment. The social component of the work environment

focuses on the social interactions of the organization. One such social interaction is the behavior exhibited by company management. That is, to what extent does company management encourage or inhibit an individual's transfer of training back to the job environment. To this end, four items from Facteau et al.'s (1995) study measures this variable. Another social interaction is the behavior exhibited by the other team members in supporting the transfer of training. Four items adapted from Facteau et al. measure this variable.

Cohen et al. (1996) suggest that another important independent variable is Work Group Social Design. The literature supports the development of group processes such as group norms in effectiveness of work groups (Campion et al., 1993; Cohen et al., 1996). This study uses two items from Cohen et al.'s study to measure the perceived norms of the group. Also, the literature supports the development of complementary skills, or expertise, in the effectiveness of teams (Campion et al., 1993; Cohen et al., 1996; Fisher, 1993; Katzenbach & Smith, 1993). Three items adapted from Cohen et al. form the basis for the measurement of this variable.

The team work environment consists of a social and a technical component. Independent variables in the current study describe the technical component as Organizational Constraints

and Group Task Design. Organizational constraints focus on the extent to which organizational resources enhance or inhibit the transfer of training. Five items from Facteau et al.'s (1995) study form the basis for measuring this variable. Group Task Design is measured by group autonomy (two items adapted from Cohen et al., 1996) and group identity (two items adapted from Cohen et al., 1996)

Table 8 shows the survey items with appropriate literature references and statistical validity.

Pilot Test

To reduce the potential for error, researchers should pretest the survey questionnaire (Babbie, 1995; Isaac & Michael, 1995; Jones & Bearley, 1995). For instance, do the readers of the questionnaire interpret each item the same (Jones & Bearley, 1995). Procedurally the pilot test should use a representative sample to pretest the various elements of the research design (Babbie, 1995; Isaac & Michael, 1995). For this purpose, employees from two organizations using teams were chosen as the sites for conducting such a pilot test. These organizations were chosen because they represent a diverse work group in terms of demographic composition.

The pilot test (Appendix A), consisting of 54 individuals

from 2 organizations using teams, suggests the original survey instrument of 53 questions required modification. For example, the pilot test showed the measure of the Choice variable did not retain sufficient reliability when compared to the original work by Facteau et al. (1995). Likewise, the measure for the Identity variable did not retain sufficient reliability in the pilot study compared to the original work by Cohen et al. (1996). Consequently, these questions were not included in the final revision of the 43-question survey instrument being used for this study (Table 8).

Data Collection and Tabulating

The present study used a survey as the data collection tool (Appendix C). This methodology provides an excellent approach for measuring attitudes in a large population (Babbie, 1995; Issac & Michael, 1995). The specific survey for this study drew upon previously tested research instruments to measure the dependent and independent variables for examining team relationships.

Statistical Treatment

The research questions for this study examined an

Table 8

Survey Measures and Statistical Reliability

No. Items	Questions	Variable	Literature Citation	Cronbach alpha
3	3, 4, 34	Training Reputation	Facteau et al. (1995)	α = .87
9	1, 2, 7, 14, 22, 28, 33, 36	Motivation to Learn	Facteau et al. (1995)	α = .71
5	8, 11, 17, 18, 21, 24	Perceived Training Transfer	Facteau et al. (1995)	α = .87
2	40, 42	Autonomy	Cohen et al. (1996)	α = .90
4	10, 13, 16	Managerial Support	Facteau et al. (1995)	α = .90
2	20, 35	Norms	Cohen et al. (1996)	α = .88
3	39, 41, 43	Expertise	Cohen et al. (1996)	α = .84
5	23, 25, 30, 37, 38	Organizational Constraints	Facteau et al. (1995)	α = .85
6	19, 26, 27, 29, 31, 32	Intrinsic Incentives	Facteau et al. (1995)	α = .90
4	5, 6, 9, 12, 15	Team Member Support	Facteau et al. (1995)	α = .81

individual's perception of the team work environment on the transference of training. Hence, the present study maintains the individual team member as the source for primary data collection.

Data treatment and analysis for this study involved various statistical techniques using SPSS 10.0 for Windows. One such

measure is correlation analysis. This technique measures the relationship between dependent and independent variables (Hanke & Reitsch, 1994; Swanson & Holton, 1997). The correlation between variables measures from -1.0 to +1.0 to verify both the type and strength of the relationship (Swanson & Holton, 1997). According to Swanson & Holton (1997), the sign of the correlation indicates whether the relationship is directly (+) or inversely (-) associated. For example, a correlation value of "1 is perfectly correlated (Hanke & Reitsch, 1994; Swanson & Holton, 1997). This study used the Pearson product-moment correlation coefficient (r) for this purpose.

Another statistical measure, multiple regression analysis, measures the relationship between the dependent and independent variables (Hair, Anderson, Tatham, & Black, 1995; Hanke & Reitsch, 1994; Isaac & Michael, 1995; Swanson & Holton, 1997). Multiple regression analysis allows the researcher to plot a linear equation that best describes the data. The equation for the line is:

$Y = \beta_0 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_k x_k + \varepsilon$; where Y = Dependent variable; x_i = Independent variable; β_k = Regression coefficients (measures the variation of the dependent variable caused by the independent variable; ε = Random error.

This study also employed factor analysis to analyze the

underlying dimensions, or factors (Hair et al., 1995). This methodology provides a way to examine whether the attributes in this study correspond with the attributes of previous studies. Initial factor extraction is achieved through principal component analysis. Additional interpretation of the factors is achieved through the varimax method of orthogonal rotation. The purpose of rotation is to improve the interpretation of the factors (Hair et al., 1995; Norusis, 1994).

Summary

The current study followed an ex post facto design since the data collected comes after the training intervention. This design provides useful information concerning the phenomena under investigation in terms of relationships; however, this method lacks the ability to tightly control the independent variables (Isaac & Michael, 1995).

Noe's (1986) model of training effectiveness conceptualizes the interrelationship between an individual's motivation to learn and the work environment. This study examines Noe's theoretical views in a team-based work environment. To address these issues, this study poses two basic research questions.

1. Are there relationships between an individual's motivation

to learn, an individual's attitude toward training, the sociotechnical attributes of the work environment in which he/she works, and his/her perceived transfer of training within a team work environment?

2. Are there relationships between an individual's attitude toward training, the sociotechnical attributes of the team work environment in which an individual works, and an his/her motivation to learn?

The research design for this study measures the relationship between specific dependent and independent variables. A survey instrument to measure the perceptions of trainees concerning the various variables is given to employees of a national retailer using a team-based work environment. The specific survey instrument draws from previous validated research (Cohen et al., 1996; Facteau, 1995). Finally, the variables of interest were statistically tested using Pearson correlation, multiple regression analysis, and factor analysis.

CHAPTER IV

ANALYSIS AND PRESENTATION OF FINDINGS

Overview

The transfer of training literature supports a favorable work environment as a determinant in motivating one's motivation to learn and encouraging the transfer of that learning to the work place. The current research extends this premise by examining the transfer of training in a team work environment. This chapter presents the statistical analysis of the selected survey instrument designed for this research study (Appendix D).

The sample population for this current research comes from a national retailer's facility in the Northeastern United States. This specific location has been in business for over six years. Since inception, this particular location has used a team work environment to manage its operations. The sample population for this study represents six of the nine teams at

this facility. Furthermore, these six teams employ 128 individuals, or 40% of the total local store population.

Per the research design methodology described in Chapter III, a list of teams and corresponding number of employees were provided to the researcher. This list (Table E-1) provides the basis for determining the sample population. Using the last digit of a five digit random number plus a sampling interval of two, Table E-1 is restructured to generate the list of teams for the sample population as shown in Table E-2.

By attending team meetings, the researcher distributed the cover letter describing the research study (Appendix B) and the survey instrument (Appendix D). Also, by attending the meeting the researcher was able to collect the completed surveys and do an audit for completeness. This methodology provided a participation rate of 100% for the teams participating in this study.

Descriptive Statistics

The sample population of 128 employees consists of 84% female and 16% male. Participant's of this study responding to their highest attained educational level indicates 66% have a high school diploma, 10% a two-year technical degree, 15% some undergraduate college work, 5% a four-year undergraduate college

degree, 3% some graduate work, and 1% a graduate degree. Table 9 shows the descriptive statistics for the demographic and measurement variables. Table 10 shows the correlation matrix for the measurement variables.

TABLE 9

Descriptive Statistics

	Mean	Standard Deviation
Demographic Variables		
Age	32.98	11.35
Education	1.70	1.15
Time with Company	3.91	2.14
Time with Team	2.79	2.01
Time in Job	2.57	1.87
Measurement Variables		
Perceived Transfer of Training (PTT)	3.702	.543
Motivation to Learn (MTL)	4.044	.515
Intrinsic Incentives (INC)	3.987	.594
Reputation of Training (REP)	3.733	.723
Expertise (EXP)	3.510	.893
Managerial Support (MGR)	3.480	.757
Team Norms (NOM)	3.660	.846
Team Support (TS)	3.723	.601
Autonomy (AUT)	3.793	.660
Organizational Constraints (ORG)	3.168	.740

TABLE 10

Correlation Matrix Measurement Variables

	PTT	MTL	INC	REP	EXP
PTT	1.0000				
MTL	0.662**	1.0000			
INC	0.634**	0.807**	1.0000		
REP	0.612**	0.364**	0.399**	1.0000	
EXP	0.392**	0.256**	0.165	0.483**	1.0000
MGR	0.562**	0.357**	0.355**	0.666**	0.439**
NOM	0.436**	0.283**	0.327**	0.452**	0.377**
TS	0.633**	0.515**	0.445**	0.528**	0.508**
AUT	0.413**	0.340**	0.346**	0.504**	0.642**
ORG	-0.012	0.022	0.019	-0.236**	-0.162

	MGR	NOM	TS	AUT	ORG
MGR	1.0000				
NOM	0.483	1.0000			
TS	0.576**	0.542**	1.0000		
AUT	0.439	0.377**	0.444**	1.0000	
ORG	-0.183*	-0.082	-0.052	-0.099	1.0000

Note. PTT - Perceived Transfer of Training; MTL - Motivation to Learn; INC - Intrinsic Incentives; REP - Reputation of Training; EXP - Expertise; MGR - Managerial Support; NOM - Norms; TS - Team Member Support; AUT - Autonomy; ORG - Organizational Constraints 2-tailed Significance; * - $p < .05$; ** - $p < .01$

Results and Findings

The research questions and accompanying hypotheses posit that the individual's attitudes toward training and the sociotechnical attributes of the team work environment influence the transference of training. These relationships are analyzed through the use factor analysis, correlational analysis, and multiple regression analysis.

Factor Analysis

Factor analysis is a statistical technique designed to analyze the underlying structure, or factors, explaining the correlations among variables (Hair et al., 1995; Malhotra, 1996; Norusis, 1994). This technique offers the ability to confirm relationships of a hypothesized model with previous research (Hair et al., 1995; Norusis, 1994. Also, the technique allows for the factors to be used in other multivariate analysis (Malhotra, 1996). Both of these objectives form the basis for factor analysis in this study. The variables measuring individual, social, and technical attributes of the team work environment are chosen for factor analysis. The first objective is to confirm whether these are the underlying factors as posited.

For a confirmatory approach the sample size should have a minimum of five observations per variable (Hair et al.,1995; Malhorta, 1996). This study has 16 observations per variable. Factor analysis assumes correlated variables. Table 11 shows that 19 of the 28 factor variable correlation are statistically significant at the .01 level. This is enough to continue with the Bartlett test for overall statistical significance (Hair et al., 1995).

The Bartlett' test of sphericity tests the null hypothesis that the correlation matrix is an identity matrix (Hair et al.,

1995; Malhotra, 1996; Norusis, 1994). This null hypothesis is rejected since the correlations are significant at the.01 level per the Bartlett test of sphericity. Furthermore, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy provides a way to evaluate the appropriateness for factor analysis (Hair et al., 1995; Malhorta, 1996). With a KMO value of .826, the variables meet the necessary criteria for factor analysis.

TABLE 11

Correlation Matrix Factor Variables

	INC	REP	EXP	MGR
INC	1.0000			
REP	0.399**	1.0000		
EXP	0.165	0.483**	1.0000	
MGR	0.355**	0.666**	0.570**	1.0000
NOM	0.327**	0.452**	0.471**	0.483
TS	0.445**	0.528**	0.508**	0.576**
AUT	0.346**	0.504**	0.642**	0.439
ORG	0.019	-0.236**	-0.162	-0.183*

	NOM	TS	AUT	ORG
NOM	1.0000			
TS	0.542**	1.0000		
AUT	0.377**	0.444*	1.0000	
ORG	-0.082	-0.052	-0.099	1.0000

Note. INC - Intrinsic Incentives; REP - Reputation of Training; EXP - Expertise; MGR - Managerial Support; NOM - Norms; TS - Team Member Support; AUT - Autonomy; ORG - Organizational Constraints 2-tailed Significance; * - $p < .05$; ** - $p < .01$

Identifying the underlying factors is achieved through principal component analysis. This method is appropriate since the current research is concerned with finding the minimum of factors explaining the greater variance for subsequent

multivariate analysis (Hair et al., 1995; Malhorta, 1996; Norusis, 1994). Additional analysis to simplify interpretation is done using the varimax method of orthogonal rotation. Three factors, accounting for 72% of the variance, are extracted using a prior criterion. Table 12 shows the rotated factor matrix using varimax rotation.

TABLE 12

Rotated Factor Matrix

	Factor 1 (Social)	Factor 2 (Individual)	Factor 3 (Technical)
REP	.554	.515	-.334
INC	.070	.902	.056
MGR	.633	.450	-.251
TS	.577	.571	.008
NOM	.575	.422	-.016
ORG	-.059	.023	.967
AUT	.779	.169	-.003
EXP	.913	.005	-.091

Note. INC - Intrinsic Incentives; REP - Reputation of Training; EXP - Expertise; MGR - Managerial Support; NOM - Norms; TS - Team Member Support; AUT - Autonomy; ORG - Organizational Constraints

The final process is to identify the underlying factors through several steps. First, all factor loadings less than ±0.5 are eliminated from the matrix (Norusis, 1994). Next, the highest loading value per factor is identified for each variable. The factor is labeled based on an analysis of the contributing variables. Rotated factor one consists of six measurement variables - Reputation of Training, Managerial Support, Team

Member Support, Team Norms, Autonomy, and Expertise. All of these measurement variables represent the Social Attributes of the work environment, except Reputation of Training and Autonomy (Table 12). Rotated factor two consists of the Individual Attitude measurement variable - Intrinsic Incentives (Table 12). Rotated factor three consists of the Technical Attributes measurement variable - Organizational Constraints (Table 12). Hence, the factor analysis shows a three factor solution consistent with the hypothesized model.

Factor analysis provides a methodology to use the factors in subsequent multivariate analysis. Hair et al. (1995) suggest three methods - Factor Scores, Surrogate Variable, Summated Scale - for using the factors in additional analysis. Of these methods Hair et al. (1995) support the use of a summated scale when transferability, or replication on subsequent samples is desired. Furthermore, the summated scale method for factors includes all variables loading highly on a factor versus a composite based on the correlation of variables in a factor score method (Hair et al., 1995). Thus, Table 13 shows the correlation, between the independent and dependent variables using a summated scale approach for the underlying factors.

Correlation Analysis

Correlational analysis involves the existence of linear

relationships between variables (Hanke & Reitsch, 1994; Hopkins & Glass, 1978). This study uses the Pearson correlation coefficient (r) to examine both the relative strength and statistical signifcance between variables. This methodology provides a way to analyze each research question and accompanying hypotheses.

TABLE 13

Correlation Between Independent and Dependent Factors

	PTT	MTL	IND	SOC	TECH
PTT	1.000				
MTL	0.661**	1.000			
IND	0.634**	0.807**	1.000		
SOC	0.650**	0.447**	0.432	1.000	
TECH	-0.017	0.022	0.019	-0.182*	1.000

Note. PTT - Perceived Transfer of Training; MTL - Motivation to Learn; IND - Individual Attributes; SOC - Social Attributes; TECH - Technical Attributes
2-tailed significance; * - $p < .05$; ** - $p < .01$

The first research question posits relationships between an individual's motivation to learn, his/her attitude toward training, the sociotechnical attributes of the team work environment, and his/her perceived transference of training. Table 13 forms the basis to analyze the supporting hypotheses

using correlational analysis.

$H_0$1 There is no relationship between an individual's motivation to learn and his/her perceived transfer of training.

H1 There is a relationship between an individual's motivation to learn and his/her perceived transfer of training.

Table 13 shows a positive relationship (r = .661) exists between an individual's motivation to learn and his/her perceived transfer of training. Additionally, this relationship is statistically significant (p < .01). The null hypothesis, $H_0$1, is rejected.

$H_0$2 There is no relationship between an individual's attitude toward training and an individual's perceived transfer of training.

H2 There is a relationship between an individual's attitude toward training and an individual's perceived transfer of training.

A positive relationship (r = .634) exists between an individual's attitude toward training and his/her perceived transfer of training (Table 13). This relationship is also statistically significant (p < .01). Therefore, $H_0$2, the null

hypothesis, is rejected.

$H_0$3 There is no relationship between the social attributes of the work environment and an individual's perceived transfer of training.

H3 There is a relationship between the social attributes of the work environment and an individual's perceived transfer of training.

The social attributes of the team work environment show a positive relationship (r = .650) exists with an individual's perceived transfer of training (Table 13). This relationship is statistically significant ($p < .01$). The null hypothesis, $H_0$3, is also rejected.

$H_0$4 There is no relationship between technical attributes of the work environment and an individual's perceived transfer of training.

H4 There is a relationship between technical attributes of the work environment and an individual's perceived transfer of training.

The technical attributes of the team work environment show a negative relationship (r = -0.017) exists with an individual's

perceived transfer of training (Table 13). This relationship, however, is not statistically significant at the .01 level. Therefore, $H_0 4$, the null hypothesis, fails to be rejected.

The second research question posits relationships between an individual's attitudes toward training, the sociotechnical attributes of the team work environment, and his/her motivation to learn.

$H_0 5$ There is no relationship between an individual's attitudes toward training and his/her motivation to learn.

$H 5$ There is a relationship between an individual's attitudes toward training and his/her motivation to learn.

An individual's attitude toward training shows a positive relationship ($r = .807$) with his/her motivation to learn (Table 13). This relationship is also statistically significant ($p < .01$). Therefore, $H_0 5$, the null hypothesis, is rejected.

$H_0 6$ There is no relationship between the social attributes of the work environment and an individual's motivation to learn.

$H 6$ There is a relationship between the social attributes of the work environment and an individual's motivation to learn.

The social attributes of the team work environment shows a positive relationship (r = .447) with an individual's motivation to learn (Table 13). Statistically this relationship is significant (p < .01). Therefore, the null hypothesis, $H_0$6, is rejected.

$H_0$7 There is no relationship between the technical attributes of the work environment and an individual's motivation to learn.

H7 There is a relationship between the technical attributes of the work environment and an individual's motivation to learn.

The technical attributes of the team work environment show a positive relationship (r = .022) with an individual's motivation to learn (Table 13). This relationship, however, is not statistically significant at the .01 level. Therefore, $H_0$7, the null hypothesis, fails to be rejected.

Multiple Regression

Multiple regression analysis measures the relationship between the dependent and independent variables (Hair et al., 1995; Hanke & Reitsch, 1994; Isaac & Michael, 1995; Swanson &

Holton, 1997). This technique provides a means of assessing not only the magnitude of the relationship but also the modeling nature of the independent variables.

Hair et al. (1995) suggests the ability to generalize research results using multiple regression requires 15 to 20 observations per independent variable. The current study meets these guidelines with a 16:1 observation to independent variable ratio. Also, multiple regression analysis should have the power to detect a significant statistical relationship. According to Hair et al. (1995), this power represents the probability of detecting a statistically significant coefficient of determination ($\underline{R}^2$) at a specific significance level. Their recommendation for eight independent variables, at a significance level of .05, and a sample size of at least 100 respondents suggests the analysis detects relationships explaining about fifteen percent of the variance.

Regression analysis allows for the examination of the amount of variation explained by the predictor variables and the contribution of each predictor variable to the variation. This study used the identified factors as predictor variables and stepwise regression analysis to examine each research question. Stepwise regression used a $\underline{F}$ statistic to determine the entry or removal of a variable in the regression equation (i.e. $\underline{F} \leq .05$ to enter; $\underline{F} \geq .10$ to remove).

Research question 1 addresses the relationship between variables when Perceived Transfer of Training is the dependent variable. Table 14 shows all predictor variables, except Technical Attributes, have been entered in the regression equation. This is logical since the Technical Attribute variable shows no statistical significance with the dependent variable, Perceived Transfer of Training (Table 13).

Table 14 also shows the various regressions based on the entry of predictor variables into the equation and their associated coefficient of multiple determination (R^2). This table shows a 17% (R^2) improvement from the entry of one variable into the regression model to the final model with three predictor variables. Furthermore, the final model shows 61% of the variance in the dependent variable is explained by the three predictor variables (R^2).

TABLE 14

PTT Regression Model Summary

Step	Variables Entered	R	R^2	Adjusted R^2	Std Error Estimate
1	Motivation to Learn	.671	.437	.433	.4092
2	Social	.771	.594	.588	.3488
3	Individual	.780	.608	.598	.3443

Note. Stepwise Regression; Dependent variable - Perceived Transfer of Training (PTT)

The F statistic tests the overall fit of the regression

model. Specifically, this test analyzes the existence of linear relationships between the dependent and independent variables. Table 15 shows that the calculated F statistic, 64.094, has an observed significance level less than .05. Therefore, the null hypothesis that no linear relationship exists between the dependent and independent variables is rejected. This means that at least one of the regression coefficients is not 0.

TABLE 15

PTT Regression Fit

	SS	df	MS	F	Sig.
Regression	22.793	3	7.598	64.094	.000
Residual	14.699	124	.119		
Total	37.492	127			

Note. SS - Sum of Squares; MS - Mean Square; Predictor variables - Individual Attributes, Social Attributes, Motivation to Learn

Table 16 also shows the relative importance (β) for each predictor variable. Social Attributes shows the greatest importance (β = .425), Motivation to Learn next (β = .310), and Individual Attributes with the least importance (β = .199).

Similar analysis is applied to research question 2 which addresses the relationship between variables when Motivation to Learn is the dependent variable. Table 17 shows Individual and Social Attributes are predictors of Motivation to Learn. Technical Attributes is excluded due to its lack of statistical

significance as reflected in Table 13.

TABLE 16

PTT Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	SE	β		
(Constant)	.189	.260		.725	.470
Motivation to Learn	.327	.102	.310	3.204	.002
Social	.401	.060	.425	6.701	.000
Individual	.182	.088	.199	2.074	.040

Note. SE - Standard Error; Predictor variables - Individual Attributes, Social Attributes, Motivation to Learn

TABLE 17

MTL Regression Model Summary

Step	Variables Entered	R	R^2	Adjusted R^2	Std Error Estimate
1	Individual	.807	.651	.649	.3054
2	Social	.814	.663	.658	.3014

Note. Stepwise Regression; Dependent variable - Motivation to Learn

Table 17 shows nearly 66% of the variance in the dependent variable, Motivation to Learn, is explained by the two independent variables (R^2). Table 18 shows a linear relationship exists between the dependent and independent variables (F = 123.068; $p < .05$).

TABLE 18

MTL Regression Fit

	SS	Df	MS	F	Sig.
Regression	22.354	2	11.177	123.068	.000
Residual	11.352	125	9.082E-02		
Total	33.706	127			

Note. Sum of Squares; Mean Square; Dependent Variable: Motivation to Learn; Predictor Variables: Individual Attributes, Social Attributes

Finally, Table 19 shows Individual Attributes has the greatest importance (β = .755) while Social Attributes has the least (β = .120).

TABLE 19

MTL Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	SE	β		
(Constant)	1.040	.208		5.00	.000
Individual	.655	.050	.755	13.115	.000
Social	.108	.051	.120	2.091	.039

Note. SE - Standard Error; Dependent Variable: Motivation to Learn; Predictor Variables: Individual Attributes, Social Attributes

Summary

This study considered the relationship between the determinants of the transfer of training within a team work

environment. A survey instrument designed to study those determinants was statistically analyzed using factor analysis, correlational analysis, and multiple regression analysis. For example, factor analysis, using varimax rotation, showed the measurement variables support the hypothesized model of individual attitudes and sociotechnical attributes in a team work environment.

Correlational analysis provided a methodology to test the underlying hypotheses of the research questions. Using the factor scores from the factor analysis, the Technical attributes of the team work environment were not statistically significant at either the .05 or the .01 level. This lack of statistical significance failed to reject the null hypotheses involving the relationships between the Technical attributes and dependent variables Motivation to Learn and Perceived Transfer of Training. On the other hand, the rejection of the other null hypotheses 1, 2, 3, 5, and 6 suggest a relationship exists between an individual's attitude toward training, the social aspects of the team work environment, an individual's motivation to learn, and his/her perceived transfer of training.

Multiple regression analysis measures the relationship between dependent and independent variables. Through the use of stepwise regression, the regression model for the dependent variable Perceived Transfer of Training shows 63% of the

variance is explained by 3 predictor variables, in the order of their importance - Individual Attributes, Social Attributes, Motivation to Learn. On the other, regressing the dependent variable Motivation to Learn shows 66% of the variance is explained through the predictor variables, in order of importance - Individual Attributes and Social Attributes.

CHAPTER V

SUMMARY AND CONCLUSION

Overview

Training represents a major financial investment for many companies. Like any investment, the organization expects a reasonable rate of return. This return is in the amount of training transferred from the learning environment to the work environment. The training literature suggests the work environment is a significant factor in the transference of training. This study extends earlier research by examining the transfer of training within a team work environment. Specifically, this study considers the relationship between an individual's attitude toward training, the sociotechnical attributes of the team work environment, an individual's motivation to learn, and his/her perceived transfer of training.

Study Results

This study considered the influence of the team work environment on the transfer of training. Using factor analysis, correlational analysis, and multiple regression analysis, the research questions and accompanying hypotheses were analyzed with the following results.

Research Question 1

Are there relationships between an individual's motivation to learn, an individual's attitudes toward training, the sociotechnical attributes of the work environment in which he/she works, and his/her perceived transfer of training within a team work environment?

Analysis of this study rejected the null hypothesis, $H_0 1$, no relationship exists between an individual's motivation to learn and his/her perceived transfer of training ($r = .661$, $p < .01$). Additionally, an individual's motivation to learn is a relatively important predictor of his/her perceived transfer of training ($\beta = .310$). This result is consistent with previous research (Facteau et al., 1995; Noe, 1986) supporting an individual's motivation to learn as an antecedent to his/her perceived transfer of training.

Similar analysis rejected the null hypothesis, $H_0 2$, no

relationship exists between an individual's attitude toward training and an individual's perceived transfer of training (r = .634, $p < .01$). This finding is consistent with Hucznski & Lewis' (1980) study of personal characteristics affecting the transfer of training.

Consistent with previous research, this study showed the social and technical attributes of the team work environment have different relationships with an individual's perceived transfer of training. The social attributes consist of the organization's social structure such as managerial support, team member support, and work group norms (Facteau et al., 1995; Noe, 1986; Noe & Schmitt, 1986). Analysis of this study rejected the null hypothesis, $H_0 3$, no relationship exists between the social attributes of the work environment and an individual's perceived transfer of training (r = .650, $p < .01$). Additionally, the social attributes have the greatest importance (β = .425) as a predictor of an individual's perceived transfer of training. These result are consistent with previous research (Baumgartel & Jeanpierre, 1972; Facteau et al., 1995; Huczyniski & Lewis, 1980; Noe, 1986; Noe & Schmitt, 1986; Xiao, 1996).

Technical attributes, on the other hand, consist primarily of those constraints the organization imposes due to financial and operational decisions (Facteau et al., 1995; Noe, 1986; Noe & Schmitt, 1986). This study failed to reject the null

hypothesis, $H_0$4, no relationship exists between technical attributes of the work environment and an individual's perceived transfer of training ((r = -0.017, p < .01). The relationship is not statistically significant and represents a consistent result with previous research (Facteau et al., 1995; Noe, 1986; Noe & Schmitt, 1986).

Research Question 2

Are there relationships between an individual's attitudes toward training, the sociotechnical attributes of the team work environment in which an individual works, and his/her motivation to learn?

The results of this study rejected the null hypothesis, $H_0$5, no relationship exists between an individual's attitude toward training and his/her motivation to learn (r = .807, p < .01). Additionally, an individual's attitudes toward training has the greatest importance (β = .755) as a predictor of his/her motivation to learn. This relationship between attitude and motivation is consistent with Facteau et al.'s (1995) study.

Results of this study showed mixed results for the sociotechnical attributes of the team work environment. For example, this study rejects the null hypothesis, $H_0$6, no relationship exists between the social attributes of the work environment and an individual's motivation to learn (r = .447, p

< .01). This result is similar to Facteau et al.'s (1995) study. On the other hand, this study fails to reject the null hypothesis, $H_0 7$, no relationship exists between the technical attributes of the work environment and an individual's motivation to learn (r = .022, p < .01). The relationship is not statistically significant and represents consistent results with previous research (Facteau et al.'s, 1995).

Study Limitations

This study suffers from the same limitation as others regarding the work environment as a factor in the transference of training. Research in this area lacks a standardized survey instrument upon which to generalize results on the same set of constructs (Bates, Holton, & Seyler, 1997; Holton, Bates, Ruona, Leimbach, 1998). This does not mean the research to date is unimportant or meaningless. On the contrary, the research to date demonstrates common themes, even though situationally specific survey instruments have been developed to address the questions of interest.

Not withstanding this macro limitation, the current study has other limitations. This study relies on data collected from one site in one industry. While this does not diminish the importance of the study, it does reduce the generalizability

beyond the subject location except for the common themes seen in similar studies. Additionally, the sample population did not attend a specific training activity prior to this study. While such an activity could be used as a standard measure for the transference of training, the operations of this facility require employees to attend individually and collectively a variety of training activities throughout the year.

Implications

Companies invest huge amounts of financial resources to train their employees. A measure of this investment is the amount of training transferred from the learning environment to the work environment. This study extends the training literature by considering the transfer of training within a team work environment. The results of this study provide important implications for senior managers, human resource development (HRD) professionals, and teams.

Senior Managers

Senior managers have the responsibility for determining the strategic organizational value of training. Results of this study provide important implications for the development of organization wide infrastructures focusing on both the

individual and the team. From an individual perspective, this study suggests organizations need to nurture an individual's attitude toward training through policies such as educational reimbursement. This policy provides financial incentive to individual's pursuing self-initiated learning opportunities. Likewise, an organization nurtures an individual's attitude toward training through performance appraisal systems. That is, a performance appraisal system in which the individual and the supervisor collaboratively develop training needs and methods for applying the new skills. Furthermore, the performance appraisal system needs to require this standard for the supervisor. Such a requirement signals to supervisors they are responsible and accountable for "the actions they have taken to ensure appropriate training for their employees and to support the transfer of training by employees to their job" (Broad & Newstrom, 1992, p. 61). Finally, an organization nurtures an individual's attitude toward training through compensation systems that reward the acquisition and continued competency of new skills. Such skill-based pay systems support an individual's motivation to learn and add value to the organization (Schuster & Zingheim, 1992, p. 107).

Developing the infrastructure supportive of individuals is only one aspect for senior managers. Their responsibilities also include the support structures for the team. For example,

the compensation system can nurture individual attitudes while nurturing the team environment. Skill based pay addresses the individual's motivation while gain-sharing measures team performance against specified cost elements and distributes a portion of any savings to team members (Milkovich & Newman, 1999, Orsburn & Moran, 2000; Schuster & Zingheim, 1992).

HRD Professionals

If senior managers are responsible for determining the strategic organizational value of training, then the HRD professional has the responsibility to develop the tactical value. The consistency of this study with previous research concerning the attitudinal, motivation relationship provides significant value for HRD professionals to move from questioning such relationships as a determinant of transference to finding ways to leverage the relationship. One approach to leveraging this relationship is using an instructional design methodology based on the andragogical model of adult learning. This model assumes trainees have a need to know why the material is important for their performance on the job (Knowles, 1980, 1990; Knowles, Holton, & Swanson, 1998). This assumption parallels the intrinsic incentives measurement variable underlying the individual attitude factor of this study. Specifically, intrinsic incentives represent the extent to which training

meets an individual's personal needs or provides him/her feelings of accomplishment (Facteau et al., 1995; Lawler & Porter, 1967/1969). The implication for HRD professionals is to leverage the attitude-motivation relationship by clearly defining the relevancy of the course objectives with the expected levels of trainee performance. Broad & Newstrom's (1992) pretraining transfer strategy supports this direction. Their research suggests managers and trainers have a responsibility in providing such course relevancy for the trainee. Furthermore, they suggest managers have a responsibility to provide the trainee with an understanding how the training enhances his/her individual and organizational performance.

The andragogical model encourages the self-directed learning nature of adults. This self-directed nature encourages the adult learner to determine his/her learning needs, identify the resources needed for learning, implement the learning strategies, and evaluate learning outcomes (Knowles, 1975). This instructional design philosophy technique provides another way to leverage the attitude-motivation relationship between learning and transference.

Results of this study are also significant for HRD from an organizational perspective. The positive relationship between the social attributes of the team work environment and an

individual's perceived transfer of training represents opportunities to enhance transference. The collaborative nature of teams provides the framework for building group identity, social support, and group cohesion (Dyer, 1977). The implication for HRD is to develop the team as a unit to establish collaborative behaviors and to learn such skills as problem solving, planning, decision making, coordination, and information sharing for effective behavior (Dyer, 1977).

Teams

Senior managers and HRD professionals provide the warp upon which the tapestry of the organization is woven. The team as the basic organizational building block becomes the artisan to weave the tapestry. As the artisan, the team must craft its individual components to function as one. This study provides teams with implications for transferring training so the team works as a seamless enterprise.

This study parallels other research concerning the importance of the social structure to the transference of training. For teams, the social structure consisting of interdependent employee support, group identity, and group norms create the environment learning and applying new skills. This means teams have the means to nurture individual team member attitudes toward training and their perceived transfer of

training. Broad and Newstrom (1992) outline a variety of activities managers can do before, during, and after training to enhance the transfer of training. Results of this study suggest teams can accomplish many of these same tasks. For example, Broad and Newstrom (1992) state supervisors and trainees should collaboratively develop training needs as part of a pretraining strategy. The sole purpose of this collaborative effort is to "ensure that training programs will meet high-priority needs" (Broad & Newstrom, 1992, p. 62). Teams, as interdependent structures, must continuously assess their training needs through a collaborative process. Likewise, Broad and Newstrom suggest managers can enhance transfer by preventing interruptions to training and assigning work to others during the training effort. Again, the multifunctionality of skills within teams provide the capability to prevent interruptions to training activities and to shift work assignments with little loss of productivity. Finally, Broad and Newstrom state managers enhance the transfer environment through communicating their support and providing opportunities to practice new skills. The team's social structure, as this study suggests, provides the mechanism to implement these posttraining strategies.

Recommendations for Future Research

Results of this study combined with existing research suggest several avenues for future research. The use of teams as the organizational paradigm suggests companies need a better understanding of the influence these organizational structures have on transferring training. This study contributes to the existing literature by considering the major factors which enhance the transfer of training within a team work environment. A logical extension of this study is to examine the individual components of these factors. For example, this study supports the social structure of the team work environment as a determinant of training transference; however, research needs to examine the specific behaviors Team Leaders and Team Members exhibit in supporting training activities within the team. Furthermore, the interdependence of team members suggests a level of mentoring may occur within the team. An exploration of whether mentoring occurs and the influence of such activity on transferring training within the team environments requires additional attention.

Another avenue for future research centers on the andragogical model of adult learning. The model, for instance, encourages an adult's self-directed nature to establish their own learning objectives and design the means to measure such

accomplishment (Brookfield, 1986; Cross, 1981; Hiemstra & Brockett, 1994; Knowles, 1975, 1980, 1990; Knowles et al., 1998). The ability to direct ones own learning to meet individual and organizational needs provide teams with the capability to reinforce complementary skills. The question of interest, therefore, centers on how teams encourage members to pursue self-directed learning activities. For example, the literature suggest self-directed learners use learning contracts as a mechanism to document their learning activities with the needs of the organization (Knowles, 1990; Knowles et al., 1998). Research is needed to understand whether the learning contracts encourage or inhibit the transfer of training within teams.

A second avenue of research based on the andragogical model of adult learning focuses on the adult's readiness to learn. According to the model, adults are ready to learn when "their life situation creates a need to know" (Knowles et al., 1998). The dynamics for change within organization's today creates the need for teams to continuously improve through developing new complementary skills. As such, research is needed on how a team work environment facilitates an employee's readiness to learn and subsequently transfer training.

Organizations operate within an environmental context. During the last decade of the twentieth century, American companies have operated in an economic environment characterized

by low inflation, relatively low unemployment, and increased global competition. This economic climate challenges American companies to consider a variety of strategic decisions ranging from mergers to retrenchment. As companies articulate these planned changes throughout the organization, the impact of these decisions have research implications involving the transfer of training. For example, the social structure of the team work environment is built on group identity and cohesion. Periods of organizational restructuring may affect these team dynamics and the training within teams. Research into this area would provide HRD and organizations with possible proactive strategies to facilitate the transfer of training during periods of organizational restructuring. Additionally, companies today maximize their profitability through an integrated workforce consisting of both permanent and contingent employees. The question of interest centers on the influence team composition has on the transfer of training when team membership includes permanent and contingent members.

Summary

Training represents a large financial investment for American companies. The rate of return for this investment comes from the individual trainee applying his/her newly acquired

knowledge, skills, and attitudes in the workplace. Research suggests a favorable work environment is an important determinant in the transfer of training (Facteau et al., 1995; Mathieu et al., 1992; Noe, 1986; Noe & Schmitt, 1986). However, research is limited on the influence of a team work environment on the transfer process. This study addresses this gap in the literature. Specifically, this study considers an individual's attitude toward training, the social structure of the team, and the technical constraints of the team as factors influencing an individual's motivation to learn and his/her perceived transfer of training.

Using a survey instrument based on previous validated research (Cohen et al., 1996; Facteau et al., 1995), this study statistically analyzed the various relationships using factor analysis, correlational analysis, and multiple regression analysis. This study showed an individual's motivation to learn is positively related to his/her perceived transfer of training. Also, this study showed a positive relationship between an individual's attitude toward training to both his/her perceived transfer of training and motivation to learn. Finally, this study showed the technical constraints of the team structure are not statistically significant as a determinant of either an individual's perceived transfer of training or his/her motivation to learn. On the other hand, the team's social structure showed

a positive relationship with both an individual's perceived transfer of training and his/her motivation to learn.

These results have important implications for senior managers, HRD professionals, and teams. Senior managers establish the strategic value of training within the organization through the development and measurement of organizational policy. HRD professionals leverage the strategic value through instructional design. Finally, teams nurture these relationships for transference through a variety of activities before, during, and after training.

This study extends the literature by examining the transfer of training within a team work environment. Such an extension is helpful to the overall understanding of transference and provides direction for future research. For example, this study focuses on an individual's attitude toward training, his/her motivation to learn, the social structure of teams, and the technical constraints of teams as determinants of the transfer of training within the team work environment. Additional research needs to explore the individual components underlying these factors. Such an approach would complement existing training research based on traditionally designed organizational structures. This study also recommends research on self-directed learning as a determinant of the transfer process within teams. Finally, this study recommends research on the impact strategic managerial

decisions such as restructuring may have on the transfer of training process within teams.

Training represents a major strategic investment requiring individual's to transfer their training to the workplace as a measure of this return on investment. Noe (1986) and Facteau et al. (1995) provide a framework for understanding the relationship the work environment as a determinant of transferring training. This study extends their basic framework by investigating factors influencing the transfer of training within a team work environment.

APPENDIX A

PILOT TEST RESULTS

This appendix provides details concerning the pilot test study for this research project. Specifically, this section discusses the pilot test survey instrument, the pilot test population, and conclusions about the pilot test.

Pilot Test Survey

The basis of this research is to study the relationships involving the transfer of training in a team work environment. Research indicates that the dependent variables of interest are an individual's motivation to learn and an individual's perceived transfer of training. Likewise, research shows the independent variables of interest in a team work environment include individual attitudinal behaviors, social attributes, and technical attributes.

A purpose of the pilot test is to evaluate the survey instrument and modify as needed. The "Team Training Survey", included at the end of this appendix, includes 53 questions from surveys of researchers in the area of training transfer and teams. Table A1 shows the appropriate literature references and statistical validity for each survey item.

Table A1

Survey Measures and Statistical Reliability (Original)

No. Items	Questions	Variable	Literature Citation	Cronbach alpha
4	4, 6, 7, 42	Training Reputation	Facteau et al. (1995)	α = .87
2	3, 19	Choice	Facteau et al. (1995)	α = .85
9	1, 2, 5, 10, 17, 27, 33, 40, 45	Motivation to Learn	Facteau et al. (1995)	α = .71
6	11, 14, 22, 23, 26, 29	Perceived Training Transfer	Facteau et al. (1995)	α = .87
2	39, 41	Identity	Cohen et al. (1996)	α = .88
3	48, 50, 52	Autonomy	Cohen et al. (1996)	α = .90
5	13, 15, 16, 18, 21	Managerial Support	Facteau et al. (1995)	α = .90
2	25, 43	Norms	Cohen et al. (1996)	α = .88
3	49, 51, 53	Expertise	Cohen et al. (1996)	α = .84
6	28, 30, 35, 44, 46, 47	Organizational Constraints	Facteau et al. (1995)	α = .85
7	24, 31, 32, 34, 36, 37, 38	Intrinsic Incentives	Facteau et al. (1995)	α = .90
4	8, 9, 12, 20	Team Member Support	Facteau et al. (1995)	α = .81

Pilot Test Population

The pilot test study uses data from the survey instrument discussed above. This instrument is administered to employees of two organizations using teams. These organizations have used teams in their work environments for several years prior to the pilot test. Both organizations operate facilities in the Middle Atlantic States where the pilot test is conducted. Also, one organization is a national retailer, while the other organization is a regional health care provider.

To test the various elements of the planned study, the survey instrument and a cover letter describing the study are distributed to employees during their regularly scheduled team meetings. To insure confidentiality of the respondents in both organizations, individuals are instructed to return their survey in a sealed envelope to their organization's Human Resource Department. All returned packets are collected from the individual Human Resources Departments 7 days after distribution.

Pilot Test Data

The pilot test study involves 54 responses from the two organizations. Forty-eight of the 54 responses are complete

for purposes of analysis. Sixty percent of the participants are employees of the national retailer, while forty percent are employees of the health care provider. Employees with the retailer have a mean time with the company of 4.3 years and a mean time on their present team of 3.4 years. On the other hand, employees of the health care provider have a mean time with the company and a mean time on their present team of 0.7 years.

The pilot test provides a means to evaluate the reliability of the survey instrument. The Cronbach alpha for each variable is calculated and compared to the statistical measure referenced in Table A1. This comparison is shown in Table A2 along with the improvement in reliability if specific questions are eliminated from the survey instrument.

Table A3 shows the Pearson correlation coefficients (r) for all variables before deleting questions. Table A4 shows the correlation coefficients after deleting appropriate questions.

Table A2

Pilot Test Statistical Reliability

	Cronbach Alpha			
Variable	Literature	Pilot Test	Pilot Test Revise after deleting questions	Questions to Drop from Original Study
Training Reputation	.87	.64	.84	4
Choice	.85	.56	.56	3, 19
Motivation to Learn	.71	.65	.67	2
Perceived Transfer	.87	.81	.81	
Identity	.88	.65	.65	39, 41
Autonomy	.9	.62	.73	48
Manager Support	.90	.7	.8	18
Norms	.88	.81	.81	
Expertise	.84	.92	.92	
Organization Constraints	.85	.55	.77	44
Intrinsic Incentives	.90	.91	.91	
Team Member Support	.81	.83	.83	

Table A3

Pilot Test Correlation Coefficients, All Variables

			Individual Attributes			Social Attributes				Technical Attributes		
	PTT	MTL	CHO	REP	INC	MGR	TEAM	EXPT	NORM	AUTO	IDENT	ORG
PTT	1.0000											
MTL	0.1848	1.0000										
CHO	0.2764	0.2391	1.0000									
REP	0.6401**	0.1587	0.2590	1.0000								
INC	0.5415**	0.6294**	0.1706	0.2170	1.0000							
MGR	0.5768**	0.0660	0.3757**	0.5834**	0.0962	1.0000						
TEAM	0.7236**	0.1297	0.3452*	0.6450**	0.2442	0.7980**	1.0000					
EXPT	0.4622**	0.0146	-0.002	0.4911**	0.0371	0.5682**	0.5063**	1.0000				
NORM	0.6120**	0.0566	0.0665	0.5285**	0.1136	0.6824**	0.7592**	0.7939**	1.0000			
AUTO	0.2171	0.1674	0.0427	0.0986	0.2737	0.0926	0.0726	0.3407*	0.2160	1.0000		
IDENT	0.6037**	-0.0025	-0.0792	0.5321**	0.2020	0.6066**	0.5879**	0.6439**	0.6922**	0.0643	1.0000	
ORG	-0.0091	0.3304*	0.2721	-0.0827	0.1527	-0.2997*	-0.2521	-0.2475	-0.2141	0.2151	-0.2124	1.0000

* - Significance Level .05
** - Significance Level .01
2-tailed

Table A4

Pilot Test Correlation Coefficients, Some Variables Deleted

			Individual Attributes		Social Attributes				Technical Attributes	
	PTT	MTL	REP	INC	MGR	TEAM	EXPT	NORM	AUTO	ORG
PTT	1.0000									
MTL	0.2578	1.0000								
REP	0.6283**	0.1127	1.0000							
INC	0.5415**	0.7096**	0.1334	1.0000						
MGR	0.5397**	0.1333	0.6691**	0.1499	1.0000					
TEAM	0.7236**	0.1833	0.7157**	0.2442	0.8142**	1.0000				
EXPT	0.4622**	0.0932	0.5525**	0.0371	0.6307**	0.5063**	1.0000			
NORM	0.6120**	0.1237	0.6236**	0.1136	0.7342**	0.7592**	0.7939**	1.0000		
AUTO	0.3359*	0.2483	0.1674	0.3030*	0.3807**	0.2114	0.5868**	0.4058**	1.0000	
ORG	-0.1180	0.2248	-0.3654*	0.0931	-0.5177**	-0.3755**	-0.3631*	-0.3317*	0.0360	1.0000

* - Significance Level .05
** - Significance Level .01
2-tailed

Team Transfer of Training Survey
(Original)

The following survey gathers information about an individual's view of training as a member of a team. The information collected will allow the researcher to study several issues that may or may not influence an individual's ability to transfer new skills learned in training back to the job. Your responses will remain confidential.

Circle your response to each of the following items. 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree.

Item No.	Item Statement	SD	D	N	A	SA
1	I try to learn as much as I can from training courses.	1	2	3	4	5
2	If I have trouble understanding the material presented in a training program, I try harder.	1	2	3	4	5
3	I take training because it is mandated by this organization.	1	2	3	4	5
4	The overall effectiveness of this organization would increase if most team members took training courses offered by this organization.	1	2	3	4	5
5	I look forward to actively participating in training programs.	1	2	3	4	5
6	Trainers for this organization are very effective.	1	2	3	4	5
7	Training from this organization provides most of the skills critical for success in this organization.	1	2	3	4	5
8	My team members encourage my efforts to incorporate new procedures that I have learned in training on the job.	1	2	3	4	5
9	My team members reward me for using new skills taught in training.	1	2	3	4	5
10	I make a special effort to complete all course assignments during training courses.	1	2	3	4	5
11	Other individuals within the organization have told me that my behavior has improved following a training course.	1	2	3	4	5
12	My team members attend training and try to use new skills in their jobs.	1	2	3	4	5
13	My management team encourages the use of innovative behaviors among employees.	1	2	3	4	5

Item No.	Item Statement	SD	D	N	A	SA
14	I have changed my job behavior in order to be consistent with the material taught in training courses.	1	2	3	4	5
15	My management team rewards individuals for using skills taught in training.	1	2	3	4	5
16	My management team is willing to spend money for training.	1	2	3	4	5
17	I get really involved in learning the material presented in training courses.	1	2	3	4	5
18	My management team encourages risk-taking by employees.	1	2	3	4	5
19	I take training because my team leader requires me.	1	2	3	4	5
20	My team members believe in the importance of training.	1	2	3	4	5
21	My management team believes in the importance of training for employees.	1	2	3	4	5
22	The productivity of my team has improved due to the skills that I learned in training course.	1	2	3	4	5
23	My team members are more committed to the mission of this organization due to the skills that I developed in training courses.	1	2	3	4	5
24	I take training because it provides me with an opportunity to grow as a person.	1	2	3	4	5
25	Our team has clear standards for the behavior of team members.	1	2	3	4	5
26	I am able to transfer the skills learned in training courses back to my actual job.	1	2	3	4	5
27	The opportunity to acquire new skills appeals to me.	1	2	3	4	5
28	Our team's lack of financial resources hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
29	My actual job performance has improved due to the skills that I learned in training courses.	1	2	3	4	5

Item No.	Item Statement	SD	D	N	A	SA
30	Unavailability of time needed to practice new skills hamper my ability to apply new skills learned in training back on my job.	1	2	3	4	5
31	I take training because it allows me to assume greater team responsibilities.	1	2	3	4	5
32	I take training because it provides me with an opportunity to interact with other members of the organization.	1	2	3	4	5
33	Doing well in training programs is important to me.	1	2	3	4	5
34	I take training because it provides me with skills that allow me to be more effective on the job.	1	2	3	4	5
35	Our team's lack of materials, supplies, or equipment hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
36	I take training because it enables me to become a more productive and efficient team member.	1	2	3	4	5
37	I take training because it provides me with a greater sense of self-worth.	1	2	3	4	5
38	I take training because the skills I learn in training help reduce my job-related stress.	1	2	3	4	5
39	My team's job is arranged so that we often have the opportunity to see jobs or projects through to completion.	1	2	3	4	5
40	I use my own time to prepare for training courses by reading, practicing skills, completing assignments, etc.	1	2	3	4	5
41	My team's job is arranged so that our group has the chance to do a job from beginning to end (that is, a chance to do the whole job).	1	2	3	4	5
42	Training courses for this organization are very useful.	1	2	3	4	5

Item No.	Item Statement	SD	D	N	A	SA
43	It is clear in our team what is acceptable behavior, and what is not acceptable.	1	2	3	4	5
44	The physical place where I do my work is adequate for what I have to do.	1	2	3	4	5
45	I GET MORE OUT OF TRAINING PROGRAMS THAN MOST OF MY TEAM MEMBERS.	1	2	3	4	5
46	Inadequate quality of information from the management team hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
47	Inadequate quality of information from other team members hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
48	My team's job permits us to be left on our own within the organization to do our work.	1	2	3	4	5
49	Our team has the right mix of people needed to do our job well.	1	2	3	4	5
50	My team's job gives us considerable opportunity for independence and freedom in how we, as a team, do our work.	1	2	3	4	5
51	Members of our team have ample expertise for doing the work of the team.	1	2	3	4	5
52	My team's job provides us an opportunity for independent thought and action.	1	2	3	4	5
53	Members of our team have the right people skills required for effective team work.	1	2	3	4	5

Demographics

Gender: __ Male __ Female **Age:** __

Team Name: _____ **Location:** _____

Employment History:

How long have you been employed by this company?

_____ years _____ months

How long have you been employed in your current position?

_____ years _____ months

How long have you been a member on your current team?

_____ years _____ months

Educational Level: Indicate your highest level of educational attainment.

__ High School

__ 2 year Technical Degree

__ Some College

__ 4 year College

__ Some Graduate School

__ Graduate Degree

APPENDIX B

SAMPLE SURVEY COVER LETTER

Sample Survey Cover Letter

Lee E. Weyant
642 Cedarcrest Dr
Duncansville, Pa 16635

May 1, 1999

Dear (Company)Employee:

Nationally American companies spend nearly $60 billion annually on training activities. Yet, only a relatively small amount of the training results in workplace improvements. The purpose of this study is to collect your perceptions regarding the factors you feel assist or hinder your use of training back on the job.

The success of this project is based on your participation. Your response and those of your team members provide valuable feedback in the design of future training activities.

Since time is an important factor, the survey should only take 20 minutes to complete. Please complete and return the survey at the end of this team meeting to me using the enclosed envelope. Your response will be maintained in confidence. All responses will be pooled with other participants thereby guaranteeing anonymity and confidentiality.

Your assistance in this project is greatly appreciated.

Thank you for your cooperation.

Sincerely,

Lee E. Weyant

APPENDIX C

PERMISSION TO USE

Dear Colleague:

The following pages contain the scale items used to measure the constructs studied by Facteau, Dobbins, Russell, Ladd & Kudisch (1995), Journal of Management, 21, 1-25. Please note that all of the 85 items in the original (a priori) measurement model are included here. Several of these items were not included in the revised measurement model. Furthermore, the internal consistency reliability estimate (i.e., Cronbach's alpha) for each scale based upon the data used in the original study is provided.

Many of the scales used in the study and presented here were developed by other authors. Please see the article for appropriate references.

Finally, I would like to stay abreast of how and where these scales are being used. So, I would greatly appreciate being notified of any presentations or publications in which these scales appear.

Cordially,

Jeffrey D. Facteau

Dissertation Assistance

From: Susan Cohen
To: Lee E. Weyant
Subject: Re: Dissertation Assistance
Cc:
Date: Thu, 12 Feb 98 07:39:06 EST

Hi Lee,

I will ask Beth Neilson, CEO's research technician, to send you a copy of the survey and scales used in our Human Relations article. Please do not use any scales without citing us.

Take Care,

Susan G. Cohen

Associate Research Professor
Center for Effective Organizations
University of Southern California
Los Angeles, CA 90089-1421
213 740-9814
213 740-4354

> Priority: Normal
> To: scohen@ceo.usc.edu
> From: "Lee E. Weyant" <lweyant@mtaloy.edu>
> Subject: Dissertation Assistance
> Date: Wed, 04 Feb 98 13:55:50 EST

> Dr. Cohen;
>
> My name is Lee Weyant. I am a doctoral student at Nova Southeastern
> University, School of Business and Entrepreneurship. My doctoral
> research involves the transfer of training from Noe's (1986) model.
> Specifically, I'm interested in the transfer of training within a team
> environment.
>
> Your published work in the 1996 Human Relations (Vol 49, No. 5) " A
> Predictive Model of Self-Managing Work Team Effectiveness" has
> relavency to my study. The predictor variables you identify for overall
> effectiveness are the same variables from the training literature applied
> to Noe's model.
>
> If possible, may I receive a copy of the specific survey instrument and
> scales used in your 1996 study for possible inclusion in my dissertation
> study. If this is possible, please mail the information to the following
> location.
>
> Lee E. Weyant
> Assistant Professor of Business Administration
> Mount Aloysius College
> 7373 Admiral Peary Highway

APPENDIX D

REFINED POST-PILOT SURVEY INSTRUMENT

Team Transfer of Training Survey

The following survey gathers information about an individual's view of training as a member of a team. The information collected will allow the researcher to study several issues that may or may not influence an individual's ability to transfer new skills learned in training back to the job. Your responses will remain confidential.

Circle your response to each of the following items. 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree.

Item No.	Item Statement	SD	D	N	A	SA
1	I try to learn as much as I can from training courses.	1	2	3	4	5
2	I look forward to actively participating in training programs.	1	2	3	4	5
3	Trainers for this organization are very effective.	1	2	3	4	5
4	Training from this organization provides most of the skills critical for success in this organization.	1	2	3	4	5
5	My team members encourage my efforts to incorporate new procedures that I have learned in training on the job.	1	2	3	4	5
6	My team members reward me for using new skills taught in training.	1	2	3	4	5
7	I make a special effort to complete all course assignments during training courses.	1	2	3	4	5
8	Other individuals within the organization have told me that my behavior has improved following a training course.	1	2	3	4	5
9	My team members attend training and try to use new skills in their jobs.	1	2	3	4	5
10	My management team encourages the use of innovative behaviors among employees.	1	2	3	4	5
11	I have changed my job behavior in order to be consistent with the material taught in the training courses.	1	2	3	4	5
12	My management team rewards individuals for using skills taught in training.	1	2	3	4	5
13	My management team is willing to spend money for training.	1	2	3	4	5
14	I get really involved in learning the material presented in training courses.	1	2	3	4	5

Item No.	Item Statement	SD	D	N	A	SA
15	My team members believe in the importance of training.	1	2	3	4	5
16	My management team believes in the importance of training for employees.	1	2	3	4	5
17	The productivity of my team has improved due to the skills that I learned in training course.	1	2	3	4	5
18	My team members are more committed to the mission of this organization due to the skills that I developed in training courses.	1	2	3	4	5
19	I take training because it provides me with an opportunity to grow as a person.	1	2	3	4	5
20	Our team has clear standards for the behavior of team members.	1	2	3	4	5
21	I am able to transfer the skills learned in training courses back to my actual job.	1	2	3	4	5
22	The opportunity to acquire new skills appeals to me.	1	2	3	4	5
23	Our team's lack of financial resources hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
24	My actual job performance has improved due to the skills that I learned in training courses.	1	2	3	4	5
25	Unavailability of time needed to practice new skills hamper my ability to apply new skills learned in training back on my job.	1	2	3	4	5
26	I take training because it allows me to assume greater team responsibilities.	1	2	3	4	5
27	I take training because it provides me with an opportunity to interact with other members of the organization.	1	2	3	4	5
28	Doing well in training programs is important to me.	1	2	3	4	5

Item No.	Item Statement	SD	D	N	A	SA
29	I take training because it provides me with skills that allow me to be more effective on the job.	1	2	3	4	5
30	Our team's lack of materials, supplies, or equipment hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
31	I take training because it enables me to become a more productive and efficient team member.	1	2	3	4	5
32	I take training because it provides me with a greater sense of self-worth.	1	2	3	4	5
33	I use my own time to prepare for training courses by reading, practicing skills, completing assignments, etc.	1	2	3	4	5
34	Training courses for this organization are very useful.	1	2	3	4	5
35	It is clear in our team what is acceptable behavior, and what is not acceptable.	1	2	3	4	5
36	I get more out of training programs than most of my team members.	1	2	3	4	5
37	Inadequate quality of information from the management team hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
38	Inadequate quality of information from other team members hampers my ability to apply new skills learned in training back on my job.	1	2	3	4	5
39	Our team has the right mix of people needed to do our job well.	1	2	3	4	5
40	My team's job gives us considerable opportunity for independence and freedom in how we, as a team, do our work.	1	2	3	4	5
41	Members of our team have ample expertise for doing the work of the team.	1	2	3	4	5

Item No.	Item Statement	SD	D	N	A	SA
42	My team's job provides us an opportunity for independent thought and action.	1	2	3	4	5
43	Members of our team have the right people skills required for effective team work.	1	2	3	4	5

Demographics

Gender: __ Male __ Female **Age:** __

Team Name: _____ **Location:** _____

Employment History:

How long have you been employed by this company?

_____ years _____ months

How long have you been employed in your current position?

_____ years _____ months

How long have you been a member on your current team?

_____ years _____ months

Educational Level: Indicate your highest level of educational attainment.

__ High School

__ 2 year Technical Degree

__ Some College

__ 4 year College

__ Some Graduate School

__ Graduate Degree

APPENDIX E

RAW DATA FROM THE STUDY

Table E1

Original List of Teams

Team Number	Team Name	Number Employees
1	Softlines	33
2	Homelines	24
3	Office	7
4	Frontend	118
5	Hardlines	64
6	Night Receiving	47
7	Pharmacy	7
8	Vision	11
9	Photo Lab	7
	Total	318

Table E2

Teams Selected

Team Number	Team Name	Number Employees
8	Vision	11
1	Softlines	33
3	Office	7
5	Hardlines	64
7	Pharmacy	7
9	Photo Lab	7
	Total	129

Random Number 54938 - Use last digit to begin. Original table reconfigured so every second team is selected.

Raw Data

	Id Number	Gender	Age	Team Name	Location
1	1	2	26.0	2	1
2	2	2	48.0	2	1
3	3	2	28.0	2	1
4	4	2	43.0	2	1
5	5	2	32.0	2	1
6	6	2	23.0	2	1
7	7	2	25.0	2	1
8	8	2	25.0	2	1
9	9	2	30.0	4	1
10	10	2	25.0	4	1
11	12	2	25.0	4	1
12	13	1	20.0	4	1
13	14	1	27.0	4	1
14	15	2	20.0	4	1
15	16	2	48.0	4	1
16	17	2	35.0	4	1
17	18	2	32.0	4	1
18	19	2	40.0	4	1
19	20	2	30.0	5	1
20	21	2	28.0	4	1
21	22	1	35.0	4	1
22	23	2	21.0	4	1
23	24	1	36.0	4	1
24	25	2	29.0	4	1
25	26	2	50.0	4	1
26	27	2	36.0	3	1
27	29	2	24.0	4	1
28	30	2	43.0	4	1
29	31	2	28.0	4	1
30	32	2	29.0	4	1
31	33	1	38.0	4	1
32	34	2	24.0	2	1
33	35	2	33.0	4	1
34	36	2	68.0	2	1
35	37	2	19.0	2	1
36	38	2	26.0	2	1
37	39	2	22.0	3	1
38	40	1	25.0	3	1
39	41	1	22.0	4	1
40	42	2	30.0	4	1

Table E-3

Raw Data

	Id Number	Gender	Age	Team Name	Location
41	43	2	36.0	4	1
42	44	2	50.0	2	1
43	45	1	57.0	4	1
44	46	2	40.0	4	1
45	47	2	19.0	2	1
46	48	1	36.0	4	1
47	101	2	60.0	4	1
48	102	2	38.0	4	1
49	103	2	22.0	4	1
50	104	2	28.0	4	1
51	105	2	26.0	2	1
52	106	2	61.0	2	1
53	107	1	21.0	4	1
54	108	2	20.0	4	1
55	109	1	19.0	4	1
56	110	2	36.0	4	1
57	111	2	34.0	4	1
58	112	2	60.0	4	1
59	113	2	39.0	4	1
60	114	2	32.0	4	1
61	115	2	53.0	2	1
62	116	2	19.0	5	1
63	117	1	25.0	4	1
64	118	2	32.0	4	1
65	119	2	48.0	4	1
66	120	2	52.0	4	1
67	121	2	45.0	3	1
68	122	2	25.0	5	1
69	123	2	28.0	5	1
70	124	2	20.0	4	1
71	125	1	21.0	4	1
72	126	1	20.0	4	1
73	127	2	55.0	4	1
74	128	1	44.0	4	1
75	129	2	31.0	4	1
76	130	2	29.0	4	1
77	131	2	35.0	4	1
78	132	1	60.0	4	1
79	133	2	34.0	4	1
80	134	2	19.0	4	1

Table E-3

Raw Data

	Id Number	Gender	Age	Team Name	Location
81	135	2	21.0	4	1
82	136	1	19.0	4	1
83	137	2	45.0	3	1
84	138	2	36.0	2	1
85	139	2	29.0	2	1
86	140	2	22.0	4	1
87	141	2	34.0	4	1
88	142	2	27.0	1	1
89	143	2	40.0	1	1
90	144	1	45.0	4	1
91	145	2	28.0	5	1
92	146	2	37.0	1	1
93	147	2	46.0	5	1
94	148	2	20.0	1	1
95	149	2	35.0	1	1
96	150	2	32.0	4	1
97	151	2	42.0	6	1
98	152	2	25.0	1	1
99	153	2	42.0	3	1
100	154	2	35.0	4	1
101	155	2	38.0	1	1
102	156	2	52.0	1	1
103	157	2	50.0	1	1
104	158	2	33.0	4	1
105	159	2	34.0	5	1
106	160	1	26.0	1	1
107	161	2	49.0	2	1
108	162	2	49.0	2	1
109	163	1	22.0	4	1
110	165	2	43.0	6	1
111	166	2	24.0	6	1
112	167	2	25.0	6	1
113	168	2	25.0	6	1
114	169	2	28.0	6	1
115	170	2	35.0	2	1
116	171	2	21.0	2	1
117	172	2	22.0	2	1
118	173	2	56.0	2	1
119	174	2	27.0	1	1
120	175	2	25.0	2	1

Table E-3

Raw Data

	Id Number	Gender	Age	Team Name	Location
121	176	2	30.0	6	1
122	177	2	24.0	2	1
123	178	2	28.0	2	1
124	179	2	25.0	2	1
125	180	2	23.0	2	1
126	181	2	22.0	2	1
127	182	2	28.0	2	1
128	183	2	20.0	2	1
Total N	128	128	128	128	128

Table E-3

Raw Data

	Time Company	Time in Job	Time in Team	Education	MTL Question 1
1	.50	.50	.50	1	4
2	4.75	4.75	2.50	1	5
3	5.67	3.50	5.67	3	5
4	4.00	4.00	3.00	1	4
5	6.00	6.00	6.00	4	4
6	5.00	1.50	3.50	1	4
7	5.83	4.00	4.00	1	4
8	.25	.25	.25	6	5
9	6.00	4.00	6.00	1	5
10	5.08	4.00	2.50	1	4
11	7.00	2.00	3.00	1	5
12	.50	.50	.50	1	4
13	1.67	1.33	1.33	1	5
14	1.75	.75	.75	1	5
15	6.00	5.00	6.00	1	5
16	.58	.58	.17	1	5
17	2.00	.50	2.00	1	5
18	5.92	3.33	3.33	3	5
19	5.50	2.50	3.58	1	5
20	4.83	3.00	3.00	3	4
21	5.50	5.50	5.50	2	4
22	2.33	.25	1.17	1	4
23	7.67	5.33	7.67	2	4
24	5.33	5.33	5.33	3	4
25	5.83	5.00	5.00	3	4
26	5.92	4.50	4.50	1	4
27	1.75	.50	.50	3	4
28	2.25	1.50	1.50	1	4
29	6.83	6.83	6.83	1	3
30	6.00	1.92	.17	4	5
31	9.58	2.50	.50	1	3
32	6.00	6.00	6.00	1	5
33	5.92	2.67	2.67	2	5
34	2.33	2.33	2.33	3	4
35	.17	.17	.17	1	4
36	.83	.83	.83	1	4
37	4.00	.25	.25	1	5
38	4.92	4.00	4.00	1	4
39	2.75	2.25	2.25	3	5
40	5.00	5.00	5.00	1	5

Table E-3

Raw Data

	Time Company	Time in Job	Time in Team	Education	MTL Question 1
41	5.92	3.00	5.92	1	5
42	5.92	3.00	3.00	5	5
43	6.00	3.17	3.17	3	5
44	4.33	1.17	1.17	1	5
45	1.75	.83	.83	1	4
46	.75	.75	.75	2	5
47	6.00	6.00	6.00	1	5
48	1.00	1.00	1.00	1	5
49	.08	.08	.08	1	5
50	5.00	5.00	5.00	1	5
51	.83	.83	.83	4	5
52	5.67	5.67	5.67	1	5
53	1.58	1.58	1.58	1	5
54	.25	.25	.25	2	5
55	.21	.21	.21	2	5
56	1.67	1.67	1.67	1	5
57	.33	.33	.33	1	4
58	.25	.25	.25	1	5
59	6.00	.33	.33	3	5
60	4.00	3.50	3.50	1	4
61	4.00	.25	.25	1	4
62	.04	.04	.04	3	5
63	5.08	3.08	4.08	1	4
64	5.92	3.92	4.92	1	4
65	5.00	2.00	4.00	1	5
66	5.42	2.50	5.42	1	5
67	5.50	3.00	3.00	1	5
68	1.58	1.58	1.58	1	5
69	3.42	2.42	3.42	1	5
70	2.00	2.00	2.00	1	4
71	1.00	1.00	1.00	1	4
72	1.33	1.00	1.00	3	5
73	.75	.75	.75	4	3
74	5.92	1.00	1.00	3	5
75	3.75	1.25	3.75	2	4
76	5.00	.33	.33	4	5
77	1.00	.17	1.00	1	5
78	4.25	4.25	4.25	3	5
79	2.00	.75	.75	1	5
80	.83	.83	.83	1	4

Table E-3

Raw Data

	Time Company	Time in Job	Time in Team	Education	MTL Question 1
81	2.92	2.00	2.92	1	4
82	1.33	.08	.08	1	5
83	6.00	4.75	4.75	3	5
84	5.92	4.25	4.25	1	4
85	6.00	4.00	4.00	1	5
86	3.00	2.50	3.00	1	5
87	2.75	2.00	2.00	1	5
88	5.83	5.83	5.83	1	4
89	5.17	5.17	5.17	1	5
90	6.00	6.00	6.00	1	5
91	7.25	2.00	2.00	1	4
92	5.50	5.00	5.00	5	4
93	3.08	3.08	3.08	5	5
94	3.33	3.33	3.33	1	5
95	6.00	6.00	6.00	1	4
96	6.00	3.00	3.00	1	5
97	.25	.25	.25	1	4
98	2.50	2.50	2.50	3	5
99	4.50	2.17	2.17	2	4
100	4.00	.67	3.00	1	4
101	3.00	1.00	1.00	1	5
102	4.00	4.00	4.00	1	5
103	6.00	6.00	6.00	2	4
104	6.00	2.50	.25	1	5
105	2.33	2.33	2.33	1	5
106	4.08	4.08	4.08	1	5
107	5.92	4.00	5.92	1	4
108	3.42	2.58	2.58	1	5
109	3.92	.25	.25	1	5
110	4.00	3.17	3.00	2	3
111	5.00	5.00	5.00	3	2
112	4.00	2.00	2.00	5	5
113	4.42	.25	.25	4	5
114	5.17	.42	.42	1	5
115	7.00	5.00	5.00	3	5
116	3.17	2.83	2.83	1	5
117	3.17	2.00	2.00	1	3
118	5.00	2.50	2.50	1	4
119	1.58	1.58	1.58	2	4
120	5.50	4.50	5.50	1	4

Table E-3

Raw Data

	Time Company	Time in Job	Time in Team	Education	MTL Question 1
121	6.00	3.00	3.00	3	4
122	5.50	5.17	5.17	1	4
123	4.17	2.00	2.00	2	5
124	6.08	6.08	6.08	2	4
125	4.42	4.42	4.42	1	4
126	4.00	.08	4.00	1	5
127	5.42	2.17	2.17	1	4
128	.17	.17	.17	1	5
Total N	128	128	128	128	128

Table E-3

Raw Data

	MTL Question 2	MTL Question 7	MTL Question 14	MTL Question 22
1	4	4	3	3
2	5	4	3	4
3	5	4	4	5
4	4	4	4	4
5	4	4	3	3
6	4	4	4	5
7	5	5	4	4
8	4	4	4	4
9	4	5	4	5
10	4	4	4	3
11	5	5	4	4
12	4	4	4	4
13	5	5	4	5
14	5	4	5	5
15	5	5	5	5
16	5	5	5	5
17	4	4	4	5
18	4	5	4	5
19	4	5	5	5
20	4	5	4	5
21	3	4	3	4
22	4	3	3	4
23	3	4	3	3
24	3	3	3	4
25	4	4	3	4
26	3	4	3	5
27	3	4	3	4
28	4	4	4	4
29	3	4	3	4
30	4	5	5	5
31	3	4	4	4
32	5	5	5	5
33	5	5	5	5
34	3	4	3	3
35	4	4	4	5
36	4	4	3	4
37	4	4	4	4
38	3	4	3	4
39	5	5	5	5
40	5	5	4	4

Table E-3

Raw Data

	MTL Question 2	MTL Question 7	MTL Question 14	MTL Question 22
41	5	5	5	5
42	4	5	4	4
43	5	5	5	5
44	5	5	4	4
45	5	4	4	5
46	5	5	5	5
47	4	4	4	4
48	5	4	4	5
49	4	5	4	5
50	4	5	5	5
51	5	4	5	5
52	5	5	5	5
53	5	5	5	5
54	5	5	4	5
55	5	5	5	5
56	5	4	5	5
57	4	3	4	4
58	5	5	5	5
59	5	5	4	5
60	4	4	4	4
61	3	3	3	3
62	5	3	4	5
63	4	5	4	4
64	3	5	5	5
65	3	4	3	5
66	5	5	4	5
67	5	5	4	5
68	5	4	4	3
69	5	4	4	5
70	4	4	4	4
71	3	4	3	4
72	4	4	3	4
73	3	3	2	4
74	4	3	4	5
75	4	4	4	4
76	4	4	4	4
77	5	5	5	5
78	5	5	4	5
79	5	5	4	3
80	4	4	4	4

Table E-3

Raw Data

	MTL Question 2	MTL Question 7	MTL Question 14	MTL Question 22
81	4	3	4	4
82	5	4	5	4
83	5	5	5	5
84	3	3	3	3
85	5	5	4	5
86	5	4	4	4
87	5	4	4	5
88	4	4	3	4
89	5	5	5	5
90	5	5	3	5
91	3	4	4	5
92	4	4	4	4
93	5	4	4	4
94	5	5	4	4
95	4	4	3	4
96	4	5	4	4
97	4	4	4	4
98	4	5	5	5
99	3	5	3	5
100	4	4	3	4
101	4	5	4	5
102	5	5	5	5
103	4	4	3	4
104	4	4	4	4
105	5	5	4	5
106	4	4	3	4
107	5	5	4	4
108	5	5	4	4
109	4	5	4	5
110	3	4	3	4
111	1	4	2	3
112	4	4	4	4
113	5	5	5	5
114	4	5	5	5
115	5	4	4	4
116	5	5	5	5
117	3	3	3	4
118	4	4	4	4
119	3	4	3	4
120	4	5	4	4

Table E-3

Raw Data

	MTL Question 2	MTL Question 7	MTL Question 14	MTL Question 22
121	4	4	4	4
122	4	1	1	1
123	5	4	4	5
124	4	4	4	4
125	3	3	4	3
126	4	4	4	4
127	4	4	4	4
128	5	5	3	5
Total N	128	128	128	128

Table E-3

Raw Data

	MTL Question 28	MTL Question 34	MTL Question 37	Motivation to Learn
1	4	3	4	3.63
2	4	4	3	4.00
3	5	5	3	4.50
4	4	4	3	3.88
5	4	3	3	3.50
6	5	3	4	4.13
7	4	3	4	4.13
8	4	4	3	4.00
9	5	3	3	4.25
10	4	4	4	3.88
11	5	3	4	4.38
12	4	3	3	3.75
13	5	4	3	4.50
14	5	5	5	4.88
15	5	1	3	4.25
16	5	5	4	4.88
17	5	2	4	4.13
18	5	3	5	4.50
19	5	4	3	4.50
20	5	1	4	4.00
21	5	1	3	3.38
22	4	2	3	3.38
23	4	4	3	3.50
24	3	3	3	3.25
25	4	3	3	3.63
26	5	4	2	3.75
27	4	2	3	3.38
28	4	3	3	3.75
29	4	1	3	3.13
30	5	4	4	4.63
31	4	4	4	3.75
32	4	5	5	4.88
33	5	4	5	4.88
34	4	3	3	3.38
35	4	4	4	4.13
36	4	3	3	3.63
37	4	4	3	4.00
38	4	3	4	3.63
39	5	5	4	4.88
40	4	2	4	4.13

Table E-3

Raw Data

	MTL Question 28	MTL Question 34	MTL Question 37	Motivation to Learn
41	5	5	2	4.63
42	5	3	3	4.13
43	5	4	4	4.75
44	4	3	3	4.13
45	5	2	3	4.00
46	5	5	4	4.88
47	4	3	3	3.88
48	4	3	3	4.13
49	4	2	3	4.00
50	5	1	4	4.25
51	5	3	3	4.38
52	5	5	3	4.75
53	5	5	5	5.00
54	5	4	3	4.50
55	5	5	2	4.63
56	5	4	5	4.75
57	4	3	3	3.63
58	5	5	3	4.75
59	5	4	5	4.75
60	4	4	3	3.88
61	3	3	3	3.13
62	5	4	3	4.25
63	5	4	3	4.13
64	5	3	3	4.13
65	4	4	3	3.88
66	5	4	3	4.50
67	5	2	3	4.25
68	4	3	3	3.88
69	4	3	3	4.13
70	3	3	3	3.63
71	4	4	3	3.63
72	4	3	3	3.75
73	4	1	3	2.88
74	5	4	3	4.13
75	4	2	3	3.63
76	4	3	3	3.88
77	5	3	4	4.63
78	5	5	5	4.88
79	4	4	3	4.13
80	4	4	4	4.00

Table E-3

Raw Data

	MTL Question 28	MTL Question 34	MTL Question 37	Motivation to Learn
81	4	2	3	3.50
82	4	2	5	4.25
83	5	5	5	5.00
84	3	3	3	3.13
85	5	3	3	4.38
86	5	4	4	4.38
87	5	4	4	4.50
88	4	3	3	3.63
89	5	2	3	4.38
90	5	1	3	4.00
91	4	3	3	3.75
92	4	4	4	4.00
93	4	3	3	4.00
94	5	4	3	4.38
95	4	4	4	3.88
96	4	2	4	4.00
97	4	4	3	3.88
98	5	5	3	4.63
99	5	4	4	4.13
100	4	2	3	3.50
101	5	4	3	4.38
102	5	5	5	5.00
103	5	4	3	3.88
104	4	3	3	3.88
105	4	2	1	3.88
106	3	4	3	3.75
107	4	2	2	3.75
108	4	4	3	4.25
109	4	4	3	4.25
110	4	2	2	3.13
111	3	2	3	2.50
112	3	4	4	4.00
113	5	5	5	5.00
114	5	5	4	4.75
115	5	1	4	4.00
116	5	3	3	4.50
117	3	3	3	3.13
118	4	4	3	3.88
119	4	3	3	3.50
120	4	4	3	4.00

Table E-3

Raw Data

	MTL Question 28	MTL Question 34	MTL Question 37	Motivation to Learn
121	4	4	3	3.88
122	3	3	3	2.50
123	4	2	3	4.00
124	4	2	3	3.63
125	4	4	3	3.50
126	4	3	3	3.88
127	4	2	3	3.63
128	5	3	3	4.25
Total N	128	128	128	128

Table E-3

Raw Data

	PTT Question 8	PTT Question 11	PTT Question 17	PTT Question 18
1	2	3	4	2
2	3	3	3	3
3	3	2	2	3
4	3	4	4	3
5	3	2	3	3
6	4	4	4	3
7	4	4	4	4
8	3	4	4	4
9	4	4	5	4
10	4	4	3	3
11	3	4	4	4
12	3	3	3	3
13	3	3	4	4
14	4	4	4	4
15	5	5	5	5
16	5	5	5	5
17	3	4	4	3
18	3	4	4	3
19	4	4	4	4
20	3	4	3	3
21	3	3	2	3
22	3	4	3	3
23	3	3	3	4
24	3	3	3	3
25	3	3	4	3
26	2	4	3	4
27	3	3	3	3
28	3	3	3	3
29	2	4	2	2
30	3	3	3	3
31	4	4	4	4
32	4	4	5	4
33	3	4	4	3
34	3	3	2	2
35	4	4	4	4
36	4	4	3	4
37	3	3	4	3
38	3	4	4	3
39	4	4	3	3
40	3	4	3	4

Table E-3

Raw Data

	PTT Question 8	PTT Question 11	PTT Question 17	PTT Question 18
41	2	5	2	2
42	1	4	4	4
43	5	5	5	4
44	5	4	4	3
45	4	3	3	3
46	5	4	5	4
47	3	3	3	3
48	3	3	5	4
49	3	3	4	3
50	2	4	4	3
51	5	3	5	4
52	5	3	5	4
53	5	5	5	3
54	4	5	4	3
55	5	5	4	5
56	3	5	4	4
57	3	3	3	3
58	5	5	4	3
59	3	5	4	4
60	3	4	4	4
61	3	3	3	3
62	3	3	4	3
63	4	4	4	4
64	4	4	4	3
65	3	3	3	4
66	3	3	4	5
67	3	5	5	3
68	4	5	4	4
69	3	4	4	3
70	3	4	3	3
71	4	3	4	3
72	4	3	4	3
73	3	2	3	3
74	3	4	4	5
75	3	4	3	3
76	3	4	4	4
77	5	5	4	3
78	4	3	3	3
79	4	4	5	4
80	4	4	4	4

Table E-3

Raw Data

	PTT Question 8	PTT Question 11	PTT Question 17	PTT Question 18
81	4	4	2	4
82	4	4	3	4
83	3	4	3	4
84	1	3	3	3
85	1	4	4	3
86	4	4	4	4
87	3	3	4	2
88	2	4	4	4
89	1	4	4	4
90	3	3	4	3
91	1	4	3	3
92	4	4	4	4
93	3	4	3	3
94	3	4	4	3
95	3	4	3	3
96	4	4	4	4
97	4	4	4	4
98	3	3	3	3
99	2	3	2	3
100	3	3	3	3
101	4	4	5	4
102	5	5	5	4
103	3	3	3	3
104	3	4	4	3
105	2	4	3	4
106	3	3	3	3
107	4	4	4	4
108	3	5	4	4
109	4	4	4	4
110	3	3	3	3
111	2	2	1	3
112	3	4	4	3
113	5	5	5	5
114	5	4	4	4
115	3	4	5	3
116	5	4	4	4
117	3	3	3	3
118	3	3	3	3
119	2	2	3	2
120	3	4	4	4

Table E-3

Raw Data

	PTT Question 8	PTT Question 11	PTT Question 17	PTT Question 18
121	4	4	4	3
122	3	3	3	3
123	4	5	4	3
124	3	4	4	3
125	3	4	2	4
126	4	4	4	3
127	4	4	4	4
128	5	3	5	5
Total N	128	128	128	128

Table E-3

Raw Data

	PTT Question 21	PTT Question 24	Perceived Transfer of Training	Rep Tng 3	Rep Tng 4
1	4	4	3.17	4	4
2	3	2	2.83	2	2
3	3	3	2.67	2	2
4	4	4	3.67	3	3
5	4	4	3.17	4	4
6	4	4	3.83	3	4
7	4	4	4.00	4	4
8	4	4	3.83	4	4
9	5	4	4.33	3	4
10	4	4	3.67	4	4
11	5	5	4.17	4	4
12	4	3	3.17	5	5
13	4	4	3.67	4	4
14	4	4	4.00	2	2
15	5	5	5.00	5	5
16	5	5	5.00	5	5
17	4	4	3.67	3	2
18	4	4	3.67	3	4
19	4	4	4.00	4	4
20	3	3	3.17	2	2
21	4	2	2.83	3	2
22	4	4	3.50	3	3
23	3	4	3.33	4	3
24	3	3	3.00	3	3
25	3	3	3.17	4	4
26	4	4	3.50	2	2
27	3	3	3.00	4	3
28	4	4	3.33	4	4
29	3	3	2.67	2	3
30	4	4	3.33	4	3
31	4	4	4.00	3	3
32	4	5	4.33	4	5
33	4	4	3.67	2	2
34	4	4	3.00	4	3
35	4	4	4.00	4	4
36	4	3	3.67	4	4
37	4	4	3.50	4	3
38	4	4	3.67	4	4
39	4	3	3.50	3	3
40	4	4	3.67	4	4

Table E-3

Raw Data

	PTT Question 21	PTT Question 24	Perceived Transfer of Training	Rep Tng 3	Rep Tng 4
41	5	5	3.50	5	5
42	4	3	3.33	4	4
43	5	5	4.83	4	5
44	4	5	4.17	3	3
45	4	4	3.50	4	4
46	5	5	4.67	5	5
47	4	3	3.17	4	4
48	4	4	3.83	3	5
49	4	5	3.67	4	4
50	5	5	3.83	3	4
51	3	5	4.17	5	5
52	4	5	4.33	5	5
53	5	5	4.67	2	4
54	5	5	4.33	5	5
55	5	5	4.83	5	5
56	4	4	4.00	4	4
57	4	4	3.33	3	3
58	5	5	4.50	5	5
59	5	3	4.00	4	3
60	4	4	3.83	4	4
61	3	3	3.00	4	4
62	4	4	3.50	5	5
63	4	4	4.00	3	4
64	4	5	4.00	3	3
65	4	3	3.33	5	4
66	5	4	4.00	5	4
67	4	4	4.00	4	5
68	4	4	4.17	4	4
69	5	4	3.83	4	5
70	3	3	3.17	4	3
71	4	4	3.67	4	4
72	5	4	3.83	4	5
73	3	4	3.00	4	4
74	4	4	4.00	4	3
75	4	4	3.50	4	4
76	4	4	3.83	4	4
77	4	4	4.17	5	5
78	4	4	3.50	2	2
79	4	4	4.17	5	4
80	4	4	4.00	4	4

Table E-3

Raw Data

	PTT Question 21	PTT Question 24	Perceived Transfer of Training	Rep Tng 3	Rep Tng 4
81	3	3	3.33	3	3
82	3	5	3.83	5	4
83	5	4	3.83	4	4
84	3	3	2.67	2	3
85	4	4	3.33	4	4
86	4	5	4.17	4	4
87	4	4	3.33	3	3
88	4	4	3.67	3	4
89	5	5	3.83	3	3
90	3	4	3.40	4	5
91	5	3	3.17	2	3
92	4	4	4.00	4	4
93	4	4	3.50	3	3
94	4	4	3.67	4	4
95	4	4	3.50	4	3
96	4	4	4.00	4	4
97	4	4	4.00	4	4
98	3	4	3.17	3	3
99	4	3	2.83	4	2
100	4	3	3.17	3	4
101	4	4	4.17	4	4
102	5	5	4.83	5	5
103	4	3	3.17	3	3
104	3	4	3.50	4	4
105	4	4	3.50	4	4
106	4	4	3.33	3	3
107	4	4	4.00	4	4
108	4	4	4.00	5	5
109	4	3	3.83	3	4
110	4	3	3.17	3	3
111	3	2	2.17	2	3
112	4	4	3.67	3	4
113	5	5	5.00	5	5
114	5	5	4.50	4	3
115	4	4	4.00	4	4
116	5	5	4.50	5	5
117	3	3	3.00	3	3
118	4	4	3.33	3	3
119	3	3	2.50	2	3
120	4	4	3.83	4	3

Table E-3

Raw Data

	PTT Question 21	PTT Question 24	Perceived Transfer of Training	Rep Tng 3	Rep Tng 4
121	4	4	3.83	2	2
122	3	4	3.17	4	4
123	5	5	4.33	4	4
124	4	4	3.67	3	4
125	4	4	3.50	3	3
126	4	4	3.83	3	3
127	4	4	4.00	3	3
128	5	5	4.67	5	5
Total N	128	128	128	128	128

Table E-3

Raw Data

	Rep Tng 35	Reputation	Int Incent Ques 19	Int Incent Ques 26	Int Incent Ques 27
1	4	4.00	4	4	3
2	2	2.00	4	3	3
3	2	2.00	4	4	4
4	4	3.50	4	3	3
5	3	3.67	3	3	3
6	4	3.67	4	4	4
7	4	4.00	4	4	4
8	4	4.00	4	4	4
9	4	3.67	4	4	4
10	4	4.00	4	4	4
11	4	4.00	5	4	4
12	4	4.67	4	4	4
13	4	4.00	5	4	4
14	4	2.67	4	5	5
15	5	5.00	5	4	4
16	5	5.00	5	5	5
17	4	3.00	3	4	3
18	5	4.00	5	5	4
19	2	3.33	5	5	5
20	1	1.67	5	4	4
21	2	2.33	1	4	4
22	3	3.00	3	3	4
23	4	3.67	3	4	3
24	3	3.00	4	4	3
25	4	4.00	4	3	4
26	3	2.33	4	5	5
27	4	3.67	4	4	4
28	4	4.00	4	4	4
29	3	2.67	3	3	3
30	4	3.67	5	5	4
31	4	3.33	4	4	4
32	4	4.33	5	4	4
33	3	2.33	5	3	3
34	4	3.67	3	3	3
35	4	4.00	4	4	4
36	4	4.00	4	3	3
37	3	3.33	4	4	4
38	4	4.00	3	3	4
39	3	3.00	5	4	4
40	4	4.00	3	4	3

Table E-3

Raw Data

	Rep Tng 35	Reputation	Int Incent Ques 19	Int Incent Ques 26	Int Incent Ques 27
41	5	5.00	5	5	5
42	4	4.00	5	4	4
43	5	4.67	5	5	5
44	3	3.00	3	4	3
45	4	4.00	4	5	5
46	5	5.00	5	5	5
47	4	4.00	3	3	3
48	3	3.67	4	4	4
49	5	4.33	4	3	3
50	3	3.33	5	4	1
51	4	4.67	4	5	5
52	5	5.00	5	5	5
53	5	3.67	5	5	5
54	5	5.00	5	5	5
55	5	5.00	5	5	5
56	4	4.00	5	5	5
57	3	3.00	4	4	4
58	5	5.00	5	5	3
59	3	3.33	5	5	5
60	4	4.00	4	4	4
61	3	3.67	3	3	3
62	4	4.67	3	4	4
63	4	3.67	4	4	4
64	3	3.00	5	5	5
65	4	4.33	4	3	3
66	4	4.33	4	4	4
67	4	4.33	5	5	4
68	5	4.33	4	4	4
69	4	4.33	4	4	4
70	4	3.67	3	4	3
71	4	4.00	4	4	4
72	4	4.33	4	3	3
73	4	4.00	4	3	3
74	4	3.67	4	5	3
75	4	4.00	4	4	4
76	4	4.00	4	4	4
77	5	5.00	5	4	4
78	4	2.67	5	5	4
79	3	4.00	4	3	3
80	4	4.00	4	4	4

Table E-3

Raw Data

	Rep Tng 35	Reputation	Int Incent Ques 19	Int Incent Ques 26	Int Incent Ques 27
81	4	3.33	4	3	3
82	4	4.33	3	5	4
83	4	4.00	5	5	5
84	3	2.67	3	3	3
85	3	3.67	4	4	5
86	4	4.00	4	5	5
87	4	3.33	4	4	4
88	3	3.33	4	4	4
89	5	3.67	5	5	5
90	3	4.00	3	3	3
91	3	2.67	3	4	3
92	4	4.00	4	4	4
93	3	3.00	4	3	3
94	3	3.67	4	4	4
95	3	3.33	5	4	3
96	4	4.00	4	4	4
97	4	4.00	4	4	4
98	5	3.67	3	4	4
99	4	3.33	4	3	3
100	4	3.67	3	3	3
101	3	3.67	5	4	4
102	3	4.33	4	5	5
103	4	3.33	4	4	4
104	3	3.67	3	3	3
105	5	4.33	4	4	3
106	4	3.33	4	3	3
107	4	4.00	4	4	4
108	4	4.67	4	4	4
109	3	3.33	3	3	3
110	1	2.33	4	3	2
111	2	2.33	3	3	2
112	4	3.67	4	4	4
113	5	5.00	5	5	5
114	5	4.00	5	5	5
115	5	4.33	4	4	4
116	5	5.00	5	5	5
117	3	3.00	3	3	3
118	4	3.33	4	4	4
119	3	2.67	4	4	3
120	4	3.67	4	4	4

Table E-3

Raw Data

	Rep Tng 35	Reputation	Int Incent Ques 19	Int Incent Ques 26	Int Incent Ques 27
121	4	2.67	4	4	4
122	3	3.67	3	3	3
123	3	3.67	4	4	4
124	4	3.67	4	3	3
125	4	3.33	3	4	4
126	3	3.00	4	4	4
127	4	3.33	4	4	3
128	5	5.00	5	3	3
Total N	128	128	128	128	128

Table E-3

Raw Data

	Int Incent Ques 29	Int Incent Ques 31	Int Incent Ques 32	Int Incent Ques 33	Incentive
1	4	3	4	3	3.57
2	3	4	4	4	3.57
3	4	5	5	5	4.43
4	4	4	4	3	3.57
5	4	4	3	3	3.29
6	4	4	4	4	4.00
7	4	4	4	4	4.00
8	4	4	4	3	3.86
9	4	4	4	4	4.00
10	4	4	4	4	4.00
11	5	4	4	3	4.14
12	4	4	4	4	4.00
13	4	4	4	4	4.14
14	5	4	5	5	4.71
15	5	5	5	5	4.71
16	5	5	5	5	5.00
17	4	4	3	4	3.57
18	5	5	5	5	4.86
19	5	5	5	5	5.00
20	4	5	5	2	4.14
21	4	4	3	1	3.00
22	4	3	4	3	3.43
23	4	3	2	2	3.00
24	3	3	4	4	3.57
25	4	3	4	4	3.71
26	5	5	5	4	4.71
27	4	4	3	2	3.57
28	4	3	4	4	3.86
29	4	4	4	2	3.29
30	5	5	5	2	4.43
31	4	4	4	4	4.00
32	5	5	5	5	4.71
33	5	5	5	4	4.29
34	3	3	3	3	3.00
35	4	4	4	4	4.00
36	3	3	4	3	3.29
37	4	4	4	4	4.00
38	4	4	4	4	3.71
39	5	4	4	4	4.29
40	4	3	3	3	3.29

Table E-3

Raw Data

	Int Incent Ques 29	Int Incent Ques 31	Int Incent Ques 32	Int Incent Ques 33	Incentive
41	5	5	5	2	4.57
42	4	4	4	4	4.14
43	5	5	5	4	4.86
44	4	4	4	4	3.71
45	4	4	4	4	4.29
46	5	5	5	4	4.86
47	3	3	4	3	3.14
48	4	4	4	3	3.86
49	5	4	4	4	3.86
50	5	5	5	1	3.71
51	4	5	4	3	4.29
52	5	5	5	5	5.00
53	5	5	5	5	5.00
54	5	5	5	5	5.00
55	5	5	5	3	4.71
56	5	5	4	2	4.43
57	4	4	4	4	4.00
58	5	5	5	5	4.71
59	5	5	5	4	4.86
60	4	4	4	3	3.86
61	3	3	3	3	3.00
62	5	4	5	4	4.14
63	5	4	4	4	4.14
64	5	5	5	2	4.57
65	3	3	4	4	3.43
66	5	4	5	4	4.29
67	5	5	4	2	4.29
68	4	4	4	4	4.00
69	4	4	5	3	4.00
70	3	3	3	3	3.14
71	4	3	4	4	3.86
72	3	4	3	3	3.29
73	4	4	4	4	3.71
74	4	4	5	3	4.00
75	4	4	4	3	3.86
76	4	4	4	4	4.00
77	5	5	5	4	4.57
78	5	5	5	5	4.86
79	3	4	4	4	3.57
80	4	4	4	4	4.00

Table E-3

Raw Data

	Int Incent Ques 29	Int Incent Ques 31	Int Incent Ques 32	Int Incent Ques 33	Incentive
81	4	4	4	1	3.29
82	5	4	4	5	4.29
83	5	4	5	4	4.71
84	3	3	3	3	3.00
85	4	5	5	3	4.29
86	4	5	4	4	4.43
87	5	4	4	4	4.14
88	4	4	4	3	3.86
89	5	5	5	5	5.00
90	3	3	3	3	3.00
91	3	3	1	2	2.71
92	4	4	4	4	4.00
93	4	4	4	4	3.71
94	5	5	5	4	4.43
95	4	4	4	3	3.86
96	4	4	4	4	4.00
97	4	4	4	4	4.00
98	5	5	5	5	4.43
99	5	5	5	5	4.29
100	3	4	4	4	3.43
101	4	5	5	5	4.57
102	5	5	5	5	4.86
103	5	5	5	5	4.57
104	3	3	3	3	3.00
105	5	5	5	3	4.14
106	3	4	3	2	3.14
107	4	4	4	4	4.00
108	4	4	4	4	4.00
109	4	4	3	4	3.43
110	2	3	2	1	2.43
111	3	3	3	3	2.86
112	4	4	4	4	4.00
113	5	5	5	5	5.00
114	5	5	4	5	4.86
115	5	4	5	5	4.43
116	5	5	5	5	5.00
117	3	3	3	3	3.00
118	4	4	4	4	4.00
119	4	3	3	3	3.43
120	4	4	4	2	3.71

Table E-3

Raw Data

	Int Incent Ques 29	Int Incent Ques 31	Int Incent Ques 32	Int Incent Ques 33	Incentive
121	4	4	4	4	4.00
122	3	3	3	3	3.00
123	4	4	3	2	3.57
124	4	4	4	2	3.43
125	4	4	4	4	3.86
126	4	4	4	3	3.86
127	4	4	4	2	3.57
128	5	5	5	5	4.43
Total N	128	128	128	128	128

Table E-3

Raw Data

	Mgr Support 12	Mgr Support 13	Mgr Support 16	Mgr Support	Peer Question 5
1	3	2	4	3.00	4
2	3	2	3	3.00	5
3	2	2	2	2.00	4
4	1	3	3	2.50	3
5	2	3	4	3.25	4
6	3	3	4	3.25	4
7	3	3	3	3.00	4
8	3	4	3	3.50	4
9	3	3	5	3.75	4
10	3	4	3	3.50	3
11	4	3	4	3.75	4
12	3	3	4	3.50	4
13	3	3	4	3.25	4
14	2	2	4	3.00	4
15	2	5	5	4.25	5
16	5	5	5	5.00	5
17	2	2	4	3.00	4
18	3	4	5	4.00	3
19	1	1	1	1.00	4
20	3	2	2	2.25	4
21	1	1	1	1.25	3
22	3	4	4	3.75	4
23	2	1	4	2.75	2
24	3	3	4	3.50	3
25	4	4	4	3.75	4
26	3	4	4	3.50	3
27	3	3	4	3.50	3
28	4	3	4	3.50	4
29	3	2	2	2.25	4
30	3	5	3	3.75	4
31	4	4	4	4.00	4
32	4	5	5	4.50	5
33	1	3	2	2.00	3
34	3	3	4	3.25	3
35	4	3	4	3.75	4
36	4	4	4	4.00	4
37	3	3	4	3.50	4
38	3	4	4	3.75	4
39	3	3	3	3.25	5
40	3	3	4	3.50	4

Table E-3

Raw Data

	Mgr Support 12	Mgr Support 13	Mgr Support 16	Mgr Support	Peer Question 5
41	2	5	5	3.50	3
42	3	4	4	3.75	5
43	4	5	5	4.75	5
44	4	2	2	3.00	4
45	4	3	5	3.75	4
46	4	5	5	4.75	5
47	3	4	4	3.75	3
48	3	3	3	3.00	5
49	4	3	5	3.75	4
50	2	2	5	3.00	3
51	2	3	2	2.25	5
52	3	.	5	4.33	5
53	1	1	5	3.00	5
54	3	5	5	4.50	5
55	5	5	5	4.75	4
56	3	3	3	3.25	4
57	4	3	4	3.50	4
58	5	5	5	5.00	4
59	3	4	3	3.50	4
60	3	3	4	3.25	4
61	3	3	3	3.00	4
62	3	5	5	4.25	4
63	3	3	5	3.75	4
64	3	4	5	3.75	3
65	3	5	4	4.25	4
66	5	4	4	4.50	4
67	3	4	5	4.00	5
68	4	3	4	3.75	5
69	3	2	2	2.25	5
70	4	3	4	3.75	4
71	4	4	4	4.00	4
72	3	4	4	3.75	4
73	2	2	4	3.00	4
74	4	3	5	4.25	5
75	3	3	4	3.50	3
76	3	3	4	3.25	4
77	4	5	5	4.75	4
78	3	2	2	2.50	3
79	4	4	5	4.50	5
80	4	4	4	4.00	4

Table E-3

Raw Data

	Mgr Support 12	Mgr Support 13	Mgr Support 16	Mgr Support	Peer Question 5
81	2	2	3	2.75	2
82	3	3	4	3.50	5
83	4	3	4	4.00	4
84	2	3	3	2.25	2
85	3	3	5	4.00	3
86	4	4	4	4.00	4
87	3	3	3	3.00	4
88	2	2	2	2.25	3
89	3	3	4	3.50	4
90	3	4	4	4.00	5
91	2	3	3	2.75	3
92	4	3	4	4.00	4
93	4	3	4	3.50	4
94	5	4	4	4.25	3
95	3	2	2	2.50	4
96	4	4	4	4.00	4
97	4	4	4	4.00	4
98	4	3	4	3.67	4
99	2	3	2	2.75	4
100	3	3	3	2.75	3
101	5	4	5	4.75	5
102	5	4	4	4.00	4
103	3	2	4	3.00	4
104	3	3	4	3.25	4
105	4	3	5	4.25	5
106	2	3	4	3.25	3
107	4	3	4	3.75	5
108	5	3	5	4.50	5
109	3	4	5	4.00	4
110	3	3	4	3.25	3
111	2	3	3	2.50	4
112	4	4	4	4.00	4
113	4	4	4	4.25	5
114	4	4	5	4.25	4
115	3	4	4	3.25	4
116	4	5	5	4.75	5
117	3	3	3	3.00	4
118	3	2	3	2.75	4
119	2	2	2	2.00	3
120	3	4	4	3.50	4

Table E-3

Raw Data

	Mgr Support 12	Mgr Support 13	Mgr Support 16	Mgr Support	Peer Question 5
121	2	2	3	2.50	2
122	3	2	3	2.75	3
123	2	3	3	2.75	4
124	3	3	4	3.25	3
125	3	4	2	3.25	4
126	3	3	3	3.25	4
127	3	3	4	3.25	4
128	5	5	5	5.00	4
Total N	128	127	128	128	128

Table E-3

Raw Data

	Peer Question 6	Peer Question 9	Peer Question 15	Team Support
1	4	3	3	3.50
2	3	3	2	3.25
3	2	3	4	3.25
4	3	3	4	3.25
5	3	4	4	3.75
6	4	4	4	4.00
7	5	4	4	4.25
8	4	4	3	3.75
9	3	4	5	4.00
10	3	4	3	3.25
11	4	4	5	4.25
12	3	4	4	3.75
13	3	4	4	3.75
14	4	4	5	4.25
15	2	5	5	4.25
16	5	5	5	5.00
17	3	4	4	3.75
18	3	4	4	3.50
19	2	4	4	3.50
20	5	5	3	4.25
21	3	4	3	3.25
22	3	3	3	3.25
23	2	4	4	3.00
24	3	3	3	3.00
25	4	4	3	3.75
26	2	3	5	3.25
27	2	3	3	2.75
28	4	4	4	4.00
29	3	2	2	2.75
30	3	5	3	3.75
31	4	4	4	4.00
32	5	4	5	4.75
33	2	3	2	2.50
34	2	3	4	3.00
35	4	4	4	4.00
36	4	4	4	4.00
37	4	4	4	4.00
38	3	4	4	3.75
39	3	5	3	4.00
40	3	4	4	3.75

Table E-3

Raw Data

	Peer Question 6	Peer Question 9	Peer Question 15	Team Support
41	2	2	5	3.00
42	3	5	4	4.25
43	4	5	5	4.75
44	5	4	4	4.25
45	4	4	3	3.75
46	4	5	5	4.75
47	4	3	3	3.25
48	4	3	4	4.00
49	4	3	5	4.00
50	3	3	4	3.25
51	2	4	3	3.50
52	2	5	5	4.25
53	1	5	5	4.00
54	5	2	3	3.75
55	4	5	5	4.50
56	5	4	4	4.25
57	4	3	4	3.75
58	3	4	3	3.50
59	3	4	4	3.75
60	3	4	4	3.75
61	3	3	3	3.25
62	5	4	5	4.50
63	3	4	5	4.00
64	3	2	3	2.75
65	3	4	4	3.75
66	4	3	4	3.75
67	5	4	4	4.50
68	5	3	4	4.25
69	4	3	3	3.75
70	3	4	4	3.75
71	4	4	4	4.00
72	4	4	4	4.00
73	2	2	2	2.50
74	4	3	5	4.25
75	2	3	4	3.00
76	3	4	4	3.75
77	4	5	5	4.50
78	4	4	4	3.75
79	4	4	4	4.25
80	4	4	4	4.00

Table E-3

Raw Data

	Peer Question 6	Peer Question 9	Peer Question 15	Team Support
81	3	3	2	2.50
82	5	3	5	4.50
83	3	4	4	3.75
84	1	1	3	1.75
85	3	4	4	3.50
86	4	4	4	4.00
87	4	3	4	3.75
88	4	2	2	2.75
89	1	4	4	3.25
90	3	3	3	3.00
91	2	3	3	2.75
92	4	4	4	4.00
93	4	4	4	4.00
94	2	2	2	2.25
95	3	4	2	3.25
96	4	4	4	4.00
97	4	4	4	4.00
98	4	3	5	4.00
99	2	4	4	3.50
100	3	3	3	3.00
101	4	4	4	4.25
102	5	5	4	4.50
103	3	4	4	3.75
104	4	4	4	4.00
105	4	5	5	4.75
106	4	3	4	3.50
107	4	4	4	4.25
108	5	5	5	5.00
109	3	4	4	3.75
110	4	3	3	3.25
111	3	3	3	3.25
112	4	4	4	4.00
113	5	5	4	4.75
114	4	4	5	4.25
115	3	3	5	3.75
116	4	4	5	4.50
117	3	4	4	3.75
118	3	3	3	3.25
119	2	3	3	2.75
120	3	4	4	3.75

Raw Data

	Peer Question 6	Peer Question 9	Peer Question 15	Team Support
121	2	3	4	2.75
122	3	2	3	2.75
123	4	4	5	4.25
124	4	3	4	3.50
125	3	4	4	3.75
126	3	3	3	3.25
127	2	4	4	3.50
128	5	5	5	4.75
Total N	128	128	128	128

Table E-3

Raw Data

	Norm Question 20	Norm Question 36	Norms	Constraints Ques 23
1	3	4	3.50	3
2	2	2	2.00	2
3	3	3	3.00	2
4	4	4	4.00	4
5	2	2	2.00	2
6	4	4	4.00	4
7	3	3	3.00	3
8	4	4	4.00	4
9	4	5	4.50	2
10	4	3	3.50	4
11	4	4	4.00	2
12	4	4	4.00	3
13	4	4	4.00	3
14	4	4	4.00	2
15	4	5	4.50	1
16	5	5	5.00	4
17	3	2	2.50	2
18	4	5	4.50	1
19	5	5	5.00	2
20	3	3	3.00	4
21	3	2	2.50	4
22	3	4	3.50	3
23	3	4	3.50	5
24	3	4	3.50	3
25	4	5	4.50	3
26	4	5	4.50	5
27	2	3	2.50	2
28	4	3	3.50	4
29	3	1	2.00	3
30	5	5	5.00	2
31	4	4	4.00	4
32	5	4	4.50	4
33	2	2	2.00	3
34	3	4	3.50	3
35	4	4	4.00	3
36	4	4	4.00	3
37	4	4	4.00	4
38	2	3	2.50	4
39	4	5	4.50	3
40	4	3	3.50	3

Table E-3

Raw Data

	Norm Question 20	Norm Question 36	Norms	Constraints Ques 23
41	2	5	3.50	2
42	4	3	3.50	2
43	4	4	4.00	4
44	1	4	2.50	3
45	3	3	3.00	2
46	4	4	4.00	2
47	3	4	3.50	3
48	3	3	3.00	4
49	4	5	4.50	1
50	4	2	3.00	3
51	4	4	4.00	3
52	5	5	5.00	2
53	2	3	2.50	5
54	2	2	2.00	1
55	5	5	5.00	1
56	4	4	4.00	4
57	4	3	3.50	3
58	3	2	2.50	1
59	3	3	3.00	3
60	4	4	4.00	4
61	3	3	3.00	3
62	5	5	5.00	1
63	4	5	4.50	3
64	5	4	4.50	1
65	4	4	4.00	4
66	4	4	4.00	3
67	5	4	4.50	1
68	4	5	4.50	3
69	2	1	1.50	2
70	3	4	3.50	3
71	4	3	3.50	3
72	4	4	4.00	1
73	4	4	4.00	3
74	5	5	5.00	3
75	3	4	3.50	3
76	4	4	4.00	3
77	5	5	5.00	3
78	3	3	3.00	5
79	4	4	4.00	3
80	4	4	4.00	4

Table E-3

Raw Data

	Norm Question 20	Norm Question 36	Norms	Constraints Ques 23
81	4	4	4.00	3
82	5	3	4.00	5
83	4	5	4.50	1
84	1	1	1.00	3
85	3	4	3.50	3
86	4	4	4.00	3
87	3	4	3.50	3
88	4	3	3.50	3
89	3	4	3.50	3
90	4	4	4.00	3
91	2	3	2.50	3
92	4	4	4.00	4
93	4	3	3.50	3
94	3	2	2.50	2
95	4	2	3.00	3
96	4	4	4.00	3
97	4	4	4.00	4
98	5	5	5.00	3
99	3	1	2.00	2
100	3	2	2.50	3
101	4	3	3.50	2
102	4	3	3.50	4
103	3	3	3.00	3
104	3	4	3.50	3
105	5	5	5.00	1
106	3	4	3.50	3
107	4	4	4.00	4
108	4	4	4.00	4
109	5	4	4.50	2
110	4	2	3.00	3
111	3	4	3.50	2
112	4	4	4.00	3
113	5	5	5.00	4
114	4	4	4.00	1
115	3	5	4.00	1
116	4	5	4.50	5
117	4	4	4.00	3
118	3	4	3.50	3
119	2	1	1.50	3
120	4	2	3.00	2

Table E-3

Raw Data

	Norm Question 20	Norm Question 36	Norms	Constraints Ques 23
121	3	2	2.50	3
122	3	4	3.50	4
123	4	4	4.00	3
124	4	4	4.00	2
125	4	4	4.00	2
126	4	4	4.00	4
127	4	4	4.00	3
128	5	5	5.00	1
Total N	128	128	128	128

Table E-3

Raw Data

	Constraints Quest 25	Constraints Ques 30	Constraints Ques 38	Constraints Ques 39
1	2	3	4	3
2	4	4	4	4
3	4	5	4	4
4	3	5	4	3
5	4	5	3	3
6	4	2	3	3
7	4	4	3	4
8	4	4	4	4
9	4	2	4	4
10	4	3	4	4
11	4	2	4	4
12	2	3	2	2
13	4	3	4	4
14	2	4	3	3
15	1	5	1	2
16	5	5	5	5
17	2	2	2	2
18	5	5	5	5
19	5	5	5	4
20	5	4	4	2
21	4	5	1	1
22	3	4	3	3
23	3	5	4	3
24	3	3	3	3
25	3	3	3	2
26	5	5	3	3
27	4	3	3	4
28	3	3	3	3
29	4	3	3	3
30	3	2	3	3
31	4	4	4	4
32	4	5	5	5
33	3	3	4	3
34	3	2	2	2
35	3	3	3	3
36	3	2	3	3
37	3	1	3	3
38	4	4	4	4
39	3	3	4	4
40	3	4	4	3

Table E-3

Raw Data

	Constraints Quest 25	Constraints Ques 30	Constraints Ques 38	Constraints Ques 39
41	2	2	5	5
42	4	4	4	4
43	3	4	1	1
44	5	5	4	4
45	4	3	4	4
46	2	2	3	3
47	4	3	3	3
48	4	4	3	3
49	2	1	2	2
50	4	3	3	3
51	4	4	3	3
52	2	2	2	2
53	5	5	5	5
54	4	1	1	4
55	1	1	1	4
56	4	2	3	4
57	3	3	4	4
58	3	2	1	2
59	2	3	3	4
60	4	5	4	4
61	3	3	3	3
62	3	1	1	1
63	3	5	3	4
64	4	5	4	4
65	4	4	3	4
66	3	4	3	4
67	4	4	3	1
68	3	3	3	3
69	3	2	3	2
70	3	5	3	3
71	4	3	4	4
72	2	2	2	2
73	4	3	3	3
74	3	4	1	1
75	4	4	4	4
76	3	4	4	4
77	4	4	4	4
78	4	5	5	5
79	4	4	4	4
80	4	4	4	4

Raw Data

	Constraints Quest 25	Constraints Ques 30	Constraints Ques 38	Constraints Ques 39
81	4	5	5	4
82	3	3	3	3
83	2	1	2	2
84	3	3	3	3
85	3	5	3	3
86	4	3	3	3
87	4	3	3	4
88	3	3	3	3
89	2	2	3	3
90	3	3	3	3
91	3	3	4	3
92	4	4	4	4
93	3	3	4	3
94	4	2	2	2
95	3	3	3	3
96	4	4	3	2
97	4	4	4	4
98	4	3	3	3
99	5	3	2	2
100	3	3	3	3
101	5	1	1	1
102	4	4	4	5
103	4	4	3	3
104	3	3	3	3
105	2	2	2	2
106	2	3	2	2
107	4	2	2	2
108	4	4	3	1
109	2	2	3	3
110	5	5	5	4
111	3	2	3	3
112	3	4	3	4
113	4	5	4	3
114	4	1	3	3
115	3	1	1	2
116	5	5	4	2
117	3	4	3	3
118	3	3	3	3
119	3	3	3	3
120	3	3	3	3

Table E-3

Raw Data

	Constraints Quest 25	Constraints Ques 30	Constraints Ques 38	Constraints Ques 39
121	3	3	4	4
122	3	3	3	3
123	3	1	5	3
124	2	3	2	2
125	4	3	4	4
126	3	1	3	3
127	3	3	3	3
128	1	1	2	2
Total N	128	128	128	128

Table E-3

Raw Data

	Org Constraints	Autonomy Ques 41	Mgr Support 10	Autonomy Ques 43	Autonomy
1	3.00	4	3	4	4.00
2	3.60	2	4	3	2.50
3	3.80	2	2	4	3.00
4	3.80	3	3	3	3.00
5	3.40	4	4	4	4.00
6	3.20	4	3	4	4.00
7	3.60	3	3	3	3.00
8	4.00	4	4	4	4.00
9	3.20	4	4	4	4.00
10	3.80	4	4	3	3.50
11	3.20	4	4	4	4.00
12	2.40	4	4	4	4.00
13	3.60	4	3	4	4.00
14	2.80	4	4	2	3.00
15	2.00	4	5	4	4.00
16	4.80	5	5	5	5.00
17	2.00	4	4	4	4.00
18	4.20	4	4	4	4.00
19	4.20	4	1	5	4.50
20	3.80	3	2	3	3.00
21	3.00	4	2	3	3.50
22	3.20	3	4	3	3.00
23	4.00	4	4	2	3.00
24	3.00	4	4	4	4.00
25	2.80	4	3	4	4.00
26	4.20	4	3	4	4.00
27	3.20	3	4	3	3.00
28	3.20	4	3	4	4.00
29	3.20	1	2	2	1.50
30	2.60	3	4	3	3.00
31	4.00	4	4	4	4.00
32	4.60	5	4	4	4.50
33	3.20	3	2	3	3.00
34	2.40	4	3	2	3.00
35	3.00	4	4	4	4.00
36	2.80	4	4	4	4.00
37	2.80	3	4	4	3.50
38	4.00	5	4	5	5.00
39	3.40	4	4	4	4.00
40	3.40	4	4	4	4.00

Table E-3

Raw Data

	Org Constraints	Autonomy Ques 41	Mgr Support 10	Autonomy Ques 43	Autonomy
41	3.20	5	2	5	5.00
42	3.60	4	4	4	4.00
43	2.60	4	5	4	4.00
44	4.20	2	4	3	2.50
45	3.40	4	3	3	3.50
46	2.40	4	5	5	4.50
47	3.25	4	4	4	4.00
48	3.60	4	3	4	4.00
49	1.60	4	3	4	4.00
50	3.20	3	3	4	3.50
51	3.40	4	2	5	4.50
52	2.00	4	5	4	4.00
53	5.00	3	5	3	3.00
54	2.20	5	5	4	4.50
55	1.60	5	4	4	4.50
56	3.40	4	4	4	4.00
57	3.40	4	3	4	4.00
58	1.80	3	5	5	4.00
59	3.00	4	4	4	4.00
60	4.20	3	3	4	3.50
61	3.00	3	3	3	3.00
62	1.40	3	4	3	3.00
63	3.60	5	4	4	4.50
64	3.60	2	3	4	3.00
65	3.80	4	5	4	4.00
66	3.40	3	5	3	3.00
67	2.60	4	4	5	4.50
68	3.00	4	4	4	4.00
69	2.40	3	2	2	2.50
70	3.40	4	4	4	4.00
71	3.60	4	4	4	4.00
72	1.80	4	4	4	4.00
73	3.20	4	4	3	3.50
74	2.40	4	5	4	4.00
75	3.80	3	4	4	3.50
76	3.60	4	3	4	4.00
77	3.80	4	5	5	4.50
78	4.80	4	3	3	3.50
79	3.80	4	5	4	4.00
80	4.00	4	4	4	4.00

Table E-3

Raw Data

	Org Constraints	Autonomy Ques 41	Mgr Support 10	Autonomy Ques 43	Autonomy
81	4.20	1	4	3	2.00
82	3.40	4	4	5	4.50
83	1.60	4	5	4	4.00
84	3.00	3	1	3	3.00
85	3.40	4	5	4	4.00
86	3.20	4	4	4	4.00
87	3.40	4	3	4	4.00
88	3.00	4	3	4	4.00
89	2.60	4	4	4	4.00
90	3.00	5	5	5	5.00
91	3.20	3	3	3	3.00
92	4.00	4	5	4	4.00
93	3.20	2	3	2	2.00
94	2.40	4	4	4	4.00
95	3.00	4	3	4	4.00
96	3.20	4	4	4	4.00
97	4.00	4	4	4	4.00
98	3.20	4	3	4	4.00
99	2.80	5	4	5	5.00
100	3.00	4	2	3	3.50
101	2.00	5	5	5	5.00
102	4.20	5	3	5	5.00
103	3.40	3	3	3	3.00
104	3.00	4	3	4	4.00
105	1.80	5	5	5	5.00
106	2.40	4	4	4	4.00
107	2.80	4	4	4	4.00
108	3.20	4	5	3	3.50
109	2.40	4	4	4	4.00
110	4.40	3	3	3	3.00
111	2.60	4	2	3	3.50
112	3.40	4	4	4	4.00
113	4.00	5	5	5	5.00
114	2.40	4	4	4	4.00
115	1.60	3	2	3	3.00
116	4.20	4	5	4	4.00
117	3.20	4	3	4	4.00
118	3.00	4	3	4	4.00
119	3.00	4	2	3	3.50
120	2.80	3	3	4	3.50

Table E-3

Raw Data

	Org Constraints	Autonomy Ques 41	Mgr Support 10	Autonomy Ques 43	Autonomy
121	3.40	4	3	4	4.00
122	3.20	3	3	3	3.00
123	3.00	5	3	4	4.50
124	2.20	3	3	4	3.50
125	3.40	4	4	3	3.50
126	2.80	3	4	3	3.00
127	3.00	4	3	4	4.00
128	1.40	5	5	5	5.00
Total N	128	128	128	128	128

Table E-3

Raw Data

	Expertise Ques 40	Expertise Ques 42	Expertise Ques 44	Expertise	INDIVIDU
1	3	3	3	3.00	3.57
2	2	2	2	2.00	3.57
3	3	4	2	3.00	4.43
4	1	4	4	3.00	3.57
5	1	4	4	3.00	3.29
6	4	4	4	4.00	4.00
7	1	4	2	2.33	4.00
8	3	4	4	3.67	3.86
9	4	4	4	4.00	4.00
10	3	4	3	3.33	4.00
11	5	4	4	4.33	4.14
12	4	4	4	4.00	4.00
13	4	4	4	4.00	4.14
14	2	4	2	2.67	4.71
15	4	4	2	3.33	4.71
16	5	5	5	5.00	5.00
17	4	4	4	4.00	3.57
18	1	4	4	3.00	4.86
19	1	4	1	2.00	5.00
20	2	2	2	2.00	4.14
21	2	2	3	2.33	3.00
22	3	4	4	3.67	3.43
23	4	2	2	2.67	3.00
24	4	4	4	4.00	3.57
25	4	4	4	4.00	3.71
26	2	3	4	3.00	4.71
27	3	3	2	2.67	3.57
28	4	4	4	4.00	3.86
29	1	1	1	1.00	3.29
30	3	2	2	2.33	4.43
31	4	4	4	4.00	4.00
32	5	5	5	5.00	4.71
33	3	3	3	3.00	4.29
34	2	3	2	2.33	3.00
35	4	4	4	4.00	4.00
36	4	4	4	4.00	3.29
37	4	4	4	4.00	4.00
38	5	5	5	5.00	3.71
39	3	4	5	4.00	4.29
40	3	4	4	3.67	3.29

Table E-3

Raw Data

	Expertise Ques 40	Expertise Ques 42	Expertise Ques 44	Expertise	INDIVIDU
41	5	5	5	5.00	4.57
42	4	4	4	4.00	4.14
43	4	4	4	4.00	4.86
44	1	2	2	1.67	3.71
45	3	3	3	3.00	4.29
46	4	4	5	4.33	4.86
47	3	4	4	3.67	3.14
48	3	4	4	3.67	3.86
49	5	3	5	4.33	3.86
50	2	3	2	2.33	3.71
51	2	3	2	2.33	4.29
52	4	4	5	4.33	5.00
53	4	3	3	3.33	5.00
54	4	5	5	4.67	5.00
55	5	3	3	3.67	4.71
56	4	5	4	4.33	4.43
57	4	4	4	4.00	4.00
58	2	4	2	2.67	4.71
59	2	3	3	2.67	4.86
60	2	3	3	2.67	3.86
61	3	3	3	3.00	3.00
62	5	3	5	4.33	4.14
63	5	4	4	4.33	4.14
64	2	2	3	2.33	4.57
65	4	4	4	4.00	3.43
66	4	4	3	3.67	4.29
67	5	5	4	4.67	4.29
68	4	4	4	4.00	4.00
69	2	2	1	1.67	4.00
70	3	3	3	3.00	3.14
71	3	3	4	3.33	3.86
72	4	3	3	3.33	3.29
73	2	2	3	2.33	3.71
74	5	5	5	5.00	4.00
75	3	3	3	3.00	3.86
76	4	4	4	4.00	4.00
77	4	4	5	4.33	4.57
78	1	2	3	2.00	4.86
79	4	4	5	4.33	3.57
80	4	4	4	4.00	4.00

Table E-3

Raw Data

	Expertise Ques 40	Expertise Ques 42	Expertise Ques 44	Expertise	INDIVIDU
81	1	3	3	2.33	3.29
82	5	3	5	4.33	4.29
83	4	4	4	4.00	4.71
84	3	3	3	3.00	3.00
85	2	4	2	2.67	4.29
86	3	4	4	3.67	4.43
87	3	2	2	2.33	4.14
88	2	4	4	3.33	3.86
89	2	2	4	2.67	5.00
90	5	5	4	4.67	3.00
91	5	4	4	4.33	2.71
92	4	4	4	4.00	4.00
93	3	3	3	3.00	3.71
94	4	3	2	3.00	4.43
95	4	3	4	3.67	3.86
96	4	4	4	4.00	4.00
97	4	4	4	4.00	4.00
98	4	4	4	4.00	4.43
99	1	2	2	1.67	4.29
100	4	3	3	3.33	3.43
101	5	5	5	5.00	4.57
102	5	4	5	4.67	4.86
103	3	3	3	3.00	4.57
104	4	4	4	4.00	3.00
105	5	5	5	5.00	4.14
106	5	4	5	4.67	3.14
107	4	4	4	4.00	4.00
108	3	4	4	3.67	4.00
109	5	5	5	5.00	3.43
110	1	2	2	1.67	2.43
111	3	3	3	3.00	2.86
112	4	4	4	4.00	4.00
113	5	5	5	5.00	5.00
114	4	4	4	4.00	4.86
115	3	3	3	3.00	4.43
116	5	4	4	4.33	5.00
117	4	4	4	4.00	3.00
118	4	4	4	4.00	4.00
119	4	3	3	3.33	3.43
120	3	3	3	3.00	3.71

Table E-3

Raw Data

	Expertise Ques 40	Expertise Ques 42	Expertise Ques 44	Expertise	INDIVIDU
121	2	2	2	2.00	4.00
122	3	3	3	3.00	3.00
123	5	4	5	4.67	3.57
124	3	3	3	3.00	3.43
125	3	4	2	3.00	3.86
126	4	3	3	3.33	3.86
127	4	4	4	4.00	3.57
128	4	4	5	4.33	4.43
Total N	128	128	128	128	128

Table E-3

Raw Data

	SOCIAL	TECHNICA
1	3.50	3.00
2	2.46	3.60
3	2.71	3.80
4	3.21	3.80
5	3.28	3.40
6	3.82	3.20
7	3.26	3.60
8	3.82	4.00
9	3.99	3.20
10	3.51	3.80
11	4.06	3.20
12	3.99	2.40
13	3.83	3.60
14	3.26	2.80
15	4.22	2.00
16	5.00	4.80
17	3.38	2.00
18	3.83	4.20
19	3.22	4.20
20	2.69	3.80
21	2.53	3.00
22	3.36	3.20
23	3.10	4.00
24	3.50	3.00
25	4.00	2.80
26	3.43	4.20
27	3.01	3.20
28	3.83	3.20
29	2.03	3.20
30	3.58	2.60
31	3.89	4.00
32	4.60	4.60
33	2.47	3.20
34	3.12	2.40
35	3.96	3.00
36	4.00	2.80
37	3.72	2.80
38	4.00	4.00
39	3.79	3.40
40	3.74	3.40

Table E-3

Raw Data

	SOCIAL	TECHNICA
41	4.17	3.20
42	3.92	3.60
43	4.36	2.60
44	2.82	4.20
45	3.50	3.40
46	4.56	2.40
47	3.69	3.25
48	3.56	3.60
49	4.15	1.60
50	3.07	3.20
51	3.54	3.40
52	4.49	2.00
53	3.25	5.00
54	4.07	2.20
55	4.57	1.60
56	3.97	3.40
57	3.63	3.40
58	3.78	1.80
59	3.38	3.00
60	3.53	4.20
61	3.15	3.00
62	4.29	1.40
63	4.12	3.60
64	3.22	3.60
65	4.06	3.80
66	3.88	3.40
67	4.42	2.60
68	4.14	3.00
69	2.67	2.40
70	3.61	3.40
71	3.81	3.60
72	3.90	1.80
73	3.22	3.20
74	4.36	2.40
75	3.42	3.80
76	3.83	3.60
77	4.68	3.80
78	2.90	4.80
79	4.18	3.80
80	4.00	4.00

Table E-3

Raw Data

	SOCIAL	TECHNICA
81	2.82	4.20
82	4.19	3.40
83	4.04	1.60
84	2.28	3.00
85	3.56	3.40
86	3.94	3.20
87	3.32	3.40
88	3.19	3.00
89	3.43	2.60
90	4.11	3.00
91	3.00	3.20
92	4.00	4.00
93	3.17	3.20
94	3.28	2.40
95	3.29	3.00
96	4.00	3.20
97	4.00	4.00
98	4.06	3.20
99	3.04	2.80
100	3.13	3.00
101	4.36	2.00
102	4.33	4.20
103	3.18	3.40
104	3.74	3.00
105	4.72	1.80
106	3.71	2.40
107	4.00	2.80
108	4.22	3.20
109	4.10	2.40
110	2.75	4.40
111	3.01	2.60
112	3.94	3.40
113	4.83	4.00
114	4.08	2.40
115	3.56	1.60
116	4.51	4.20
117	3.63	3.20
118	3.47	3.00
119	2.63	3.00
120	3.40	2.80

Table E-3

Raw Data

	SOCIAL	TECHNICA
121	2.74	3.40
122	3.11	3.20
123	3.97	3.00
124	3.49	2.20
125	3.47	3.40
126	3.31	2.80
127	3.68	3.00
128	4.85	1.40
Total N	128	128

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