4-1997

Determinants of Worker Perceptions of Team Effectiveness

Scott D. Mist

DETERMINANTS OF WORKER PERCEPTIONS OF TEAM EFFECTIVENESS

by

Scott D. Mist

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Master of Arts
Department of Sociology

Western Michigan University
Kalamazoo, Michigan
April 1997

ACKNOWLEDGMENTS

I would like to mention a few of the people who have helped me finish this thesis. First, I would like to thank my committee. Dr. Subhash Sonnad, I would like to thank you for I certainly would not have finished this project without your stating that it would be a "...very bad idea to not do a thesis." Dr. Susan Carlson, thanks for E-mailing me when I was *confused*. Dr. Larry Mallak, I would like to thank you for the use of your data and your enthusiasm in this project.

Secondly, I would like to thank Cindy Jones and Patti Storm. I owe you two a debt of gratitude. I thank you both for your support in my endeavors. You both helped me see this thesis as a task in a mythical journey. And thanks to Kathryn who taught me to say, "Nolite te bastardes corundorum."

Scott D. Mist

DETERMINANTS OF WORKER PERCEPTIONS OF TEAM EFFECTIVENESS

Scott D. Mist, M.A.

Western Michigan University, 1997

This study measures perceptions of team effectiveness in a research and development organization from data obtained during an evaluation of a Federal Re-Invention Laboratory. The study is a secondary analysis which examines five scales, selected for their ability to measure team performance and satisfaction through the use of several values, behaviors and attitudes. These include empowerment, cohesion, team fitness, culture-power distribution, and culture.

A confirmatory factor analysis was used to analyze the strength of the question items of the scales. The factors were then utilized in four logistic regression analyses of dependent variables.

The analyses showed the relative strength of the scaled items. The team fitness scale by Hartzler and Henry (1994) was the only scale that was significant in all four of the logistic regression analyses. Denison and Mishra's (1995) culture scale was significant for comparative performance along with the empowerment scale by Spreitzer (1995).

TABLE OF CONTENTS

Table of Contents -- Continued

Table of Contents -- Continued

CHAPTER

Table of Contents -- Continued

LIST OF TABLES

CHAPTER I

INTRODUCTION

As organizations move further and further towards task specific operations, team style work groups are becoming more prevalent. Organizations such as IBM, 3M, General Electric, Boeing, Motorola, and Eastman Kodak have all implemented teams as a means for meeting today's challenges for flexibility. It has been estimated that one quarter of all US corporations use some form of self-directed work teams (Felts, 1995).

Due to the increasingly competitive marketplace, more and more organizations are experimenting with team organizational structures. These changes reflect a paradigm shift within the market place. Fanz and Harel (1993, 277) suggest some of the paradigmatic changes include a shift from a management style where:

> managers direct, plan and control; 'rugged individualism' breeds healthy competition and high performance; management's job is to solve operational problems; and organizational performance is the cumulative effect of individual performance

to an approach where:

> management supports front-line performance teams who run daily operations; well-trained and supported teams always

> outperform star individual performers; management ensures performance teams have the skills, tools, information and support to solve operational problems; and organizational performance depends on its systems, processes and structure.

Teams offer many advantages over the traditional hierarchical organization. As organizations are forced to become more and more customer focused, teams can offer an increase in service and product quality. It has been further noted that supervision and staff support levels for team organizations can be reduced from a more traditional hierarchical to a less hierarchical process (Lawler, 1986). For organizations where there is a need for quick adaptability and compartmentalized projects, team structures seem to be ideal. Lawler also notes that there are additional expenses for work teams as salary and training costs both rise for work team structures.

Team style organizations, at their best, offer greater flexibility and quicker reaction time to customer demands. Teams have the ability to reduce costs and increase sales. Teams have given a competitive edge to such companies as Northern Telecom Morrisville factory which reported revenue increases of 63%, sales increases of 26%, product quality increases of 50%, productivity per employee increased by 60% and earnings increased by 46% all after the implementation of self-directed teams (Schidler, 1992).

At their worst, teams quickly evolve into an authoritarian style leadership which frustrates the worker and the management, isolating each team from the organization. Managers who have no experience with this style of management may feel as if their authority has been taken and may not use teams to their fullest capabilities.

With the continued changes within organizations, managers at all levels are looking for tools for evaluating the performance of each team. Several attitudes, values, and perceptions have been identified as prerequisites for successful team participation. Some of these include: team cohesion, a willingness to accept leadership, adaptability, and an understanding of the unit's mission. While much work has been done to produce scales to measure these attributes, little effort has been committed to assessing the effect of these attitudes, values and perceptions on the dependent variables to see which are more important for predicting performance within teams.

This study is a secondary analysis of several attitudes, values, and perceptions, in relation to dependent variables describing perceived outcome measures, from a previous evaluation of a team organized Federal Re-Invention Laboratory.

CHAPTER II

REVIEW OF RELATED LITERATURE

Team style organizations have become a buzzword in the organizational literature and popularized in the media. One has to simply glance at the latest issues of Forbes magazine or Fortune to find articles about teams. While teams have been quite an attraction, there has been relatively inadequate quantitative research done on the efficiency and effectiveness of the team style organizational approach. Most of the literature is anecdotal in nature, though there is an increasing movement towards rectifying this shortcoming.

There are several reasons for this lack of research. The most apparent is that most evaluations and internal audits of organizations are necessarily confidential. The whole purpose of evaluation within an organization must, at some level, be for the purpose of improving the organization or making the organization better than its competitors. This would logically lead to an unwillingness of organizations to reveal the findings of their evaluations in a format that is accessible to its competitors.

A possible second reason for the lack of literature in this field is that it is hard to generalize findings from the study of a single organization. An evaluation of the team approach in one company may have little to offer another organization, due to differences in infrastructure, the work place climate, the customer focus or the style of team.

While it is true that organizations have many differences, this study assumes that many organizations with research and development (R&D) divisions have many characteristics generalizable to other R&D divisions. Some of the characteristics that organizations with an R&D component have in common include individuals who are often used to working by themselves -- not as a team. In research and development organizations, which are accustomed to individuals operating autonomously, a team approach may be seen as an encroachment upon individual initiative if not carefully implemented.

R&D members are expected to perform with a high level of autonomy. This is especially true because R&D organizations often hire experts within their fields. The management shift toward team style projects means that people from cross-functional positions will have a say in the way things are done. This could be one of the causes of a certain amount of friction with the implementation of teams in an R&D

environment.

A second commonality of R&D divisions is that many of them are often governed by consent, not by command. For example, Handy (1987) suggested that teachers, who also are governed by consent, would have an easier transition to team implementation for this reason. R&D organizations, having the common characteristic of being governed by consent, could possibly have an easier transition to team style organization because teams have to have some level of horizontal processes by their very definition. This may be particularly true since most people in these organizations are highly educated. As a change to a team approach represents a 'loosening' of regulation, many individuals may prefer team organizations.

Definition of a Team

A very important concept for this study is the idea of a team. It is particularly interesting to see that many researchers have designed scales for the measuring of teamwork yet very few define what a team is (Champion, et. al. 1993; Hartzler & Henry, 1994; Kayser, 1994; Zigon, 1994). Of those who do define the concept of a team, many of these definitions are very simplistic. One such example is found in the work by Plovnick, Fry and Rubin (1975). According to Plovnick, et. al.(1975, p. 4),

a team is "two or more people who must coordinate their activities to accomplish a common goal."

One of the problems with developing the definition of teams is that there are many types of teams. Zenger, Musselwhite, Hurson & Perrin, (1994) have identified at least four types of teams by their function including intra-functional teams, problem-solving teams, cross-functional teams, and self-directed teams. Most teams have components of each of these types, and the teams in this study were not an exception. Of these types, problem-solving teams come the closest to the teams in the Federal Re-Invention Laboratory being studied.

A more thorough definition of a team was developed by Moxon (1993). His definition of a team has five parts. The first, and most obvious, is that it must be a group. Second, the group must have a common purpose. He further states that there must be recognition by each individual as belonging to the same unit (i.e., team identity). The team must have interdependent functions, and, finally, there must be agreed upon norms or values which regulate behavior. Moxon goes further to define norms and values as an agreed upon form of communication, decision making and conflict resolution practices (1993: 5).

Katzenbach and Smith (1993) have developed a definition of team

which is more to the point yet, inclusive of the parts that make a team more than a group. Their definition of a team was adopted for this study. According to Katzenbach and Smith(1993, p. 74), a team is:

> ... 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.

This definition accurately describes the teams that were the focus of the present study.

Dependent Variables

The dependent variables were all measures focusing on perceived effectiveness by the organization. The dependent variables were all indicators of the productivity within the teams as defined by the management. These include (a) satisfaction; (b) comparative performance; (c) total team savings, in dollars, identified by associates; and (d) number of process changes suggested by team members.

Satisfaction

The first dependent variable examined in the study is satisfaction. A scale was created to measure satisfaction among the associates of the Federal Re-Invention Laboratory. This scale included one measure of comparative satisfaction, and two measures of satisfaction. Satisfaction

has been found to have a very weak, if any correlation to productivity, but it has been linked to intention of employees to continue employment, and employee retention.

There have also been many studies which have identified a positive correlation between satisfaction and commitment to the organization (Cialdini, et. al. 1976, p. 406; Mowday, Porter, and Steers, 1982; Williams & Hazer, 1986; and Mathieu, 1991). This was further substantiated by the research by Riggs and Knight (1994) where they found a substantial correlation. This is partly due to the individual's willingness to internalize organizational goals which cause a reduction of cognitive dissonance due to internal conflict between personal goals and organizational goals (Locke, Frederick, Lee, & Bobko, 1984; Markus & Wurf, 1987).

Comparative Performance

The second dependent variable that was examined was comparative performance as perceived by the workers. It was included due to the substantial correlations that have been found in past research between perceived performance and satisfaction, organizational commitment, self-efficacy and task performance (Bandura, 1971; Lawler and Porter, 1967; Riggs and Knight, 1994). This is the primary

dependent variable as it constitutes the major purpose and emphasis of this study.

Much of the research on comparative performance uses Bandura's social learning theory as a means of describing why it is theoretically important (Bandura, 1971.). Bandura's social learning theory in its most basic form states that individuals learn from others though modeling. The learning occurs when the observer sees the action and the subsequent consequences of those actions. If the consequences are positive, the observer may imitate the behavior in a similar situation. Bandura further states that as an individual experiences success or failure, the expectation for behavior in a similar situation will be the same.

Social learning theory has been used to study comparative performance due to the measure of success -- failure of modeling associated with performance, and ability of an individual to learn from these models without reinforcement. Therefore, a team which is viewed as a successful one is expected to perform successfully again given the same task.

Comparative performance has been positively linked to satisfaction, another dependent variable: that is to say that if the workers feel that their organization performs better than other organizations of similar character, they are more likely to have a higher level of satisfaction

(Lawler and Porter, 1967). Riggs and Knight (1994) point out that this may not be a direct relationship, though they do not mention what the intervening variable might be.

Another reason that comparative performance has been included as a dependent variable is that it has been found that there is a positive link between those who view their group as efficient and satisfaction (Snyder, Lassegard, and Ford, 1986) They found that those groups and individuals who view themselves as efficient often are efficient. This in turn brought about rewards for their efficient behavior which brought about an increase in satisfaction.

Identified Savings and Number of Process Changes Suggested

Identified team savings in dollars and number of process changes suggested were included as dependent variables because they are measures that the Federal Re-Invention Laboratory uses to determine team performance. As such, this study will assume that these two measures are additional indicators of comparative performance. In this case, though, they will be a measure of comparative performance with other teams instead of with other organizations. Each of these measures are based on the perceptions of the workers.

Independent Variables

Many efforts have been made to study the effect of attitudes, behaviors and perceptions of the people within the organization to determine why one team works more efficiently than another. These studies have ranged from measuring intelligence to satisfaction in hopes of finding a combination of predictors of team effectiveness. Mallak, Mist and Watts (1996) focused their evaluation efforts on the attitudes, behavior and perceptions of the team members within the organization, they used the latest scales in the literature for measuring these latent variables. These scales were all from recent publications, they had not been utilized in a confirmatory study, and each was deemed important for evaluating teams. The same scales were adopted in the present study. The present study will test these scales for their predictive ability in measuring perceptions of team effectiveness and satisfaction.

The research which incorporated the scales used in this study is reviewed here. Mallak et al.'s (1996) survey includes five scales measuring distinct values within a team based structure. The scales measure the power distribution within the organization and equity of the organization's reward structure, the level of group cohesion, the level of empowerment within the teams, the types of culture within the organization and the level of team fitness.

Scale 1: Culture-Power Distribution

The first of the scales was an adaptation of Kabanoff's computer content analysis of business documents (Mallak, Mist and Watts, 1996). The concepts from Kabanoff were used to make a scale measuring each of the values forming Kabanoff's typologies.

The Kabanoff's schema divided nine values into four typologies concerning the distribution of power. Kabanoff ran a computerized content analysis of the official documents of 88 large Australian firms in an effort to determine the strength of the nine values for each of their four typologies.

Kabanoff's concepts were grounded in distributive justice theory and used to design a scheme for classifying organizational structures by their value structures. The main assertion of the distributive justice theory is that there are limited resources that have to be allocated fairly. Methods for the allocation differ amongst theorist. One of the measures of Kabanoff's model is the way in which the limited resources -- rewards -- are distributed.

Kabanoff suggests that an organization can be measured on two polar scales: process and power structure. The process measure was weighed where the organization fell on the equitable -- egalitarian

continuum. An equitable process within an organization has a centralized structure with unequal reward distribution with rewards going to those that produce more or better. An organization with an egalitarian process tends to be more decentralized and will have more equal distribution of rewards.

The second polarity, in Kabanoff's study, dealt with intra-organizational power structures. Organizations will either stress equal or unequal power distributions among the workers and those in leadership positions. The organizations that stress an equal power distribution structure would have fewer differences between the work of the leaders and the individuals underneath them.

Kabanoff explains that there are nine values that are important measures of the four typologies but does not adequately define the values or even justify why these measures are theoretically tied to the typologies. As Kabanoff used computerized content analysis, the definitions for the nine values were pre-programmed; Kabanoff offers little in the way of in-depth conceptualization of these values to help those who do not have access to the original content analysis.

Scale 2: Cohesion

As Benjamin Franklin so aptly put it, "We must all hang together,

or assuredly we shall hang separately." Social psychology, group dynamics, organizational behavior, military psychology, sports psychology are just a few of the fields that are interested in the idea of group cohesion. Cohesion has been an interest of just about every discipline that studies the behavior of people in a group.

As cohesion has been studied as one of the variables that best predicts the effectiveness of a team, the second scale used in this evaluation is based on a cohesion scale created by Wheeless, Wheeless, and Diskson-Markman (1982).

"The resultant forces which are acting on the members to stay in a group", is the definition of cohesion that most researchers use (Festinger, 1950, p. 274). While Wheeless et. al. (1982) do not use the same definition, their definition of cohesion is very similar. Wheeless et. al. defines cohesion as: "...the sum of positive and negative forces of attraction of group members to each other." They further define attraction as "...related to communication patterns, behavior perceived, homophyly, perceived status, and perceived group task success." Wheeless et. al. forward the idea that cohesion within a group is "semantically isomorphic" to cohesion in interpersonal relationships; that is, they are basically the same. They conducted a study using an 18-item self-report instrument at a Midwestern university and their hypotheses

were supported.

As mentioned, cohesion has received the most attention due to the fact that it is positively correlated with performance. While most would agree on this, there has also been a significant amount of research stating that there is no relationship between the two variables. Fisher (1973), Bakeman and Helmreich (1975), Jaffe and Nevenzahl (1990), Keller (1986) and Williams and Widmeyer (1991) have found that cohesion is positively correlated with employee satisfaction, while both Mitchell (1982) and Forsythe (1990) have found that there is no relationship between performance and cohesion. Thus there is disagreement in the literature concerning the relationship between group cohesion and performance.

There is evidence though that there is a small positive correlation between cohesion and performance. Mullen and Copper (1994) reported these results from a meta-analytic integration of 66 tests representing responses from 8,702 subjects. While they only included 66 tests from over 200 studies that were available, they estimate that there would need to be over "...3,700 additional studies averaging no cohesiveness-performance effect...before these results could be ascribed to sampling error"(1994, p. 216).

Similarly, while most research tends to link satisfaction positively

to cohesion (Forsythe, 1990; Greenberg and Pyszezynski, 1986; and Lawler and Porter, 1967), it should be noted that in his most recent article, Katz (1994) suggests that for high performance R&D team's cohesion may not be correlated with satisfaction.

Scale 3: Empowerment

Empowerment within groups has gained much attention within the organizational sciences (Bennis & Nanus, 1985; Block, 1987; Bowen and Lawler, 1992; Burke, 1986; Conger and Kanungo, 1988; Harrison, 1983; House, 1988; Kanter, 1983; Neilsen, 1986). It has even been studied in social work environments (Schmid and Nirel, 1995). Even though it has been studied more recently, there is often little agreement about what empowerment is. The most widely used definition has been forwarded by Thomas and Velthouse (1990) which was used by Spreitzer (1995) for her empowerment scale. Thomas and Velthouse's (1990, p. 667) multifaceted definition of empowerment is:

> increased intrinsic task motivation manifested in a set of four cognitions reflecting an individual's orientation to his or her work role: meaning, competence, self-determination, and impact. Meaning is the value of a work goal or purpose, judged in relation to an individual's ideals or standards. Competence, or self efficacy, is an individual's belief in his or her capability to perform activities with skill. Self-determination is an individual's sense of having choice in initiating and regulating actions. Impact is the degree to which an individual can influence strategic, administrative,

or operating outcomes at work.

Meaning is a measure of the intrinsic values of a task to the individual. Thomas and Velthouse (1990) further state that meaning in psychoanalytic terms represents a kind of psychic investment or cathexis with respect to a task. Low values of meaning correspond to a lack of interest or motivation concerning the task; while high values result in a commitment to or involvement in the task.

Competence refers to the individual's belief in their ability to perform the given task. This is similar to Bandura's (1977, 1986) self-efficacy. If an individuals believe that they are able to perform the task, they will have higher performance and satisfaction with the job.

Self-determination refers to the individual's perception of where their locus of causality lies. This differs from the locus of control in that the locus of causality is an issue of whether the individual believes that their behavior is self-determined rather than the locus of control which is involved with outcome aspects. If they believe that their locus of causality in the work place is within themselves, the workers will have intrinsic motivation; whereas the individual with an exterior locus of causality will not. Therefore, self-determination will be positively correlated with both satisfaction and performance.

Impact, the final measurement in Spreitzer's scale, is a measure of

the individual's belief of whether they have an impact on the completion of a task. If the individual feels that they have an impact on the task, they are more likely to be productive and satisfied with the work at hand (Spreitzer, 1995).

Scale 4: Culture Scale

The fourth scale, in this study, is a cultural scale produced by Denison and Mishra (1995). This scale distinguishes between two polarities. The first polarity is change and flexibility versus stability and direction. Denison and Mishra assume that organizations which have great amounts of change naturally will have higher flexibility and those with stability have a better sense of direction.

The second polarity is between external and internal orientations. This is consistent with the work done by Schein (1990). Schein stated that an organization must learn to work with problems of external adaptation and internal integration.

These polarities are measured through four latent constructs: adaptability, mission, involvement, and consistency. Adaptability, according to Denison and Mishra, refers to the ability of the organization to change and its responsiveness to customer needs. This is positively related to effectiveness because as the individual increases in the capacity

to change in response to external conditions, the effectiveness of the individual increases due to the nature of those conditions.

Mission refers to the individual understanding of the unit mission. Mission is also positively related to effectiveness. Denison and Mishra state that as the individual realizes the purpose of the organization, they are more able to work towards organizational goals and internalize the purpose. Hamel and Prahalad (1989) have found similar findings. Further, this has been found to be positively linked to both satisfaction and organizational commitment (Riggs and Knight, 1994).

Involvement is a measurement of the individual's active participation within the unit. Denison and Mishra(1995) state that involvement is positively related to effectiveness. This is because high levels of participation create a feeling of possession and loyalty to the organization.

Cognitive dissonance theory would suggest that as active involvement in the organization increases, so would satisfaction. The reason for this is that when an individual holds two cognitions that contradict each other, there is a tension between these ideas that must be resolved. So if involvement increases, satisfaction should increase likewise.

Consistency is the congruity of the organization's approach to

business. For similar reasons, consistency has been correlated with satisfaction and performance. Denison and Mishra (1995, p.219) state:

> ...the concept underlying the second hypothesis [consistency is positively correlated to effectiveness] is that an implicit control system, based upon internalized values, can be a more effective means of achieving coordination and integration than external control systems relying on explicit rules and regulations.

Accordingly, those who view organizational managers as being consistent in their approach in the workplace will have an internalized control system that is not dependent on rules and regulations. They will, therefore, be more effective in the organization.

Scale 5: Team Fitness

The final scale, the team fitness scale, was created by Hartzler and Henry (1994). The scale focuses on four aspects to measure team fitness: customer focus, direction, understanding, and accountability. These measures were deemed important through Hartzler's personal experience within the field of management sciences.

The first of the latent constructs, customer focus, measures how clear the team is envisioning the expectations of the customer, both external and internal, making sure that the "...expectations shape the requirements for the products and services you provide." Direction measures the understanding of each team's specific purpose. As these are

both very similar to Denison and Mishra's (1995) description of mission, there should be positively correlated with satisfaction, and performance.

Understanding evaluates the strengths, weaknesses, and understanding of the effect of the team and their dynamics within the organization. As this knowledge increases, the ability of the group to become cohesive should increase as will the ability to be more effective. The final area, accountability, is a measure of team member's knowledge of who is responsible for all aspects of each project or plan.

Research Hypotheses

Based on the review of the literature, two hypotheses will be tested in the present study. These hypothesis are pertinent specifically to the Federal Re-Invention Laboratory and peripherally to other organizations with similar internal structures.

Research Hypothesis 1

The five scaled measures, used in past studies will constitute five separate dimensions -- culture-power distribution, cohesion, empowerment, culture, and team fitness.

Research Hypothesis 2

Each of the five scales will be positively correlated with perceptions of team effectiveness.

CHAPTER III

DESIGN AND METHODOLOGY

Design

This study examines worker attitudes, values and perceptions of the organization, management, and team structure on worker perceptions of team performance.

One obstacle in the study is that performance measures and processes are hard to measure in a research and development organization. As teams are necessarily compartmentalized in their projects and many teams are working toward different goals, there is little that can be compared between teams. It is also difficult to measure whether one idea is better than another, or how many new ideas actually work.

To remedy this problem, the study examined job satisfaction, a variable that can be measured in any organization. The study also examined several dependent variables specific to the organization which would be a desired outcome of other team based organizations. These dependent variables include number of process changes suggested by the

individual, cost savings identified by the team and perceptions of comparative performance. Thus, the four dependent variables included in this study are satisfaction, number of process changes initiated, dollar amount of savings, and comparative performance. The study examines the ability of the five scales defined in the previous chapter, to predict the four dependent variables.

Sample

The sample for the study was taken from a Federal Re-Invention Laboratory. The organization has five divisions that each went through a delayering process. The organization changed from a eight deep hierarchy to a five level structure of leadership. This was done to enhance the team-style leadership of the laboratory.

Following total quality management processes, the organization decided to evaluate the effectiveness of the teams. An employee questionnaire was selected to be the main instrument of the study, though there were additional evaluations conducted as part of a larger study. The reasons for the use of a questionnaire were quick results, reproducibility of the survey, adaptability of the instrument for other studies, and concern for anonymity voiced by the management.

The population for the survey included all employees from each of

the five divisions within the Federal Re-Invention Laboratory. Employees were asked by the management to participate in the survey with the additional incentive of full pay during the time used to complete the survey.

Instrument

The original questionnaire, constructed by Mallak, consisted of 187 questions, but needed to be reduced due to the time constraints of the laboratory. The revised survey consists of 93 questions selected through a process of negotiation with the organization. Fifty-six of the questions comprised the five scales and the dependent variables utilized in the study. The questions included: (a) team fitness questions taken from Hartzler and Henry(1994); (b) an empowerment scale by Spreitzer (1995); (c) a five point IRIS[1] measure for satisfaction (Kunin, 1955; Dunham and Herman, 1975; Herbert and Tepas 1995); and (d) a cohesion scale Wheeless, Wheeless, and Dickson-Markman (1982). Also included in the survey was a culture-power distribution scale by Mallak et al.(1996). This scale was based on a prior study by Kabanoff, Waldersee and Cohen (1995). The final scale was a culture scale by Denison and Mishra (1995). The remainder of the questions were composed of demographics and other

[1] IRIS stands for Item Response Icon Scale where symbols replace a Likert-type scale.

questions to compare the laboratory to other organizations within the Department of Defense with similar characteristics.

Culture-Power Distribution

The first scale used in the instrument was an adaptation of Kabanoff's work on culture and power within the workplace. This scale was difficult to design due to the vague definitions for the nine values in Kabanoff's computer content analysis. As the main focus of Kabanoff's work was a content analysis with pre-existing definitions, he used reflexive definitions for all nine traits of his analysis.

Only 8 of the 9 values of Kabanoff's analysis were examined. The omitted value was performance. Mallak omitted performance because it was stated as a dependent variable rather than an independent variable in this study.

The first of the nine values that Kabanoff measured was authority. Kabanoff defined authority as "concerned with authority figures and relations." He gives examples of "executive, manager, [and] director" as words within this definition. The definition of authority, in this survey instrument, is a measure of the individual's understanding of the authority structure and their respect for individual authority.

The second value is leadership. Kabanoff defines leadership as

"concerned with leadership." It is very difficult to discern the difference between authority and leadership by his definitions. The definition for leadership used in this study is "leadership is a measure of the team's ability to be self-directing through an internal influence."

Kabanoff continues vaguely defining the values with the definition for teamwork. The working definition of teamwork for the study is an association with the team process rather than individual process.

Participation is defined for this study as participation of non-managerial employees in decision making. Participation is an effort to focus on whether the non-managerial employees, team members, felt that they were a part of the decision making process and weight was given to their ideas.

The fifth value in Kabanoff's study is commitment. This study uses a definition of commitment that measures the individual's commitment to the use of team. Commitment is a measure of a sense of ownership within the team.

Reward is a measure of the extent that the individual felt that recognition and recompense were fairly met out to the employees. This is similar to the definition used by Kabanoff. He defines reward as "concerned with organizational reward system, especially remuneration." This covers compensation, salary, bonuses and other rewards.

Affiliation and normative value are two other characteristics that Kabanoff most poorly defined. Affiliation was defined as "all words with connotation of affiliation or supportiveness" with examples such as "share, enthusiasm, appreciate, [and] join together." Normative is "all rectitude values invoking in the final analysis the social order and its demands as the justification" with examples such as "responsibilities, fair and rights." These two are especially difficult to operationalize.

For the purpose of the survey, affiliation is defined as the cohesion of the team. Normative is a measure of an individual's understanding of the expected conformities within the organization. The questions items that measure Kabanoff's eight values are as found in Table 1.[2]

Cohesion

In addition, several key questions used in the survey were from the cohesion scale by Wheeless (1982). As cohesion has been used as a key characteristic for characterizing small groups, it was felt that cohesion would be an important diagnostic tool for examining the Federal Re-Invention Laboratory. Only four questions from the cohesion scale were

[2] Note that the variable number is located before the question, as a "V" and the question number. This is included so that the questions can be identified with their factor loadings and scales in the analysis.

Table 1

Scale 1: Culture-Power Distribution Items

Authority	
V59	I know who to see for a specific decision to be made.
V60	A person's authority is respected here.
Reward	
V55	There is quick recognition for associates for outstanding performance.
V56	The organization recognized the associates for working together.
V61	I am recognized for how well I do my job.
V62	Associates are formally recognized for their good efforts by the organization's leadership.
Teamwork	
V69	It's each person for himself or herself here. (Reverse coding)
V70	How the overall team performs is more important than how each person performs.
Leadership	
V68	My team operates on its own with little input from management.
Participation	
V66	I am given the information I need to do my job properly.
V67	You can tell the difference between a team leader and team member here based on the decisions they make.
Commitment	
V64	What my team stands for is important to me.
V65	I feel a sense of "ownership" for my team rather than just being an employee.
Normative	
V63	I know what I must do to conform to expectations.
Affiliation[3]	
V71	I trust my team.
V72	I like my team much more than other groups I have participated in.
V73	My team is not very close at all.(Reverse coding)
V74	Members of my team do helpful things for each other.

[3] These are the same questions for the Wheeless Cohesion scale(1982).

included in the final questionnaire and can be found in Table 1 under the heading of affiliation.

Empowerment

The questions used to measure the four latent variables that were included in Spreitzer's composite definition of empowerment are found in Table 2.

Table 2

Scale 2: Empowerment Items

Meaning	
V75	The work I do is very important to me.
V76	My job activities are personally meaningful to me.
Competence	
V77	I am confident about my ability to do my job.
V78	I have mastered the skills necessary for my job.
Self-Determination	
V79	I have significant leeway in determining how I do my job.
V80	I have significant influence over what happens in my team.
Impact	
V81	Most associates have input into decisions that affect them.
V82	Cooperation and collaboration across functional roles are actively encouraged.

Culture Scale

The survey items used to measure the four latent variables from Denison's culture scale are found in Table 3.

Table 3

Scale 3: Culture Scale Items

Adaptability	
V85	Customer's comments and recommendations often lead to changes in this organization.
V86	This organization is very responsive and changes easily.
Mission	
V87	This organization has a long-term purpose and direction.
V88	There is a shared vision of what this organization will be like in the future.
Involvement	
V81	Most associates in this organization have input into the decisions that affect them.
V82	Cooperation and collaboration across functional roles are actively encouraged.
Consistency	
V83	There is a high level of agreement about the way that we do things in this organization.
V84	Our approach to doing business is very consistent and predictable.

Team Fitness

The final items of the survey are from the team fitness scale by Hartzler and Henry as seen in Table 4.

Table 4

Scale 5: Team Fitness Items

Customer Focus	
V23	My team has met with our external customers to clarify their expectations for our work.
V24	My team works in partnership with our customers.
V57	Associates know who their customers are.
V58	The organization's customers are asked for their opinions about the work (services, products) they receive from the organization.
Direction	
V25	My team has a clear understanding about the scope and boundaries of our work.
V26	My team has a vision of what we would like to accomplish in the future.
V27	Our individual goals and objectives support the mission and vision of my team.
V28	My team knows how we will be measured.
Understanding	
V29	Once decisions are made, all associates support those decisions.
V30	Associates feel free to bring forward problems that may affect the team's performance.
V31	My team understands our organization and how the team fits into the big picture.
V32	My team knows how to get organizational resources to support the team.
Accountability	
V33	My team has decided how decisions affecting the whole team will be made.
V34	Each team member's role is clear.
V35	In my team, there is little chance of things "falling through the cracks" -- we have our bases covered.
V36	We know who, if anyone, has veto power over team decisions.
V37	We have prioritized our major goals.

These are the scale items that were used for analysis in the present study. The next section deals with data collection.

Data Collection

As mentioned before, the data used in this study were from an evaluation that was previously conducted; therefore, this study is a secondary analysis. The data were collected in group sessions held over a two-week period. Each session was begun with a short set of verbal instructions on completing the survey. The final questionnaire took approximately 30 to 40 minutes to complete.

These sessions produced 609 completed and usable surveys representing a 46% self-selected sample response rate. Response rates varied from 44% to 100% by division. The study assumes that there was no significant difference between those who chose to participate in the survey and those who did not.

The data were sorted for all cases with more than 25% missing data. The remainder of the cases were used to determine the effectiveness of each of the scales using bivariate correlations and factor analysis of the scales and the dependent variables.

Analysis

Measures of Attitudes, Values and Perceptions

The questionnaire was designed to measure 17 attitudes, values, and perceptions identified as important for the study of self reported team effectiveness. The dependent variables included in the survey were all self identified by the respondent. These include number of process changes suggested, identified team savings in dollars, satisfaction within the organization and comparative performance of the organization.

It should be noted that although the literature suggests that at least three items should be included in each scale dimension, time and length of the survey were considerations forcing most of the characteristics to be measured with only two items. The scales that included only two items include: authority, commitment, competence, involvement meaning mission participation, self-determination and teamwork. A six point Likert scale was used to measure responses to each question ranging from 1 = "strongly disagree" to 6 = "strongly agree." The six point response scale was used to eliminate the option of neutral responses.

Scale Testing

The first step of testing the scales was to use confirmatory factor analysis. Factor analysis is a means of describing characteristics that are not directly observable, sometimes called a latent variable, based on a set of observable variables. This is accomplished through an analysis of the variables which isolates what the variables have in common and uses this commonality to describe the latent factor. An example is cohesion, which cannot be directly observed but may be a combination of observable variables such as trust among team members and whether individuals do helpful things for each other.

The advantage of using the latent variables is that they represent a parsimonious method of including multiple dimensions of complex constructs. Factor analysis was conducted using principal components analysis where linear combinations among the observed variables are formed. Principal components was utilized as this is the most widely used method of factor extraction. Once extracted, the factors were rotated using varimax rotation to yield orthogonality. Varimax is also a very widely used method.

Several tests were used in the factor analysis to identify the appropriateness of using each question item to measure the behavior, value or attitude. The first step of the analysis was to examine the

correlation matrix for all variables in each scale. All scale items had a medium to high inter-correlation coefficient (higher than 0.50).

This was followed by two tests that measure sample characteristics necessary for factor analysis. The first test, the Kaiser Meyer Olkin's test, commonly referred to as KMO, was conducted to determine the sampling adequacy. A cutoff of 0.60 was used as suggested by Kaiser (1974), and the KMO's ranged from 0.63 to 0.94.

Second, the Bartlett test of sphericity was used to determine whether the correlation matrix is an identity matrix. All the factors had a corresponding significance of at least 0.0001 level thereby rejecting the null hypothesis of an identity matrix. At this point, the data were determined as acceptable for further analysis.

Logistic Regression of Dependent Variables

Once the latent factors were categorized, the relative importance of the individual factors for predicting satisfaction, comparative performance, level of team savings, and number of process changes initiated were analyzed. Discriminant analysis was not used as the latent functions did not satisfy the multivariate normality requirements nor the equal variance-covariance matrices in the two groups assumptions. As logistic regression has fewer requirements, it was determined as the best

diagnostic tool for measuring the factors that display the largest difference between the levels of satisfaction, comparative performance, and the other dependent variables.

Logistic regression is a method for determining the probability that an event will occur using maximum-likelihood estimation. This produces a list of variables that most distinguishes the differences between the event occurring or not occurring. There are four measures of the logistic regression analysis that are discussed in this study. They are the classification table, the goodness of fit statistics, the R statistic, and the Wald statistic.

For assessing the goodness of fit for the model, there were two different tests. The first was the classification table. The classification table is a method of comparing predictions using the logistic regressions compared to the actual outcomes. These predictions are then compared to the random chance of guessing the outcome.

The second test is the model chi square. The model chi square is the difference between the -2 log likelihood (-2LL) for the model with only a constant and -2LL for the current model (Norusis, 1993). . The model chi square represents the difference in the log likelihood-ratio from the model with only the constant and the final model. In other words, it shows whether adding variables to the model significantly improves

predictability

The R statistic in logistic regression is the equivalent of the partial correlation in multiple regression. This statistic explains how much of the variation in the model is explained just by the particular independent variable. R values can range from -1 to 1. Values that are closer to 1 or -1 have more partial contribution in the model. Positive values indicate that as the value of the variable increases so does the likelihood of the event occurring (Norusis, 1993).

The Wald statistic is a measure of statistical significance of the B coefficient. The null hypothesis for the Wald statistic is that the individual coefficient is equal to 0. If the Wald statistic, which has a chi-square distribution, is larger than the critical value, the null hypothesis is rejected and the values is significant.

One of the requirements of logistic regression is a dichotomous dependent variable. In order to satisfy this requirement, all of the dependent variables were dichotomized. For example, satisfaction with the organization was divided into high and low satisfaction; all who scored below the mean of satisfaction scale were classified as having low satisfaction, and those above as high satisfaction. All the other dependent variables were dichotomized in this manner with the exception of comparative performance.

Comparative performance was sorted into high and low values by examining the top and bottom 40 percent of the sample. The decision to code in this manner was made in order to examine the difference between the more extreme values of comparative performance. This decision was made because there was little variation among the middle twenty percent of the sample.

CHAPTER IV

FINDINGS

Factor Analysis

The first step in the factor analysis was the confirmatory analysis using the principal components method. The purpose of this analysis was to determine whether the items predicted to scale together actually did so, consistent with the first hypothesis. Two separate analyses were conducted, the first with only the satisfaction related items and the second with all of the independent variable questions.

Satisfaction

On the analysis of satisfaction, the Kaiser Meyer Olkin's measure of sampling adequacy had a value of 0.69803. It also had a value of 841.98203 for the Bartlett test of sphericity, which represents a significance level of at least 0.00001. The eigenvalue for satisfaction was 2.49411, and the factor loadings ranged from 0.70 to 0.87. See Table 1. Therefore, the measures that were selected for satisfaction were measuring the same latent variable.

Table 5

Satisfaction Factor Loading

	Factor 1
Eigenvalue	2.49411
V1	0.82266
V10	0.76222
V22	0.86728
V91	0.69584

Independent Variables

For the analysis of the independent variables, the Kaiser Meyer Olkin's Measure of Sampling Adequacy had a value of 0.94, and a value of 12,202.37 for the Bartlett test of sphericity -- representing a significance level of at least 0.0000001.

The analysis produced ten different factors with an eigenvalue larger than 1.00, rather than the five suggested by past studies. The eigenvalues ranged from 17.00 to 1.05. Variables that were part of the same scale had high loadings on the same factor, while others loaded highly along with variables from different scales. See Table 6.

The first of the factors grouped all of the team fitness scale items together with the exception of the customer focus which grouped together

Table 6

Independent Variables Factor Loadings

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10
	Team Fitness	Culture Scale	Cohesion	Reward	Customer Focus	Meaning	Not Used	Competence	Authority	Not Used
Eigen value	17.00319	3.91170	2.30497	1.82547	1.70917	1.48876	1.40099	1.31691	1.11756	1.04792
V23	0.41820	0.06549	0.16786	0.06926	0.65401*	0.04361	0.13465	-0.02919	-0.05434	0.07209
V24	0.36274	0.04885	0.24800	0.11894	0.61527*	0.06370	0.25626	0.05279	0.02722	0.02672
V25	0.62654*	0.20515	0.18330	0.07082	0.31095	0.03932	0.15393	0.12500	0.12839	-0.06794
V26	0.65006*	0.13830	0.26259	0.01127	0.18935	0.12693	0.18132	0.07350	0.06472	0.02642
V27	0.57614*	0.19463	0.13876	0.05198	0.14391	0.19761	0.29442	0.00782	0.17819	0.08333
V28	0.63316*	0.25784	0.01501	0.15351	0.10881	0.05497	0.18628	0.08413	0.11788	0.01663
V29	0.60913*	0.23081	0.19460	0.2437	0.06105	0.03254	0.04487	0.12525	0.00226	-0.00347
V30	0.52312*	0.12532	0.48354	0.16258	0.12894	-0.02504	-0.16367	0.06633	0.02501	0.05620
V31	0.61162*	0.38353	0.05614	0.07413	0.10161	0.09056	0.03785	-0.01588	0.21379	-0.02135
V32	0.54651*	0.41717	0.10828	0.05871	-0.06166	-0.04261	-0.00379	0.02781	0.29981	-0.02429
V33	0.62585*	0.28844	0.25448	0.19577	0.16397	0.00385	-0.01537	0.10123	-0.18474	-0.04203
V34	0.62261*	0.18692	0.32976	0.05487	0.14366	0.03911	0.09302	0.07430	0.11610	-0.02076
V35	0.58044*	0.10791	0.45112	0.18096	0.09247	-0.07132	0.09158	0.17983	0.07967	0.07589
V36	0.50847*	0.05134	-0.06946	0.26621	0.03737	0.11080	-0.14562	0.01636	0.25137	0.14119
V37	0.66485*	0.10677	0.23550	0.09361	0.25923	0.09669	0.11282	-0.02182	0.04317	0.08683
V55	0.22993	0.28014	0.09957	0.72856*	0.10474	0.05581	0.07521	-0.10917	0.12219	0.05822
V56	0.23314	0.41810	0.06832	0.67140*	0.08360	0.10366	0.09205	-0.06974	0.05768	-0.00473

* Indicates Highest Factor Loading

Table 6 - Continued

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10
	Team Fitness	Culture Scale	Cohesion	Reward	Customer Focus	Meaning	Not Used	Competence	Authority	Not Used
V57	0.16876	0.30642	0.16736	0.03357	0.56707*	0.02363	-0.09249	-0.04253	0.38950	0.00696
V58	0.21350	0.22338	-0.02251	0.12065	0.67855*	0.13166	-0.00044	0.02539	0.10349	0.00898
V59	0.27116	0.30573	0.11232	0.16416	0.06750	0.09403	0.11864	0.11316	0.59893*	0.10210
V60	0.22313	0.36723	0.09036	0.38756	0.06761	-0.00777	0.06414	0.05116	0.49141*	0.12510
V61	0.13762	0.25502	0.20953	0.69367*	0.09303	0.07112	0.10919	0.05751	0.19512	0.07250
V62	0.14024	0.43934	0.03083	0.68524*	0.04653	0.03979	0.10739	0.02746	0.02806	0.09255
V63	0.23530	0.31453	0.12904	0.15781	0.27923	0.12898	-0.00289	0.13421	0.48027*	0.12439
V64	0.36181	0.11768	0.27216	0.10036	0.19762	0.50040	0.13291	0.09253	-0.04830	0.13586
V65	0.45889*	0.12804	0.33026	0.26784	0.20248	0.30433	0.17197	0.05871	-0.10064	-0.00411
V66	0.26075	0.31630	0.28027	0.37102*	0.22690	-0.03217	0.08329	0.23600	0.32731	0.00085
V67	0.09379	0.10281	0.15069	0.19008	0.06123	-0.04448	-0.01012	0.09820	0.14212	0.77952*
V68	0.08573	0.12350	0.35872*	0.09349	0.30372	-0.22846	0.08537	0.28992	-0.28477	-0.12342
V69	0.23317	0.00497	0.34755*	0.17408	0.14326	0.18146	0.05621	-0.16435	0.27345	-0.11209
V70	0.30470	0.19121	0.10582	-0.04423	0.05776	0.29809	0.13379	-0.09199	-0.29306	0.31065*
V71	0.36465	0.10005	0.61828*	0.10286	0.11506	0.19297	0.04799	0.01814	-0.00825	0.14675
V72	0.24014	0.13891	0.67512*	-0.05246	-0.02151	0.08732	0.32251	0.05092	0.04235	0.15255
V73	0.24130	-0.04188	0.72698*	0.02247	-0.00558	0.09011	0.11226	-0.04128	0.08430	-0.08989
V74	0.17833	0.00466	0.64171*	0.15170	0.14548	0.15950	0.02853	-0.05968	0.10708	0.16073
V75	0.09571	0.04221	0.13241	0.07365	0.03581	0.81591*	0.03504	0.18377	0.05723	0.00217
V76	0.03823	0.13773	0.18813	0.05274	0.06837	0.75503*	0.00805	0.26944	0.12973	-0.13238
V77	0.12964	0.01353	0.02027	-0.01450	-0.04797	0.28853	0.05187	0.78735*	0.07766	0.05992
V78	0.13983	0.01921	-0.04527	-0.05210	0.00876	0.10743	-0.07316	0.83435*	0.03980	0.04538
V79	-0.00708	0.15465	0.41980*	0.07951	0.23967	0.21581	-0.00025	0.39755	0.06787	-0.09607

* Indicates Highest Factor Loading

Table 6 - Continued

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10
	Team Fitness	Culture Scale	Cohesion	Reward	Customer Focus	Meaning	Not Used	Competence	Authority	Not Used
V80	0.23657	0.14462	0.39504*	0.25717	0.25578	0.16417	0.01365	0.31238	0.02151	-0.30675
V81	0.14320	0.63405*	0.12377	0.35949	0.15344	-0.01858	0.03316	0.10281	-0.01215	-0.11046
V82	0.24029	0.58175*	0.20792	0.22103	0.22756	0.01397	-0.11547	0.06587	-0.02169	-0.00562
V83	0.27670	0.74204*	0.03170	0.24392	0.03287	-0.02219	0.13978	0.11904	0.07642	0.06033
V84	0.16322	0.64610*	0.10958	0.16985	-0.03559	0.01133	0.17677	0.02745	0.11836	0.05895
V85	0.15299	0.70359*	-0.07161	0.14885	0.22206	0.15034	0.09928	-0.01161	-0.00605	0.15628
V86	0.14088	0.77291*	-0.00820	0.18400	0.15958	-0.02849	0.10376	0.04447	0.05969	0.01079
V87	0.13863	0.79421*	0.01654	0.03282	0.07041	0.15808	0.10193	-0.02479	0.11591	0.03772
V88	0.17550	0.80775*	0.05343	0.11982	0.04196	0.14763	0.08313	-0.01105	0.12414	-0.02953

* Indicates Highest Factor Loading

with additional customer focus questions from the Department of Defense scale. The factor loadings for variables V25 through V37 all ranged from 0.46 to 0.66. This factor will be referred to as team fitness for the logistic regression.

The second factor, referred to as culture in the analysis, included all of the questions from Denison and Mishra's culture scale. The factor loadings of V81 through V88 ranged from 0.58 to 0.81 and had the strongest overall loadings of all the factors.

The third factor loaded all of Wheeless et. al.'s cohesion scale items, V71 through V74, plus variables V79 and V80 that are from the self-determination subscale developed by Spreitzer. This factor was named cohesion.

All of the additional questions that loaded fall nicely into Festinger's (1950, p. 274) and Wheeless et. al.'s definition of cohesion as self-determination could be viewed as a perceived status. As self-determination increases, so does perceived status within the group. Even though these items loaded with the cohesion scale, their factor loadings have a smaller value than those items originally expected to load together. The original items from the cohesion scale had a range of 0.62 to 0.73; while the other items had a range of 0.35 to 0.42.

The fourth factor was the beginning of the individual scale items. Reward, V55, V56, V61 and V62, from the scale designed by Mallak, had a range from 0.69 to 0.73 with very consistent loadings with one exception. One of the questions, V66, that was designed to measure participation entered into the factor with a loading of 0.37. This factor has little similarity to the other questions in the scale. The factor loading is almost half of the others and could very well be measuring something different. In the logistic regression, the fourth factor is referred to as reward.

Customer focus, the fifth factor, included both the Department of Defense customer focus questions, V23 and V24, and the team fitness questions related to customer focus, V57 and V58. These had factor loadings from 0.59 to 0.70. While these items were not originally intended to measure the same thing, they are both quite obviously measuring customer focus.

The sixth factor loaded both of the items from meaning of Spreitzer's empowerment scale loaded together with large factor loadings and will be referred to as meaning. The items, V75 and V76, loaded at 0.82 and 0.76 respectively. It is interesting to note that all of Spreitzer's items loaded together with each item of the individual measures but not together. This could mean that the items do not measure the same latent

variable, empowerment, or it could be that these subscales measure different latent variables.

The seventh factor had very interesting characteristics. Even though it had an eigenvalue of 1.4, none of the items loaded greater than 0.32 and most in the 0.1 to 0.08 range. Additionally, none of the items loaded most strongly with this factor. This indicates that the factor was likely a mathematical construct produced by the analysis which has no real meaning; it was simply residual and was omitted from further analysis.

V77 and V78 were items designed to measure competence, from Spreitzer's scale. They composed the next factor and will be called by the same name, competence, in the logistic regression analysis. These loaded together with a loading of 0.79 and 0.83 respectively.

The ninth factor loaded the two items measuring authority, V59 and V60, from the scale by Mallak. In addition, the single item measuring norms, V63 also from Mallak's scale, loaded with the ninth factor. These had factor loadings of 0.60, 0.49, and 0.48. Since the normative item measures the degree to which the individual feels that s/he must conform to expectations, it seems reasonable as a measure of authority.

The final factor loaded one of the items from participation and one from teamwork together. While these loaded together, they had very different loadings, 0.78 and 0.31 respectively. As they seemed to have little in common, this factor was not included in further analysis.

In sum, the conformatory factor analysis shows that there is some conceptual overlap in the scales used in previously published work. In the following section, eight of the ten extracted factors are used in the logistic regression of indicators of team effectiveness.

Logistic Regression Analysis

In all of the analyses, four hundred and thirty-nine cases were used for the logistic regression. The criteria for not including a case in the analysis was that had one or more missing values in the predicting factor. As a large number of cases were retained in the study, it was assumed that the remaining cases were representative of the sample and the inclusion of the missing cases, through the use of the mean, would only have the effect of possibly clouding the actual relationships in the model.

As previously noted, factors 1, 2, 3, 4, 5, 6, 8, and 9 were included in all of the analyses, in accord with the literature review. Factors 7 and 10 were not included as factor 7 seemed to be a mathematical anomaly and factor 10 did not load items that seemed to have a common link.

Satisfaction

There are two measures commonly used in logistic regression that measure the overall fit of the model, classification tables and the goodness of fit statistic. Table 7 presents the classification table resulting from the logistic regression of level of satisfaction on the weight extracted factors. One hundred and fifty of the cases with low satisfaction and 195 cases with high satisfaction where correctly predicted by the regression equation. The off-diagonal entries indicate the incorrectly predicted cases. If one were to randomly guess which cases were in the low satisfaction category with the knowledge that there are 201 low cases, one could expect to be correct 45.8% of the time. Through the use of the regression equation, the odds of correctly predicting low satisfaction would increase to 74.6%, representing an 63% increase in predictive power from the original 45.8%. The ability to accurately predict the high level of satisfaction would be increased to 81.9%, representing a 51% increase.

The Wald statistics, in Table 8, show six significant predictors of level of job satisfaction. The R statistic show that culture is the strongest predictor of satisfaction followed by cohesion, team fitness, reward

competence and meaning. Contrary to hypothesis 2, authority and customer focus fail to have a significant impact on level of satisfaction.

Table 7

Classification Table for Satisfaction

	Predicted		Percent Correct
Observed	Low	High	
Low	150	51	74.63%
High	43	195	81.93%
		Overall	78.59%

Table 8

Logistic Coefficients for Satisfaction

Variable	B	S.E.	Wald	Sig	R	Exp(B)
Team Fitness	0.7692	0.1317	34.0997	0.0000	0.2303	2.1581
Culture Scale	1.2935	0.1488	75.6005	0.0000	0.3487	3.6456
Cohesion	0.8056	0.1364	34.8716	0.0000	0.2330	2.2380
Reward	0.6833	0.1278	28.6060	0.0000	0.2096	1.9805
Customer Focus	0.1848	0.1261	2.1495	0.1426	0.0157	1.2030
Meaning	0.4117	0.1308	9.9041	0.0016	0.1143	1.5093
Competence	0.5372	0.1292	17.3024	0.0000	0.1590	1.7113
Authority	0.0691	0.1243	0.3092	0.5782	0.0000	1.0716
Constant	0.2670	0.1258	4.5039	0.0338		
Model Chi Square		206.53	Goodness of Fit			447.15
Significance Level		0.001	Significance Level			0.001

Denison and Mishra's culture scale had the greatest individual effect in the model, as evidenced by an R of 0.35. R is equivalent to the partial coefficient of a linear regression. For example, the overall effect that can be attributed solely to reward is 0.21, which almost twice the effect size that can be attributed to meaning which was 0.11.

The only factors that were not significant in the model were customer focus and authority. There are two reasons why this may be so. The correlation between customer focus and satisfaction had at least one intervening variable in some models, reward. As factor analysis tries to isolate the interaction between factors, these were entirely unrelated.

The second reason is that as this is a Federal organization, which is traditionally very hierarchical. A research and development organization is traditionally horizontally organized. Thus there are conflicting roles for authority. This coupled with the change to a team style organization would likely cause much confusion about what the role of the leadership is supposed to be. There is evidence of this in the results of the survey. One of the questions in the survey was, "From my point of view, associate directors (the former line supervisor) practice the primary role of: (1) former division chiefs, (2) mentors, (3) unknown, and (4) other role." Even though the organization has been stressing the role of mentor for the

associate directors, most of the associates could not properly identify the associate director's role.

The goodness of fit statistic measures how well the model fits. It does this by comparing the observed probabilities and compares them to the predicted probabilities. The goodness of fit measure for the satisfaction model was 447.152. If the significance level were below the 0.05 significance level, we could conclude that the model fits the data poorly. This, as well as all of the other goodness of fit measures in this study, was significant to at least 0.001, which means that the overall model for the analysis was statistically significant.

The final statistic measuring the overall fit of the model is the model chi square. The model chi square tests the null hypothesis that all the coefficients together are 0. The model chi square for the final equation, 206.532, is significant, therefore rejecting the null hypothesis that all the coefficients are 0.

Comparative Performance

The classification table for comparative performance, Table 9, clearly shows that the variables in the model increase the predictive ability over random chance. The model provided an increase from 32.13%, by random chance, to 68.75% -- an increase of 114%!

Table 9

Classification Table for Comparative Performance

	Predicted		Percent Correct
Observed	Low	High	
Low	55	25	68.75%
High	19	150	88.76%
		Overall	82.33%

The second test for model fit, the model chi square, had a significance level of 0.001. Therefore, the coefficients for the model were significantly different than 0.

The Wald statistics, in Table 10, shows that five of the eight latent variables were significant predictors of comparative performance. These include team fitness, the culture scale by Denison and Mishra(1995), cohesion, customer focus, competence, and authority.

The culture scale by Denison and Mishra (1995) had the largest individual effect on comparative performance as demonstrated by an R value of 0.39. This is twice the effect as the next closest variable, team fitness, which had a value of 0.19. These were followed in individual effect by competence, 0.17; cohesion, 0.14; and customer focus, 0.08.

Table 10

Logistic Coefficients for Comparative Performance

Variable	B	S.E.	Wald	Sig	R	Exp(B)
Team Fitness	0.6808	0.1826	13.8978	0.0002	0.1951	1.9755
Culture Scale	1.3734	0.1943	49.9822	0.0000	0.3917	3.9490
Cohesion	0.5059	0.1790	7.9830	0.0047	0.1383	1.6585
Reward	0.2850	0.1750	2.6506	0.1035	0.0456	1.3297
Customer Focus	0.3551	0.1795	3.9134	0.0479	0.0782	1.4264
Meaning	0.0109	0.1834	0.0035	0.9526	0.0000	1.0110
Competence	0.6153	0.1822	11.4045	0.0007	0.1734	1.8503
Authority	0.0581	0.1665	0.1219	0.7270	0.0000	1.0598
Constant	0.9765	0.1898	26.4719	0.0000		
Model Chi Square		114.17	Goodness of Fit			235.73
Significance Level		0.001	Significance Level			0.001

That the culture scale had such a great effect on comparative performance is of little surprise. Denison and Mishra's culture scale (1995) measures four traits, adaptability, mission, involvement, and consistency. All of these variables have been stated as important in the total quality management literature.

Once again, authority did not show up in the analysis as statistically significant. This was attributed to same reasons that it was not significant in satisfaction: different structure of management and confusion about leadership role.

Meaning was not a significant predictor of comparative performance in the analysis. It showed that there was no correlation

between the associate perceptions of meaningfulness of their suggestions and work to the organization and the associates perceptions of the organization, compared in performance measures, to other similar organizations. This was unexpected as cognitive dissonance theory would suggest that the more a person felt that their work was meaningful to the organization, the more likely the satisfaction level and the comparative performance would increase. Meaning was significant for satisfaction but not for comparative performance.

The most unexpected of all the variables that were not significant in the analysis was reward. Most of the literature suggests that if an individual feels that they are well rewarded for their individual contributions, the organization is more productive. In part, this may be a result of the focus on individual reward instead of team reward by the organization.

The organization was making an effort to reward the associates for work well done. While this should increase productivity, if the reward is deemed large enough, responsive and consistent, the organization is rewarding for individual efforts -- not team efforts. As an example, one division of the organization is giving the reward of a parking spot for individuals who are the associate of the month. This would only increase individual competitiveness. Therefore, reward, in this organization,

might not be correlated with comparative performance due to conflicting purposes and the focus of the measurement on teams.

Process Change and Total Identified Savings

Table 11, the classification table for process change, suggests that the model most accurately predicts low number of process changes suggested by the associate. This shows an increase of 17% in the predictive ability of the model over randomly guessing with the prior knowledge that there are 361 low cases. This is contrasted with a 14% decrease in the ability to predict high number of process changes, if the number of high cases was already known.

Table 11

Classification Table for Process Change

	Predicted		Percent Correct
Observed	Low	High	
Low	361	0	100.00%
High	61	0	0.00%
		Overall	85.55%

The coefficients for identified savings are shown in Table 12. There were three variables that were significant in the model: team fitness,

reward, and customer focus. Once again, team fitness was the variable that contributed the most to the overall equation, though none of the variables had remarkably large R's.

Customer focus was an interesting addition to the model. It indicates that if the associate had a high score in customer focus -- a high interest in the needs of the customer -- the number of process changes suggested would increase. This may be due to the fact that as the associates are more able to determine the needs of the customer, they are more able to suggest what changes are necessary for each individual customer.

Table 12

Logistic Coefficients for Process Change

Variable	B	S.E.	Wald	Sig	R	Exp(B)
Team Fitness	0.6074	0.1678	13.1045	0.0003	0.1785	1.8357
Culture Scale	0.2351	0.1396	2.8362	0.0922	0.0490	1.2650
Cohesion	0.2823	0.1596	3.1282	0.0769	0.0569	1.3261
Reward	0.2990	0.1502	3.9642	0.0465	0.0751	1.3486
Customer Focus	0.3398	0.1601	4.5069	0.0338	0.0848	1.4046
Meaning	0.0261	0.1587	0.0271	0.8693	0.0000	1.0265
Competence	0.0563	0.1615	0.1216	0.7273	0.0000	1.0580
Authority	0.1493	0.1542	0.9380	0.3328	0.0000	1.1610
Constant	-1.9979	0.1676	142.1784	0.0000		
Model Chi Square		29.61	Goodness of Fit			455.38
Significance Level		0.001	Significance Level			0.001

As the R's are all low and the classification table does not predict any of the cases with a high level of process changes suggested, the model does not include the independent variables that would capture the values that lead to high levels of number of process changes suggested by the team.

The dependent variable, identified savings by the team, had a significant increase in the predicted low and high values (Table 13). The low value increased predictive ability by 22%, from 49.4% to 60.1%, and the high value increased by 39%, from 50.6% to 70.2%.

Table 13

Classification Table for Identified Savings

	Predicted		Percent Correct
Observed	Low	High	
Low	116	77	60.10%
High	59	139	70.20%
		Overall	65.22%

Number of process changes suggested and total team identified savings were a specific measure of performance within the organization. Therefore, it was assumed that the findings on comparative performance,

number of process changes suggested, and total team identified savings would all have similar results.

Identified savings also had three independent variables that were significant to the model as seen in Table 14. Team fitness had the highest value for R, 0.18. Denison and Mishra's culture scale (1995) and customer focus were the two other variables that were significant with R's of 0.14 and 0.11 respectively.

Table 14

Logistic Coefficients for Identified Savings

Variable	B	S.E.	Wald	Sig	R	Exp(B)
Team Fitness	0.5155	0.1139	20.4807	0.0000	0.1847	1.6745
Culture Scale	0.4015	0.1104	13.2176	0.0003	0.1439	1.4941
Cohesion	0.1689	0.1084	2.4274	0.1192	0.0281	1.1840
Reward	0.0550	0.1075	0.2621	0.6086	0.0000	1.0566
Customer Focus	0.3183	0.1106	8.2859	0.0040	0.1077	1.3748
Meaning	0.1139	0.1069	1.1350	0.2867	0.0000	1.1206
Competence	0.1121	0.1076	1.0845	0.2977	0.0000	1.1186
Authority	-0.0176	0.1066	0.0273	0.8688	0.0000	0.9825
Constant	0.0382	0.1078	0.1254	0.7233		
Model Chi Square		47.43	Goodness of Fit			392.54
Significance Level		0.001	Significance Level			0.001

Summary

Overall, the variables in the model were more strongly related to level of job satisfaction and comparative performance than they were for

level of process change and savings. As the 5 original scales were intended to measure comparative performance and job satisfaction this was expected.

The scale was the cleanest and most clear factor in the factor analysis. Culture was the strongest predictor of both satisfaction and comparative performance.

Authority is not significant in any of the analyses. As mentioned before, there is much confusion about the role of the management. This is due in part to the conflict of expectations of a governing by command as a traditional Federal organizational hierarchy within a research and development organization which is normally governed by consent.

CHAPTER V

CONCLUSION

As the study intended to examine the perceptions of team effectiveness in a research and development organization and how they are related to several scaled traits, the conclusion relates the findings to the original purpose of the study.

Culture-Power Distribution

The first scale examined by the study was the culture-power distribution scale produced by Mallak (1996). This scale was based on work done by Kabanoff, Waldersee, and Cohen (1995) and measures the organization's process and power distribution. This scale, as all others, was supposed to be highly related to performance, and peripherally, satisfaction.

The factor analysis did not combine the items of the culture-power distribution scale together and only two of the subscales combined to make individual factors. These traits were reward, and authority. The reason that reward factored together while the others did not might be

because there were four items in the survey measuring reward while others in this scale had a maximum of two items. Also, it should be noted that whereas Kabanoff's original work measured affiliation, Mallak substituted the cohesion scale by Wheeless, et. al.

The other item that loaded together from the culture-power distribution scale was authority. While it only had two questions measuring the variable, these items did fall into their own factor.

The second part of the study was to test the scale's effectiveness for predicting satisfaction and performance. As the entire scale did not fall together, the only parts that could be examined were reward and authority.

Reward was significant in the analysis of satisfaction and process changes suggested, though process changes suggested was not adequately measured by any of the independent variables. As most of the literature on job satisfaction includes employee perception of fair reward as an strong positive indicator, this was expected. In the analysis, reward was the third most significant individual factor.

Reward was not significant in the analysis of performance as suggested. One possible reason could be that the organization is rewarding individuals not the whole team.

Authority was not significant in any of the logistic regressions. This may be due to the fact that the associates were confused about the role of the leadership. As they did not have a clear idea of the role the supervisors were to play in the organization, the factor was not significant. A second reason is the change of the hierarchical structure, even though it took place two years before the survey, still was not integrated into the Federal Re-Invention Laboratory in the manner that the organization intended. There were still a significant amount of associates that stated that the structure of the organization had changed in theory but the practice did not reflect this change.

Cohesion

The second scale examined in this study was a cohesion scale (Wheeless, et. al. 1982). In the literature, cohesion is related to satisfaction and performance. The factor analysis produced a factor comprised of all of the items from the cohesion scale, two from Mallak's scale, and another from Spreitzer's scale. These additional items could easily be included into the cohesion scale as they fit nicely into the definition of cohesion that each Festinger (1950) and Wheeless et. al. (1982) used.

Cohesion was a significant predictor of both the satisfaction and the comparative performance variable, but neither the suggested process changes nor the identified savings. The cohesion scale was one of the stronger individual contributors for satisfaction and was one of the weaker contributors for comparative performance.

Empowerment

The analysis of empowerment showed that it is possible that the factors that Spreitzer (1995) calls empowerment might not actually measure this latent variable. There is evidence of this in that only half of Spreitzer's empowerment scale (1995) were grouped together by the factor analysis. Further, meaning and competence were grouped individually by the analysis. If the scale was to measure a single latent variable such as empowerment, the analysis should have grouped the items comprising that scale together. In this analysis, the subscales intended to measure empowerment either did not group -- self-determination and impact-- or grouped only as subscales--as is the case with meaning and competence.

The factors that did group together, meaning and competence, were significant in the analysis of satisfaction but not in the analysis of comparative performance, suggested process changes or identified

savings. These subscales made the weakest of contributions to the overall model among the independent variables.

Culture Scale

Denison and Mishra's culture scale (1995) produced the strongest and most clean factor of all the factors in the analysis. It was the only scale where all of the items loaded together on a single factor.

This scale was significant in the analysis of satisfaction, comparative performance and savings identified. The culture scale was the largest single predictor of satisfaction and comparative performance. Though it was an integral part of the satisfaction and comparative performance regressions, it played a much smaller part in the prediction of total identified savings and contributed nothing to the number of process changes suggested.

Team Fitness

The team fitness scale by Hartzler and Henry (1994) loaded three of the four subscales together with customer focus remaining its own factor. The scale loaded together with only one item that was not from the original scale. That item, V65, was originally intended to measure commitment to the group but most closely fell into the team fitness measure of accountability.

Team fitness was the most successful of the independent variables in measuring all of the dependent variables. It was significant in all of the analyses and contributed the most to all except for the comparative performance where it was the second highest predictor.

Customer focus, where the individual items did not load together, was significant for all of the analyses except for satisfaction. While it was significant, it contributed the least individual addition to explaining the variation in each of the analyses.

Process Changes

It is important to note that the analysis of number of process changes suggested did not produce significant results for distinguishing the high level of process changes suggested as compared to the low level of process changes suggested. One possible reason could be that the dependent variable was individually reported and therefore had less reliability. Use of external report of the number of process changes suggested by the associates might be a more accurate indicator. A second reason might simply be that none of the factors is a good indicator of process changes suggested.

Hypothesis Testing

Hypothesis 1

The first hypothesis stated that the items from the 5 original scales would fall into five factors when the factor analysis was conducted. This hypothesis was only partially supported; not all of the individual items fell into their original scales. The only scale to successfully load together was Denison and Mishra's culture scale (1995) Wheeless, Wheeless, and Dickman-Markman's cohesion scale (1982) included other items from the scales by Mallak (1996) and Spreitzer (1995). The team fitness scale loaded as two distinct factors. The empowerment scale did not factor the entire scale together but did factor two subscales together, meaning and competence.

Hypothesis 2

The second hypothesis was that the 5 scales would all be positively correlated to the dependent variables. As the second hypothesis was dependent on the first, this hypothesis was not supported. This is not to say that there were no significant findings in the study. As a hypothesis is only an artificial construct that enables one to clearly test an idea, the information from the study is still quite important. The important

findings concerning the second hypothesis include the finding that all of the variables were more strongly related to job satisfaction and comparative performance than level of process change and savings, the culture scale was the most significant predictor of both satisfaction and comparative performance, the team fitness scale was significant for all of the analyses, and authority was not significant in any of the analyses.

Implications for Managers

There are two major implications of this study for managers. The first is that there are two scales that are excellent for measuring comparative performance and job satisfaction. These are the culture scale (Denison and Mishra, 1995) and the team fitness scale (Hartzler and Henry, 1994). These have both been shown to effectively measure the level of perceived comparative performance and job satisfaction of workers.

The second importance of this study for managers is that rewarding on an individual basis while promoting team effectiveness does not increase satisfaction or perceived comparative performance. A manager must keep in mind that individual-based reward will only cause separation from a group rather than cohesion.

Suggestions for Further Research

As this study used secondary data, it was impossible to identify in which team each associate belonged. The level of analysis in further studies should really be at the team level instead of the individual level. This would enable the researcher to study the latent variables measured by the scales for the whole team.

A second suggestion is that the items comprising the scales be further redefined and more items be used to measure each individual latent variables. The number of items in this study was reduced due to time constraints, many of the latent variables were measured using only two items. If the individual scales were redefined and used more items for each aspect of the scale, the results might have been more clear about the role of each scale for predicting the dependent variables, particularly the number of process changes suggested and identified savings.

Appendix A

Survey Instrument

Survey of ABC Co.

In the top *left* data block of the Opscan form, please put "ABC Co." and fill in the corresponding ovals.
Please identify your business group. Place your response in the first two spaces of the top *right* data block on the Opscan form and fill in the corresponding ovals. Use the codes below and include the leading zero.

ABC Business Group

01 Administration
02 Engineering
03 Finance
04 Operations
05 Research

Please be sure to provide your business group affiliation. If this item is not answered, your responses to the rest of the survey will be unusable.

Survey Continues on Next Page

Survey of ABC Co.

This survey seeks your perceptions of ABC's team structure.

- The information you provide will be kept confidential.
- The information will provide feedback to fine-tune ABC's use of the team structure.
- Summarized results of this survey will be shared with all participants in a manner where no individuals can be identified.
- This survey will support academic research concerning the effectiveness of team structures.

Please code all responses on the accompanying Opscan forms.

The first section concerns your reactions to the Team Evaluation Process. Please rate your perception of each of the following items and mark your response on the Opscan form.

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
1.	I favor the team structure over our previous hierarchical structure.	1	2	3	4	5	6
2.	In the long term, I see the team form of rating as a more accurate source of information about my performance.	1	2	3	4	5	6
3.	In the long term, I see the team form of rating being favored over the traditional supervisor-subordinate form of performance appraisal.	1	2	3	4	5	6
4.	My VP provides an appropriate level of support to my team.	1	2	3	4	5	6
5.	My Director provides an appropriate level of support to me.	1	2	3	4	5	6
6.	My team leader provides an appropriate level of guidance to me.	1	2	3	4	5	6
7.	I know what my team's performance metrics are.	1	2	3	4	5	6
8.	My team has the proper skills balance to support my team goals and objectives.	1	2	3	4	5	6
9.	From my point of view, directors practice the primary role of:	chiefs (1)	mentors (2)	unknown (3)	other role (4)		
10.	When comparing ABC with similar organizations, I would rate ABC's employee satisfaction as:	poor	below average	average	above average	superior	
		1	2	3	4	5	
11.	When comparing ABC with similar organizations, I would rate ABC's overall performance as:	poor	below average	average	above average	superior	
		1	2	3	4	5	

Items 12-18 concern ABC's team philosophy and structure as a means to a more effective and productive workplace.

Survey Continues on Next Page

12.	Since becoming a team member, I have personally initiated ____ process changes.	zero 1	1-5 2	6-10 3	over 10 4	
13.	Since becoming a team member, my team has identified savings totaling:	zero 1	$5-10K 2	$20-50K 3	over $50K 4	
14.	I spend ___% of my work time with the customer.	zero 1	1-10% 2	10-25% 3	25-50% 4	over 50% 5
15.	I interact with my customer at the peer level.	never 1	rarely 2	monthly 3	weekly 4	daily 5
16.	I interact with my customer at the supervisory level.	never 1	rarely 2	monthly 3	weekly 4	daily 5
17.	I interact with my customer at the leadership level.	never 1	rarely 2	monthly 3	weekly 4	daily 5
18.	I interact with my customer at the top leader level.	never 1	rarely 2	monthly 3	weekly 4	daily 5

Please rate the extent to which you agree or disagree with each of the items.

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
19.	The six members of the Executive Team are able to "supervise" this organization.	1	2	3	4	5	6
20.	The team-based structure has had little impact on how I do my job.	1	2	3	4	5	6
21.	My team has more decision making authority as compared to the old structure.	1	2	3	4	5	6
22.	I find greater personal satisfaction in the team structure compared to the previous hierarchical structure.	1	2	3	4	5	6
23.	My team has met with our external customers to clarify their expectations for our work.	1	2	3	4	5	6
24.	My team works in partnership with our customers.	1	2	3	4	5	6
25.	My team has a clear understanding about the scope and boundaries of our work.	1	2	3	4	5	6

15.

Survey Continues on Next Page

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
26.	My team has a vision of what we would like to accomplish in the future.	1	2	3	4	5	6
27.	Our individual goals and objectives support the mission and vision of my team.	1	2	3	4	5	6
28.	My team knows how we will be measured.	1	2	3	4	5	6
29.	Once decisions are made, all employees support those decisions.	1	2	3	4	5	6
30.	Employees feel free to bring forward problems that may affect the team's performance.	1	2	3	4	5	6
31.	My team understands our organization and how the team fits into the big picture.	1	2	3	4	5	6
32.	My team knows how to get organizational resources to support the team.	1	2	3	4	5	6
33.	My team has decided how decisions affecting the whole team will be made.	1	2	3	4	5	6
34.	Each team member's role is clear.	1	2	3	4	5	6
35.	In my team, there is little chance of things "falling through the cracks"—we have our bases covered.	1	2	3	4	5	6
36.	We know who, if anyone, has veto power over team decisions.	1	2	3	4	5	6
37.	We have prioritized our major goals.	1	2	3	4	5	6
38.	Employees are aware of how their jobs contribute to the organization's mission.	1	2	3	4	5	6
39.	Employees try to plan ahead for technological changes (such as new developments in computer software) that might impact the organization's future performance.	1	2	3	4	5	6

Survey Continues on Next Page

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
40.	Employees see the continuing improvement of work produced as essential to the success of the organization.	1	2	3	4	5	6
41.	Employees want to do a good job.	1	2	3	4	5	6
42.	I am asked about ways to improve the work produced.	1	2	3	4	5	6
43.	Employees that I look to set examples of quality performance in their day-to-day activities.	1	2	3	4	5	6
44.	Employees turn to their team leaders and directors for advice about how to improve their work.	1	2	3	4	5	6
45.	Employees know that their team leaders and directors will help them find answers to problems they may be having.	1	2	3	4	5	6
46.	Employees are challenged by their team leaders and directors to find ways to improve the system.	1	2	3	4	5	6
47.	Employees regularly ask their customers about the quality of work those customers receive.	1	2	3	4	5	6
48.	The structure of the organization makes it easy to focus on producing quality work.	1	2	3	4	5	6
49.	Employees share responsibility for the success or failure of the work produced.	1	2	3	4	5	6
50.	Employees believe that their work is important to the success of the organization.	1	2	3	4	5	6

Survey Continues on Next Page

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
51.	There are good working relationships between teams in the organization.	1	2	3	4	5	6
52.	Employees look for ways to improve their work.	1	2	3	4	5	6
53.	Employees are expected to produce high quality work.	1	2	3	4	5	6
54.	The right tools, equipment, and materials are available in the team to get the job done.	1	2	3	4	5	6
55.	There is quick recognition for employees for outstanding performance.	1	2	3	4	5	6
56.	The organization recognizes the employees for working together.	1	2	3	4	5	6
57.	Employees know who their customers are.	1	2	3	4	5	6
58.	The organization's customers are asked for their opinions about the work (services, products) they receive from the organization.	1	2	3	4	5	6
59.	I know who to see for a specific decision to be made.	1	2	3	4	5	6
60.	A person's authority is respected here.	1	2	3	4	5	6
61.	I'm recognized for how well I do my job.	1	2	3	4	5	6
62.	Employees are formally recognized for their good efforts by ABC leadership.	1	2	3	4	5	6
63.	I know what I must do to conform to expectations.	1	2	3	4	5	6
64.	What my team stands for is important to me.	1	2	3	4	5	6

Survey Continues on Next Page

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
65.	I feel a sense of "ownership" for my team rather than just being an employee.	1	2	3	4	5	6
66.	I am given the information I need to do my job properly.	1	2	3	4	5	6
67.	You can tell the difference between a team leader and a team member here based on the decisions they make.	1	2	3	4	5	6
68.	My team operates on its own, with little input from management.	1	2	3	4	5	6
69.	It's each person for himself or herself here.	1	2	3	4	5	6
70.	How the overall team performs is more important than how each person performs.	1	2	3	4	5	6
71.	I trust my team.	1	2	3	4	5	6
72.	I like my team much more than other groups I have participated in.	1	2	3	4	5	6
73.	My team is not very close at all.	1	2	3	4	5	6
74.	Members of my team do helpful things for each other.	1	2	3	4	5	6
75.	The work I do is very important to me.	1	2	3	4	5	6

Survey Continues on Next Page

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
76.	My job activities are personally meaningful to me.	1	2	3	4	5	6
77.	I am confident about my ability to do my job.	1	2	3	4	5	6
78.	I have mastered the skills necessary for my job.	1	2	3	4	5	6
79.	I have significant leeway in determining how I do my job.	1	2	3	4	5	6
80.	I have significant influence over what happens in my team.	1	2	3	4	5	6
81.	Most employees at ABC have input into decisions that affect them.	1	2	3	4	5	6
82.	Cooperation and collaboration across functional roles are actively encouraged.	1	2	3	4	5	6
83.	There is a high level of agreement about the way that we do things at ABC.	1	2	3	4	5	6
84.	Our approach to doing business is very consistent and predictable.	1	2	3	4	5	6
85.	Customers' comments and recommendations often lead to changes at ABC.	1	2	3	4	5	6
86.	ABC is responsive and changes easily.	1	2	3	4	5	6
87.	ABC has a long-term purpose and direction.	1	2	3	4	5	6
88.	There is a shared vision of what ABC will be like in the future.	1	2	3	4	5	6

Survey Continues on Next Page

BIBLIOGRAPHY

Applbaum, R., Bodoken, E., Sereno, K. & Anatol, K. (1974). The Process of Group Communication. Chicago: Science Research Associates.

Bandura, A. (1971). Social learning theory. Morristown, NJ: General Learning Press.

Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations Between Work Group Characteristics and Effectiveness: Implications for Designing Effective Work Group. Personnel Psychology, 46, 823-850.

Cialdini, R., Borden, R., Thorne, A, Walker, M., Freeman, S., & Sloan, L. (1976). Basking in reflected failure: Three (football) field studies. Journal of Personality and Social Psychology, 39, 406-415.

Denison, D. R. & Mishra, A. K. (1995). Toward a Theory of Organizational Culture and Effectiveness. Organization Science, 6: 204-223.

Fanz, T. and Harel, G. (1993) Performance appraisal for TQM: a team approach. Total Quality Management, 4, (3), 275-282.

Felts, C. (1995). Taking the Mystery Out of Self-Directed Work Teams. Industrial Management, 37, 21-26.

Fisher, B. A. (1973). Small Group Decision-Making: Communication and the Group Process. New York: McGraw-Hill.

Gouran, D. P. & Craig, R. T. (1976). Discussion: The Process of Group Decision-Making. New York: Harper & Row.

Hamel, G., & Prahalad, C. (1989). Strategic Intent. Harvard Business Review, 67, (3), 62-76.

Handy, C. (1987). The Age of Unreason. Boston, MA: Harvard Business School Press.

Hartzler, M. & Henry, J. E. (1995). Team Fitness: A How-To Manual for Building a Winning Work Team. Milwaukee: ASQC Quality Press.

Herbert, L B. & Tepas, D. I. (1995). A New Approach to Collecting Survey Data: An Item Response Icon Scale (IRIS). Proceedings of the Human Factors and Ergonomics Society 39th Annual Meeting 804-808.

Kabanoff, B., Waldersee, R., & Cohen, M. (1995). Espoused Values and Organizational Change Themes. Academy of Management Journal, 38, 1075-1104.

Kaiser, H. (1974). An Index of Factoral Simplicity. Psychometrica, 35, 31-36.

Katz, R. (1994). Managing High Performance R&D Teams. European Management Journal: 12, 3, 243-252.

Katzenbach, J. & Smith, D (1993). The Wisdom of Teams: Creating the High-Performance Organization. Boston: Harvard Business School Press.

Kayser, T. A. (1994). Building Team Power: How to Unleash the Collaborative Genius of Work Teams. Irwin Professional Publishing: Burr Ridge, IL.

Lawler III, E. (1986). High Involvement Management: Participative Strategies for Improving Organizational Performances. San Francisco: Jossey-Bass: 110-113.

Lawler, E., III, & Porter, L. (1967). The effect of performance on job satisfaction. Industrial Relations, 7, 20-8.

Locke, E., Frederick, E., Lee, C., & Bobko, P. (1984). Effect of self-efficacy, goals, and task performance. Journal of Applied Psychology, 69, 241-251.

Mallak, L. A. Mist, S. D., & Watts, P. S. (1996). Team Process Effectiveness in a Federal Reinvention Laboratory. Manuscript submitted for publication.

Markus, H., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. Annual Review of Psychology, 38, 299-337.

Mathieu, J., Marineau, J., & Tannenbaum, I. (1993). Individual and situational influences on the development of self-efficacy: Implications for training effectiveness. Personnel Psychology, 46, 125-147.

McGrath, J. E. (1978). Small Group Research. American Behavioral Scientist, 21, 651-675.

Menard, S. (1996). Applied Logistic Regression Analysis, 106 Thousand Oaks, CA: Sage Publications.

Mowday, R. & Lee, T. (1986). The influence of propensity to become committed on the development of commitment and prediction of turnover during organizational entry. In J. Pearce & R. Robinson (Eds.), Academy of Management Best Papers of Proceedings, (pp. 193-197). Chicago: Academy of Management.

Mowday, R., Porter, L., & Steers, R. (1982). Employee-organizational linkages. San Diego, CA: Academic Press.

Norusis, M. (1993). SPSS for Windows: Advanced Statistics Release 6.0. Chicago: SPSS Inc.: 15.

Plovnick, M. Fry, R. & Rubin, I. (1975). New Developments in O.D. Technology: Programmed Team Development. Training and Development Journal, April 4.

Riggs, M., & Knight, P. (1994). The Impact of Perceived Group Success-Failure on Motivational Beliefs and Attitudes: A Causal Model. Journal of Applied Psychology, 79, (5), 755-66.

Salas, E., Bowers, C. A., & Cannon-Bowers, J. A. (1995). Military Team Research: 10 Years of Progress. Military Psychology, 7, 55-75.

Scheaffer, R., Mendenhall, W. III, & Ott, R. (1996). Elementary Survey Sampling: Fifth Edition. Duxbury Press: Belmont, CA.

Schidler, J. (1992). Work Teams Boost Productivity. Personnel Journal, February, 67-71.

Shein, E. (1985). Organizational Culture and Leadership. San Francisco, CA: Jossey-Bass.

Shonk, J. H. (1992). Team-Based Organizations: Developing a Successful Team Environment. Business One Irwin: Homewood, IL.

Snyder, C., Lassegard, M., & Ford, C. (1986). Distancing after group success and failure: Basking in reflected glory and cutting off reflected failure. Journal of Personality and Social Psychology, 51, 382-388.

Spreitzer, G. M. (1995). Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation. Academy of Management Journal, 38, 1442-1465.

Thomas, K. & Velthouse, B. (1990). Cognitive elements of empowerment. Academy of Management Review, 15, 666-681.

Van Gundy, A. B., Jr. (1988). Techniques of Structured Problem Solving. New York: Van Nostrand Reinhold.

Wheeless, L. R., Wheeless, Y. E., & Dickson-Markman, F. (1982). The Relations Among Social and Task Perceptions in Small Groups. Small Group Behavior, 13: 373-384 Thousand Oaks, CA: Sage Publications.

Williams, L., & Hazer, J. (1986). Antecedents and consequences of satisfaction and commitment in turnover models: A reanalysis using latent variables structural equation methods. Journal of Applied Psychology, 761, 219-231.

Zenger, J. H., Musselwhite, E., Hurson, K., & Perrin, C. (1994). Leading Teams: Mastering the New Role. Business One Irwin: Homewood, IL.