The assessment of an organizational culture change

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THE ASSESSMENT OF AN ORGANIZATIONAL CULTURE CHANGE

A Thesis
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Jennifer Lynn Wion
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Abstract

This study assessed the effects of an organizational culture change on team effectiveness. An alpha change (Golembiewski, Billingsley, Yeager, 1976) was measured by utilizing a triangulation methodology (Manz & Sims, 1984). The Work Environment Scale (Moos, 1981) was used to assess team effectiveness and a questionnaire developed from the subject's input was used to measure goal attainment. Scrap and rework data were used as a way of linking objective data to subjective data (questionnaires) and also to measure goal attainment from an organizational point of view. Three naturally occurring groups were used to assess the effects of the organizational culture change: one experimental and two control groups. Another group, from another plant, was used to rule out perceptual bias. Although change did occur no statistically significant results were found.
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The Assessment of an Organizational Culture Change

In today's competitive world, the ability to change in order to meet internal and external environmental demands has become a key to survival in American business. The health of an organization depends on change (Eckhardt, 1987). One way to meet these demands is to examine the culture of the workplace. Schein (1990) defines culture as:

(a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems. (p. 111)

After examining an organization's culture relative to where it needs to be, a change may be necessary. This can be done in a several ways. The organization can simply guide the culture as it evolves by enhancing the cultural elements that are critical to the organization's identity (Schein, 1990) or it can utilize any of a number of approaches to stimulate organizational culture change. Once a plan for change has been decided upon it is necessary to measure the effectiveness of that change.

Culture Change

According to Vogt and Griffith (1988), there are two types of change: reactive change and proactive change. Reactive change is generally used to save an organization (Vogt & Griffith, 1988). For example, a company which is forced to down-size in times of economic turmoil is making a reactive change as a result of a change in the environment. In other words, the organization is becoming aligned with the environment (Wilkins & Dyer, 1988).
On the other hand, proactive change plans for the long term by taking "into account new technologies and discoveries and realizes the need to rework systems and the infrastructure before either fails or becomes obsolete" (Vogt & Griffith, 1988, p. 81). A company that has decided to move from a traditional management culture where individuals are micro-managed to a culture based on the concepts of total quality management is an example of proactive change. In such a culture individuals work as a team, employees are a valued human resource, defect prevention strategies are used, processes are continuously improved, and statistical process control and concurrent engineering are utilized. Either proactive or reactive change acts as an intervention which alters the culture of the organization.

The actual interventions can take many forms. Lewin (1952) presents a three stage process for change which involves unfreezing, moving/changing, and refreezing. The unfreezing stage is utilized to prepare the organization for change. A consultant might expose the members of the organization to a new philosophy and create a desire for change. The moving/changing stage is the actual implementation of the strategic plan for change. Finally, at some point in time it is necessary to refreeze the culture so that the new cultural elements can become habituated.

Another approach to change is to take the nature of the culture into account. Wilkins and Dyer (1988) suggest four types of culture change which are based upon the nature of the existing culture. The first type is where a general frame (generic view or way of looking at the organization as a whole) is replaced by another general frame. In the second, an existing specific frame (situation specific view of a particular cultural scene) is used as a
pattern for a new general frame. A third involves replacing an old specific frame with a new specific frame. And in the fourth, a new specific frame is learned without replacing any of the old specific frames. These changes tend to be moderated by the availability of alternative frames, the level of commitment to the current frames, and the fluidity of the current frame (amount of flexibility built into a frame).

Organizational culture can also be changed through a systems approach. There are various interpretations of what a systematic approach to change might be. However, only the three most relevant models will be discussed here. One model of a systems approach is a deterministic one in which processes are assumed to be "certain and stable and that behavior in the system is controllable" (Gemmill & Smith, 1985, p. 753). However, this model takes an idealistic point of view since not all behavior or processes are controllable nor are they stable. Another systems approach is the equilibrium model. This model uses a step-by-step change process whereby change is attempted within the confinements of the old system. This only works when the transformation does not involve an extension of the system's parameters (Gemmill & Smith, 1985).

When neither the deterministic model nor the equilibrium model is appropriate another systems approach may be necessary. The dissipative structure model is appropriate when it is necessary to expand the constraints of the existing system in order to make the desired changes. During the first stage of this particular model a jolt is delivered to the system which causes a state of disequilibrium. Next, old patterns are disbanded through a process of "symmetry-breaking" so that equilibrium mechanisms cannot be utilized and
the needed changes can occur. These changes occur in the experimentation stage. Finally, a reformation takes place. It is here that successful elements of the experimentation stage are finalized so that they become part of the new structure (Gemmill & Smith, 1985).

So far, various models for organizational culture change have been explored. Yet, how does one actually implement change and can that change be managed? Published research on what to do during a change process is limited. Vogt and Griffith (1988) suggest utilizing team-building as "a mini-change strategy" (p. 85) which will also ready the organization for future change. Ideas for team-building are also provided, but no empirical data are given to support their position. Eckhardt (1987) provides a conceptual plan for a healthy organization which includes employee involvement, participative management, and team-work. This plan emphasizes a steering committee, cross-functional teams, departmental teams, and self-managed work teams. However, this plan lacks empirical support. Even when a transformation within a noted company like the Ford Motor Company is reported, no data are provided for assessing statistical significance. Hence, it is extremely difficult to choose a particular method for organizational culture change since none of the proposed methods have been empirically tested.

The change agent is faced with numerous problems while trying to manage a transformation. First of all, measuring the change can be problematic in itself. Not only is it difficult to measure an unstable process (Fitzgerald, 1989), but it is also often difficult to identify the exact type of change that has occurred (Golembiewski, Billingsley, & Yeager, 1975). Conducting applied research can also pose a problem for the change agent.
since conditions for "pure research" are usually not accessible in many organizations (Schein, 1980). An additional problem that can interfere with the transformation process deals more with the subjects as opposed to the technical aspects of measurement or research. People tend to resist change and can create barriers that impede the organizational culture change process (Fitzgerald, 1989).

**Measuring Change**

Accuracy in measuring the change that has occurred in a transformation process can be diluted by the change methodology. One particular problem with change methodology is defining the criteria for assessing change is difficult since they are often 'soft' criteria. These criteria include the goals of the intervention, the variables that are to be used for evaluation, and the evaluation of the variables (Lindell & Drexler, 1979). The change goals themselves tend to be difficult to define since the processes that are to be changed are part of a functioning organization whose primary goal is to make a profit. The goals of the intervention cannot interfere with the goals of the organization. As a result, the goals of the intervention tend to be flexible or even determined as the transformation progresses. The variables that are used to evaluate the change are often abstract concepts such as involvement, peer cohesiveness, autonomy, etc. When the criteria are abstract or when the product of the change is intangible, like turning a group of individuals into a team, questionnaires tend to be used to measure that change (Zmud & Armenakis, 1978). Yet, the typical tools used for measurement in empirical research do not generally work well in the organizational setting since the elements of change do not exist as separate entities (Fitzgerald, 1989).
However, Lindell and Drexler (1979) have proposed a way of overcoming the soft criteria problem. They suggest that by developing a survey instrument which relies on the perceptions of those within the organization one can more accurately assess the conditions that exist within the organization.

One particular difficulty that researchers encounter is that of defining the constructs that will be measured. It is not enough to define change in terms of abstract concepts. Change itself must be defined. Golembiewski et al. (1975), identify three types of change: alpha change, beta change, and gamma change. Alpha change occurs "along relatively stable dimensions of reality that are defined in terms of discrete and constant intervals" (p. 135). In other words alpha change is the effect of the intervention on the process with all other possible change elements factored out. Beta change involves "the recalibration of the intervals used to measure some stable dimension of psychological space, as in preintervention vs. post-intervention responses" (p. 135). For instance, the distance between one and two may be perceived smaller at posttest than at pretest. If beta change occurs pretest and posttest data are useless since the subjects have in effect changed their impression of what each value on the scale represents. Gamma change can also make pretest and post-test data useless since it "involves a redefinition or reconceptualization of some domain" (p. 135). In other words, it is actually the perceptions of the anchors that changes during a gamma change and not the actual behavior.

Once the type of change that is desired has been identified, the change agent or the researcher can take steps to ensure that the other types of change do not confound the data. Beta change is not generally sought,
therefore, steps must be taken to distinguish it from alpha change for which it is sometimes mistaken (Lindell & Drexler, 1979; Millsap & Hartog, 1988). Armenakis and Zmud (1979) suggest asking for both the "ideal" and the "now" responses at both the pre and post-test administrations to detect a beta change. Lindell and Drexler (1979) take a different approach to the beta change issue by seeking not to measure beta change, but rather to eliminate it. In fact, they propose that utilizing a "psychometrically sound questionnaire" not only eliminates beta change, but also gamma change (p. 18). The questionnaire must have "multiple items rather than single items for measuring constructs" and make "use of behavioral anchors in defining the endpoints of judgement continua" (p. 18). The multiple items protect against recalibration of the evaluation scale (beta change) and the behavioral anchors reduce the need to redefine the domains (gamma change). Yet, some researchers argue that it is the gamma change that change methodology should be measuring since the goal of the change is really to "induce a new 'social order' or 'culture' in an organization" (Golembiewski et al., 1975, p. 139). However, it may not necessarily be the concepts that one wants to change, but the actual behaviors of the employees. Hence, it is the measurement of an alpha change that is desired and not that of a gamma or beta change, which makes their elimination appropriate.

**Applied Research**

With all the problems that seem to plague research in organizations one might question the use of applied research as opposed to academic research. Yet, applied research gives a realistic look at how problems are solved in real life organizations. Applied research makes it quite apparent that what
happens in the organization is not necessarily what is taught in the classroom. As Fitzgerald (1989) points out, the school solution for a change project requires a: "planned alteration of the entire structure and its processes, continued and highly visible support and guidance from top management, a rewiring of the reward system, and reeducation of all members" (p.8). It is rare to find an organization where it is possible to plan a comprehensive transformation. A plan of change might be possible in one area of an organization, but the whole organization is generally not feasible. The school solution also does not provide for potential changes in the organizational factors. For instance, a vendor might make a change in his product which might cause the organization to make a change in its production method. A change plan must remain flexible since organizational factors will tend to change. It is unrealistic to expect top management to provide highly visible support at all levels. They don't generally have the time to devote to such efforts. The final element of the school solution requires unlimited resources like time, effort, and money. Any solution that has these types of unlimited resources "requires the sort of end-state the change project seeks to bring about" (Fitzgerald, 1989, p. 8).

From a methodology stand point, using controls in the workplace is very difficult. Researchers are often concerned with utilizing control groups and controlling for extraneous variables in assessing change (Lindell & Drexler, 1979). As Schein (1980) points out "pure research models involving control groups and controlled experimental manipulation are neither feasible nor desirable when dealing with human systems" (p. 241). To withhold something from one group that might improve their productivity or their way of life
while it is given to another group is unethical (Schein, 1980). The company itself, is not likely to allow anything that will interfere with profit, which withholding something from one group might do. Controlling other areas through manipulation may not be possible either. For instance, external variables like competition and the economy cannot be controlled. This type of uncertainty is bound to exist in similar organizations which allows the results to be generalized to the real world.

Being able to generalize research findings to other situations is a premise upon which much research is done. Applied research offers many of the elements that are necessary for generalizing to the workplace. One such element is the use of representative subjects and situations. Chapanis (1988) states that in basic research:

Subjects are solicited, or conscripted, from some conveniently accessible population. They are brought into a laboratory and are confronted with an experimental setup. . . Often the stimuli are things a subject may never or rarely experience in a lifetime. (p. 255)

It is a logical assumption that the laboratory is not like the workplace nor will the subjects behave the same way in the lab as they would in the workplace. Hence, if the setting of the workplace and the subjects are similar to others in the industry then the findings can be generalized. Another element is the long-term changes that occur. As management philosophies change, or even laws that govern human resources change, previous research will not be reliable as a source for future change projects. Hence, it is necessary for applied research to be done.

Another fact that limits the generalizability of academic research is that threats to external validity are supposed to be controlled. While the
limited ability to do this has already been noted, the fact that general findings
are sought can not be ignored. However, it is often these extraneous variables
that aid the variable under examination in providing the precise answers.
This is especially true in applied research (Chapanis, 1988). For instance,
while trying to assess the effects of a culture change on team effectiveness
one might find that the threat of being laid off contributed to the
effectiveness of the team. Hence, it is important not to discount extraneous
variables when assessing change in an organization.

Some extraneous variables can impede an organizational culture
change, such as the managers' and workers' resistance to change. During
quality-of-work-life transformations, like total quality management, the
middle manager's position changes. As top management focuses its efforts on
the workers the middle managers lose their power over resources
(Schlesinger & Oshry, 1984). As their power base is encroached upon, the
managers express their resistance by sabotaging the efforts to establish a total
quality management philosophy (Schlesinger & Oshry, 1984). Of course, this
destructive effort tends to be disguised as "delay, avoidance, disinterest, back­
pedalling, talking for the record but finding endless excuses for inaction,
[and] discounting benefits while exaggerating costs" (Fitzgerald, 1989, p. 7). In
essence, the more responsibilities that the workers are given the more
threatened the middle manager feels. Thus, causing him/her to fall back upon
the deep seated authoritarian values that many managers still hold (Fitzgerald,
1989).

The middle managers are not the only ones that create barriers to the
transformation. The workers themselves tend to resist change. Yet, their
resistance stems more from a lack of trust than from being threatened. For years, management has concentrated on getting more work out of subordinates without compensating them for the additional effort. This dissatisfaction with management leads to unions trying to protect the worker and improve the working conditions (Beer & Spector, 1985). Now, as the quality-of-work-life movement is making its way through American industry, the workers are suspicious of management. When management announces its intention to instigate a change project the employees project their own meaning onto the announcement, and questions what is in it for them (Fitzgerald, 1989). This lack of trust slows down and sometimes stops the change process.

The literature reviewed thus far has demonstrated some of the reasons for changing an organization's culture. A company may engage in reactive change, but for an organization to remain healthy it needs proactive change. Yet, there does not seem to be any one particular approach to change that is "best" or "right." We do know that alpha change should be measured if it is the effect of the intervention that is of interest to the researcher. A survey which stems from the employees' perceptions should be used to overcome the "soft criteria" problem. Another questionnaire should be used that is "psychometrically sound" with multiple items and behavioral anchors to eliminate the threat of beta or gamma change. The change research should be done in an applied setting so that it can be generalized. Yet, what is not known is what element of the change should be looked at to measure its effectiveness.
Teams

As referred to earlier, teams are often emphasized in today's culture change attempts (Vogt & Griffith, 1988; Eckhardt, 1987). In fact, work teams are considered by some to play a pivotal role in the transformation process (Sundstrom, De Meuse, & Futrell, 1990). These teams of interdependent individuals share the responsibility for specific outcomes (Sundstrom et al., 1990). A team's effectiveness is often judged according to production outcomes or outputs (Weisbord, 1985; Sundstrom et al., 1990; Ableson & Woodman, 1983). Ableson and Woodman (1983) look at the goal attainment view of effectiveness in terms of the following criteria:

1. A work team is effective when its productive output exceeds or meets organizational standards for quality and quantity.
2. A work team is effective when the group experience satisfies more than frustrates the personal needs of team members.
3. A work team is effective when the group processes used in carrying out their work increases, or at least maintains, their capability to work collaboratively on future team tasks. (p. 126)

The first criterion can be assessed, for example, by measuring the amount of scrap and rework that is generated. This would give the organization an idea of how effective the group is in meeting its production goals. The second criterion can be assessed with a psychometrically sound questionnaire. The third criterion can also be assessed with a questionnaire that has a relationship dimension (the interactions between a worker and the environment, coworkers, and supervisors) or by tacking performance over time. The relationship dimension would indicate the likelihood of working together in the future.
Sundstrom et al. (1990) propose an interesting way of looking at team effectiveness. They demonstrate how team effectiveness, which is defined as performance and viability (member satisfaction and the likelihood that the group will work together in the future), interacts with the organizational context, boundaries, and team development. Each of the elements above, which interact with team effectiveness, also has several components within it. However, here we are most interested in the components of the organizational context--specifically, the organizational culture. If the cultural element of the organizational context is changed, then team effectiveness should be affected since all of the areas are interrelated. Hence, by measuring team effectiveness one can obtain a reasonable measure of the effectiveness of the organizational culture change.

To measure team effectiveness, triangulation (Manz & Sims, 1984) must be used not only to get a better understanding of the results, but also to meet the other demands that have been discussed thus far. What is meant by triangulation is the utilization of several data collection methods to get a more in-depth understanding of what is being studied (Manz & Sims, 1984). As McGrath (1986) noted, by utilizing several different methods of data collection, each one will tend to supplement the weaknesses of the others. In essence, triangulation provides for a stronger design.

In this study, triangulation will be achieved through the use of three different measures. A psychometrically sound questionnaire with multiple items and behavioral anchors will be used to assess alpha change and eliminate the possibility of measuring beta and gamma change. Another questionnaire will be used that is developed through the aid of employee

13
perceptions. In other words, ask the employees what their goals are and then develop a questionnaire from the data so that the perceived goals will be measured. Finally, objective data like scrap and rework, absenteeism, or turnover need to be measured. This not only gives a measure of goal attainment, but also allows for a comparison between objective data and subjective data (questionnaires).

**Measurement Approaches**

Exactly which "psychometrically sound questionnaire" should be used is another question for debate. A number of approaches might be taken in measuring the effects of such a change effort. In fact, a number of instruments can be, and have been used. Some examples include: the Job Descriptive Survey (Hackman & Lawler, 1975); the Job Descriptive Index (Gillet & Schwab, 1974); the Minnesota Satisfaction Questionnaire (Gillet & Schwab, 1974); and the Work Environment Scale (WES) (Moos, 1981). For the purposes of the present investigation the WES seems especially appropriate. It meets the demands spelled out earlier for this type of research. For example, the demonstrated reliability is acceptably high (.69 to .86). It also satisfies Abelson and Woodman's (1983) criteria for team effectiveness.

The WES consists of ten subscales that are divided into three dimensions: The Relationship dimension, the Personal Growth dimension, and the System Maintenance and System Change dimension. The Relationship dimension is comprised of scales that measure involvement, peer cohesion, and supervisor support. The Personal Growth dimension is assessed by autonomy, task orientation, and work pressure. The System Maintenance and System Change
dimension includes clarity, control, innovation, and physical comfort. (See Table 1)
Table 1

WES Subscales and Dimensions Descriptions

| Relationship Dimensions                                                                 |
|                                                                                         |
| 1. Involvement                                                                          |
| the extent to which employees are concerned about and committed to their job            |
| 2. Peer Cohesion                                                                        |
| the extent to which employees are friendly and supportive of one another                |
| 3. Supervisor Support                                                                  |
| the extent to which management is supportive of employees and encourages employees to be |
| supportive of one another                                                               |
|                                                                                         |
| Personal Growth Dimensions                                                              |
| 4. Autonomy                                                                             |
| the extent to which employees are encouraged to be self-sufficient and to make their own |
| decisions                                                                              |
| 5. Task Orientation                                                                    |
| the degree of emphasis on good planning, efficiency, and getting the job done           |
| 6. Work Pressure                                                                       |
| the degree to which the press of work and time urgency dominate the job milieu          |

| System Maintenance and System Change Dimensions |
|                                               |
| 7. Clarity                                   |
| the extent to which employees know what to   |
| expect in their daily routine and how        |
| explicitly rules and policies are            |
| communicated                                |
| 8. Control                                  |
| the extent to which management uses rules    |
| and pressures to keep employees under control|
| 9. Innovation                               |
| the degree of emphasis on variety, change,   |
| and new approaches                          |
| 10. Physical Comfort                        |
| the extent to which the physical surroundings |
| contribute to a pleasant work environment    |

Note. From Moos, 1981, p. 2
When the WES was developed it was designed to meet five psychometric criteria (Moos, 1981; Turnipseed, 1988). First of all, to avoid the items being representative only of unusual work situations a 50-50 split between the items was established—50 items were representative of normal work situations and the other 50 were representative of unusual work situations (Moos, 1981; Turnipseed, 1988). Next, the items need to correlate more so with their subscales than with anything else (Moos, 1981; Turnipseed, 1988). The subscales themselves were designed so that "an approximately equal number of items scored true and scored false to control for acquiescence response set" (Moos, 1981, p. 3). Finally, each subscale not only has low to moderate intercorrelations, but also discriminates among work settings (Moos, 1981; Turnipseed, 1988).

The WES has been shown to be a dependable instrument. In one study Moos (1981) tested the instrument in its 90 item, true/false response form. The internal consistency reliability ranged from a low of .69 to a high of .86. The WES also proved to be reliable in a one month, test-retest situation. The reliability coefficients ranged from .69 to .83. Abraham and Foley (1984) took the examination of the instrument one step further by changing the scale from a true/false form to a 1-4 Likert type form. After reversing the negatively formulated items, the results yielded alpha coefficients from .04 to .88 with an overall coefficient of .94. The coefficient of .04 for work pressure was unusual since all of the other subscales were .41 and above. The authors attributed the outlier to the fact that in the altered form there were only four points on the scale. Perhaps if there were more choices as in a seven point Likert format then the coefficient for work pressure would have been closer.
to those of the other subscales. They speculated further that the low coefficient could have also been due to sampling error.

Psychometrically and conceptually the WES appears to be appropriate for assessing culture change. In fact, it was developed to be applicable for almost any setting (Moos, 1981). Moos (1981) lists several experiments in which the WES has been used to monitor the impact of change. Specifically relevant to this study is the application to organizational development. In a study that looked at increasing participation in decision making, Jackson (1983) used the WES to measure the effects on role conflict, ambiguity, job satisfaction, and well being. He found that "involvement in decision making may lessen role strains and enhance valued individual and organizational outcomes" (Moos, 1981, p. 18). It is important to note that the WES was successfully utilized to monitor the change. The autonomy subscale reflected the positive change that participation had on perceived influence within the hospital. Yet, other scales (peer cohesion and supervisor support) did not indicate a positive change in work support. The WES has also been used to assess team effectiveness (Turnipseed, 1988). Groups were ranked according to effectiveness criteria. These groups were then given the WES to test the work climate. The more effective group was found to have a higher overall score on the WES than the less effective group. He further proposes that climate and culture are interrelated. Therefore, it is possible that the effective group could also have a different culture.

The purpose of this study is to assess the effectiveness of an organizational culture change within a sub-system of an organization. Specifically, the transition from a traditional management philosophy to a
total quality management philosophy within a defense company will be assessed. In order to assess the culture change, team effectiveness will be measured. Three groups will be used to assess the effectiveness of the change. The quasi-experimental group will differ from the two control groups in that it will be facilitated by a total quality management task force member, have a formalized structure (weekly meetings, set goals, and reports to the Engineering Manager), have access to data, measure micro-processes, design experiments, and implement best practices.

Hypotheses

Hypothesis 1: For the quasi-experimental group team effectiveness as measured by the WES (Moos, 1981) will increase from pretest to posttest.

Hypothesis 2: Goal attainment (measured by a situation specific questionnaire) at posttest will be significantly greater for the quasi-experimental group.

Hypothesis 3: Defects will significantly decrease from pretest to posttest for the quasi-experimental group.

Hypothesis 4. The Work Environment Scale will prove to be psychometrically sound after revising the scale from true/false choices to a Likert format with behavioral anchors.
Method

Subjects

42 employees served as subjects. All the participants were salaried people working in support positions (Supervisor, production engineer, quality engineer, group engineer, and a senior manufacturing engineer). All subjects were from the local area and had been with the company for several years. There was an equal mix of male and female subjects with ages ranging from 30 to 50.

Organizational Context

An Air Defense Systems Division of a major defense company in the United States has been experiencing difficulty in adjusting to changing external conditions such as competition and new customer requirements. The company receives all of its business from government contracts. However, once the government began cutting defense spending the company was forced to complete contracts on time and within budget. This meant that a contract that was proposed to take one year and cost five million dollars was not only expected to be completed on time and within budget, but future contracts were now contingent upon fulfilling the previous contract. Simultaneously, the government began looking to other sources for the same products. Once the government actually began buying from another company or "dual sourcing" (some portion of the products are bought from one business and the remainder are bought from another business) it became evident that contracts had to be completed as promised. Loss of business base raised rates which made it more difficult to bid competitively. This put even more pressure on the company to
make some life saving changes in the way business is conducted, such as reducing costs and getting the products out the door on time. In fact, a change in the organizational culture was necessary.

One of the changes, aimed at reducing costs, was to make drastic cuts in both manpower and physical assets through a major down-sizing effort. To this end, two local divisions were merged into one and employees were laid off. This effort took the division from approximately 12,000 employees to about 5,000 employees within a two to three year period. Next, the physical assets that these people were using such as furniture and office fixtures were sold to increase capital. There is also an effort under way to sell the buildings at one of the facilities.

Trying to get the product out the door on time has been severely impeded by the immediate effort to cut costs. The staffing required to get the job done is often insufficient. Some employees occasionally put in seven days a week. Not only are the people getting paid more for overtime as opposed to regular time, but absenteeism has increased. The more tired the employees get, the slower they perform so that eventually they are producing the same amount with overtime as they normally would have on regular time.

Many of the barriers in implementing changes are a function of the current organizational culture. This culture has been largely shaped by a traditional management style, characterized by poor communication between or within levels of the hierarchy. Yet, upper management tries to micro-manage processes at lower levels of the organization which it often doesn't understand. This is done because employees are not trusted to make decisions that affect their work environment so management feels the need to maintain
rigid control over what the line employees do. Upper management is perceived by the workers as thinking of themselves as "Gods" and the employees are treated like "Egg Sucking Pigs" (Lareau, 1991). This management style has created an atmosphere of distrust and fear throughout the ranks. In an attempt to change the culture, the division has targeted the HMA area for a "pilot" program (a special project in which normal rules do not apply).

The HMA area is a production facility that deals primarily with classified, high technology products for government defense contracts. The HMA production area is very clean, which is necessary for the type of product being built. Anyone entering the production area must wear smocks and hair nets. Those who work on the products are often required to wear gloves or at least finger coverings in addition to the smocks and hair nets. Over the course of a day, the smocks get rather warm and the smell from the chemicals can be overwhelming. Despite the conditions on the floor, the employees are expected to meet the numbers for the day.

From an organizational perspective, the members of the organization are classified as two separate groups, company (salary) or union (hourly). The company people get an hour lunch break, get ten sick days per year, and do not have to punch a time clock. On the other hand, the union people must bargain every three years for their contract which presently includes punching the time clock, a half hour lunch, and five sick days per year. Another difference between the groups is that salaried people tend to have more mentally demanding jobs where as the hourly jobs are more physically taxing. For instance, in the production area the supervisors are responsible
for making decisions concerning the placement of people, meeting daily goals, planning for the week, and making reports. However, the operators (hourly) are responsible for getting a certain number of parts done per day, which in some instances requires looking through a high powered microscope eight hours a day (which can weaken the eyes) or wire pulling all day (which can lead to metacarpal syndrome). These differences, define boundaries that inhibit interaction. This inhibiting force exacerbates an atmosphere of mistrust.

Mistrust is amplified by a traditional hierarchical management approach. The upper portion of the hierarchy tends to be mostly "company" employees whereas the lower levels are made up of hourly employees. Approximately 250 hourly workers are supervised by 7 supervisors whose responsibilities range from front-line production to final assembly. Each supervisor in turn reports to the Manufacturing Manager who reports to the Director of Production. Approximately 40 salaried engineers including: manufacturing, failure diagnosis, and industrial engineers report to their respective group engineer, who in turn reports to the Engineering Manager. The Manufacturing Engineer reports to the Director of Manufacturing Engineering. The production control people report to the Production Control Manager, who reports to the Director of Production Control. All three of the process directors (Production, Manufacturing Engineering, and Production Control) report to the Vice President of Production. The Quality Engineers report to the Quality Engineering Manager, who reports to the Vice President of Quality Assurance. The quality inspectors report to the Inspection Supervisor, who reports to the Quality Assurance Manager. This manager also
reports to the Vice President of Quality Assurance. Finally, both vice presidents report to the General Manager. (see Appendix A for an organization chart)

**Instruments**

Three sources of data collection were used: (1) a modified version of the WES (see Appendix B), (2) a situation specific questionnaire designed from information provided by the subjects (see Appendix C), and (3) scrap and rework archival data. The WES (Moos, 1981) was changed from a true/false response format to a Likert response format with behavioral anchors. The second questionnaire was designed from the responses to three questions: (1) What would you say are the goals of your work group? (2) How would you define team effectiveness for your work group? (3) When the "HMA Pilot" was introduced to you what type of organizational culture changes did you expect?

The final source of data, scrap and rework information, was provided in monthly reports.

**Design and Procedures**

A Quasi-Experimental approach coupled with a retrospective pretest-posttest strategy (Howard, 1980) was used. Three naturally occurring work groups were studied. There were five people in the quasi-experimental group: a supervisor, a quality engineer, a group engineer, and two senior manufacturing engineers. The first control group had six subjects and the second control group had seven subjects. Each subject in the control groups acted in a similar capacity as their counter-part in the quasi-experimental group. Another group of 24 subjects from another division of the same
company was used only to test the validity of the WES and to rule out the possibility of perceptual bias.

Due to the nature of the retrospective pretest-posttest strategy, both the pretest and the posttest data were collected at the same time. This particular method of collecting data is also known as a Then/Posttest strategy. Howard (1980) found that collecting the data at the same time reduces the "response shift" problem or what has already been described as beta change. He also found that the data collected from a retrospective pretest-posttest is not significantly different than that collected from a normal pretest-posttest design. Nicholson, Belcastro, and Gold (1985) also support the use of the retrospective pretest. In a study where the retrospective pretest/posttest was compared with the traditional pretest-posttest in measuring treatment effect in a counseling environment both methods produced the same results. The retrospective pretest/posttest also eliminated the "response-shift bias."

Utilizing the retrospective approach, each member of the groups was given a letter explaining the purpose of the research and an informed consent form. They were also given a modified form of the WES and asked to complete it according to how things were before the culture change began. Since organizations are constantly trying to make improvements the exact date of the beginning of the culture change was difficult to specify. In order to ensure that all the subjects were thinking along the same lines, June 1991 was used as a reference point for the pretest. Next, they were asked to complete another modified form of the WES according to how things are at that current point in time. They were also given a questionnaire to collect demographic data and one to collect information on their views of the group goals. Each
subject was provided with a self-addressed stamped envelope to ensure anonymity. Retrospective pretest and posttest, scrap and rework data was also collected at that time from archival data.

The information collected about the subjects' views of the goals for the group was used to create a situation specific questionnaire. The responses from the three questions were used to create questions that measured the real goals of the employees as opposed to those perceived by the researcher or management. The subjects were asked to complete the goal attainment questionnaire (GAQ) and to return it in a self-addressed stamp envelope three weeks after the WES was administered.
Results

Work Environment Scale

Of the 18 questionnaires administered at the experimental plant 10 were returned. All five were returned for the quasi-experimental group (TF). Two were returned for the first control group (PRC), and three were returned for the second control group (A2). Of the 24 questionnaires administered to the other plant (POM) 18 were returned.

In order to establish the reliability of the modified WES the pretest scores for the four groups were combined. An alpha reliability coefficient was calculated for the total scale, each of the three dimensions, and each of the 10 subscales. The total alpha was .91. The Relationship Dimension consisting of Involvement (.73), Peer Cohesion (.74), and Supervisor Support (.81) had an alpha of .87. The Personal Growth Dimension consisting of Autonomy (.80), Task Orientation (.73), and Work Pressure (.77) had an alpha of .65. The System Maintenance and System Change Dimension consisting of Clarity (.80), Control (.74), Innovation (.83), and Physical Comfort (.79) had an alpha of .80. An item analysis was also done on the individual questions; however, due to the small sample size, questions which might have increased alpha if deleted were kept in the analysis since extreme individual responses could have affected the scores, and the scales have shown acceptable reliability in other settings.

A oneway ANOVA was also done for each of the three pretest dimensions to determine if there were significant differences between the four groups. The ANOVA for the RELa dimension was not significant (F=1.14, p=.35). The ANOVA for the PGa was also not significant (F=1.03, p=.40). However, the ANOVA for the SMSCa dimension was significant (F=2.94, p=.05). Multiple range
tests were done to determine which groups differed significantly. The LSD posthoc test (p=.05) indicated that there was a significant difference between the POM group mean (121.3333) and the A2 group mean (149.9474) at pretest while none of the other groups were significantly different.

A series of multiple regression models was constructed for each of the three WES dimensions. For each WES dimension, the posttest WES scores served as the dependent variable. The predictor side of the equation contained pretest WES scores for that particular dimension as a covariate to partial out pretest differences, and dichotomous group membership variables to represent each of the three work groups.

For the Relationship Dimension (REL), the incremental R-squared for the work group variables, over and above the REL pre-score, was .17. That is, the portion of post REL variance uniquely attributable to work group membership was 17%. This increment in R-squared was not significant (F=3.22, p=.10). For the Personal Growth Dimension (PG), the incremental R-squared for the work group variables, over and above the PG pre-score, was .08. That is, the portion of post PG variance uniquely attributable to work group membership was 8%. The increment in R-squared was not significant (F=.18, p=.68). For the System Maintenance and System Change Dimension (SMSC), the incremental R-squared for the work group variables, over and above the SMSC pre-score, was .17. That is, the portion of post SMSC variance uniquely attributable to work group membership was 17%. This increment in R-squared was not significant (F=2.97, p=.12). While the absolute amount of variance accounted for by work groups was substantial, the small sample provided insufficient power to demonstrate significance.
To provide possible additional explanation of the sizeable, but nonsignificant, change process the actual change score (the difference between pretest and posttest) was also computed. For the Relationship Dimension 40% of the responses indicated no change while 60% indicated a positive change. For the Personal Growth Dimension 60% of the responses indicated a negative change while 40% indicated a positive change. For the System Maintenance and System Change Dimension 20% of the responses indicated no change, 10% indicated a negative change, and 70% indicated a positive change. In order to pinpoint where the changes occurred means were computed for each of the groups. The A2 group, one of the control groups, had the largest positive change for both the REL Dimension and the SMSC Dimension indicated by a -21.0 and a -14.67. (See Table 2)
Table 2
Mean Change Scores for the Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>REL-change</th>
<th>PG-change</th>
<th>SMSC-change</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF</td>
<td>-8.2</td>
<td>5.8</td>
<td>-8.0</td>
</tr>
<tr>
<td>PRC</td>
<td>-9.0</td>
<td>4.5</td>
<td>12.0</td>
</tr>
<tr>
<td>A2</td>
<td>-21.0</td>
<td>.33</td>
<td>-14.67</td>
</tr>
</tbody>
</table>
Correlations between the pretest and posttest are high for many of the dimensions. For Relationship pretest (RELa): Relationship posttest (RELb)=.67, Personal Growth posttest (PGb)=.66, and System Maintenance and System Change posttest (SMSCb)=.65. For SMSCa: SMSCb=.66. For RELb: PGb=.89 (-.001 significance) and SMSCb=.58. For PGb, SMSCb=.70. (See Table 3)
### Table 3

**Intercorrelations Between Pre and Posttest Scores**

<table>
<thead>
<tr>
<th></th>
<th>RELa</th>
<th>PGa</th>
<th>SMSCa</th>
<th>RELb</th>
<th>PGb</th>
<th>SMSCb</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELa</td>
<td>1.0000</td>
<td>-0.1734</td>
<td>0.3280</td>
<td>0.6704</td>
<td>0.6468</td>
<td></td>
</tr>
<tr>
<td>PGa</td>
<td>1.0000</td>
<td>-0.0965</td>
<td>0.1525</td>
<td>0.1494</td>
<td>0.1036</td>
<td></td>
</tr>
<tr>
<td>SMSCa</td>
<td>1.0000</td>
<td>-0.0448</td>
<td>0.2553</td>
<td>0.5779</td>
<td>0.6960</td>
<td>1.0000</td>
</tr>
</tbody>
</table>
Goal Attainment Questionnaire

A reliability analysis was done for the GAQ with 11 subjects. The alpha coefficient was .91. A one-way ANOVA showed no significant differences among the work groups on Goal Attainment ($F=.92$, $p=.44$). (See Table 4) For more power, groups PRC and A2 were combined and compared to the TF (treatment group). The combined group mean was 26.20 and the TF group mean was 35.17. (See Table 5) While the t-test ($t=-1.44$, $p=.184$) was nonsignificant, the experimental group mean was larger than the control groups combined. The larger group mean indicates some positive change.
<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF</td>
<td>35.1667</td>
<td>7.8081</td>
</tr>
<tr>
<td>PRC</td>
<td>26.0000</td>
<td>9.1652</td>
</tr>
<tr>
<td>A2</td>
<td>26.5000</td>
<td>21.9203</td>
</tr>
</tbody>
</table>
Table 5

Results of the T-Test

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF</td>
<td>35.1667</td>
<td>12.736</td>
</tr>
<tr>
<td>PRC/A2</td>
<td>26.2000</td>
<td>7.808</td>
</tr>
</tbody>
</table>
Scrap and Rework

Scrap and rework data were gathered from archival data. Labor hours and dollars spent were recorded for both scrap and rework from May 1991 to April 1992. Missing data for scrap hours and rework hours was interpolated. The TF group had the first data point missing for scrap hours which was replaced by the same value as data point number two. The TF group also had missing data for rework hours. In this case, data point two was missing which was in turn replaced with the same value as data point number one. The PRC group had the first data point for scrap hours missing which was replaced by the same value as the second data point. The A2 group had five missing data points for scrap hours and four missing data points for rework hours. The last data point for scrap hours was given the same value as the one preceding it. All other missing values were determined by taking the two data points between which the missing value(s) fell and calculating a value for the missing data point(s). The new values were either midpoints between the two existing data points or in some cases where two values were missing an equal distance between the points was established so that the increase from one point to the next was the same.

Regression equations were constructed for both scrap dollar and rework dollar for each group over time. The results of these analyses are presented in Table 6. None of the trends were statistically significant. However, for the TF group, approximately 14% of the variance in scrap dollar was associated with the time variable. The regression coefficient indicates that scrap dollars decreased approximately $42.00 per month.
Since the none of the regressions were significant it was not necessary to calculate the slopes.
### Table 6
Regression Results for Dollar Data

<table>
<thead>
<tr>
<th>Group</th>
<th>R-squared</th>
<th>Regression Coefficient</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF/Scrap</td>
<td>0.13511</td>
<td>-41.8152</td>
<td>10</td>
</tr>
<tr>
<td>TF/Rework</td>
<td>0.011232</td>
<td>0.142967</td>
<td>10</td>
</tr>
<tr>
<td>PRC/Scrap</td>
<td>0.094213</td>
<td>0.928014</td>
<td>10</td>
</tr>
<tr>
<td>PRC/Rework</td>
<td>0.01053</td>
<td>-1.89913</td>
<td>10</td>
</tr>
<tr>
<td>A2/Scrap</td>
<td>0.0003</td>
<td>0.218576</td>
<td>10</td>
</tr>
<tr>
<td>A2/Rework</td>
<td>0.44961</td>
<td>-21.1582</td>
<td>10</td>
</tr>
</tbody>
</table>
Discussion

Lack of significance was not surprising in this study since the sample size was characteristically small. Small sample sizes afford the researcher limited power in hypothesis testing. Since the group size was determined by the natural grouping within the organization, the sample size could not be increased. Despite nonsignificance some changes did appear to occur from the pretest situation in May of 1991 to the posttest situation of April 1992. It is these changes and their implications that will be discussed.

The WES demonstrated that little variance among the teams was accounted for by the change effort. In fact, control group A2 appeared to have the largest positive change for both the Relationship and the System Maintenance and System Change dimensions. However, this change could be attributed to the fact that one of the projects that the group worked on was completed during the time period of the study. This could have resulted in less stress on the employees. Hence, they could have had a more positive perception of the environment. This is also substantiated by the posthoc analysis which was unable to rule out perceptual bias for the A2 group, since it was significantly different from the POM group at pretest. This result suggests that there were other factors affecting the A2 group at pretest that were not affecting the other groups. Therefore, it is difficult to conclude that the largest change actually did occur within the A2 group since there appeared to be some pretest differences.

One aspect of the WES that appears to be of particular interest is the frequency with which the Relationship dimension is highly intercorrelated with the other dimensions. Not only are the pretest and posttest measure
highly intercorrelated for the Relationship dimension itself, but also with the pre and post measures of the other two dimensions. Since, the Relationship dimension has been noted as an indication of group effectiveness in the future (Ableson & Woodman, 1983) it stands to reason that by concentrating on involvement, peer cohesion, and supervisor support the other dimensions would also be affected. However, the actual degree to which they would be affected can not be determined since correlation only implies that there is a positive or a negative relationship. In this case the relationships are usually positive, except for RELa with PG (−.17) and RELb with SMSCb (−.04) and these are small by any standard (See Table 3). It is difficult to determine specifically which factors in the dimensions are causing the direction of the correlation from data in this study. Future research should focus on the ability of the Relationship Dimension to predict the other dimensions. By being able to predict which elements would be most effective in ensuring group effectiveness a more focused plan for proactive change could be developed.

Besides the WES, two other measures were used to assess team effectiveness. These measures (GAQ and scrap/rework) looked at goal attainment as an indication of team effectiveness. The GAQ and scrap/rework do demonstrate a small indication of team effectiveness. While the results of the GAQ failed to reach significance (possibly a result of low power) the means of the groups were substantially different. The means for the control groups were about the same while the experimental group was larger. Hence, according to group perceptions, the TF group was more effective in meeting its goals than were either of the other two groups. While the results are
consistent with the hypothesis, lack of statistical significance precludes a claim of empirical support.

The TF group was also more effective in meeting organizational goals. Over time the experimental group decreased the amount of money spent on total scrap by $41.82 a month. In other words, the experimental group had a total decrease in scrap costs of $4,184.00 for the period of time between June 1991 and April 1992. While the amount may seem minimal for a high budget project, the improvement indicates movement toward change in an area where the nature of the product calls for the part to be scraped more often than it is reworked. This particular area also had a lot of problems with the raw materials being bad, which would have increased the amount spent on scrap.

In addition to poor materials, the environment was schedule driven. This meant that even if there was a problem, that the group was aware of, they had to keep producing, even if that meant producing scrap. Hence, the actual decrease over time might have been greater if the extraneous variables could have been controlled. For example, if the raw materials that were received from the vendor were of high quality then the only thing that could be attributed to scrap would be human error. Part of the human error element, may have been eliminated if the group were allowed to shut down the line to fix any problems, as opposed to continuing production. The A2 group also demonstrated a decrease over time in the amount spent on rework. However, there were too many missing values during the time period studied for the decrease to be attributed to the change effort.
The triangulation method used here has provided for a more in-depth understanding of the organizational culture change (Manz & Sims, 1984). If one were to look strictly at the results of the WES, little if any alpha change would appear to have occurred. Yet, when the objective data from scrap and rework and the subjective data from the GAQ are examined it does appear as if some sort of change has occurred. In fact, the two measures appear to support each other in confirming some degree of team effectiveness for the TF group. The WES further indicates that more of an emphasis should be placed on changing the elements of the Relationship dimension (involvement, peer cohesion, and supervisor support) to ensure team effectiveness in the future which would in turn effect the culture change. According to Sundstrom et al. (1990) the fact that the TF team appeared to be effective in meeting its performance goals indicates that the organizational culture change had a positive effect on the group's effectiveness. In essence, the culture change was successful in increasing team effectiveness. Yet, as already indicated, the lack of statistical support precludes a claim of empirical support.
Appendix A

Formal HMA Organization Chart

General Manager

Vice President Quality Assurance
  Quality Assurance Manager
  Quality Engineering Manager
  Inspection Supervisor
  Inspectors

Vice President of Production
  Director of Production
    Director of Manufacturing Engineering
      Manufacturing Engineering Manager
        Manufacturing Group Engineer
          Hourly
        Failure Diagnosis Group Engineer
        Industrial Group Engineer
        Production Control

* S = Supervisor
### Appendix B

#### Work Environment Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The work is not really challenging.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. New employees are ignored.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. Supervisors tend to talk down to employees.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. Few employees have any important responsibilities.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>5. People do their work without thought.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6. There is constant pressure to keep working.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>7. Things are sometimes pretty disorganized.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8. There’s strict emphasis on following policies and regulations.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>9. Doing things in a different way is criticized.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>10. The work area sometimes gets too hot.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>11. There’s not much group spirit.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>12. The atmosphere is impersonal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

The work is challenging.
People go out of their way to help a new employee feel comfortable.
Supervisors talk to employees as equals.
Employees have important responsibilities.
People pay a lot of attention to getting work done.
There is very little pressure to keep working.
Things are well organized.
Violation of policies and regulations are overlooked.
Doing things in a different way is valued.
The work area is always comfortable.
There is a lot of group spirit.
People care a lot about each other.
<table>
<thead>
<tr>
<th></th>
<th>Employees are never complimented.</th>
<th></th>
<th>Supervisors always compliment an employee who does something well.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Employees have no freedom.</td>
<td></td>
<td>Employees have a great deal of freedom to do as they like.</td>
</tr>
<tr>
<td>14</td>
<td>There's a lot of time wasted because of inefficiencies.</td>
<td></td>
<td>Things are run very efficiently.</td>
</tr>
<tr>
<td>15</td>
<td>There always seems to be an urgency about everything.</td>
<td></td>
<td>Things are pretty calm.</td>
</tr>
<tr>
<td>16</td>
<td>Nothing is planned.</td>
<td></td>
<td>Activities are well planned.</td>
</tr>
<tr>
<td>17</td>
<td>People must wear regulation clothing.</td>
<td></td>
<td>People can wear wild looking clothing while on the job if they want.</td>
</tr>
<tr>
<td>18</td>
<td>Nothing new is ever tried.</td>
<td></td>
<td>New and different ideas are always being tried out.</td>
</tr>
<tr>
<td>19</td>
<td>The lighting is very poor.</td>
<td></td>
<td>The lighting is extremely good.</td>
</tr>
<tr>
<td>20</td>
<td>A lot of people seem to be just be putting in time.</td>
<td></td>
<td>People look forward to work.</td>
</tr>
<tr>
<td>21</td>
<td>People don't care about each other.</td>
<td></td>
<td>People take a personal interest in each other.</td>
</tr>
<tr>
<td>22</td>
<td>Supervisors tend to discourage criticisms from employees.</td>
<td></td>
<td>Supervisors encourage criticisms from employees.</td>
</tr>
<tr>
<td>23</td>
<td>Employees are discouraged from making their own decisions.</td>
<td></td>
<td>Employees are encouraged to make their own decisions.</td>
</tr>
</tbody>
</table>
25. Things always get "put off till tomorrow."
26. People cannot afford to relax.
27. Rules and regulations are somewhat vague and ambiguous.
28. People are expected to follow set rules in doing their work.
29. This place would be the last place to try out a new idea.
30. Workspace is awfully crowded.
31. People don't take pride in the organization.
32. Employees rarely do things together after work.
33. Supervisors don't give credit to employees for their ideas.
34. People can't use their own initiative to do things.
35. This is an inefficient, nonwork-oriented place.
36. Everyone works too hard.

Things rarely get "put off till tomorrow."
People can afford to relax.
Rules and regulations are clear and concise.
People are not expected to follow set rules in doing their work.
This place would be one of the first to try out a new idea.
The work space is not crowded.
People seem to take pride in the organization.
Employees usually do things together after work.
Supervisors usually give full credit to ideas contributed by employees.
People can use their own initiative to do things.
This is a highly efficient, work-oriented place.
Nobody works too hard.
<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Score</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>Supervisors' responsibilities are not clearly defined.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>38</td>
<td>Supervisors keep a rather close watch on employees.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>39</td>
<td>Variety and change are not particularly important.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>40</td>
<td>This place looks old.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>41</td>
<td>People don't put in a lot of effort.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>42</td>
<td>People usually hide how they feel.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>43</td>
<td>Supervisors often criticize employees over minor things.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>44</td>
<td>Supervisors discourage employees from relying on themselves when a problem arises.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>45</td>
<td>People don't care if they get a lot of work done.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>46</td>
<td>There is a lot of time pressure.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
<tr>
<td>47</td>
<td>Jobs are usually not explained to employees.</td>
<td>1</td>
<td>2 3 4</td>
<td>5 6 7</td>
</tr>
</tbody>
</table>

The responsibilities of supervisors are clearly defined.

Supervisors do not watch employees.

Variety and change are important.

This place has a stylish and modern appearance.

People put quite a lot of effort into what they do.

People are generally frank about how they feel.

Supervisors rarely criticize employees over minor things.

Supervisors encourage employees to rely on themselves when a problem arises.

Getting a lot of work done is important to people.

There is no time pressure.

The details of assigned jobs are generally explained to employees.
<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>48.</td>
<td>Rules and regulations are always well enforced.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>49.</td>
<td>The same methods have been used for quite a long time.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>50.</td>
<td>The place could stand some new interior decorations.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>51.</td>
<td>Few people ever volunteer.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>52.</td>
<td>Employees never eat lunch together.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>53.</td>
<td>Employees can’t ask for a raise.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>54.</td>
<td>Employees generally do not try to be unique and different.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>55.</td>
<td>There’s an emphasis on “work before play.”</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>56.</td>
<td>It is very hard to keep up with your workload.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>57.</td>
<td>Employees are often confused about exactly what they are supposed to do.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>58.</td>
<td>Supervisors are always checking on employees and supervise them very closely.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>59.</td>
<td>New approaches to things are rarely tried.</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Rules and regulations are not enforced.
New methods are used all the time.
New interior decorations are not needed.
People always volunteer.
Employees often eat lunch together.
Employees generally feel free to ask for a raise.
Employees do try to be unique and different.
There isn’t an emphasis on "work before play."
It is easy to keep up with your workload.
Employees are usually clear on what to do.
Supervisors rarely check on employees or supervise them.
New approaches to things are always tried.
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>60. The place is dreary.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>61. It is a boring place.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>62. Employees who differ greatly from the others in the organization don't get on well.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>63. Supervisors expect far too much from employees.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>64. Employees only learn what they need for the current job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>65. Employees don't work hard.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>66. You have to work very fast to get your work done.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>67. Fringe benefits are not explained to employees.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>68. Supervisors do not often give in to employee pressure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>69. Things tend to stay just about the same.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>70. It is rather drafty at times.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>71. It's hard to get people to do any extra work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

The colors and decorations make the place warm and cheerful to work in.

It is quite a lively place.

Individual differences don't affect how people do in the organization.

Supervisors don't expect too much from employees.

Employees are encouraged to learn things even if they are not directly related to the job.

Employees work very hard.

You can take it easy and still get your work done.

Fringe benefits are fully explained to employees.

Supervisors do give in to employee pressure.

Things usually change.

It is not drafty.

People volunteer to do extra work.
|   | Employees don't talk to each other about their personal problems. 1 2 3 4 5 6 7 | Employees often talk to each other about their personal problems.  
|   | Employees don't discuss their personal problems with supervisors. 1 2 3 4 5 6 7 | Employees discuss their personal problems with supervisors.  
|   | Employees don't function independently of supervisors. 1 2 3 4 5 6 7 | Employees function fairly independently of supervisors.  
|   | People seem to be quite inefficient. 1 2 3 4 5 6 7 | People are efficient.  
|   | There are always deadlines to be met. 1 2 3 4 5 6 7 | There are rarely deadlines to be met.  
|   | Rules and policies are constantly changing. 1 2 3 4 5 6 7 | Rules and policies are consistant.  
|   | Employees are expected to conform rather strictly to the rules and customs. 1 2 3 4 5 6 7 | Employees don't have to conform to the rules and customs.  
|   | There is a stale atmosphere about the place. 1 2 3 4 5 6 7 | There is a fresh, novel atmosphere about the place.  
|   | The furniture is poorly arranged. 1 2 3 4 5 6 7 | The furniture is usually well-arranged.  
|   | The work is boring. 1 2 3 4 5 6 7 | The work is usually very interesting.  
|   | Often people make trouble by talking behind others' backs. 1 2 3 4 5 6 7 | People don't talk behind each others backs.  
<p>|   | Supervisors don't stand up for their people. 1 2 3 4 5 6 7 | Supervisors really stand up for their people. |</p>
<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>84.</td>
<td><strong>Supervisors don't discuss future work goals with employees.</strong></td>
<td></td>
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<tr>
<td>85.</td>
<td><strong>There's a tendency for people to come to work late.</strong></td>
<td></td>
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<tr>
<td>86.</td>
<td><strong>People often have to work overtime to get their work done.</strong></td>
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<td></td>
</tr>
<tr>
<td>87.</td>
<td><strong>Employees are not encouraged to be neat and orderly.</strong></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>88.</td>
<td><strong>Employees can't make up time if they are late.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89.</td>
<td><strong>Things never change.</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>90.</td>
<td><strong>Rooms are stuffy.</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Supervisors meet regularly with employees to discuss their future work goals.

People come to work on time.

People don't have to work overtime to get their work done.

Supervisors encourage employees to be neat and orderly.

If an employee comes in late, he can make it up by staying late.

Things always seem to be changing.

The rooms are well ventilated.
Appendix C

Goal Attainment Questionnaire

Many of you completed the Work Environment Scale a few weeks ago. In doing so, you were promised another questionnaire which would assess goal attainment. Please complete the following questions and return them in the self-addressed stamped envelope by July 8, 1992. If you still haven't returned the other questionnaire please return that one as well. If you did not receive the Work Environment Scale or if you lost it contact me at (714) 881-4168 and I will get one to you. All of your input is greatly valued and will, of course, be confidential.

1. My work group has not reduced costs.
   1  2  3  4  5  6  7
   My work group has reduced costs.

2. Yields have not increased.
   1  2  3  4  5  6  7
   Yields have increased.

3. My work group does not meet schedule.
   1  2  3  4  5  6  7
   My work group usually meets schedule.

4. Communication within my work group is poor.
   1  2  3  4  5  6  7
   Communication has improved within work group.

5. A bureaucratic management style is used.
   1  2  3  4  5  6  7
   A participative management style used.

6. The work environment is unpleasant.
   1  2  3  4  5  6  7
   The work environment is pleasant.

7. My work group has not improved the quality of the product.
   1  2  3  4  5  6  7
   My work group has improved the quality of the product.

8. Management dictates which process improvements will be implemented.
   1  2  3  4  5  6  7
   Process improvements are implemented without management interference.
References


