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FACTORS RELATING TO UPPER LEVEL EMPLOYEE
SUPPORT FOR ORGANIZATIONAL REDESIGN

THESIS

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

BY

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August, 1990

MB

Street, Amy, Factors Relating to Upper Level Employee Support for Organizational Redesign. Master of Science (Industrial/Organizational Psychology), August 1990, 137 pp., 9 tables, bibliography, 102 titles.

Successful implementation of organizational redesign depends on the support of employees at all levels of the organization. This study looked at some of the factors that are related to employee support for organizational redesign.

Subjects (82 support staff members of a small manufacturing plant undergoing organizational change) were administered a survey which measured employee perceptions about the change management process and the disruption the change caused to their daily routine. Eleven variables were assessed as independent variables in terms of their relationship to the dependent variable which was employee support of the organizational change. All eleven variables were significantly related to the dependent variable. The implications of these results and issues for further research was discussed.

TABLE OF CONTENTS

LIST OF TABLES	iv
Chapter	
I. INTRODUCTION	1
Statement of the Problem	
A Historical Look at Redesign	
Modern Organizational Redesign Theory	
Work Redesign	
Socio-Technical Redesign	
Self-Managing Work Teams	
Impact of SMWT's on Supervisor Resistance	
Implementation Strategies to Counter	
Resistance	
Phases of Implementation	
Individual Issues Around Change	
Summary of the Literature and	
Presentation of the Hypotheses	
II. METHOD	38
The Sample	
The Setting	
The Survey Instrument	
Survey Administration	
Data Analysis	
III. RESULTS	50
IV. DISCUSSION	62
Discussion of Subscales	
Intercorrelations Between the Process and	
Context Scales.	
Conclusions	
APPENDICES	85
REFERENCES	119

LIST OF TABLES

Table	Page
1 The Reliability Coefficients of Anderson's (1985) Process Variables	47
2 Means, Standard Deviations, and Reliability Coefficients of the Variables	51
3 Intercorrelations of Process Variables	52
4 Intercorrelations of the Context Variables	53
5 Intercorrelations between the Process and Context Variables	54
6 Pearson Correlations between Process Variables and Support Variables	57
7 Pearson Correlations between Context Variables and Support Variables	59
8 Summary of the Results	63
9 Multiple Regression Analysis	114

CHAPTER I

INTRODUCTION

Successful implementation of organizational redesign hinges upon gaining the support of employees at all levels of the organization (Hackman, 1975). Although work redesign has been proven successful in a number of situations (Ford, 1973; Walton, 1979), Hackman (1975) questioned whether work redesign would eventually be developed into a powerful tool for organizational change. Work redesign refers to altering the content or context of a job to improve individual and group performance and satisfaction (Hackman, 1975).

Current organizational redesign methods include job enrichment (Hackman & Oldham, 1980), socio-technical restructuring (Cherns, 1976), and quality of work life innovations (Cummings & Molloy, 1977). Job enrichment involves adding new tasks and responsibilities to a job. Herzberg's (1976) motivation-hygiene model provided the roots for job enrichment programs. Socio-technical restructuring of an organization involves simultaneous consideration of both social and technical aspects of the workplace (Cherns, 1976). Quality of work life (QWL) refers to the quality of the employee's relationship to his or her working environment. It has been defined as the

degree to which members of an organization are able to satisfy personal needs through their work in the organization (Suttle, 1976).

Although the theoretical bases of the three redesign methods mentioned above differ, all three methods affect the basic relationship between the employees and their job. The effect of redesign on employees will vary depending on their level in the organizational hierarchy (Moch, 1977). For example, a line worker adjusting to new job tasks in an enriched job will have very different reactions to the redesign program than middle managers who might be adjusting to increasing the amount of work they delegate to subordinates. Therefore, worker resistance cannot be addressed unidimensionally across the organization (Trist, 1977).

If efforts to introduce change in organizations are to succeed, practitioners must demonstrate sensitivity to the interests and concerns of all major constituency groups (Mire, 1979). To date, the preponderance of research focuses on lower level employee resistance (Anderson & Terborg, 1988; Friedlander & Brown, 1974; Pasmore, Frances & Haldeman, 1982; Strivastva, Salipante, Cummings, Notz, Bigelow & Waters, 1975). Only a few studies have investigated upper level employee resistance (Kerr, Hill & Broedling, 1986; Klein, 1984; Walton & Schlesinger, 1979). Integrating upper level employees, including supervisors,

into redesign programs is often the most elusive task in a change effort (Bean, Ordowich & Westley, 1985).

Statement of the Problem

Much of the research on organizational redesign has focused on an attempt to determine tactics that management might use to prevent worker resistance (Taylor, 1977; Friedlander & Brown, 1974; Pasmore et al., 1982; Strivastva et al., 1975; Walton et al. 1979). Some of the management tactics suggested in the literature include effective communication of the need for change, demonstration of strong managerial commitment, and allocation of adequate resources (financial and time) for the change (Pasmore, 1982).

Much of the research on management tactics stems from the assumption that employee support for work redesign hinges principally on the processes used to introduce change (Howes, 1978). Anderson and Terborg (1988) countered this assumption, finding that lower level employee beliefs about the negative impact of the redesign program on the work context was an important predictor of their support for the change. Anderson and Terborg's research seems to suggest that even a redesign program that is well managed during implementation will not succeed if employees perceive the change as disruptive to personally valued aspects of their jobs.

Anderson and Terborg's (1988) research highlights an additional factor to consider during organizational

redesign. This factor involves individual perceptions about the impact of change on their personal situations at work. Anderson and Terborg's research, however, only examined lower level employees. Research has shown that employees have differing attitudes depending on their position in the organization (Moch, 1977; Olson & Tetrick, 1988); therefore, an investigation of employee attitudes to redesign is warranted at all levels of the organization.

Empirical consideration of upper management perceptions toward work redesign is not addressed in the literature. The literature pertaining to supervisor and middle management resistance to redesign programs is very limited and only descriptive in its approach (Klein, 1984; Walton & Schlesinger, 1979). It is the purpose of this study to empirically investigate the attitudes and beliefs of upper level employees facing organizational redesign around self managing work teams (SMWT's).

An Historical Look at Redesign

The changes facing upper level employees in modern redesign interventions become salient when the history of organizational redesign is considered. Modern design theory has its roots in Taylor's scientific management model (Taylor, 1911). The problems facing management in Taylor's day were quite different from problems faced by management today. For Taylor the principal problem lay in the lack of knowledge possessed by managers:

And yet these foremen and superintendents know, better than anyone else, that their own knowledge and personal skill falls short of the combined knowledge and dexterity of all the workmen under them. The most experienced managers therefore frankly place before their workmen the problem of doing the work in the best and most economical way. (Taylor, 1911, 32-33.)

The problem that preoccupied Taylor was the workers' abuse of the control that they had been given. In the pursuit of their own self-interest, workers restricted output, concealed from management how fast jobs could really be done, and created norms among peers for production rates.

The essence of Taylor's scientific management was the replacement of worker's control by a management that gave the orders, directed the work, and monitored the results of that work. Taylor emphasized that the work of the lower level employee should be specialized, standardized, and simplified (Taylor, 1911).

There were several components to Taylor's scientific management. The first component was the reintroduction of Adam Smith's principle of the division of labor. To reestablish management control, time and motion studies were performed to simplify tasks. In other words the "brain power" was removed from the shop floor and the lower

level employees no longer determined how work was to be done.

A second component of scientific management was the introduction of a piecework compensation system. Workers were given economic incentives for performing their work quickly and efficiently.

Taylor's ideas were exceedingly influential in reshaping American industry. In fact many scholars argue that Taylor's methods and theories still provide direction for many present day managerial practices (Braverman, 1974).

Modern Organizational Redesign Theory

Modern design theorists (Hackman & Oldham, 1980; Lawler, 1986) have shifted from the dictatorial approach of scientific management. Several aspects of today's business environment have necessitated a more participative approach (Lawler, 1986). For example, Drucker (1980) describes today's leader as "managing in turbulent times" due to a growing technological innovation and the international market. Contemporary managers, particularly those in rapidly changing industries, are often unable to process all of the knowledge necessary to make intelligent decisions by themselves. Increasingly, the managerial role is that of integrating the knowledge and talent of specialists in different organizational functions (Lawler, 1986).

Another aspect of today's business environment that contrasts sharply with the early 19th century, is the composition of today's labor force. The employees not only possess the desire to participate, but also have greater capabilities because they are more highly educated (Hackman & Oldham, 1980).

Two major structural redesign interventions, job redesign and the socio-technical systems approach, are considered capable of meeting many of the current environmental demands (Pasmore, 1982; Margulies, Wright, & Scholl, 1977). Work redesign is aimed primarily at the level of the individual, seeking ways to improve work through increased variety, autonomy, task completeness, task importance, and feedback on performance (Hackman & Oldham, 1980). The socio-technical systems approach considers both the relationships between people and technology, and between the organization and the environment (Cummings, 1978).

Work Redesign

Work redesign has received a great deal of attention throughout the 70's and 80's. The theoretical basis of work redesign evolved from the research of Hackman and Oldham (1980). Basically, work redesign attempts to correct the mismatch that often exists between employees potential and the opportunities of their jobs. Research shows (Hackman & Oldham, 1980) that most employees desire

and value jobs that are complex and challenging. Unfortunately, challenging jobs are often not plentiful in traditionally designed manufacturing organizations.

A key component of work redesign is job enrichment. Job enrichment involves the redesigning of a job so it has more variety, requires a higher level of knowledge and skill, gives the employee more responsibility for planning, and provides for personal growth (Hackman & Oldham, 1980).

Job enrichment efforts began in the U.S. with the pioneering research of people like Frederick Herzberg and Lois Davis (as cited by Hackman, 1975). Early experimentation with the technique was very successful. The job enrichment efforts at AT&T (Ford, 1973) furnished documented over a seven year period and were the first published accounts of the process. In the AT&T studies, both whitecollar and bluecollar jobs were enriched to bolster employee motivation, as well as improve efficiency and productivity and reduce turnover.

There are five components to work redesign (Hackman & Oldham, 1980). First, skill variety refers to the degree to which a job requires a variety of different activities in carrying out the work. Second, task identity is the degree to which a job requires the completion of a whole task. A whole task involves building a product from beginning to end. Third, task significance is the degree to which a job has significant impact on the lives of

others. A job that is perceived by employees as affecting the health or happiness of others has high impact and is consequently significant to the job holder. Fourth, autonomy is the degree to which a job provides freedom. A job is considered high in autonomy when the work outcomes are viewed as depending substantially on the efforts of the job incumbent. Fifth, task feedback is the degree to which job performance elicits immediate feedback.

In summary, work redesign attempts improve the motivation, satisfaction, and performance of organizational members. Although work redesign deals with individual jobs, it's theoretical and organizational implications are much broader. Often, work redesign is utilized as a point of departure for initiating broadscale organizational change (Hackman & Oldham, 1980) Work redesign is a unique approach to organizational change in that the job itself is changed, precipitating changes in employee beliefs, attitudes, and skills (Hackman & Oldham, 1980).

Socio-Technical Redesign

Socio-technical design involves the analysis of human and technical relationships. Work arrangements are designed to improve the fit between the needs of the individual, work groups, and technological processes in the pursuit of organizational goals (Cummings, 1978).

Since the classic studies of the British coal mining industry were first reported by Trist and Bamforth (1951),

interest in socio-technical system methods of work restructuring has grown geometrically. The term socio-technical system was coined by Trist et al. (1951) to describe a method of viewing organizations that emphasize the interrelatedness of the social and technological subsystems of the organization and the relation of the organization as a whole to the environment.

Organizations must interact with their environments to survive (Cummings, 1978). The open system perspective implies the need to analyze organizational transactions with the environment so that adaptability can be built into the organization (Pasmore, 1982).

The term system implies that all aspects of the organization are interrelated, so that the design of one aspect of the organization affects the operation of another. In the context of socio-technical design, the open system perspective implies that the social and technological subsystems of the organization must be designed not only in relation to each other, but also with consideration for present and future environmental demands (Pasmore & Sherwood, 1978)

There are a number of principles that are specific to socio-technical theory. It is important to consider these principles when examining upper level worker resistance. Implementation of socio-technical principles has enormous impact on upper level jobs. The impact can be positive if

the interests and concerns of these employees are taken into consideration. Negative consequences might include loss of status in the organization or loss of control over subordinates (Manz & Keating, 1990b).

The first socio-technical principle is minimal critical specification (Cherns, 1976), and has two aspects, both negative and positive. The negative simply states that no more should be specified in organizational design than is absolutely necessary. The positive states that one needs to identify what is essential. While it may be necessary to be quite precise about what is done, it is not necessary to be precise about how it is done (Cherns, 1976).

In a socio-technical system, the information systems should be designed to provide information where it is needed. Properly directed, sophisticated information systems can supply a work team with exactly the right type and amount of feedback to enable them to learn to control the variances as quickly as possible. Designers must determine which information is appropriate for the higher levels of management and which is important for the lower levels (Cherns, 1976).

Another socio-technical principle is controlling variances at their source (Cherns, 1976). This principle states that variances, if they cannot be eliminated, must be controlled as near to their point of origin as

possible. Variance is any unprogrammed event in the manufacturing process. Frequently, this implies that low level employees must be allowed to conduct their own maintenance, quality control, supply, and other functions. They must have access to information that might otherwise be reserved for their supervisors and upper management.

The multifunctional principle in socio-technical systems refers to organism vs. mechanism (Cherns, 1976). The traditional organization is highly mechanistic and relies heavily on redundancy of functions. It requires people to repeatedly perform specialized and fragmented tasks. Although turnover is high, people are easily replaced and retrained. Disadvantages arise when a wide range of responses are required from the workforce. This usually occurs when the external environment becomes dynamic. A dynamic external environment requires an organization to become more organismic (Cherns, 1976). The work becomes less fragmented, and organizational members perform more than one function.

Close attention is given to the management of boundaries in a socio-technical system (Cherns, 1976). It is very important to successfully manage the boundaries between departments. Otherwise the boundaries will interfere with the desirable sharing of knowledge and experience. Proper management of organizational boundaries is accomplished when more control of activities within the

department becomes the responsibility of the members and the role of the supervisor becomes focused on boundary activities. That is, ensuring that each team has the information and resources to perform its job successfully.

Self-Managing Work Teams

Although no single definition of self-managing work teams (SMWT's) prevails, the central defining characteristic of a self managing team is a high degree of decision-making power and opportunities for self-control within a work group (Cummings, 1978; Hackman, 1980).

There are three basic characteristics of self-managing teams (Manz, 1990). First, workers are often organized into teams according to some natural combination of steps in the work flow. Consequently, self-managing teams usually are responsible for a relatively whole task. Second, teams are typically provided with a substantial degree of decision making autonomy and control over their work behavior. For example, team members may decide on their collective task schedules, work methods, and individual assignments within the group. Third, each team is responsible for assessing the quality and quantity of group performance. Organizational communications and performance feedback are directed to each team to allow group self-appraisal.

The underlying theory for self-managing work teams stems from both basic job design literature and

socio-technical systems theory. Self-managing work teams accommodate almost all of the specifications included in the Job Characteristics Model: (Hackman & Oldham, 1980) skill variety, task identity, task significance, autonomy, and feedback. Similarly, self-managing work teams are compatible with socio-technical systems approach.

Theoretically, a self-managing work team design can simultaneously optimize both the social (e.g., quality of work life for employees) and technical (e.g. organizational efficiency) aspects of the organization (Emery and Trist, 1969; Sussman, 1976).

Positive effects of self-managing teams are documented by Walton (1977). He researched the self-managing work groups at Gaines Dry Dogfood Plant in Topeka, Kansas. Included in his major findings were:

1. The savings due to work group innovation amounted to nearly a million dollars per year.
2. Under the group design, the plant went 1.3 million working hours without a "lost-time" accident.
3. Absenteeism remained below 1.4% during the period 1971-1974.
4. Turnover through the period averaged 10% per year.

Implementation of self-managing teams is occurring in a growing number of companies. Estimates of the number of companies that have tried the approach run as high as 300 firms (Manz, 1990). Procter and Gamble began its work in

this area in early 1960 and is perhaps the leader in seriously applying the self-managing team approach in the United States (Walton, 1985).

The Impact of SMWT's on the Supervisor

Peter Drucker (1983) noted that "no job is going to change more in the next decade than that of the first line supervisor. And few people in the work force are less prepared for the changes and less likely to welcome them" (p. 28). There is quite a bit of information in the literature concerning the nature of the changes that face upper level employees as they adjust to a self managed work environment. Since many of these changes require dramatic shifts in the supervisor role and responsibilities, this information may be useful in speculating about possible reasons for upper level employee resistance. However, none of the literature empirically relates these massive changes to supervisor resistance.

Most of the literature on upper level employee resistance focuses on the supervisor (Walton, 1975). The support staff and middle management is largely ignored in the literature. Support staff is a term that will be used in this paper to refer to a variety of positions in the manufacturing setting. These positions are held by employees that have been promoted from the manufacturing line. Examples of their duties include providing materials, tools, and assembly instructions to line workers.

A brief description of the traditional supervisor role highlights the magnitude of the changes faced by supervisors adjusting to working with self managing work teams. The traditional role of the supervisor has been that of keeping problems from filtering up the hierarchy. (Manz, 1990). The traditional supervisor performs narrow duties and controls a small area in the organization. In addition, they do not enter into meaningful decision making but merely implement decisions made by others (Wray, 1949). The traditional supervisor must assign tasks to others and monitor performance. Consequently, the supervisor must take responsibility for their own actions as well as subordinate actions.

There are few similarities between the role of the traditional supervisor and the role of the supervisor in an SMWT setting. The changes include adjustment to increased autonomy, increased feedback, the merging of staff and line positions, decision making responsibilities pushed to lower levels, emphasis on group activities and accountabilities rather than on individual performance, teamwork in problem solving and implementation, and the move from activity based jobs to more conceptual roles (Bamlette, 1984).

The supervisor in a SMWT environment does not intercept and resolve problems that develop on the line. Instead the supervisor must allow the self managed team to resolve its own problems. The supervisor is required to

supply the team with the necessary information to solve the problem but to refrain from directing team decisions.

The supervisor in a SMWT environment will be required to perform a wide range of tasks. In fact, the SMWT will determine the tasks of the supervisor. That is, the supervisor must act in a manner that is supportive of the teams efforts.

In addition to the changes mentioned above, supervisors must adjust to the fact that their roles in relation to the self-managing work team is often not well defined (Walton et al. 1979). Even when the supervisor's new role is well defined, confusion still exists because often there is an organizational plan for the evolution of the supervisory role from the start-up mode (newly formed SMWT) to that which is ultimately required for the support of a self-managing team. Consequently, the supervisors are in a constant state of role flux.

Supervisor Resistance

It is clear that first-level management practices are a critical factor in establishing and maintaining work redesign interventions. (Cummings, 1978; Davis & Valfer, 1965; Griffin, 1981; Slocum & Sims, 1980; Susman, 1976; Wall, 1980). Based on the literature presented in the previous section; however, it is clear that supervisors and middle management have to go through enormous change to function in a self managing work team setting. Any of the

issues discussed above (loss of power and status, role ambiguity, or inability to perform the new skills required) could account for supervisor resistance to redesign programs. Specific issues have been noted in the literature; however, there is no research empirically linking these issues to resistance.

Supervisors are often overlooked during the implementation of a redesign program (Manz, 1990). Supervisors have voiced disappointment, because all the attention is focused on the self managing work teams. The teams generally get most of the training opportunities and rewards from management (Manz, 1990; Walton et al., 1979). Often supervisors feel that their concerns are not attended to as readily as other group concerns in the organization. In one study, Walton (1974) found nearly three-quarters (72%) of the supervisors viewed participative programs as being good for their companies and more than half (60%) saw them as good for the assembly staff, but less than a third (31%) viewed them as beneficial to themselves.

Manz (1990) reported several issues raised by resentful supervisors and middle management. The sources of concern included the feeling that past personnel failures were the reason for the introduction of the change program, and the belief that the new system would fail.

Supervisors have experienced a steady erosion of status and power and are often extremely resistant to

anything that might further undermine their sense of worth (Manz, 1987); for example, the deterioration of their role and the expanding rights of the lower level workers. Also, redesign programs flatten the organizational structure which supervisors may interpret as providing fewer and fewer possibilities for advancement.

Another factor that might lead to supervisor resistance is the perception that they do not have the skills to successfully perform the new job (Walton et al., 1979). For instance, supervisors may be expected to lead meetings with various teams and have no skills in the area of meeting management.

Klein (1984) described three sources of supervisory resistance in her research. The first source of resistance was job insecurity. When plants move to self managing work teams, often management guarantees that the new organizational structure will pose no threat to the job security of the hourly workers, but no such promise is made to the supervisors.

A second area of concern for these supervisors was job definition. In one plant, management took more than three years to clearly articulate what it expected of first line supervisors (Walton et al., 1979).

A third area of concern is the additional work generated by implementing participative programs. For instance, supervisors are often responsible for team development and training.

Implementation Strategies

Applications of job redesign and socio-technical redesign are reported to be successful. A review of the literature by Pasmore (1982) found that nearly 90 percent of the reports of work restructuring interventions cited improvements in productivity, costs, absenteeism, attitudes, and quality. However, these findings are deceptive, because failures are rarely reported in the literature (Pasmore 1982).

Walton (1979) reviewed 12 efforts at work restructuring and found that three had failed, while several others had regressed. Hall, Goodale, Rabinowitz, and Morgan (1979) reported a field study of the effects of job redesign on effort, performance, and satisfaction. They found more favorable work attitudes where no change had occurred. In the unsuccessful cases reported in the literature there seems to be no clear distinction between the efforts that succeed from those that fail (Pasmore, 1982).

The vast majority of written reports on organizational redesign have given "black-box treatment" to the actual process of implementation. While the setting, theory, reasons for change, and outcomes are usually specified, relatively little is said about the actions taken and the difficulties (including worker resistance) encountered along the way (Pasmore, 1982). Griener (1967) pointed out

the need to understand the change process, especially in terms of which approaches lead to successful changes and which actions fail to achieve desired results.

Phases of Implementation

Although it is not always clear what factors lead to successful implementation of a redesign program, it appears that employee resistance almost always has detrimental effects (Englstad, 1978). Much of the literature addresses various phases of implementation with the notion that if each phase is handled correctly, employee resistance will be kept to a minimum (Howes, 1978). Pasmore (1982) breaks the implementation process into three phases: (1) The preconditions that set the stage for the intervention to take place, (2) the quality of the effort itself, and (3) the continuity of the effort throughout implementation. The first phase of this process will be the focus of this research.

Change theorists (Bennis, Benne, & Chin, 1961; Lewin, 1951; Pasmore, 1982) believe that the primary precursor to successful implementation is an understanding by organizational members of the need for change. The basic assumption of this theory is that a person's desire for change can be influenced if appropriate marketing strategies are followed (Howes, 1978). For example, presenting the redesign program in a manner such that its relative advantage over the present organizational

structure is apparent (Lippitt, 1967; Moore & Mizata, 1969; Rogers & Shoemaker, 1971).

Another precondition for successful implementation is a demonstration of strong managerial commitment (Pasmore, 1982). A great many researchers have found that innovations are more likely to be accepted by the employees if there is administrative support (Hage & Aiken, 1967; Pasmore, 1982).

An additional precondition for successful implementation is the allotment of adequate resources for the change. This includes financial resources as well as time resources (Pasmore, 1982). Time must be set aside to provide organizational members an adequate introduction to the change (Howes, 1974; Kelley, 1976).

A final factor in the preparation phase is providing organizational members with a clear plan for the redesign, including clear objectives and relevant training (Goldstein, 1978; Nurick, 1982; Pasmore, 1982; Weick, 1977). In other words, there is likely to be less resistance to implementation efforts if employees perceive management as having a strong sense of direction.

Collaboration seems to be another precondition that characterizes successful change efforts. Perlak (1972) suggests that participation in the change process by all those who are affected by it is the best way to prevent resistance. Seeborg, (1978) studied the influence of

employee participation in job redesign. He investigated whether employees would show the same affective reactions to both supervisor and self designed jobs. Satisfaction measures increased under the more participative method. Identical changes were perceived to be better by employees who participated in job design.

Specific strategies for the implementation of self-managing work teams are outlined by Katz (1982). First, there must be publicized external support. Managerial levels of the organization must make their commitment to the program and to the personnel involved clear and public. Second, the members of the SMWT need initial training in group decision making and the job skills necessary for taking on a multiple skill task. Third, groups are known to develop certain norms which may limit the impact of the training because of resistance to a change in traditional routines. It may be necessary during initial phases of a self-managing work team implementation to provide incentives for adapting new routines. Fourth, in newly formed groups, both group members and external coaches need to be aware of the stages of development that have been observed in group development.

Individual Issues Around Change

Careful management of the change process has been shown to increase the probability of success of redesign programs (Pasmore et al., 1982). The fact that

organizational redesign strategies have been around for the past 20 years, but have been successfully implemented in relatively few organizations, suggests that there are other factors preventing widespread success (Hackman, 1975). Implementation strategies described above seem to have consequences that are not anticipated in the management of change and organizational redesign literature, such as the lack of top management support, and supervisors and middle management feeling "threatened by the changes" (Bolweg, 1976).

Rather than focusing on specific methodologies for implementing change, another branch of the literature addresses the issue of employee resistance to change in a very different way. This perspective focuses on understanding and acknowledging the individual reactions to change (Bridges, 1986; Connor, 1982; Owen, 1985). The assumption here is that resistance is a natural consequence of change. This is a dramatic contrast from implementation strategies that attempt to prevent resistance from occurring. Implicit in such attempts is the notion that resistance represents failure on the part of management to properly introduce the change. Instead, resistance (Connor, 1982) can be considered a part of the change process. In fact overt resistance can be viewed as necessary because open expression of employee concerns allows management the opportunity to openly discuss these

concerns. Conner (1982) states that unless employees actually go through the process of emotionally dealing with change no real change will occur.

The literature describes individual issues that are a natural consequence of the change process. Included is the issue of personal loss (Bridges, 1986; Owen, 1986; Weinbach, 1984). Esty (1987) describes several types of loss that are experienced by employees dealing with change. These include loss of familiarity, security, and mechanisms of control. Miller and Labovits (1973) found that the strongest influence on employee resistance was the attempt to preserve rewarding social exchanges with other employees.

Summary of the Literature and Presentation of the Hypotheses

There is a scarcity of empirical information on the concerns and beliefs of supervisors, middle management and support staff facing socio-technical change. There are some references in the literature to the concerns of supervisors and middle management in self-managing work team settings but these are purely descriptive and not empirically linked to resistance.

There is no reference to issues pertinent to the support staff in the literature, the issues specific to supervisors and middle management that are presented in the

literature should be incorporated into an empirical study. Some of these issues include declining status in the organization, role ambiguity, and too much free time (Walton, 1979).

The literature suggests two frameworks for understanding supervisor, middle management, and support staff resistance. The first focuses on the process of implementing the change. This framework has extensive coverage in the literature (Pasmore, 1982). The second framework has received considerably less attention in the literature but could possibly make up for some of the deficiencies in the first framework. It deals with the individual reactions to the disruptive aspects of change (Anderson & Terborg, 1988; Bridges, 1982; Cheney, 1989; Owen, 1986).

Eleven variables are to be assessed in the present study. Hypotheses for the eleven variables are presented below, five of which focus on the management of the change process. The remaining six hypotheses focus on individual beliefs concerning the impact of the change on the work environment. The purpose of this study is to determine the relationship of each of the variables to employee support for the SMWT redesign program.

The first five hypotheses were adopted from Anderson's (1985) research with his permission. Conceptually, these hypotheses can be grouped within the first framework

described above, the process of implementing change. The remaining six hypotheses are based on six themes that were generated from the employee interviews conducted at the manufacturing plant in which the present study is to take place. A full description of the interviewing process will precede presentation of the six hypotheses. These hypotheses are grouped within the second framework mentioned above which addresses individual reactions to the disruptive aspects of change.

The hypotheses addressing the change management process are presented below. Preceding each hypothesis is a brief summary of relevant research.

Numerous theorists (Bennis, Benne, & Chin 1961; Lewin, 1951; Pasmore, 1982) state that the primary precursor to successful implementation is an understanding by organizational members of the need for change.

Hypothesis 1. A significant relationship is likely to exist between an employee's perception of the need for change and their subsequent support.

Seeborg (1978) studied the influence of employee participation in job redesign. Changes were perceived as preferable by employees who were allowed to participate in job redesign. Perlak (1972) suggests that participation in the change process by all those who are effected by it is the best way to prevent resistance.

Hypothesis 2. A significant relationship is likely to exist between an employee's perception of management collaboration during a change effort and that employee's subsequent support.

Another precondition for successful implementation is a demonstration of managerial commitment (Pasmore, 1982). Hage and Aiden (1967) found that innovations are more likely to be accepted by the employees if there is administrative support.

Hypothesis 3. A significant relationship is likely to exist between an employee's perception that management is highly committed to a change effort and that employee's subsequent support.

Another factor in successful change is providing organizational members with a clear plan for the redesign intervention (Goldstein, 1978; Nurick, 1982; Pasmore, 1982; Weick, 1977). This should include clear objectives and relevant training.

Hypothesis 4. A significant relationship is likely to exist between an employee's perception of a clear plan for change and that employee's subsequent support.

The expectations of the employees must also be managed during the preparation phase. The expectations about the outcomes should be realistic and deliverable (Archer, 1975; King, 1982) The goals and impact of the change should be clarified (Thompson, 1965; Lauer & Thomas, 1976).

Hypothesis 5. A significant relationship is likely to exist between an employee's perception that the change

program is in line with their expectations and subsequent employee support.

Support Staff Interviews. Preliminary data on individual reactions in the support staff to SMWT's were generated through thirty interviews conducted at a manufacturing plant site (33% of the support staff). Although Anderson (1985) identified several issues around individual reactions to change, the present study will attempt to identify reactions specific to the plant in the present research so that specific factors influencing these variables will be more easily identified. The limited coverage of this topic in the literature suggests the need to expand the exploratory explanations with empirical research. Such a procedure coincides with Stone's (1978) model of scientific method as consisting of a cycle of induction, deduction, and verification.

The plant manager was very supportive of the support staff interviews. One year into the planning stage of the redesign program, it became clear that the support staff had been overlooked. The plant manager requested that personnel in the human resources department of the parent organization conduct the interviews. The interviews were conducted by the researcher (26 interviews) and another member of the human resources department (4 interviews). The data generated from the employee interviews was the basis for the remaining six hypotheses which will be presented below.

Interview Process. During the interviews, each of the employees was asked five broad questions (see Appendix B). These questions were based on several of the issues raised in the resistance literature (Conner, 1982). In addition to these five broad questions, the plant manager added several questions to determine the employee's stance on a number of specific topics related to the SMWT's.

The interviews took place over a period of three days. Each interview lasted about thirty minutes. The employees came individually during their regular shift to be interviewed. The interviews were conducted in a room in which only the interviewer and employee were present. The interviewer wrote down employee responses verbatim.

The manufacturing plant in which these interviews were conducted is small (380 employees). Without exception, all employees interviewed had a very positive attitude about their job and enjoyed working at the plant. The employees also claimed to trust upper management, and appeared to feel comfortable giving both positive and negative statements concerning the redesign program.

Even though employees were generally trusting of management, a number of employees were concerned about maintaining their confidentiality. Employees were assured that their names would not appear anywhere in the report that was to be presented to the plant manager. In one extreme case, an employee communicated considerable concern

to the interviewer about his confidentiality. The employee felt that the statements he made during the interview were very self damaging and could jeopardize his job. He felt that his identity could be determined because of the nature of the comments. The interviewer offered to destroy the transcript of the interview. Instead, the employee and the interviewer reviewed the transcript of the interview, deleting passages that the employee perceived as self damaging.

Minimal information was shared with the employees about the redesign program. The interview was not intended to educate employees. There were a few instances in which the interviewer attempted to clarify some extreme misperceptions and misinformation among employees.

There were a number of employees who claimed to know very little about the redesign program. They stated that they could not really give an opinion about the program, because they really did not know how their job would be affected. If the employee did not know much about the redesign program the interviewer presented several scenarios of what life might be like in one or two years, and the employee was asked to respond. This was not necessary with most of the employees, because once they began to think through the questions, they realized that they knew quite a bit about the redesign program. Most employees realized that their jobs would change drastically in the future.

Content Analysis of Interview Data. The transcripts of each interview were analyzed by the researcher, using methods adopted from the critical incidents technique (Flanagan, 1954). The process consisted of transferring each of the issues raised in the interviews onto a separate piece of paper. These papers were then sorted into groups according to thematic content. The cards were sorted on two separate occasions by the researcher. The sorted cards were then presented to two members of the human resources department of the parent organization to the manufacturing plant. The researcher incorporated the suggestions from this group. Afterwards the sorted cards were presented to seven members of the upper management at the plant in which the interviews took place. Again, the researcher made several revisions based on the advice of the management group at the manufacturing plant. Basically the revisions involved changing the language to better suit the participants in the survey. The management also discussed the relevance of the issues raised in the survey items to the redesign program.

Exploratory Hypotheses. The six exploratory hypotheses presented below are based on the themes that arose from the employee interviews. The first theme from the employee interviews is interpersonal tension. Many of the supervisors and members of the support staff perceive the redesign program as possibly increasing tension between the

workers. Employees with this concern made comments similar to the following: "If someone is not performing well on the team it will hold the whole team back." "I do not want the entire group to put pressure on me to do my job well." The following hypothesis was created to determine the impact of this issue on individual support for the redesign program (the dependent variable).

Hypothesis 6. A significant relationship is likely to exist between an employee's perception that the redesign program will not increase interpersonal tension and subsequent employee support.

The second theme is methods of setting new standards. Two of the aspects of the organization that are expected to change once self-managing work teams are established are the pay system and the appraisal system. This is done so that the reward system and appraisal system are consistent with the overall philosophy of the organization (Donavan, 1987). In other words, an organization that structures itself around self managing groups should judge performance based on group behavior rather than individual behavior.

A common model for pay systems in self managing settings is pay for knowledge (Donovan, 1987). In this system, pay increases are based on the amount of knowledge an employee possesses rather than the number of years of service, which is the common system in traditional organizations. In a self managing work team setting, the

appraisal system also changes. Instead of employees receiving their performance appraisals from their supervisor, the appraisal is often conducted by peers. These systems become very complex when incorporated into the work setting. The third theme involves issues around setting new standards for evaluating employee knowledge and performance. Some employees are very threatened by the unknowns surrounding the new pay standards and appraisal systems.

Comments from the employees were positive or negative depending on how disruptive they felt the new standards were to their situation. "Peer review will be more fair than the old system, because not just one person will be making decisions about a person's review." "I don't support a pay for knowledge system because it would mean a cut in pay for me".

Hypothesis 7. A significant relationship is likely to exist between an employee's comfort with the way that new standards are determined and subsequent employee support.

The third theme is individual recognition and status in the organization. Many employees expressed a concern about their status and means of achieving recognition in the workplace. These employees seem to feel that individual recognition can be achieved through outstanding productivity, personal expertise, or position in the organization. Many of the individuals interviewed

perceived the redesign effort as disruptive to the means by which they achieve individual recognition. Presently, the organization is shifting from rewarding individual contribution to rewarding group contribution. Support staff members that were concerned about this issue made comments similar to that quoted as follows: "I see myself as above average, I do not want my reviews based on group performance because then I will be rated the same as the average group member."

A more positive outlook on this issue was expressed by those that felt that their needs for recognition would be satisfied by some of the other opportunities made possible by the new organizational structure: "I see the Redesign Program as getting me out of a no win career position. Going back into a technical career is appealing. The Redesign Program will give me an opportunity to blend technical and management duties." "The Redesign Program will give me a chance to broaden my skills, I am currently topped out in my position."

Hypothesis 8. A significant relationship is likely to exist between an employee's perception that the redesign program is not disruptive to the ways in which they achieve status in the organization and subsequent employee support.

The fourth theme is general disruption of manufacturing methods. Many of the employees expressed concern over the disruptiveness of the redesign program to

the established manufacturing methods and general organizational effectiveness. "If they would just leave things the way they are we would be more productive." "The redesign program will work in the pilot study, but it won't work in other areas of the organization, because things are very inefficient there, and the redesign program will compound the problem."

Positive comments came from those who saw the redesign program as well-aligned with the organizational goals and a necessary change for the plant. "The key to the self-managing work teams is that everyone will share all jobs, and have an understanding of how it all fits together, and their creative ideas can significantly impact how work gets done."

Hypothesis 9. A significant relationship is likely to exist between the employee's perception that the redesign program is not disruptive to organizational methods and subsequent employee support.

The fifth theme is adjustment problems. Some employees expressed concern with the new expectations that are to be placed on them as a result of the redesign program. Their concerns seemed to center around increased work load, a more demanding job, and learning new skills. "I don't want my job to change, I have enough to do as it is, and I wish people would leave me alone, I was doing fine before all this."

Those that saw the changes in their job definitions as best for the organization and themselves expressed very positive statements about changes in their job definitions. "Multiple tasks will make the job more interesting and do away with the 'it's not my job syndrome'."

Hypothesis 10. A significant relationship is likely to exist between an employee's comfort with the amount of adjustment they must make in their current job definition and subsequent employee support.

The final variable is personal expertise. Many of the employees stated that they were concerned about the value of their personal expertise in the new self managing setting. In addition concerns were voiced around having to learn multiple skills, as some employees felt that they would not be able to perform any of the new skills well. Employees who felt this way made comments similar to this: "If I have to learn a lot of new jobs, my skills will be diluted".

Hypothesis 11. A significant relationship is likely to exist between an employee's perception that the redesign program will not interfere with personal expertise and subsequent employee support.

CHAPTER II

METHOD

The Sample

The data was collected from approximately 110 employees at a satellite plant of a major electronics manufacturing organization in the southwestern United States. The plant employs approximately 380 people.

The group, consisting of supervisors, middle management, and support staff, included both exempt and nonexempt employees. Exempt employees typically have a college education and nonexempt employees do not; however, there are exceptions to this distinction. Nonexempts are paid by the hour and exempts are salaried.

Much of the support staff is comprised of nonexempt employees that have been promoted from the line. They are not considered operators but work in a support capacity to the line. These employees generally provide the tools, assembly directions and other materials to workers on the assembly line. As one might guess from the language "promoted from the line", the support positions have higher status in the organization than the line positions.

The duties of the three different employee groups that are referenced throughout this paper (supervisor, middle management, and support staff) are very different from one

another. The supervisory duties in this particular plant are very traditional. The duties include administrative tasks, scheduling, hiring, and employee appraisals.

Middle management is comprised of employees that function in a technical and nontechnical capacity. The technically trained employees include design engineers, process engineers, and manufacturing engineers. The nontechnical employees are college educated in the area of management. These employees manage technicians and have a number of administrative obligations.

The support staff is also comprised of nonexempt technicians that work in the area of production control, tooling, or methods. These employees usually have been promoted from the line. Their duties include supplying the appropriate tools to employees on the manufacturing line, and improving general efficiency on the line.

The Setting

For the past year this manufacturing plant has lost business because of its inability to produce products at competitive prices. The redesign program is perceived as a means of drastically reducing cost by increasing efficiency and eventually producing a leaner organization (fewer levels of management).

The plant manager had read extensively about self managing work teams. He had also visited a number of other organizations that were currently utilizing self-managing work teams before implementing the change to SMWT's.

An external consultant visited the plant on a number of occasions. He provided the plant manager with materials containing a step by step plan for implementing self-managing work teams and socio-technical organizational redesign. He also conducted three training sessions on self-managing work teams and socio-technical principles. Employees from all levels of the organization attended the training.

About one year before the interview data was collected, a pilot self-managing team was established (twenty team members). The team was progressively allotted more of the duties typically performed by the supervisor and various members of the support staff.

One of the first responsibilities taken on by the team was interviewing job applicants. The team interviewed and hired several new employees. The new employees hired by the team have all received high ratings on their first performance appraisal indicating the team's ability to handle the traditional supervisory task of employee selection.

Next, the team will absorb the duties of production control (who are responsible for the procurement of parts for the line and production schedules) and methods technician (who provide assembly instructions). These duties are currently being performed by nonexempt members of the support staff. These nonexempt members of the

support staff will eventually train the team members and become a part of the team themselves or move to another support function.

A design team was established about six months before the self-managing team was created. The design team consists of 30 employees. Team members include upper management, as well as various members of the nonexempt support staff, and the self-managing work team members. The design team meets weekly. The purpose of the team is to analyze various aspects of the organization. The design team did some of the initial analysis of the technical systems in the plant. This was accomplished through value added/non-value added assessment of manufacturing procedures on the line. This type of assessment breaks down each job performed on the line to determine any wasted steps in the execution of the job. The rationale for this type of analysis is to improve the way work is done while simultaneously attending to any necessary organizational restructuring. Finally, the design team discusses issues around the design of the new pay and appraisal systems.

A "steering committee" was also established. This team has only seven members. The members of the steering committee are upper management employees. This group of employees is also on the design team. Initially, the design team was completely responsible for the entire redesign program. This responsibility was overwhelming to

many of the team members. The steering committee focuses on the restructuring of the organization. The steering committee keeps the design team informed of decisions that are made in their meetings.

Resistance by the members of the support staff and supervisory staff was not overt until three months into the change effort. At that time that a member of the support staff was asked to become a member of the pilot self-managing team. She stated that if they moved her onto the team (back down to the line) she would quit. The management was very concerned; they felt that other members of the support staff would follow her example and openly resist change. It was at this point that the plant manager contacted the human resources department in the parent organization. The researcher was an employee in the human resources department. The plant manager asked for help in dealing with the resistance in his supervisors and support staff. He also wanted to know whether there was any unexpressed resistance in middle management.

The Survey Instrument

The survey instrument contains three subscales (see Appendix D). The Context Scale will assess employee beliefs (independent variable) on the disruptiveness of the redesign program to their present situation. The Change Management Scale will assess employee perceptions about how well the redesign program has been managed (independent

variable). The Individual Support Scale will assess whether employees personally support the change (dependent variable).

The Context Scale was developed by the researcher. The Individual Support Scale and the Change Management Scale were developed by Anderson (1985) and will be utilized in this study with his permission. There are similarities between the Anderson study and the present study which warrant the use of these two subscales. Both studies were investigating the attitudes of employees facing the implementation of self-managing work teams.

The items for the Context Scale were based on the thematic content of the employee interviews conducted at the manufacturing plant where the present research is to be conducted (see Support Staff Interviews, at the end of the Summary and Conclusions section). The six hypotheses presented in the Summary and Conclusions section are based on the following themes: interpersonal tension, methods of setting new standards, individual recognition and status in the organization, general disruption of manufacturing methods, personal adjustment problems, and threats to the establishment of personal expertise in the organization.

A separate subscale was developed in the Contextual Scale for each of the themes identified by a content analysis of the employee interviews. Each subscale contains three or more items. The items were written after

careful review of the original transcripts from the interviews. This was done to ensure that the survey items were reflective of the issues raised by plant employees. The rationale for writing survey items in this manner is that the particular concerns of employees around a redesign program will have a direct effect on their support of the program. In order to be valid, therefore, the items must be based on employee opinion. Each of the survey items in the Contextual Scale was also reviewed by seven members of upper management in the plant.

An effort was made in the Individual Support Scale (Anderson, 1985) to operationalize the variable to examine as broad a range of indices as possible. The principal measure asked the respondents how they would vote if a referendum were held on whether to continue the redesign program. This measure was inspired by the practice of including a provision in pre-intervention agreements which specifies the conditions under which the parties may terminate their involvement (Goodman, 1979).

The second subscale of the Individual Support Scale is a Likert type scale consisting of the two items listed below:

1. I often express doubts about the redesign program in discussions with my co-workers.
2. Whenever I hear people discussing the redesign program I try to say something good about it.

This scale sought to establish the posture subjects tended to assume in informal discussions about the intervention. The rationale underlying the construction of this scale is based on Salancik and Pfeffer's (1978) discussion of the importance of social information processing to work redesign.

The third subscale of the Individual Support Scale in Anderson's (1985) survey was not included in the present survey. This scale was excluded because the plant manager rejected the questions contained in the scale. This change brings to question whether the scale is still reliable.

The Change Management Scale (Anderson, 1985) was constructed on the basis of several themes which, according to much of the research (Pasmore, 1982), determine employee reaction to the implementation of change. Each of these themes is assessed separately by a subscale which corresponds to one of the five variables presented in the list of hypotheses. The first variable addresses the issue of whether the employee is aware of a clearly articulated need for change (Need Subscale). The second variable addresses the issue of whether the employee feels that management has proceeded in a collaborative fashion (Collaboration Subscale). The purpose of the third variable is to determine whether the employees feel that management has demonstrated commitment to the change (Commitment Subscale). The fourth variable addresses

issues around union involvement, and will not be used in the present study due to the fact that there are no employees that are members of the union. The fifth variable addresses the issue of whether the employees perceive the redesign program to be going as well as planned (Plan Subscale). The sixth variable concerns the extent to which expectations are managed (Expectations Subscale).

Change Management Scale Reliability. The reliabilities of both the Change Management Scale and the Individual Support Scale (Anderson, 1985) are listed below. The reliability coefficient for the Individual Support Scale was .64. The Spearman-Brown reliability coefficient for each of the subscales of the Change Management Scale are listed in sufficient reliability for use in the present research. The researcher consulted the literature (Pasmore, 1982) as the basis for the content of the items relating to perceived need for the change. These items were also reviewed by two content experts who are Industrial/Organizational Psychologists.

Survey Administration

The Survey was administered by the author. The support staff was divided into three groups (approximately 40 people per group) for administration. The survey was administered in the plant cafeteria.

Table 1

The Reliability Coefficients of Anderson (1985) ProcessVariables

	Coefficient
Process Variables	
Need*	--
Collaborative	.80
Management Commitment	.58
Clear Plan	.58
Expectations Managed	.63

*The need subscale in the Anderson survey did not have sufficient reliability to be utilized in the study.

The plant manager agreed to ask that supervisors, middle management, and members of the support staff be present for survey administration. The plant manager was not present during survey administration. The author collected all the surveys personally to protect employee confidentiality.

The instructions for the survey were standardized (see Appendix A). The surveys were distributed and collected by the author. The plant manager did not see any of the raw data. The survey administration took approximately 30 minutes.

Data Analysis

Each of the hypotheses in this study questioned the relationship between a number of independent variables (perceived need for change, collaboration, interpersonal tension, etc.) with the dependent variable (support for the redesign program). The essential purpose of the data analysis was to determine whether the relationship between the each of the independent variables and the dependent was statistically significant, thus providing support for each of the hypotheses.

Correlation analysis was the principal measure used to test the hypotheses in this study. A stepwise regression procedure was also used to assess the relative importance of each of the predictor variables. This was done to determine which variables have the greatest relationship with employee support.

A weakness in gathering the data through survey methodology is the possibility of priming effects (Koch & Rhodes, 1979). Completing a survey instrument might make various aspects of the situation more salient than they might be otherwise. Two forms of the questionnaire were administered in an effort to assess for priming effects (see Appendix D). In form A the items measuring the independent variable precede the items measuring the dependent variable. In form B the order of the items measuring independent and dependent variables is reversed.

A ttest was run to determine whether there was a significant difference between the mean scores of the two forms of the survey. The two forms of the survey were subsequently combined for further analysis.

Another possible threat to scale validity is response acquiescence of the employees. To guard against this type of bias, half of the items were phrased positively and half were phrased negatively (Wiggins, 1973).

CHAPTER III

RESULTS

The manufacturing plant at which the survey was administered employs about 110 people in the support staff. Surveys were administered to and collected from 82 support staff employees. This was a response rate of 75%. Confidentiality was maintained for all employees involved in the survey process.

There did not appear to be any sensitization effects in either of the two forms of the survey. (Form A presented the predictor variables first, followed by the criterion variables. Form B reversed this order). The ttests comparing scale means between the two survey forms was not significant (Group A = 1.30/Group B = 1.27) at the .05 level.

Scale Reliability

Table 1 presents the scale means (on a five point scale), standard deviations, and Chronbach Alpha internal consistency coefficient for the independent variables and the dependent variable.

The inter-correlations between each subscale of the Process Scale and Context Scale are presented in Tables 2 and 3 to allow for an evaluation of the degree to which the subscales covary. A number of the subscales of the process

Table 2

Means, Standard Deviations, and Reliability Coefficients of the Variables

	M	SD	ALPHA	SKEW
<u>Process Subscales</u>				
Need	3.1	1.0	.55	-.11
Collaborative	2.5	1.0	.79	.47
Management commitment	3.9	.9	.71	-.47
Clear Plan	2.8	1.0	.83	.07
Expectations Managed	2.9	1.0	.63	-.12
<u>Context Subscales</u>				
Interpersonal Tension	2.7	1.2	.79	-.02
New Standards	2.5	.9	.54	-.12
Status	3.0	.8	.72	-.26
Organization Disruption	3.2	1.1	.92	-.49
Adjustment	3.3	.7	.52	-.25
Personal Expertise	3.4	1.2	.81	-.47
<u>Support Subscale</u>				
Behavioral Items	3.2	1.0	.79	-.33

Note. Scale Values are based on a five point scale, and are as follows: 1 = Strongly Disagree; 2 = Slightly Disagree; 3 = Neutral/NA; 4 = Slightly Agree; 5 = Strongly Agree.

scale were highly correlated. The scales dealing with whether management is proceeding in a collaborative fashion and whether the respondents viewed the program as being carefully planned were relatively highly correlated. This was also true of the variable on planning and the measure which assessed whether participants' expectations were carefully managed.

Table 3

Intercorrelations of Process Variables

	PS1	PS2	PS3	PS4	PS5
PS1	1.0				
PS2	.61*	1.0			
PS3	.29**	.41*	1.0		
PS4	.55*	.76*	.44*	1.0	
PS5	.49*	.71*	.37*	.68*	1.0

Note. The Process Subscales are as follows: PS1 = Need; PS2 = Collaboration; PS3 = Commitment; PS4 = Clear plan; PS5 = Expectations Managed.

* $p < .001$; ** $p < .01$

As Table 3 reveals, nearly all of the Context Subscales were very highly correlated.

Table 4

Intercorrelation of the Context Variables

	CS1	CS2	CS3	CS4	CS5	CS6
CS1	1.0					
CS2	.60*	1.0				
CS3	.61*	.56*	1.0			
CS4	.78*	.73*	.78*	1.0		
CS5	.56*	.53*	.68*	.60*	1.0	
CS6	.69*	.57*	.82*	.86*	.60*	1.0

Note. The Context Subscales are as follows: CS1 = Interpersonal Tension; CS2 = New Standards; CS3 = Status; CS4 = Organizational Disruption; CS5 = Adjustment; CS6 = Personal Expertise

* $p < .001$

The Process Scale and the Context Scale correlated .76 ($p < .001$). This is a fairly high correlation between the two scales. It is clear from the high correlation between the Process and Context Scale that the scales overlap quite a bit in terms of what they are measuring. However, the correlation is low enough that it is also clear that the two scales are measuring different constructs. Tables 4 through 6 present the intercorrelations between the various

subscales of the independent variables. There are a number of high intercorrelations of the subscales between the two independent variable scales, context and process. The Process Subscale (collaboration), correlated with the Context Subscales (interpersonal tension, personal expertise, and organizational disruption). The Process Subscales (clear plan and expectations managed), both correlated highly with the Context Subscales (interpersonal tension, personal expertise, and organizational disruption).

Table 5

Intercorrelations between the Process and Context Variables

	CS1	CS2	CS3	CS4	CS5	CS6
PS1	.50*	.35**	.42*	.62*	.30**	.57*
PS2	.64*	.46*	.53*	.72*	.48*	.69*
PS3	.23***	.02	.16	.33**	.16	.37*
PS4	.61*	.49*	.56*	.77*	.54*	.70*
PS5	.69*	.48*	.60*	.77*	.53*	.69*

Note. The Process Subscales are as follows: PS1 = Need; PS2 = Collaboration; PS3 = Commitment; PS4 = Clear plan; PS5 = Expectations Managed. The Context Subscales are as follows: CS1 = Interpersonal Tension; CS2 = New Standards; CS3 = Status; CS4 = Organizational Disruption; CS5 =

Adjustment; CS6 = Personal Expertise.

* $p < .001$; ** $p < .01$; *** $p < .05$

Process Variable Correlations with the Dependent Variable.

The first five hypotheses are conceptually grouped within a framework called the management of the change process (the Process Scale). Table 5 lists these five Process Subscales and the Pearson coefficient of the dependent variable (the Independent Support Scale). All five hypotheses were strongly supported by the data.

The collaboration subscale correlated most highly with the dependent variable, support. This hypothesis states that a significant relationship is likely to exist between the employee's perception that management is working in a collaborative manner and support for the redesign program. The method of determining the importance of this factor was calculation of the Pearson coefficient, utilizing mean scores on the collaboration scale and the support scale.

The hypothesis that dealt with the clarity of the change plan is also significantly related to the support variable. This hypothesis stated a significant relationship is likely to exist between the employee's perception of a clearly defined change management plan and employee support.

Management of employee expectations was also significantly related to employee support (expectations

managed subscale). This hypothesis addressed the issue of whether the redesign program will turn out as promised. The significance of the relationship between the expectations managed variable and employee support indicates that employees are more supportive of the change if they feel that management is carefully managing employee expectations and not overselling the change or ignoring negative expectations on the part of the employees.

Clearly defined need for the change (Hypothesis 1) and management commitment to the change process (Hypothesis 3) both appear to be relatively important considerations during the management of the change process.

Context Variable Correlations with the Dependent Variable.

The final six hypotheses of this research are grouped within a framework called context considerations. Table 6 lists these six subscales and their relationship (Pearson coefficient) to the dependent variable, support. All six exploratory hypotheses are strongly supported by the data.

The exploratory hypothesis concerning issues around interpersonal tension states that a significant relationship is likely to exist between the employee's perception that the redesign program will not cause an increase in interpersonal tension and support. This hypothesis is supported and seems to be an important issue in the redesign process.

Table 6

Pearson Correlations between Process Variables and Support Variables

Process Variables	Support Variables	
	Behavioral	Vote
Need	.58*	.58*
Collaborative	.74*	.54*
Management Commitment	.40*	.30*
Clear Plan	.71*	.53*
Expectations Managed	.70*	.59*

* $p < .001$

The second exploratory hypothesis addresses issues around setting new standards. The hypothesis states that a significant relationship is likely to exist between an employee's comfort with the manner in which new standards are being determined and that employee's support. This hypothesis is also strongly supported by the data.

The third exploratory hypothesis addresses the issue of individual status in the self-managing work team setting. The hypothesis is as follows: a significant relationship is likely to exist between the employee's perception that the redesign program is not disruptive to

the achievement of individual status in the organization and the employee's support. This hypothesis is also supported by the data.

The fourth exploratory hypothesis is the most strongly supported hypothesis in the context scale. This hypothesis addresses the issue of general organizational disruption that might occur if self managing teams are implemented. The hypothesis states that a significant relationship is likely to exist between employees perception that the redesign program is not disruptive to organizational methods and their support.

The fifth exploratory hypothesis concerns employee adjustment problems. These concerns include an increased work load, a more demanding job and the acquisition of new skills. The hypothesis states that a significant relationship is likely to exist between the employee's perception of personal adjustment problems and the employee's support.

The final exploratory hypothesis addresses concerns of maintaining personal expertise in a self managing environment. One goal of the self managing philosophy is to train each employee with numerous skills so that problems may be solved at a lower level in the organization. The concern expressed by many employees was that if they are required to learn many new skills they may not be very good at any of the skills that they perform at

their job. In addition, many employees implied in the interview that they felt their job security was related to being the best at a particular skill. This hypothesis is also significantly supported by the data.

Table 7

Pearson Correlations between Context Variables and Support Variables

Context Variables	Support Variables	
	Behavioral	Vote
Interpersonal Tension	.72*	.66*
New Standards	.61*	.57*
Status	.69*	.63*
Organizational Methods	.86*	.74*
Adjustment	.61*	.49*
Expertise	.80*	.69*

* $p < .001$

Multiple Regression Analysis of Process Variables and

Context Variables. A multiple regression was performed to determine which of the independent variables accounted for the greatest amount of variance in the dependent variable. The Context Subscale, organizational disruption, accounted

for the greatest amount of variance in the dependent variable (Multiple $R = .84$; R -Square = .71; Beta = .84). The hypothesis assessed by this scale, states that a significant relationship is likely to exist between the employees perception that the redesign program will not be disruptive to organizational methods and their support.

The Process Subscale, collaboration was entered on step number two (Multiple $R = .86$; R -Square = .76; Beta = .62). The hypothesis assessed by this scale, states that a significant relationship is likely to exist between employees perception that management is proceeding in a collaborative fashion and their support.

A step-wise regression was also run on the variables of the Context Scale and the Process Scale separately. The Process Subscale, collaboration, of course accounts for the greatest amount of variance in the dependent variable when compared to the other Process Subscales (Multiple $R = .74$; R -Square = .55; Beta = .74). Two other variables clustered with the collaboration variable in the multiple regression analysis. The first variable addresses the issue of managing employee expectations (collaboration and expectations $R = .78$; R -Square = .61; expectations-Beta = .34). The other Process Variable in the cluster is, clear plan (collaboration, expectations, & clear plan $R = .78$; R square = .63; clear plan-Beta = .24) for the redesign program

The multiple regression analysis reveals that two Context Subscales are significant at the .05 level. The variable which accounted for the most variance in the dependent variable addresses the issue of disruption to organizational methods (Multiple $R = .86$; $R^2 = .73$; Beta = .85). The Context Subscale that addresses the issue of personal expertise is also significant at the .05 level in the regression analysis (Multiple $R = .87$; $R^2 = .75$; expertise-beta = .25). The hypothesis addressed in the expertise subscale states that a significant relationship is likely to exist between the employee's perception that the redesign program will not be disruptive to the ways in which they achieve expertise and personal recognition in the organization (See Appendix F for a more complete statistical table on the multiple regression analysis).

CHAPTER IV

DISCUSSION

The eleven hypotheses under investigation in this study were all strongly supported (See Table 9). It is clear that a number of factors are significantly related to employee support for an organizational redesign effort. The results of the survey show that the majority of the support staff employees are in favor of the redesign program. However, a number of employees seem to have strong reservations about the program. The negative attitudes and reservations among members of the support staff employees were found to be detrimental to the overall support of the redesign program.

The lower mean scores in the Context Subscales indicated that employees are having difficulties with the anticipated effects of the redesign program on the day to day activities of their jobs. Specifically, the low mean on the interpersonal tension subscale indicates that some employees see the SMWT redesign program as actually increasing tension among employees. The mean score on the new standards subscale is also relatively low, indicating a discomfort with the way that new standards will be determined. Finally, some individuals had difficulty adjusting to increased job demands and added skill demands

Table 8

Summary of the Results

	Results of Hypothesis Test	Relative Importance
<u>Process Subscales</u>		
Need	Supported	High
Collaborative	Supported	Very High
Management Commitment	Supported	High
Clear Plan	Supported	Very High
Expectations Managed	Supported	Very High
<u>Context Subscales</u>		
Interpersonal Tension	Supported	High
New Standards	Supported	High
Status	Supported	High
Organizational Disruption	Supported	Very High
Adjustment	Supported	High
Expertise	Supported	Very High

In general, the average item scores on the Process subscales are higher. The lowest subscale is as is indicated by the adjustment scale.

The literature is just beginning to address the specific concerns of management and the supervisory staff in a self managing setting (Manz & Sims, 1990). Issues centering around role ambiguity, loss of status in the organization and lack of necessary skills are mentioned as possible reasons for supervisory and middle management resistance. These issue were addressed in the adjustment subscale and status subscale. However, in the findings of the study, these issues were not as strongly related to employee support as other variables included in the research (organizational disruption, collaboration and clear plan).

The discussion will focus on several aspects of the research data. First, the issues that accounted for the greatest amount of varience (multiple regression analysis) in terms of determining employee support will be more closely examined and interpreted in the discussion; second, a discussion will include speculation as to why some of the contextual issues (status work load) as measured in the adjustment subscale, did not have as great a relationship with employee support as other variables in the present study; third will be an examination of the significant relationships between the variables in the present study and the possible implications. Finally, the significance of the findings will be explored from a theoretical standpoint.

Discussion of the Subscales

Of the eleven hypotheses investigated in this research, all were supported by the research data. However five of the hypotheses accounted for the most variance in the relationship between the independent and dependent variables.

Collaboration Subscale. Employees who did not feel included in the change process were less supportive of the redesign program. The literature emphasizes the importance of this issue and identifies some of the processes that occur in a participative environment during organizational change (Lawler, 1986). In addition to looking at some of these processes, attention will be given to several factors in the present research that may have contributed to the perception on the part of some of the employees of the lack of management collaboration.

Lawler (1986) outlines three processes that occur when workers participate in the implementation effort. First, people are more likely to decide that change is desirable and become psychologically committed to its success. Second, when people participate in a planned change, they are able to structure the impending change so that it is more desirable to them. Third, the increase in communication that results from including workers in planning and implementing a major change enables objections and misperceptions of the consequences of the change to be clarified.

Lewin (1952) participated in a government sponsored study during World War II. An attempt was made in this study to change consumer behavior to more closely approximate the restrictions placed upon consumers as a part of the war effort. Lewin discovered that individuals were more likely to change their behavior if they felt involved in the decision to change.

The collaborative approach to implementing change is also consistent with many of the principles of socio-technical design and in particular, self managing work teams. An organization redesigning around a socio-technical philosophy must draw on the knowledge of employees from all levels. The assumption here is that employees that are at different levels in the organization possess different types of information. The redesigning organization must make use of information about all aspects of its environment to meet the needs of both the people and technology.

The present research sheds some light on several factors in the organization and their possible effect on employee perceptions about management collaboration. The mean score of the items contained in the collaboration scale was the lowest of all process scales. In addition, there was a negative skew on the scale. This of course means that although a number of employees feel that management has been collaborative in its approach to the

redesign program, a percentage of support staff employees do not share this perception.

One possible explanation for the split in employee perception around the issue of management collaboration is the fact that the organization provides few formal mechanisms for eliciting employee participation. Management has spoken extensively about the benefits of employee participation, both formal and informal. The Design Team, however, is the only formalized mechanism for employee input on the redesign of the organization. Support staff employees who are not members of the Design Team learn about the decisions that the team makes informally through the grapevine. The Design Team has no formalized means of communicating with other employees in the organization. Consequently, employees who are on the Design Team are likely to feel that management has been very collaborative during the redesign program and employees who are not members of the Design Team probably see little evidence of management collaboration.

Clear Plan. The low average item score of this subscale indicates a clear concern for the ambiguity surrounding the general direction of the redesign program. An important characteristic of the socio-technical theory might partially account for the low average item score on the clear plan subscale, and the consequential importance of this variable. According to the socio-technical

principle of "minimal critical specification" (Cherns, 1976), management must specify only what is essential in the organization. In other words, a socio-technical organization will not have a thick manual on how to get the work done. While it may be necessary to be quite precise about what is done, it is not desirable to be precise about how it is done (Cherns, 1976).

The principle of minimal critical specification has important implications for the redesign program in the present research. Most importantly, this principle means that specifics about the future organizational structure, job descriptions, and work methods is not dictated by upper management. Instead, these decisions are made by the workers while performing their jobs. In addition, the organizational structure should evolve out of the input of employees at all organizational levels.

An important implication of the impact of the minimal critical specification principle in the present research is the necessity of effective communication of the socio-technical and self management philosophy. Employees, embedded in a traditionally managed organization may not understand some aspects of the socio-technical philosophy and its influence on the redesign program and therefore resist the change. For example, the employees in the present research seem to have interpreted the lack of direction and specification on the part of management as

negative. This is clearly indicated by the average to below average scores on the Process Subscale, clear plan. An understanding of the principles of socio-technical redesign might alleviate employee concerns because they would realize that management is not going to dictate organizational structure and that all levels of the organization must have input on the plan for redesign.

Management of Expectations. The implication of this finding is the importance of managing employee expectations, so that they do not perceive management as promising more than can be delivered.

Research has shown the consequences of employee expectations on change efforts. Worker expectations about the nature of self-managing redesign programs will make a difference in how eagerly or slowly they approach the change. King (1974) demonstrated the importance of worker expectations about change relative to subsequent performance. Pasmore, Francis and Haldeman (1982) suggest that it is essential to carefully manage expectations about the benefits to be gained from a proposed change in order to reduce worker resistance to the change.

One of the underlying reasons in the present research for the impact of this variable on support may again be the socio-technical principle of minimal specification. The ambiguity that surrounds the redesign program seems to have given rise to employee concern. Employees might be

thinking, "Yes, this self managing stuff sounds great, but are we really going to get there?"

Organizational Disruption. This variable addresses employee concern for the general disruptiveness of the redesign program to the established manufacturing methods and general organizational effectiveness. High scores on this subscale indicate the employee belief that the redesign program will have a negative effect on organizational efficiency. The significance of this finding can be interpreted in a number of ways.

A particular characteristic of the employee group may partially account for the significance of the organizational disruption variable. The employees at this particular manufacturing plant are highly committed to the organization and its management. During the employee interviews, 90% of those interviewed voiced their commitment to the organization.

Employee commitment becomes troublesome if the person is simultaneously uncomfortable with the unknowns associated with the transition to a self managing work environment. On the one hand, employees support the organization and the decisions made by upper management, yet at the same time employees are unsure of how these changes will affect them. This dilemma may be solved by claiming that the redesign program would be destructive to the organization, an attitude that allows employees to remain supportive to management.

The processes that might be going on for the employees that are concerned about organizational disruption are clarified when examined in terms of the Cognitive Dissonance theory. Dissonance (Festinger, 1957), results when two related "cognitions" do not fit together harmoniously. The term cognition refers to any belief, opinion, or perception that individuals have about themselves, or any aspect of the environment.

Since dissonance is, by definition, psychologically uncomfortable, it leads to attempts at dissonance reduction. To reduce dissonance, it is necessary for a new attitude that will produce consonance (psychological comfort) be substituted for the dissonant attitude.

In order for cognitive dissonance to occur, there must be two attitudes that are relevant, yet opposite to each other. For example, a worker may say, "I am very loyal to the organization and it's management, but I am very against this change that management is condoning." To reduce dissonance, individuals will adjust the ways that they perceive a situation so that the two opposing attitudes are more psychologically comfortable.

Heider's (1958) balance theory integrates the concept of cognitive dissonance in a way that helps further understand some of the dynamics that may be occurring in the resisting employees in the present research. Heider (1958) argues that people maintain consistent attitudes by

balancing their feelings and beliefs about one another against their feelings and beliefs about salient aspects of the environment.

In Heider's (1958) model, a single individual (P) formulates an attitude toward another individual (O) in relation to the similar or dissimilar attitudes that they hold to (X), which may be an object or an idea. From the standpoint of P, a "balanced cognitive state" exists if P dislikes O and their attitudes toward X are in harmony. On the other hand, an "unbalanced state" will exist if P likes O but their attitudes toward X are not in harmony.

Application of the Heider model to the situation in the current research is as follows. The members of the support staff have very positive feelings for their management and organization. The management condones a self managed environment, but some members of the support staff are uncomfortable with the idea of a self managed environment. Instead of showing their negative attitudes to management, they claim to like the self managed environment but insist that this new program will never work in their plant.

Expertise. The Context Subscale, expertise, is significantly related to employee support. High scores on the personal expertise subscale indicate that employees feel that the redesign program will not threaten their expertise in a particular skill area. In addition, high

scores on this variable indicate that the employees feel that the skills that they presently have will still be valued in the organization. Low scores on this subscale indicate that employees feel that they will be required to learn so many new skills that they will not be proficient in any area and that their current expertise will not be valued in the organization.

The significant relationship between this variable and the support variable suggests that this issue is a determining factor in gaining employee support. There are some factors that might explain why this variable is of such significance in the present research.

An important principle of socio-technical design may partially account for the significance of this issue in the current research. The socio-technical principle of controlling variances at their source is closely related to the issue of expertise. This principle basically means that problems should be controlled as near to their point of origin as possible. This is only possible if low level employees are allowed to conduct their own maintenance, quality control, and parts acquisition. For members of the support staff this principle requires that they train line employees to perform tasks that are in their area of expertise. In addition, it requires the support staff to learn a number of new skills so that they may deal with manufacturing problems that may arise.

Passing on personal knowledge and acquiring new skills is particularly threatening for employees that are still in the mind-set of a traditionally managed organization. In a traditionally managed organization, personal power and job security is often a result of being the only person capable of a certain task. In addition, in a socio-technical setting jobs are no longer carefully defined. One's job changes depending on the demands of the environment. This changes the whole meaning of the word expertise for employees.

Another socio-technical principle that might have been an influence on the issue of personal expertise is that of organism versus mechanism (Cherns, 1976). In the old paradigm (the traditionally run organization), the work is fragmented and people generally performed one function in a repetitive manner. Such people do not have to be highly skilled and are easily replaced. The socio-technical organization requires that people perform more than one job function. In the socio-technical environment employees are less easily replaced and are of more value to the organization.

Employees in the present research who are still operating in the old paradigm (rules by which they understand the world) are probably accustomed to becoming extremely proficient at a very narrow set of skills and are threatened by the prospect of having to acquire a wide

variety of skills. Some employees stated during the interviews that they thought learning several new skills might mean that they will not be proficient in any area.

The word paradigm has been mentioned several times as a factor in employee support. The concept is very useful in terms of understanding the adjustment difficulties that face many of the support staff employees. Possibly, a number of support staff employees in the present research are still struggling with the new values and attitudes that must be learned to function in the new self managing work team environment. Paradigmatic change requires a radical change in world view; this is often accompanied by mourning because the old world is felt to be dying (Sheldon, 1980).

Schein (1980) also states that the shift to the new paradigm requires the unlearning of old values and attitudes. Schein (1980) offers several assumptions about the shift to a new paradigm. First, any change process involves not only learning something new but unlearning something that is already present and possibly well integrated into the personality. Second, organizational change, such as new structures, processes, reward systems and so on, occurs only through individual changes in key members of the organization; hence, organizational change is always mediated through individual changes. Third, most adult change involves attitudes, values and self-images and the unlearning of present responses in these areas is

initially painful and threatening. Fourth, change involves a multistage cycle, and all stages must be negotiated somehow before a stable change is in place.

The process described by Schein seems very applicable and helpful in understanding the significance of some of the findings of the present research. Attitude change seems to be a theme that has occurred a number of times in the present discussion as the implications of various subscales are examined. Basically, it seems that many of the employees are dealing with a great deal of turmoil while grappling with the redefinition of basic personal attitudes.

Self-managing teams are slow to develop (Manz 1990). The evolution and development of mature self-managing teams is not a smooth process, despite occasional claims of instant success. Employees often have difficulties shifting to the new paradigm and probably do not have a clear understanding of the change, until they have experienced the self managing environment.

Intercorrelations Between the Process and Context Scales

Both the Process Scale and Context Scale were very similar in terms of their relationship with the Individual Support Scale. In addition, the Process and Context scales were highly correlated with each other. Anderson (1985), however, found a significant difference between the relationship of these two Scales to employee support.

Specifically, Anderson's research revealed a significant relationship between context variables and employee support, but a nonsignificant relationship between process and the support variable.

One reason that the Process Scales and Context Scales in the present research are similar in their relationship to the support variable and to each other might have something to do with the timing of the survey in terms of the change process. The survey was administered very early in the change process, in fact there had not been any job changes for any of the employees surveyed and the exact nature of any future changes had not been clarified. Employees, therefore, might be at the point in which the context concerns including interpersonal tension, status, adjustment and expertise are not easily differentiated from the process concerns, including collaboration and management commitment.

Of course the correlation between the two scales is low enough that it is clear that there are some employees that have separated their reactions to the change from what they feel management will expect from them. It is clear from this data that the paradigm shift necessary for a successful transition into a socio-technical culture is enormous.

High Correlations Among Context and Process Subscales. The Process Subscale, collaboration, correlated

highly with the Context Subscales of interpersonal tension, expertise and organizational disruption. The implication of these high intercorrelations is that although these are all important issues to consider during the implementation of organizational change, there are some underlying factors common to all four scales.

Examination of the subscale items for each of the four scales suggests that the issue of personal control is common to all items. Lawler (1986) suggests that collaboration with management during the change process gives employees the feeling of control over their future. The other three issues that are highly related to collaboration are most likely issues that employees would like to influence in some way or another during the redesign of their organization.

The issue of interpersonal tension is an important issue in a self-managing setting because mechanisms for dealing with this issue are unclear. The authoritative leadership of the traditionally run organization is no longer present to "settle all employee squabbles." Collaboration with management becomes an important point of leverage for employees as the determination of new mechanisms for dealing with interpersonal tensions evolve. Such a mechanism might work in the following manner: a team may not be pulling their weight. This is a very threatening situation if the reward system is based on

group productivity. A mechanism such as the power to discipline team members might make employees more comfortable with the issue of interpersonal tension.

The issue of personal expertise is also something that employees will be attempting to protect during the transition process. A collaborative input on the change process can help insure that this takes place. Finally, employees generally feel that they know a great deal about their particular corner of the organization. To ensure the least possible disruption to organizational efficiency, most employees probably feel that they need to share information during the redesign process. The data implies that the general feeling among employees is that the best way for this process to happen is through collaborative efforts throughout the organization.

A high correlation also exists between the Process Subscale, clear plan, and three other Context Subscales: interpersonal tension, personal expertise, and organizational disruption. One will notice that these three subscales also correlated highly with the collaboration scale. The plan scale brings up the issue of the ambiguity of the change process; all three scales are affected by excessive ambiguity.

Method Variance

The high correlations between the Process Scale and Context scale as well as their respective subscales, might

have resulted from the fact that in fact there is a large amount of overlap in terms of what these two scales are measuring. However, it is also possible that the high intercorrelations between the variables of this study (both independent and dependent) resulted from method variance. Method variance refers to the possibility that when the independent and dependent variables are measured with the same instrument and with the same group of subjects the correlations might be inflated thus leading to misleading results.

Supervisor Issues. Many of the issues currently raised in the literature pertaining to the difficulties supervisors and members of middle management are having with self-managed work team settings are empirically supported in the present research. The self managed work environment requires a dramatic shift in the supervisor's role and responsibilities. The results of this research support the link between these difficulties and supervisor support of self-managing work team redesign program.

Traditional supervisors must make many adjustments to become effective in a self managed work setting. They have to adjust to increased autonomy, increased feedback, the merging of staff and line positions and the move from activity based jobs to more knowledge based roles (Bamlette, 1984).

The contextual scale adjustment contained items that referred to some of the difficulties around increased work load, and acquisition of new skills. The data indicates the importance of these issues for supervisors and members of the support staff.

Another issue that has been addressed in the literature concerning supervisors and middle management is the loss of status and power in the organization (Walton, 1974). This issue was addressed by some of the items in the Context Subscale called status. Again these issues are significantly related to supervisor and middle management support/resistance to organizational redesign.

Conclusions and Summary

The eleven variables in the present study are all significantly related to employee support for the redesign program. This indicates the importance of the change management process including such factors as demonstrating a clear need for the change, employee collaboration with management, management commitment to the change, a clear change plan and the management of employee expectations during implementation. In addition, context factors including interpersonal tension, methods for setting new standards, threats to individual status, organizational disruption, individual adjustment problems and threats to individual expertise are also important considerations when attempting to gain employee support for a redesign program.

The present research is also consistent with the literature on supervisor resistance. Issues such as increased autonomy, increased feedback, and merging of staff and line positions are addressed in the literature as causing difficulties in the implementation of SMWT's. These issues as well as several others were found to be significantly related to employee support of a redesign program.

The issue of paradigm shift is an important implication of the research findings. Employees who are transitioning from a traditionally managed organization to a socio-technical organization must make an adjustment in their basic values and attitudes. These employees must adjust to the fact that they are no longer responsible for carrying out the "orders of upper management" but instead must make their own decisions based on the information at hand.

Implications for Future Research. The survey created for the present study was only administered once. Survey administration took place during the initial stages of the redesign program. The change process cannot be fully appreciated with a single "snapshot" of employee perception. A fuller understanding of the implications of various employee attitudes increases if examined over time.

Future research might investigate the attitudes of employees before, during, and after implementation of

organizational redesign. Of course longitudinal studies of this sort are numerous in the literature; however, the basic issues facing members of middle-management enumerated in this study have not been examined in a longitudinal study.

It seems quite possible that employee behavior may evolve through a number of stages as a redesign program is implemented. This proposition is expounded upon extensively by Connor (1982). Connor stated that the employee will go through a number of stages, when adjusting to a change. These include: (a) status quo--prior to introduction of the change, (b) denial--refusal to believe that the change is actually taking place, (c) bargaining--an attempt to retain the status quo, (d) anger--lashing out at those who appear to be implementing the change, (e) depression--realization that the change is beyond their control, and (f) acceptance--attempt to explore various options around the change.

Manz (1990) outlined four stages that management went through in a plant that he assisted during the implementation of self-managing work teams. He listed these as: (a) initial suspicion, uncertainty and resistance, (b) gradual realization of the positive possibilities inherent in the new work system, (c) wrestling with the new role of a facilitator of self-managed employees and (d) rehearsing and learning a

new language to go with the new role. Examination of these four stages and those suggested by Connor makes one realize the complexity of the change process, and therefore how difficult it may be to capture in a survey instrument. For example, out of a group of ten employees, each one could be at a different stage, or between stages. An empirical investigation of attitude change during the change process would help to increase the chances of successful implementation of organizational redesign.

APPENDIX A

INSTRUCTIONS FOR SURVEY ADMINISTRATION

Instructions for Survey Administration

My name is Amy Street. I work in Human Resource Development Department in Dallas. _____ (plant manager) has asked me to help with the Self Managing Work Team Redesign Program.

As you know you have been asked to come here today to participate in a survey. It is important that each group that comes here today receive the same instructions, so I will read them. This will assure unbiased survey results.

One year ago _____ began the Self Managing Work Team Redesign Program. The design team has been working on finding a better way for this plant to organize itself around work. Teams of course are a central aspect of the program.

The reason we are asking you to fill out this survey is so we can get a better idea of how you feel about the Self Managing Work Team Redesign Program. Although you may not have much information about SMWT's, you most likely will know enough to have an opinion on the survey items.

Our goal is to use the survey results to identify problems so that the Self Managing Work Team Redesign Program can be managed to meet the needs of the people in this plant.

Participation in this survey is voluntary. No one in this plant will see individual answers. All of the information obtained here today will be summarized away

from the plant and analyzed in broad employee groups. Please express yourself frankly, and do not write your name anywhere on the survey. For this project to work we need your cooperation and particularly your views and opinions. A summary of the survey results will be presented to you.

Please turn to page 3 in your Survey Booklet. There are six demographic questions. Please answer these and when you are finished we will go through the instructions for the remainder of the survey.

The survey has six sections. You have just completed the first section. The remaining five sections are to be answered in terms of a five point rating scale. Mark one (1) if you strongly disagree with the survey item. Mark two (2) if you slightly disagree with the survey item. Mark three (3) if you feel neutral or do not feel the item applies to your situation. Mark four (4) if you slightly agree with the item. Mark five (5) if you strongly agree with the survey item.

In some cases a question is asked in more than one way. This is done simply to increase confidence in the results of the survey. Do not spend too much time on any one item. Your first reaction to a question is usually the best.

Thanks again for participating in the survey.

APPENDIX B

INTERVIEW QUESTIONS

Interview Questions

1. Why is ----- moving to SMWT's? Do you personally see a need for the change?
2. What will be expected of you during the transition to SMWT's? Do you expect your job to change? If so, are you comfortable with these changes?
3. If SMWT's are successful, what will it mean for you?
4. What is important to protect in this organization?
5. Do you expect your influence or the influence of others to change as ----- shifts to SMWT's?
6. Specific changes are typically associated with SMWT's, please state your comfort/discomfort with these changes:
 - Pay for knowledge
 - Loosely defined job
 - Multiple tasks
 - Group reward
 - Peer appraisal

APPENDIX C

QUESTIONNAIRE ITEMS

Questionnaire Items

Process Subscale

Need

As far as I'm concerned, we were doing just fine before.

No one has convinced me that we need to make any changes.

Collaborative

People have generally been consulted in advance before any changes have been made in their work.

It seems like a lot of decisions are being made without first talking to the people who are going to be effected.

Management Commitment

The redesign program seems to be pretty low on management's list of priorities. They don't really seem committed to changing the way we do things.

Based on the amount of time they have invested in the redesign program, I would say that management has shown a strong commitment to changing the way we do things here.

Clear Plan

The redesign program has been well thought out. The people leading it seem well prepared.

The people leading the redesign program should have done their homework better before they tried to make any changes.

Expectations Managed

They promised more from the redesign program than they will be able to deliver.

The redesign program will probably turn out much the way they say it will.

(Anderson, 1985).

Context Subscale

Interpersonal Tension

The SMWT Redesign Program will help improve relations between co-workers.

The SMWT Redesign Program will create more tension among the people who work together.

If there are no authority figures on the self managed teams, there will be pettiness among the team members.

New Standards

I feel confident that the new pay system will be redesigned in a fair manner.

I am concerned about how the new organizational pay standards are going to be determined.

Status

Because of the SMWT Redesign Program, I will receive recognition based on my value to the organization.

People won't be as motivated to achieve in the context of SMWT's because there will not be less emphasis on individual recognition.

I don't think I will personally gain from the change, in fact I will lose my status in the organization.

I do not think that SMWT's will have any affect my status in the plant.

Senior people will have the same rights that they have always had. The SMWT Redesign Program won't change that.

Seniority will be less important because of the redesign program. Senior people will have fewer rights than they have now.

Organizational Disruption

The SMWT Redesign Program will provide for our future organizational survival.

The SMWT Redesign Program is going to make a real difference. Things will really change this time.

There will be better communication in the context of SMWT's because no one will be kept in the dark.

I see SMWT's as building on many of the positive aspects of this plant; specifically; communication and team work.

SMWT's will make quality go up productivity go up, and scrap go down.

I don't see how SMWT's will work in a job shop environment.

The change to SMWT's will NOT make the problems on the line easier to understand.

We will loose efficiency with SMWT's.

Adjustment

I would be very upset if my job changed, I already have enough to do.

I'll be able to learn many of the different jobs in my department as a result of the SMWT redesign program.

There will be less pressure on me when there are SMWT's because the responsibility will be shared.

I am concerned that we will not have enough training to perform well in our future jobs.

I do not want further training on other job skills.

Expertise

SMWT's will give everyone an opportunity to grow.

Performing multiple functions, will dilute my expertise/influence.

As far as I can tell, the SMWT Redesign Program won't make much difference in terms of improving my job skills.

If I become part of the manufacturing area, my expertise will not be appreciated.

APPENDIX D

SURVEY: FORM A

SECTION ONE

Please check the appropriate response.

1. AGE:

- 18-30 yrs
- 31-40 yrs
- 41-50 yrs
- 51-60+ yrs

2. YEARS AT

- 0-5 yrs
- 6-10 yrs
- 11-15 yrs
- 16 to 20+ yrs

3. JOB TYPE:

- | | |
|--|--|
| <input type="checkbox"/> Line Supervisor | <input type="checkbox"/> Design Engineering |
| <input type="checkbox"/> Clerical/Secretarial | <input type="checkbox"/> Tooling |
| <input type="checkbox"/> Sustaining Engineering | <input type="checkbox"/> Plastics |
| <input type="checkbox"/> Production Control | <input type="checkbox"/> Quality Control |
| <input type="checkbox"/> Manufacturing Engineering | <input type="checkbox"/> Process Engineering |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Methods |

4. YEARS AT PRESENT JOB:

- 0-5 yrs
- 6-10 yrs
- 11-15 yrs
- 16-20+ yrs

5. EDUCATION LEVEL:

- Grade School
- Some High School
- High School Diploma
- Some College
- Business/Technical School
- College Degree
- Master's or Higher Degree

6. CHECK ONE:

- Nonexempt
- Exempt

SECTION TWO

This survey contains questions about what you think will actually happen as a result of the implementation of Self-Managing Work Teams (SMWT's). Please indicate the extent to which you agree with each of the following statements.

Use the following rating scale when answering the questions in this section.

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

1. The Self Managing Work Team (SMWT) Redesign Program will help improve relations between co-workers.

1	2	3	4	5
---	---	---	---	---

2. The SMWT Redesign Program will make a difference in terms of improving my level of expertise.

1	2	3	4	5
---	---	---	---	---

3. I don't think I will personally gain from SMWT's, in fact, I will lose my status in the organization.

1	2	3	4	5
---	---	---	---	---

4. Senior people will have the same rights that they have always had. The SMWT Redesign Program won't change that.

1	2	3	4	5
---	---	---	---	---

5. Because of the SMWT Redesign Program, I'll receive recognition based on my value to the organization.

1	2	3	4	5
---	---	---	---	---

6. SMWT's will make quality go up, productivity go up, and scrap go down.

1	2	3	4	5
---	---	---	---	---

7. I would be very upset if my job changed, I already have enough to do.

1	2	3	4	5
---	---	---	---	---

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

8. We will loose efficiency with SMWT's.
- 1 2 3 4 5
9. I do not want further training on other job skills.
- 1 2 3 4 5
10. The change to SMWT's will NOT make the problems on the line easier to understand.
- 1 2 3 4 5
11. I feel confident that the new pay system will be designed in a fair manner.
- 1 2 3 4 5
12. I see SMWT's as building on many of the positive aspects of this plant, specifically; communication and team work.
- 1 2 3 4 5
13. SMWT's will give everyone an opportunity to grow.
- 1 2 3 4 5
14. People won't be as motivated to achieve in SMWT's because there will less emphasis on individual recognition.
- 1 2 3 4 5
15. I don't see how SMWT's will work in a job shop environment.
- 1 2 3 4 5
16. If I become part of the manufacturing area my education will not be appreciated.
- 1 2 3 4 5

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

17. I am concerned about how the new pay standards are going to be determined.

1 2 3 4 5

18. There will be better communication in SMWT's because no one will be kept in the dark.

1 2 3 4 5

19. There will be less pressure on me when there are SMWT's because the responsibility will be shared.

1 2 3 4 5

20. The SMWT Redesign Program is going to make a real difference. Things will really change this time.

1 2 3 4 5

21. If there are no authority figures on the self managed teams, there will be pettiness among the team members.

1 2 3 4 5

22. Seniority will be less important because of the redesign program. Senior people will have fewer rights than they have now.

1 2 3 4 5

23. I am concerned that we will not have enough training to perform well in our future jobs.

1 2 3 4 5

24. SMWT's will create more tension among the people who work together.

1 2 3 4 5

25. I do not think that SMWT's will have any effect on my status.

1 2 3 4 5

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

26. Performing multiple functions, will dilute my expertise.

1 2 3 4 5

27. I would be comfortable with a "peer review" system (instead of the current supervisory review system).

1 2 3 4 5

28. It is important to me that no changes are made which would effect the rights of senior people.

1 2 3 4 5

29. The SMWT Redesign Program will provide for our future organizational survival.

1 2 3 4 5

SECTION THREE

This section contains questions about the way the SMWT Redesign Program has been managed up until now. Please indicate the extent to which you agree with each of the following statements.

Use the following rating scale when answering the questions in this section.

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

1. Management has really helped me understand how SMWT's will improve the way we do business.
1 2 3 4 5
2. People are being consulted before any changes are made in their work.
1 2 3 4 5
3. The SMWT Redesign Program has been well thought out. The people leading it seem to be well prepared.
1 2 3 4 5
4. The SMWT Redesign Program seems to be pretty low on management's list of priorities. They don't really seem committed to changing the way we do things.
1 2 3 4 5
5. My personal interests will be taken into account with any changes in my work.
1 2 3 4 5
6. I have received quite a bit of information about the SMWT Redesign Program. I feel as though I know a lot about it.
1 2 3 4 5

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5
7.	They promise more from the SMWT Redesign Program than they will be able to deliver.			
1	2	3	4	5
8.	It seems like a lot of decisions are being made without first talking to the people who are going to be effected.			
1	2	3	4	5
9.	As far as I'm concerned, we were doing just fine before. No one has convinced me that we need to make any changes.			
1	2	3	4	5
10.	Based on the amount of time they have invested in the SMWT Redesign Program, I would say that management has shown a strong commitment to changing the way we do things here.			
1	2	3	4	5
11.	The SMWT Redesign Program will probably turn out much the way they say it will.			
1	2	3	4	5
12.	The people leading the SMWT Redesign program should have done their homework better before they tried to make any changes.			
1	2	3	4	5

SECTION FOUR

These next four questions are concerned with how you personally feel about the SMWT Redesign Program. Please indicate the extent to which you agree with each of the following statements.

Use the following rating scale when answering the questions in this section.

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

1. I often express doubts about the SMWT Program in discussions with peers.

1 2 3 4 5

2. I'd be willing to come before, or stay after my shift to attend meetings about the SMWT Redesign Program.

1 2 3 4 5

3. SMWT Redesign Program is just another one of management's fads. Nothing will really come of it.

1 2 3 4 5

4. Whenever I hear people discussing the SMWT Redesign Program, I try to say something good about it.

1 2 3 4 5

SECTION FIVE

Please check one of the two options presented below.

_____ If a vote was taken today, I would cast my ballot FOR the SMWT Redesign Program.

_____ If a vote was taken today, I would cast my ballot AGAINST the SMWT Redesign Program.

APPENDIX E

SURVEY: FORM B

November 7, 1989

TO: The [REDACTED] Support Staff
FROM: [REDACTED]
[REDACTED]
Amy Street
RE: [REDACTED] Support Staff Survey

About one year ago, The [REDACTED] began the Self Managing Work Team (SMWT) Redesign Program, marked by the establishment of The Design Team. The pilot SMWT has now been functioning for a year in the HARM Cell.

We would like to know your views on this program. The results of this survey will direct the energies of the Design Team. All individual responses will be kept confidential.

Even if you don't have a lot of information about SMWT's, answer the survey questions based on your understanding of SMWT's at this point.

Regards,

[REDACTED]

[REDACTED]

&
Amy

SURVEY INSTRUCTIONS

Please read the following instructions carefully before responding to the survey.

1. The purpose of this survey is to examine your personal views on the SMWT Redesign Program. Participation is voluntary and all of the information you provide will remain completely confidential. No individual responses will be reported to management. Please do not write your name anywhere on the survey.
2. We are interested in your own thoughts and opinions about the SMWT Redesign Program.
3. In some cases the same question is asked in more than one way. This is done simply to increase confidence in the results of the survey. Be sure to read each item carefully; you may find that you agree with some questions on an issue while disagreeing with others.

THANK YOU IN ADVANCE FOR YOUR COOPERATION

SECTION ONE

Please check the appropriate response.

1. AGE:

- 18-30 yrs
- 31-40 yrs
- 41-50 yrs
- 51-60+ yrs

2. YEARS AT [REDACTED]

- 0-5 yrs
- 6-10 yrs
- 11-15 yrs
- 16 to 20+ yrs

3. JOB TYPE:

- | | |
|--|--|
| <input type="checkbox"/> Line Supervisor | <input type="checkbox"/> Design Engineering |
| <input type="checkbox"/> Clerical/Secretarial | <input type="checkbox"/> Tooling |
| <input type="checkbox"/> Sustaining Engineering | <input type="checkbox"/> Plastics |
| <input type="checkbox"/> Production Control | <input type="checkbox"/> Quality Control |
| <input type="checkbox"/> Manufacturing Engineering | <input type="checkbox"/> Process Engineering |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Methods |

4. YEARS AT PRESENT JOB:

- 0-5 yrs
- 6-10 yrs
- 11-15 yrs
- 16-20+ yrs

5. EDUCATION LEVEL:

- Grade School
- Some High School
- High School Diploma
- Some College
- Business/Technical School
- College Degree
- Master's or Higher Degree

6. CHECK ONE:

- Nonexempt
- Exempt

SECTION TWO

The first four questions are concerned with how you personally feel about the SMWT Redesign Program. Please indicate the extent to which you agree with each of the following statements.

Use the following rating scale when answering the questions in this section.

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

1. I often express doubts about the SMWT Program in discussions with peers.

1 2 3 4 5

2. I'd be willing to come before, or stay after my shift to attend meetings about the SMWT Redesign Program.

1 2 3 4 5

3. SMWT Redesign Program is just another one of management's fads. Nothing will really come of it.

1 2 3 4 5

4. Whenever I hear people discussing the SMWT Redesign Program, I try to say something good about it.

1 2 3 4 5

SECTION THREE

Please check one of the two options presented below.

_____ If a vote was taken today, I would cast my ballot FOR the SMWT Redesign Program.

_____ If a vote was taken today, I would cast my ballot AGAINST the SMWT Redesign Program.

SECTION FOUR

This survey contains questions about what you think will actually happen as a result of the implementation of Self-Managing Work Teams (SMWT's). Please indicate the extent to which you agree with each of the following statements.

Use the following rating scale when answering the questions in this section.

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

1. The Self Managing Work Team (SMWT) Redesign Program will help improve relations between co-workers.

1 2 3 4 5

2. The SMWT Redesign Program will make a difference in terms of improving my level of expertise.

1 2 3 4 5

3. I don't think I will personally gain from SMWT's, in fact, I will lose my status in the organization.

1 2 3 4 5

4. Senior people will have the same rights that they have always had. The SMWT Redesign Program won't change that.

1 2 3 4 5

5. Because of the SMWT Redesign Program, I'll receive recognition based on my value to the organization.

1 2 3 4 5

6. SMWT's will make quality go up, productivity go up, and scrap go down.

1 2 3 4 5

7. I would be very upset if my job changed, I already have enough to do.

1 2 3 4 5

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

8. We will loose efficiency with SMWT's.
- 1 2 3 4 5
9. I do not want further training on other job skills.
- 1 2 3 4 5
10. The change to SMWT's will NOT make the problems on the line easier to understand.
- 1 2 3 4 5
11. I feel confident that the new pay system will be designed in a fair manner.
- 1 2 3 4 5
12. I see SMWT's as building on many of the positive aspects of this plant, specifically; communication and team work.
- 1 2 3 4 5
13. SMWT's will give everyone an opportunity to grow.
- 1 2 3 4 5
14. People won't be as motivated to achieve in SMWT's because there will less emphasis on individual recognition.
- 1 2 3 4 5
15. I don't see how SMWT's will work in a job shop environment.
- 1 2 3 4 5
16. If I become part of the manufacturing area my education will not be appreciated.
- 1 2 3 4 5

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5
17.	I am concerned about how the new pay standards are going to be determined.			
1	2	3	4	5
18.	There will be better communication in SMWT's because no one will be kept in the dark.			
1	2	3	4	5
19.	There will be less pressure on me when there are SMWT's because the responsibility will be shared.			
1	2	3	4	5
20.	The SMWT Redesign Program is going to make a real difference. Things will really change this time.			
1	2	3	4	5
21.	If there are no authority figures on the self managed teams, there will be pettiness among the team members.			
1	2	3	4	5
22.	Seniority will be less important because of the redesign program. Senior people will have fewer rights than they have now.			
1	2	3	4	5
23.	I am concerned that we will not have enough training to perform well in our future jobs.			
1	2	3	4	5
24.	SMWT's will create more tension among the people who work together.			
1	2	3	4	5
25.	I do not think that SMWT's will have any effect on my status.			
1	2	3	4	5

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5
26. Performing multiple functions, will dilute my expertise.				
1	2	3	4	5
27. I would be comfortable with a "peer review" system (instead of the current supervisory review system).				
1	2	3	4	5
28. It is important to me that no changes are made which would effect the rights of senior people.				
1	2	3	4	5
29. The SMWT Redesign Program will provide for our future organizational survival.				
1	2	3	4	5

SECTION FIVE

This section contains questions about the way the SMWT Redesign Program has been managed up until now. Please indicate the extent to which you agree with each of the following statements.

Use the following rating scale when answering the questions in this section.

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5

1. Management has really helped me understand how SMWT's will improve the way we do business.

1	2	3	4	5
---	---	---	---	---

2. People are being consulted before any changes are made in their work.

1	2	3	4	5
---	---	---	---	---

3. The SMWT Redesign Program has been well thought out. The people leading it seem to be well prepared.

1	2	3	4	5
---	---	---	---	---

4. The SMWT Redesign Program seems to be pretty low on management's list of priorities. They don't really seem committed to changing the way we do things.

1	2	3	4	5
---	---	---	---	---

5. My personal interests will be taken into account with any changes in my work.

1	2	3	4	5
---	---	---	---	---

6. I have received quite a bit of information about the SMWT Redesign Program. I feel as though I know a lot about it.

1	2	3	4	5
---	---	---	---	---

Strongly Disagree	Slightly Disagree	Neutral: N/A	Slightly Agree	Strongly Agree
1	2	3	4	5
7.	They promise more from the SMWT Redesign Program than they will be able to deliver.			
1	2	3	4	5
8.	It seems like a lot of decisions are being made without first talking to the people who are going to be effected.			
1	2	3	4	5
9.	As far as I'm concerned, we were doing just fine before. No one has convinced me that we need to make any changes.			
1	2	3	4	5
10.	Based on the amount of time they have invested in the SMWT Redesign Program, I would say that management has shown a strong commitment to changing the way we do things here.			
1	2	3	4	5
11.	The SMWT Redesign Program will probably turn out much the way they say it will.			
1	2	3	4	5
12.	The people leading the SMWT Redesign program should have done their homework better before they tried to make any changes.			
1	2	3	4	5

APPENDIX F

MULTIPLE REGRESSION ANALYSIS

Table 9

Multiple Regression AnalysisProcess VariablesVariable Entered on Step Number 1:Collaboration

Multiple R = .74
 R-Square = .55
 Adjusted R-Square = .55
 Standard Error = 2.67
 F = 99.33
 Significant F < .001
 Beta = .74

Variable Entered on Step Number 2:expectations

Multiple R = .78
 R-Square = .61
 Adjusted R-Square = .60
 Standard Error = 2.51
 F = 62.22
 Significant F < .001
 Beta = collaboration = .50
 expectations = .34

Variable Entered on Step Number 3:Clear Plan

Multiple R = .80
 R-Square = .63
 Adjusted R-Square = .62
 Standard Error = 2.44
 F = 45.219
 Significant F < .001
 Beta = organizational disruption = .36
 expectations = .27
 clear plan = .24

Context Variables:Variable Entered on Step Number 1:Organizational Disruption

Multiple R = .86
 R Square = .74
 Adjustd R-Square = .73
 Standard Error = 2.04
 F = 209.15
 Significant F < .001
 Beta = .86

Context Variables (Cont.)Variable Entered on Step Number 2:Expertise

Multiple R = .87
 R Square = .74
 Adjustd R-Square = .74
 Standard Error = 1.98
 F = 112.49
 Significant F < .001
 Beta = organizational disruption: .64
 expertise: .25

Process Variables and Context Variables in MultipleRegression:Variable Entered on Step Number 1:Organizational Disruption

Multiple R = .84
 R Square = .71
 Adjustd R-Square = .71
 Standard Error = 2.12
 F = 186.32
 Significant F < .001
 Beta = .84

Variable Entered on Step Number 2:Collaboration

Multiple R = .87
R Square = .76
Adjusted R-Square = .75
Standard Error = 1.95
F = 116.64
Significant F < .001
Beta = organizational disruption = .62
collaboration = 31

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