6-2010

A multi-level examination of employee reactions to organizational change

Julianne Rodda
DePaul University, jrodda@depaul.edu

Follow this and additional works at: https://via.library.depaul.edu/etd

A MULTI-LEVEL EXAMINATION OF EMPLOYEE

REACTIONS TO

ORGANIZATIONAL CHANGE

A Dissertation

Presented in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

BY

JULIANNE RODDA

NOVEMBER, 2007

Department of Psychology

College of Liberal Arts and Sciences

DePaul University

Chicago, Illinois

DISSERTATION COMMITTEE

Doug Cellar, Ph. D.

Chairperson

Suzanne Bell, Ph. D.

Alice Stuhlmacher, Ph. D.

Pamela Meyer, Ph. D.

D. Joel Whalen, Ph. D.

Committee Members

ACKNOWLEDGEMENTS

Many thanks to Doug Cellar, my dissertation chair, for his guidance, support, and insights throughout the dissertation process. I would also like to express gratitude to my other committee members for their continued support. Thank you to my family and friends, in particular Josh, for their love and encouragement.

<u>VITA</u>

The author was born in Menomonee Falls, Wisconsin on June 17th, 1980. She

received her Bachelor of Arts degree in Psychology from Emory University in

2002. She received a Master of Arts degree in Industrial/Organizational

Psychology from DePaul University in 2005.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

As the business world becomes increasingly complex through the

development of new technologies, methods, and procedures, employees are

expected to not only adapt to but embrace change as a way of their working life.

Employees must respond to continuous smaller scale changes that happen on an

almost daily basis, as well as discrete large-scale change initiatives that

completely alter the way they do their jobs (Weick & Quinn, 1999).

The technological "revolution" in the world of business requires that

employees embrace new ways of doing things and imposes dramatic revisions to

how they must complete their job responsibilities. Although these technological

advances promise (and many times deliver) significant business performance

improvements in terms of productivity and efficiency, they may do so at the cost

of employee satisfaction and retention (Gilmore, Shea, & Useem, 1997). This

presents a unique challenge for organizations implementing large scale

technology changes. How do organizational leaders engage employees in the

change process and manage the workforce transition associated with these

changes? How do they formulate strategies for coaching employees through

major transformations?

Research on organizational change is typically conducted from one of

several different perspectives. Different aspects of the change may be studied; for

example, researchers may choose to focus on the nature of change, environmental

factors that facilitate change, or the process of change implementation (Armenakis & Bedeian, 1999).

Understanding the psychological and behavioral roots of employee reactions to change is integral to understanding how to manage and support employees going through major transitions in the workplace. However, much of the research in the field of organizational development and change focuses on change at the organizational (or macro) level as opposed to change at lower levels of analysis (Judge et al., 1999). Recently, researchers have postulated that both the ability to cope with change as well as the tendency to resist change lies within the individuals who are experiencing the change (Judge et al., 1999; Oreg, 2003). In essence, they have proposed that reactions to change are heavily dependent on dispositional characteristics. Other scholars have found that situational characteristics, such as communication quality and supervisor support, can greatly impact how employees perceive and react to large-scale changes (e.g., Wanberg & Banas, 2000).

A recent review of the organizational change literature published by Armenakis and Bedeian (1999) highlights the importance of work dealing with the affective reactions of organizational members to change implementations. These authors call for additional empirical work that looks at how to most effectively implement change to avoid the costly implications of negative employee responses to change. Reactions to change are considered highly complex in nature, and are impacted by aspects of the change at the organizational, work unit, and individual level. There is much support for the

view that reactions to change are highly influenced by personal demands placed on employees as a result of the change (e.g., Fedor et al., 2006).

The section that follows will focus on a review of the organizational change literature, specifically looking at theoretical models of change. In particular, both process models of change and change typologies will be discussed. Additionally, a review of employee reactions to organizational change, including the antecedents and outcomes of these reactions, will be presented. Finally, the rationale for studying change at the workgroup level and linking it to objective measures of performance will be put forth.

<div align="center">Change Models and Theoretical Perspectives</div>

Within the organizational psychology literature, change has been studied from several different perspectives (Armenakis & Bedeian, 1999). At the organizational level, environmental factors that induce change are the research focus. Alternatively, researchers may examine the content of change, including the development of different change typologies. More recently, researchers have begun to focus on change processes, including how organizational members respond to change.

Change Typologies

Classifications of change types have been proposed and evaluated for many years in the organizational change literature. Several typologies of change have emerged in an attempt to classify change (e.g., Dunphy & Stace, 1988; Porras & Robertson, 1992; Weick & Quinn, 1999). Organizational change can be defined as something that alters "how an organization functions, who its members

and leaders are, what form it takes, or how it allocates resources" (Huber et al., 1993, p. 316).

Weick and Quinn (1999) in an *Annual Review* article on organizational change and development, discuss change as either *episodic* or *continuous*. Both types of change assume that the ideal organization is one that can continuously adapt to its external environment. *Episodic change* is thought of as an organizational change that is "infrequent, discontinuous, and intentional" (p. 365). Episodic change "occurs in distinct periods during which shifts are precipitated by external events such as technology change or internal events such as change in key personnel" (p. 365). Change that is episodic in nature generally occurs in a phased approach, and is usually planned and driven by external forces. Lewin's (1947) model of planned change, which is discussed in a later section, could be considered a theory that stems from the view of change as episodic.

Alternatively, *continuous change* is thought of as "ongoing, evolving and cumulative" (Weick & Quinn, 1999, p. 375). Change occurs in organizations as work processes and systems are continuously updated over time. Continuous change happens everyday as "small continuous adjustments, created simultaneously across units, culminate and create substantial change" (p. 375). Change of this type is seemingly more difficult to study, given that it is often informally implemented, not often tracked, and emerges organically in organizations.

Porras and Roberton's (1992) change typology classifies change based on two dimensions: the degree of change and the planning involved in change. Four

types of change identified by the authors are: *developmental change* (planned first-order change), *transformational change* (planned second-order change), *evolutionary change* (unplanned first-order change), and *revolutionary change* (unplanned, second-order change). First order change occurs when change within a system leaves the system itself unchanged (Watzlawick, Weakland & Fisch, 1974). Second order change attempts to change the system itself as opposed to effecting change within a system. Second order change is thought to have much more profound and lasting effects on a system than first order change (Watzlawick et al., 1974).

Dunphy and Stace (1993) approach change classification using the degree of change as the primary classification mechanism. *Fine-tuning changes* describe small shifts in an organization's strategy, structure, people or processes. Similar to "continuous change" described by Weick and Quinn (1999), fine-tuning changes often occur at lower levels of the organization (workgroup or department). On the other hand, *incremental adjustments* describe organizational changes that are direct attempts to change corporate strategy, structure or processes. Two other types of change include *modular transformation* (a major realignment of one or more departments or divisions) and *corporate transformation* (corporate-wide change that encompasses dramatic shifts in business strategy and affects the entire company). Mergers, acquisitions, downsizing and restructuring are all examples of corporate transformations (Rafferty & Simons, 2006).

The change that is the focus of the present study could be classified as "transformational change" (planned second-order change) in the typology

identified by Porras and Robertson (1992), and as "corporate transformation" by Dunphy and Stace (1993). The organizational implementation involves extensive corporate-wide modifications to business processes and technology, in the attempt to change the system itself. In addition, the change taking place was planned, distinct, and precipitated by disequilibrium, which would qualify it as "episodic change" according to Weick and Quinn (1999).

Rafferty and Simons (2006) examined whether antecedents of change readiness differ based on the type of change under examination. They specificially looked at comparisons between "fine-tuning" changes (or small changes to an organization's structure, strategy, and processes) and "transformational changes" (Dunphy & Stace, 1993). Results indicated that the antecedents of change readiness differed based on the type of change that was being implemented: transformational or fine-tuning changes. Logistics and systems support had the greatest impact on readiness for fine-tuning changes, whereas trust in organizational leadership had the greatest impact on readiness for corporate transformation. Other factors significantly related to readiness for corporate transformation were (in order of strength): change-related self-efficacy, perceived organizational support, flexible policies and procedures, participation in the change process, logistics and systems support, and trust in peers. The authors stressed the importance of change researchers specifying the type of change under investigation in the context of empirical work.

Process Models of Change

Process models of change examine actions taken to initiate or facilitate organizational change and generally view organizational change as a phased process. In particular, process research looks at actions taken in the context of change, and employee, workgroup, or organizational outcomes of these actions (Armenakis & Bedeian, 1999).

Perhaps the most influential change researcher, Lewin (1947) conceptualized change in human systems as a phased process. This "episodic" change is thought to occur in three stages: unfreezing, moving, and freezing. The unfreezing stage involves moving individuals from their current state to a state where they are open for transition. During the unfreezing stage, a state of "change readiness" is created, and prior learning is supposed to be rejected and replaced. Lewin theorized that during this stage, anxiety related to the change is highly likely, due to the fact that previously held assumptions are being challenged (Lewin, 1947). Unfreezing is accomplished through several different mechanisms: disconfirmation of expectations, induction of learning anxiety if disconfirming data are accepted as valid and relevant, and provision of psychological safety that creates motivation and change from anxiety (Schein, 1996).

During the moving or transition stage, individuals are expected to move from their current state to the future state (Lewin, 1947). Dissatisfaction with the current conditions that is created during the unfreezing phase creates the motivation to change during the moving phase. At this stage, activities are

required to enable individuals to move to the new state. These can include communication, role modeling, and other activities that support new learning.

Finally, the refreezing stage occurs as individuals come to terms with their new state and the change is made permanent (Lewin, 1947). New behaviors learned as a result of the change eventually become automatic, and a new identity is established to support these behaviors.

Lewin's staged model of change has formed the basis for many of the process models of change that have been put forth in recent years (Armenakis & Bedeian, 1999). For example, Judson's (1991) process model of implementing change consists of five stages: 1) analyzing and planning the change; 2) communicating the change; 3) gaining acceptance of new behaviors associated with the change; 4) changing the status quo to the new desired state; 5) consolidating the change. Judson also identifies points within the change process where resistance is likely, and posits several ways to overcome this resistance, including rewards, bargaining, and persuasion. It is important to note that Judson's model is presented from the perspective of the change "agent" or instigator, and does not examine change from the perspective of employees on the receiving end of change.

On the other hand, Isabella (1990) proposed a process model of how change affects organizational members as it is implemented. The four stages describing organizational members' experiences with change are a) *anticipation*, in which individuals compile information they have about the change into a perceived reality, b) *confirmation,* during which assumptions are established and

become ingrained, c) *culmination*, in which managers compare pre-change and post-change conditions, and d) *aftermath*, when managers review and evaluate change consequences. Isabella's model has been used by many researchers as a basis for understanding why organizational members might resist or promote change.

Each of the models presented above utilizes a process framework for understanding how organizational change progresses. In fact, Hendry (1996) noted that any process model of change can essentially be boiled down to Lewin's three stages of change. These models propose that change unfolds in a series of identifiable steps and indicate specific actions that can be taken to reduce resistance. Finally, these staged approaches to change imply that if the stages of change are not adequately addressed, resistance is likely (Armenakis & Bedeian, 1999).

Continuous and discrete models of change can be differentiated based on the perceived frequency of the change events. Glick and colleagues (Glick, Huber, Miller, Harold, & Sutcliff, 1995) describe continuous change as a situation in which change occurs very frequently within an organization, resulting in a highly unpredictable situation for organizational members. This unpredictability is likely to lead to high anxiety, even though this type of change is incremental in nature. On the other hand, when change is less frequent within organizations, it is more likely to be viewed as having a distinct beginning and end. This type of change is more likely to be transformational in nature, involving modifications to core

aspects of the organization, such as values, structure, strategy, and key work processes.

<div align="center">Change Perceptions: From Cynicism to Commitment</div>

Going beyond organizational outcomes and processes, recent change research has taken to examining organizational change from the perspective of the change attitudes of organizational members (Armenakis & Bedeian, 1999). A greater focus on the "human side" of change is imperative, as change is specifically enacted and experienced by employees. Empirical research has demonstrated that employee reactions to change and perceptions of the change process are critical drivers of change success (Armenakis, Harris, & Mossholder, 1993).

A wide range of change attitudes has been examined as employee outcomes of organizational change. Some of the commonly researched change attitudes include: acceptance of change (Leiter & Harvie, 1998), change readiness (Armenakis et al., 1993), change openness (Wanberg & Banas, 2000), resistance to change (Coch & French, 1948), cynicism about change (Wanous, Reichers, & Austin, 2000), and commitment to change (e.g., Herscovitch & Meyer, 2002). These change attitudes span both positive (e.g., change acceptance) and negative (e.g., resistance) ends of the spectrum in terms of potential employee responses to change.

In recent years, several researchers have asserted that change perceptions such as resistance and commitment are multi-dimensional in nature (e.g., Oreg, 2006; Herscovitch & Meyer, 2002); specifically, that change perceptions have

behavioral, affective and cognitive components. This line of thinking stems from evidence of incongruence between individuals' thoughts and behaviors related to change, and suggests that to create champions of change, change process variables must appeal to employees cognitively, affectively, and behaviorally.

Researchers have demonstrated that change perceptions, whether positive or negative, are heavily influenced by the organization's attempt to influence the attitudes or behaviors of employees in reference to change (Armenakis et al., 1993). The next section reviews empirical research that has examined variables expected to influence employee's perceptions related to organizational change. These factors can range from individual variables and workgroup characteristics to organizational factors.

<u>Empirical Research on Change Process Variables</u>

Empirical research has identified a wide range of individual, workgroup, and organizational factors that may promote or impede positive change reactions. Change implementation processes can have a dramatic influence on employees' reactions to change (Caldwell et al., 2004). Specifically, what the organization and its management does prior to and throughout the change process has a great impact on reactions to organizational change (Fedor et al., 2006). Many of the variables presented below can facilitate the disconfirmation of expectations, which Schein (1996) argues serve to facilitate the "unfreezing" process (Lewin, 1947) and create more openness to change. The following section summarizes some of the empirical work that examines the influence of these various antecedents on change perceptions.

Participation in the Change Process

Participation has been argued by many as critical for increasing change acceptance and reducing change uncertainty or resistance (Dunphy & Stace, 1990). In the action research model of change implementation, employees are viewed as active and necessary collaborators in the change process (Wanous, Reichers, & Austin, 2000). In line with this, Wanberg and Banas (2000) showed that employees who participated in the change process reported greater beliefs in the benefits of the change. One explanation for the effect of participation on change perceptions is that participation exerts a motivational effect on change participants, by enhancing individual self-efficacy related to the change (Latham, Winters, & Locke, 1994).

The opportunity for participation in change can create a sense of control on the part of employees and result in greater commitment to a goal or activity (Locke & Schweiger, 1979). Employees who are given the opportunity for participation and input should then feel more control, and thus, less uncertainty about impending changes.

Much of the organizational development literature recognizes the importance of employee participation in the change process. Empirically, Antoni (2004) found that participation in the change process predicted positive change responses and evaluations of change success. In a similar way, Korunka, Weiss, Huemer, and Karetta (1995) showed that high levels of employee participation during a technology implementation led to higher job satisfaction following the implementation, and fewer health complaints. Terry and Jimmieson (2003) found

that change-related employee participation led to increased self-efficacy, which predicted positive coping behaviors and job satisfaction.

<u>Change Communication</u>

Researchers have reported that employees would rather have any information (even negative) than have no information at all about an organizational change (Miller & Monge, 1985). The change message is thought to be critical to the support of or resistance to a given change (Armenakis, Harris, & Mossholder, 1993). In addition, evidence of a need for change is required for creating readiness for change (Cunningham et al., 2002). Cummings and Worley (2005) argue that the identification of gaps between the current and desired states of the organization, and the effective presentation of positive expectations for change can increase change readiness. Both of these goals can be accomplished via effective change communication.

Process models of organizational change assert that if individuals are inadequately prepared for a change, as a result of poor communication or training, denial and resistance to the change are likely to occur (Isabella, 1990). In this way, the amount and quality of information provided about the change can largely affect how individuals react to change.

In a process model of organizational change, Armenakis, Harris, and Feild (1999) argued that change communications should contain the following elements in order to be effective a) discrepancy (i.e., why the change is needed), b) self-efficacy (i.e., change is possible), c) personal valence (i.e., why change is in the best interest those being asked to change), d) principal support (i.e., those affected

by the change support it), and e) appropriateness (i.e., why the change is appropriate for the organization).

Several empirical studies have demonstrated the positive benefits of change-related communication and information. According to Sutton and Kahn (1986), the ability to predict and understand the specific outcomes of an organizational change can act as a buffer to the stress experienced as a result of the uncertainty inherent in the change process. This may allow employees to more easily adjust to change. Miller and Monge (1985) demonstrated that information was associated with lower levels of anxiety for employees about to experience a significant organizational change. Shaw, Fields, Thacker and Fisher (1993) found that open communications correlated positively with job satisfaction for employees experiencing the divestiture of AT&T. In addition, communication was strongly correlated with organizational commitment following the divestiture. Wanberg and Banas (2000) showed that detailed and timely information provided about a change resulted in increased willingness to support/cooperate with the change and reacted positively to the change.

In research looking at change-specific communication, several communication mechanisms have shown to be vital to the success of organizational change implementations. Schweiger and DeNisi (1991) conducted an experimental study comparing communication methods in the context of a merger. One group within the study received a realistic merger preview (RMP), or a set of communications (newsletter, telephone hotline, group and individual meetings) specifically focused on the merger. Employees in the comparison group

merely received a letter from the CEO announcing the merger of the organizations. The researchers found that although both groups experienced negative emotions and thoughts when the merger was announced, the realistic communications received by the experimental group considerably helped employees cope with the merger. The benefits of communication were demonstrated over time, in the form of decreased merger-related stress, and increased commitment and intentions to remain with the organization.

Schweiger and DeNisi (1991) also noted that the positive effects of communication could be partially attributed to the symbolic value of communication. Communication from senior management may serve to increase trust in the organizational leaders, in addition to perceptions of their competence as far as steering the organization in the right direction. Senior management communication can also indicate their care and concern for the well-being of employees.

It is important to note, however, that communications for both groups were presented following the merger announcement. At the initial announcement of the merger, stress reactions were high for both the RMP group and the control group – thus, suggesting that communications about organizational implementations may be more effective if occurring prior to the implementation. Although not possible in a merger situation, this may be more feasible in other types of implementations where initial communications during the planning stages are appropriate. Communication of this type may help considerably to

ameliorate change-related stressors, namely the uncertainty that surrounds organizational change.

Supervisory Support of Change

Several researchers have established that successful change efforts depend on organizational leaders demonstrating their commitment to the change (Kotter, 1996). When employees see management as champions of a change, it helps to reduce their uncertainty about the change. It has been found that management support for change-related activities increases employee commitment to the change (Cummings, Mohrman, & Mitroff, 1990).

Supervisors are thought to have the greatest impact on employee attitudes and behaviors (Antoni, 2004). Employees see supervisors as the link between the organization and themselves, and are likely to take cues and model behaviors from their supervisor. Therefore, reactions to change are likely to be influenced heavily by how the supervisor reacts (i.e., whether or not the supervisor supports the change initiative).

Also, supervisor support of change demonstrates to employees that management has their best interests at heart, and will act in ways that are beneficial for organizational members. Acceptance of change is likely to be higher when supervisors show their subordinates that they are "on board" with the change initiative. Supervisor support of change can also be demonstrated to employees through asking employees for suggestions and participation in the change process. Supervisors serve as positive role models for the values of a

change initiative and reinforce and reward change-related behavior (Manz &
Sims, 1987).

Rafferty and Griffin (2006) argued that supervisor support can be thought
of as a coping resource, because a supportive supervisor most likely provides
information and counsel related to an organizational implementation. These
researchers found that supervisor support had a strong impact on change
perceptions. Individuals who responded that their supervisors were supportive
reported less uncertainty associated with organizational change. Uncertainty was
then negatively related to job satisfaction, and positively related to turnover
intentions.

Antoni (2004) found that support for the change on the part of supervisors
had a significant relationship with employee participation in the change process
and perceptions of change favorability, and a negative relationship with the
perceived need for further organizational change. This study demonstrated that
supervisor reactions to change can have a strong impact on subordinates'
perceptions and reactions to change.

Herzig and Jimmieson (2006) specifically investigated the role of middle
managers in the organizational change process. These researchers found that how
well middle-managers coped with uncertainty associated with change was
indicative of how their employees dealt with the change transition. When middle-
managers effectively managed the uncertainty associated with the change process,
this resulted in more positive change perceptions and positive outcomes for their
employees.

Mediators of the Change Process – Outcome Relationship

Recently, there has been an increased interest in studying how individual characteristics and dispositions affect employee responses to change (e.g., Judge et al., 1999). Several variables have been proposed to mediate the change process to change outcome relationship. The rationale for examining these characteristics in the context of change is that the process by which change is implemented may have a direct influence on how well employees perceive that they can perform their jobs following a change, and how well they will cope with change.

Change-related Self-Efficacy

Employees may be less apt to accept and participate in changes when they involve the use of new technology, and employees have uncertainty about whether or not they will be able to perform their roles with the new programs or systems (Coch & French, 1948). When employees believe that they will not have the ability to perform after imposed change, they may be more likely to resist it (Cunningham et al., 2002).

Self-efficacy is defined as an individual's judgment of their capacity to perform in a given situation (Gist & Mitchell, 1992). Self-efficacy is thought to determine motivational behaviors such as goals, effort, and persistence (Bandura, 1997). This is particularly true when the situation in question is novel or uncertain in nature (Judge et al., 1999). Therefore, individuals with higher self-efficacy in the context of a change implementation will be more likely to believe that they can deal with the new performance expectations resulting from the change in roles and responsibilities, and thus, will have more positive reactions to the change in

general. In addition, self-efficacy serves a motivational purpose, directing task persistence and behavior. Individuals who have high self-efficacy for a specific change will be more likely to commit to making the change a success (Wanberg & Banas, 2000).

Change-related training and participation in the change process may serve as ways to increase change-related self-efficacy. In fact, Bandura's original social learning theory (1977) pinpointed enactive mastery as a way to increase self-efficacy. Verbal persuasion, such as what might be achieved through effective and targeted communications about the change initiative, may also increase change-related self-efficacy.

Wanberg and Banas (2000) defined change-related self-efficacy as employees' perceived abilities to complete their job responsibilities, despite the change. Several empirical studies have examined self-efficacy as a precursor to change readiness or acceptance. Cunningham et al. (2002) showed that employees with higher self-efficacy reported higher readiness for hospital reengineering. Judge et al. (1999) examined generalized self-efficacy in the context of change, and found that self-efficacy was positively related to coping with change.

Coping with Change

Organizational change oftentimes imposes radical adjustments to employees' day-to-day jobs, resulting in feelings of uncertainty about work. Uncertainty is a central component in Lazarus and Folkman's (1984) model of stress and coping, and has shown to be a situational property that is harmful to individuals and hinders their well-being. Uncertainty is associated with

undesirable individual outcomes, such as turnover intentions and lowered job satisfaction (Rafferty & Griffin, 2006). Because uncertainty in the workplace is viewed as a stressor (Ashford, 1988), coping strategies for change are important to an employee's health and well-being in the workplace, and are thought to be associated with positive outcomes for the individual and the organization.

Lazarus and Folkman's (1984) model of stress and coping proposes that coping resources, or the resources individuals draw upon to deal with an undesirable situation, have a profound impact on individual's cognitive reactions to the situation. In the context of change, an individual's propensity to positively cope with organizational change is likely to affect how they perceive and react to a change implementation. This model rests on the assumption of coping as a state or process, which is heavily influenced by event characteristics (i.e., process variables) related to the change (Amiot, Terry, Jimmieson, & Callan, 2006).

Amiot and colleagues (2006) found that positive coping strategies were associated with certain event characteristics related to an organizational change (merger). In particular, participation in the change, perceptions of leadership support, and information about the change, were associated with problem-focused coping (i.e., the use of behavioral strategies to behaviorally and cognitively contend with the merger). This relationship was mediated by stress and self-efficacy. In addition, problem-focused coping was related to greater adjustment after the merger, whereas avoidance-coping (or escapist) behavior was negatively related to adjustment.

In a similar study, Rafferty and Griffin (2006) found that coping (defined using Lazarus and Folkman's approach), along with other perceptions, accounted for almost half of the variance in perceived uncertainty resulting from change. In addition, these variables accounted for approximately one third of the variance in subsequent job satisfaction, and one quarter of the variance in turnover intentions.

In a different approach to the study of coping and change, Judge et al. (1999) looked at the relationship between several personality characteristics (Positive Self-Concept and Risk Tolerance) and coping with change. In addition, the authors investigated relationships between self-reported coping and extrinsic and intrinsic career outcomes.

According to Judge and colleagues, coping with change is comprised of both reactions to change and willingness to lead change (Judge et al., 1999). Judge et al. (1999) examined the link between various dispositional characteristics and coping with change, in line with their hypothesis that individuals have a general willingness and ability to cope with change. The strongest relationships between the study variables emerged between tolerance for ambiguity and coping, and positive affectivity and coping. When the study's personality variables were factor analyzed to form two distinct factors (Positive Self-Concept and Risk Tolerance), both higher level variable compositions were significantly and positively related to coping with change.

Upon further analysis, coping with change was found to mediate relationships between Positive Self-Concept and Risk Tolerance, and intrinsic and extrinsic career outcomes. In particular, these variables predicted job satisfaction,

organizational commitment, salary, career plateau and job performance. As a whole, this study does indicate that coping with change may be, at least partially, based on individual's dispositional characteristics. Also, these results indicate that an individual's ability to cope with organizational change is strongly related to many important work-related outcomes, including attitudes towards the job and organization, and measures of career success.

Perceptions of Change Favorability

Employees' perceptions of the outcome favorability of a change may largely impact their willingness and desire to remain a part of the organization, and to perceive the organization in a favorable way. When employees view change outcomes as favorable, they are likely to determine that management holds their best interests at heart, and is making the changes necessary for the organization to remain successful. This idea is supported by expectancy theory (e.g., Vroom, 1964); the belief that positive outcomes will result from a given action will increase the likelihood of completing that action. Applied to change, employees who have positive expectations about the outcomes of change both for the organization and for themselves will be more likely to support it and view the organization favorably (Wanous et al., 2000).

Novelli et al. (1995) found that positive perceptions of the outcomes of change were related to increased employee commitment to the change. In a similar way, Fedor et al. (2006) demonstrated that the perceived favorability of the change heavily impacted both commitment to the change and commitment to the organization. When changes were viewed as unfavorable, as far as making

work life more difficult or less interesting, individuals were less committed the change, and consequently, to the organization.

Caldwell et al. (2004) investigated whether change favorability (i.e., whether or not a change was expected to help or hinder success) moderated the relationship between aspects of the change process and specific change outcomes. They found that when the change initiative was viewed as unfavorable, low management support was associated with negative change reactions. At high levels of favorability, the management support did not have a significant impact on change reactions.

These studies highlight change outcome favorability as a potentially important variable to assess in the study of change reactions. Change favorability may serve to lessen or increase the influence of change process variables on employee reactions to change. Employees' expectations about whether or not a change initiative is likely to be successful, and ultimately better the organization, may be integral to how they react to change.

<u>Analyzing Change Outcomes</u>

Studies of change have examined a wide range of individual change perceptions, from resistance and cynicism, to acceptance and commitment. Although all are deemed important to the study of change, commitment to change was selected for the purposes of this study due to both its positive connotations, and to the strength of the construct of employee commitment in general (e.g., Meyer & Allen, 1991).

<u>Commitment to Change</u>

Recently, many change researchers have posited that employee commitment to change is an integral part of a successful change implementation (e.g., Fedor et al., 2006; Herscovitch & Meyer, 2002). Additionally, several studies on organizational change support the positive effects of factors such as employee commitment in the success of organizational change initiatives (e.g., Herscovitch & Meyer, 2002; Wanberg & Banas, 2000).

The theoretical basis for employee commitment to change stems from *organizational* commitment research by Meyer and Allen (1991). Commitment to change is thought to be a three-component model, in the same way that organizational commitment is comprised of affective, continuance and normative commitment (Meyer & Allen, 1991). Each component of *organizational* commitment is thought to have a different effect on withdrawal behaviors (e.g., turnover or retention) and empirical research supports differential relationships with predictors and outcomes of each. Therefore, the three components or facets of commitment are viewed as distinct.

Commitment to change is defined as "a force (mind-set) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative" (Herscovitch & Meyer, 2002, p. 475). Change commitment, similar to organizational commitment, is comprised of three facets: affective commitment, which is support for a change based on a belief in its benefits; continuance commitment, which stems from perceived costs associated with not supporting the change; and normative commitment, which is

based on a sense of obligation to support organizational initiatives (Herscovitch &
Meyer, 2002).

When it comes to commitment to organizational change, the
organizational change literature suggests that employee support of change is a
necessary condition for change success (Piderit, 2000). High commitment is
expected to engender compliance with organizational change initiatives, which in
turn enables the success of the change implementation. More importantly,
commitment may also lead to discretionary behaviors related to the change, such
as cooperating with the change and serving as a champion of the change
(Herscovitch & Meyer, 2002).

Herscovitch and Meyer (2002) demonstrated that commitment to change
is related to behavioral support of change, above and beyond the effects of
organizational commitment. In addition, both affective and normative
commitment to change correlated positively with cooperation and championing
behaviors. Interestingly, even individuals who showed very little commitment to
change still showed some willingness to comply with the organizational change.
However, these individuals did not demonstrate any of the discretionary behaviors
(e.g., championing), which are arguably more desirable behaviors in the context
of change. Had organizational outcomes been examined, the researchers may have
found that the difference between compliance and championing is what draws the
line between successful and unsuccessful change initiatives.

In a related study, Fedor et al. (2006) found that commitment to change
was high among individuals who were members of workgroups undergoing large

amounts of change, but only if the change was judged to be appropriate and the individual job demands resulting from the change were low. On the other hand, commitment to the change was low when the change was viewed to be unfavorable, even when the *amount* of change was low. In essence, when the change is viewed as something unfavorable, even if the impact to the individual is small, individuals tend not to be supportive of it.

What has received little empirical study up to this point is how change commitment develops in individual employees or workgroups. In fact, Herscovitch and Meyer put forth the following question as a logical next step in the study of employee reactions to change: "How does commitment to change develop?" (2002; p. 484) Based on the *organizational* commitment literature, the researchers speculated that value relevance, identification, and socialization may be several means by which commitment to change develops (Herscovitch & Meyer, 2002). Several of the factors examined in the present study are highly similar to the factors identified by Herscovitch and Meyer, including perceptions of change favorability (similar to value relevance), change communication (similar to socialization), and participation (similar to identification). Therefore, this study may be viewed as a first attempt to look at factors that promote or impede the development of change commitment.

Job Satisfaction

Due to increasing evidence that many change implementations fail to produce desired results (Micklethwait & Wooldridge, 1996), Judge and Church (2000) called for a study of the relationship between organizational change and

employee attitudes, particularly job satisfaction. Job satisfaction can be defined as an overall, summative judgment of feelings about ones' job (Spector, 1997).

Research has shown that psychological uncertainty, such as what is experienced in the context of large scale organizational change, is related to job satisfaction (e.g., Rafferty & Griffin, 2006). Wanberg and Banas (1997) showed that change attitudes, acceptance, and positive feelings about the change were positively correlated with job satisfaction. On the other hand, negative change attitudes have been shown to be related to lower job satisfaction (Schweiger & DeNisi, 1991).

Judge et al. (1999) found that coping with change mediated relationships between risk tolerance and positive self-concept, and job satisfaction. Individuals with high risk tolerance and positive self-concept were more satisfied with their jobs following a change, and this was accounted for by their ability and willingness to cope effectively with the change.

Workgroup Performance

Tying employee perceptions of change to organizational change outcomes is imperative for the study of organizational change and development. A major stream of research in organizational change has suggested that employee acceptance of and readiness for change are important drivers of the success or failure of change initiatives (e.g., Cunningham et al., 2002). Ultimately, the purpose of large-scale organizational change is to enhance organizational performance. However, although authors oftentimes propose that change attitudes (such as readiness and acceptance) mediate the relationship between

implementation factors and change outcomes, this assertion has, for the most part, not been subject to much empirical testing (Rafferty & Simons, 2006). It is rare that studies of organizational change are able to link employee perceptions to organizational performance data. Most studies of change look at perceptual, self-report measures as the outcomes of interest (Fedor et al., 2006).

Change studies at the organizational level have demonstrated the quality or efficiency improvements experienced as a result of organizational implementations (Armenakis & Bedein, 1999). However, at the individual level or workgroup level, linkages to individual or workgroup level performance changes are rarely, if ever, made. The present study attempts to fill this void by tying employee perceptions of change to workgroup performance following the change.

<u>Workgroup-Level Perspective: Beyond Individual Change Perceptions</u>

Although change is generally focused at the organization as a whole, the way in which it is filtered through the organization may differ from unit to unit. Some workgroups, for example, might experience a greater degree of change than others. Workgroups have different supervisors, may be communicated to differently, may be provided with differential opportunities for participation in the change process, and may experience different types and amounts of proximal change. As such, the experience of change may dramatically differ between workgroups within the same organization. Because of these, change process variables are oftentimes thought of as group level variables (e.g., Caldwell et al., 2004).

On the other hand, perceptions *within* workgroups may show little variance. Research from other domains of employee behavior indicates that the perceptions of employees with interdependent relationships may interact with and influence one another. For example, relative deprivation theory argues that individuals do not react to objective realities; in fact, they are more likely to base reactions on subjective realities heavily influenced by social forces (Crosby, 1984). Terry and Jimmieson (2003) argued that employees use co-workers as a crucial reference point to validate or invalidate their own reactions to organizational events. This idea is supported by social learning theory (Bandura, 1977), which stresses the importance of observing and modeling others' emotional reactions, attitudes, and behaviors.

Some researchers have argued that by focusing on the study of change at the individual level or organizational level only, researchers may be unnecessarily narrowing the study of change and change outcomes (Dent & Goldberg, 1999). Lewin (1947) suggested that resistance to change could emerge not only at the individual or organizational level, but from anywhere within the social system of an organization. Two general justifications for examining change at the workgroup level are presented here. The first is that individual perceptions may be heavily influenced by perceptions of others within ones workgroup. Shared perceptions are likely to develop within groups when they experience the same work rules and procedures and/or share the same manager (Schneider & Reichers, 1983). Secondly, employees within the same workgroup or business unit will

likely experience the same type and amount of change to their jobs, therefore encountering the same "change situation" (Fedor et al., 2006).

Logically, it is certainly plausible that social perception would affect employee perceptions and reactions to organizational change. The perceptions of others can largely influence how individuals respond to social events (Erickson, 1988). Just as readiness or resistance to change is thought to be influenced by organizational change "agents", perceptions can certainly be shaped by others within the organization, such as coworkers or members of ones workgroup. Research on resistance to change has supported this assertion with evidence that when those in an employees' social network (i.e., colleagues, supervisors and subordinates) resist change, an employee is more likely to also resist change (Brown & Quarter, 1994). In line with this, Antoni (2004) found that employee's colleagues' openness towards change influenced their own openness toward change.

Focusing on the workgroup level is also appropriate because commitment or resistance from a single source may not be enough to severely impact the implementation or change process (Lapointe & Rivard, 2005). However, when groups of employees band together to resist or promote change, the effects can be much more evident. Recent researchers have stated that changes are typically directed and managed at the unit level (Fedor et al., 2006). Our understanding of the change process can thus be enhanced by examining change at the workgroup or unit level.

Conceptualizing change reactions at the workgroup level is fitting, given the probability that change is experienced similarly by those working closely together. Those within the same workgroup will likely experience the same *amount* and *type* of change to their daily jobs. The extent or severity of change is considered an important factor in determining employee reactions to it (Fedor et al., 2006). The new demands placed on employees occupying similar positions within the same workgroup should be relatively consistent among all employees within that workgroup. As such, employees who work closely together may experience and respond to change in a similar way.

The aggregation of perceptions to the workgroup level is also practically important, given that in many contexts, group level data on performance may be easier to obtain than individual performance data, especially within manufacturing organizations. Aggregating change perceptions to a higher level of analysis will allow for the examination of relationships between employee reactions to change and objective outcome measures of change success.

<div align="center">Rationale</div>

Employee reactions to organizational change are now recognized as one of the most important factors in the success or failure of change initiatives. Whereas in the past, much of the research on change focused either on change typologies or implementation models, recent research increasingly questions the impact of change on employee behavior (Armenakis & Bedeian, 1999) and conversely, the impact of employee attitudes on change success or failure.

The most influential antecedents of change reactions demonstrated by empirical research are participation in the change process (Wanberg & Banas, 2000), change communication (Armenakis et al., 1993), and supervisory support of change (Cummings et al., 1990). These variables are generally considered change process variables, as they are factors associated with the implementation of change programs.

Participation in the change process increases the control that change recipients have over the change, and as a result, lessens feelings of uncertainty which are thought to largely drive negative reactions to change (Wanberg & Banas, 2000). The action research model of organizational change corroborates this view by positioning change as a collaborative effort among organizational members (Cummings & Worley, 2005). Change-related communication can have an enormous impact on employee perceptions of change, due to its goal of creating positive expectations for change in addition to the identification of where current organizational performance gaps exist (Wanberg & Banas, 2000). Finally, supervisory support of change is related to employee commitment to change, as support from upper management demonstrates to employees that the change is accepted and embraced by organizational leaders, and will guide the organization in the right strategic direction (Cummings et al., 1990). Through modeling (Bandura, 1977), employees are likely to take behavioral and reactionary cues from their supervisors. Thus, supervisor support (or lack thereof) can exert a powerful influence over employee reactions to change.

Individual difference variables, including dispositions, represent a newer area of focus for change researchers. Two individual characteristics of interest in the present study are coping with change (Judge et al., 1999) and change-related self-efficacy (Wanberg & Banas, 2000). Coping with change is considered an individual difference variable, and is highly related to the personality traits of tolerance for ambiguity and positive affectivity. In addition, self-efficacy, which is also an individual characteristic, is highly related to change reactions, due to its ability to motivate action and increase confidence in performance.

The ability to cope with change in a positive fashion, and self-efficacy regarding the change, may account for the impact of process variables on reactions to change. Communication, participation, and supervisory support will likely have a strong impact on reactions to change through increased ability to cope with the change and high self-efficacy about post-change performance. On the other hand, effective change implementation practices may not exert a positive effect on change reactions if individuals do not have the ability to cope with change or the perception that they can be perform successfully once the change is implemented.

Change reactions are multi-faceted in nature, and span the range from positive (e.g., change acceptance, change readiness) to negative (e.g., resistance to change, cynicism). Of interest in this study is employee commitment to change, defined by Herscovitch and Meyer (2002) as a mind-set or reaction that binds an individual to a course of action allowing for the successful implementation of change. Commitment to change is hypothesized to be influenced by various

process variables and individual characteristics related to change. Employees who receive effective communications about change, participate in the change implementation, and see that their supervisor supports the change are likely to be committed to it. Similarly, these process variables are likely to impact employees' job satisfaction following the change implementation (Judge & Church, 2000). Individual job satisfaction following a significant organizational transformation is likely to be at least somewhat influenced by how the transformation was carried out, an individual's ability to cope with the change, and their perceived ability that they can perform their job following the change.

Despite a growing body of research on employee reactions to organizational change, for the most part, employee perceptions are used as the outcome measure of interest. Rarely do empirical studies tie reaction, or perceptual measures, to any kind of objective outcome. Oftentimes, this creates a methodological limitation due to mono-method bias. This absence of objective outcomes of change may be primarily due to the difficulty of ruling out alternative influences unrelated to the change that affect individual, workgroup, or organizational performance.

Change itself may not necessarily result in positive outcomes for the organization, as several authors (e.g., Micklethwait & Wooldridge, 1996) have observed. Whether or not this may be traced directly back to employee perceptions and reactions has yet to be determined, but appears to be a plausible direction worthy of exploration. The present study attempts to determine whether process variables, at the workgroup level, have an impact on workgroup

performance following an organizational transformation. Process variables are important to examine in this context given that they are under the direct control of the organization, and largely influenced by the supervisor.

<div align="center">Statement of Hypotheses</div>

The rationale for Hypotheses I through III is affirmed by several empirical studies that have demonstrated relationships between change process variables and employee reactions to change (e.g., Armenakis et al., 1993; Cummings et al., 1990; Wanberg & Banas, 2000). In addition, there has been a recent call for the examination of individual differences in the study of change (Judge et al., 1999) and several empirical studies that have shown relationships between dispositional or motivational characteristics and employee reactions to change (e.g., Jimmieson et al., 2004; Judge et al., 1999). There is reason to believe that individual differences, such as the ability to cope with change, and self-efficacy related to change, may mediate the relationship between change process variables and change reactions. When changes are carried out with employee involvement, adequate information, and supportive leadership, these characteristics are likely to lead to increased perceptions of the ability to perform and personal means to cope with change (Terry & Jimmieson, 2003). In turn, these individual differences are likely to impact change reactions and outcomes.

Hypothesis Ia: At the *individual* level, change process variables (i.e., communication quality, participation in the change process, supervisory support of change) will be significant positive predictors of commitment to change.

Hypothesis Ib: At the *individual* level, change process variables (i.e., communication quality, participation in the change process, supervisory support of change) will be significant positive predictors of job satisfaction after the change.

Hypothesis IIa: At the *individual* level, individual difference variables (i.e., coping with change, self-efficacy) will be significant positive predictors of commitment to change.

Hypothesis IIb: At the *individual* level, individual difference variables (i.e., coping with change, self-efficacy) will be significant positive predictors of job satisfaction after the change.

Hypothesis III: At the *individual* level, individual difference variables (i.e., coping with change, self-efficacy) will mediate the relationships between the process variables and commitment and job satisfaction.

The rationale for the workgroup level hypotheses, Hypotheses IV through VII, emerges from the rise in recent years of multilevel organizational research in general (Kozlowski & Klein, 2000). Multilevel researchers are interested in what conditions occur to create shared organizational perceptions among interdependent individuals (e.g, those who work on the same teams or have the same supervisor) and how these interact with individual level variables as well. Organizations are now viewed as "systems", and this view calls for the study of how individual and organizational characteristics interact and predict individual and organizational outcomes (Kozlowski & Klein, 2000). Regarding organizational change, it is reasonable to anticipate that supervisors within

organizational groups might create an environment akin to a *climate* for change, resulting in shared perceptions of the change process that might predict outcomes above and beyond the effects of individual-level perceptions.

Chan (1998) specified that there are several different means by which unit level constructs can be operationalized and measured, referred to as *composition models*. The most commonly used model for aggregation, as described by Chan, is the *direct consensus* model of aggregation. This approach aggregates individual level responses that demonstrate an acceptable level of within-group agreement of scores. Employees are asked to individually respond to survey items, which are then averaged (given that sufficient within-group agreement and between-group variance is demonstrated) to form a unit-level perception.

Some authors have recently argued that the *referent shift* composition model (which asks group members to rate the group as a whole, instead of asking individuals to rate the self) is a more appropriate way to aggregate variables (Arthur, Bell, & Edwards, 2007; Kozlowski & Klein, 2000). However, the direct consensus model was selected for use in the present study, due to the sample organization's desire to ask individual respondents about their individual experiences.

Due to the assertion that shared change perceptions likely exist within workgroups (Caldwell et al., 2004), as a result of a common "change experience" and the influence of social factors on employee perceptions (Erickson, 1988), the following hypotheses are put forth:

Hypothesis IV: At the *workgroup* level, aggregated change process variables (i.e., communication quality, participation in the change process, supervisory support of change) will be significant positive predictors of workgroup performance at Time 2 (controlling for performance at Time 1).

Hypothesis V: At the *workgroup* level, aggregated workgroup commitment to change will be a significant positive predictor of workgroup performance at Time 2 (controlling for performance at Time 1).

Hypothesis VI: At the *workgroup* level, aggregated perceptions of change favorability will mediate the relationships between aggregated change process variables (i.e., communication quality, participation in the change process, supervisory support of change) and performance at Time 2 (controlling for performance at Time 1).

Hypothesis VII: At the *workgroup* level, aggregated commitment to change will mediate the relationships between aggregated change process variables (i.e., communication quality, participation in the change process, supervisory support of change) and performance at Time 2 (controlling for performance at Time 1).

Research Question I: Are the relationships between workgroup level process variables (i.e., communication, participation, supervisory support) and workgroup performance stronger for Time 3 performance measures (controlling for Time 1)?

Research Question II: Is the relationship between commitment to change and workgroup performance stronger for Time 3 performance measures (controlling for Time 1)?

Figure 1. Model of Study Hypotheses

Workgroup Level of Analysis

| Process Variables
- Participation
- Communication
- Supervisory Support | → | - Workgroup commitment to change
- Change Favorability | → | Workgroup Performance |

....

Individual Level of Analysis

| Process Variables
- Participation
- Communication
- Supervisory Support | → | Individual Differences
- Self-efficacy
- Coping with Change | → | Commitment to Change
Job Satisfaction |
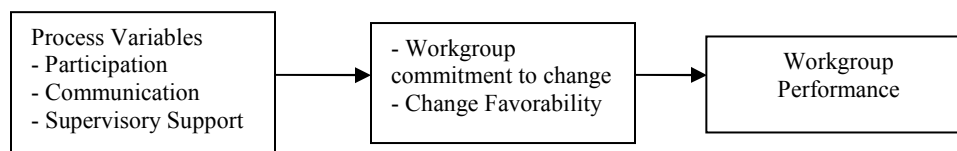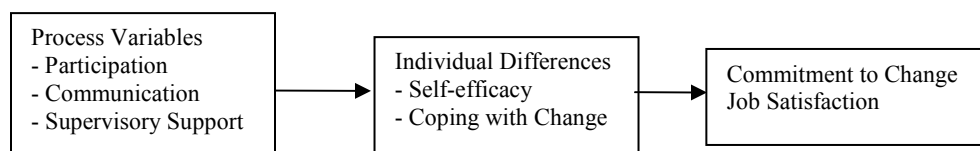
CHAPTER II

METHOD

The data for this study were collected from five different U.S.-based plants of a three billion dollar, Fortune 500 manufacturing organization headquartered in the United States. The organization employs over 14,000 individuals working in more than 30 countries. As part of a multi-year, corporate-wide technology implementation undertaken by the organization in an attempt to systematize and increase the efficiency of operations, a survey was conducted at the plant level to assess plant employees' reactions to the ensuing organizational changes. Organizational surveys are an effective way for organizations to drive and measure the success of organizational change initiatives (Kraut, 2006). The plants surveyed for the present study were among the first in the organization to implement the new information systems and supply chain processes associated with the project. Ultimately, this project, which began in 2004, hoped to achieve several outcomes: improved inventory management, demand planning, and production scheduling, all resulting in improved customer satisfaction and superior operational efficiency. At the plant level, this was expected to translate into reduced waste and delay on the lines, and increased speed and recovery of materials, as well as an increase in the volume of product produced and shipped.

Plant employees were viewed as serving a critical role in making the technology implementation a success. As the front-line workers of the organization, plant employees are responsible for carrying out the day to day operations of the company. These five plants were part of the first "wave" of the

project implementation, and as a result, were used to pilot many of the processes involved in the project roll-out, including the training and new technology. Several significant changes in plant employees' job responsibilities were required as a result of the technology implementation. For example, many of the formerly manual operations in the plant were becoming computerized, resulting in the need for plant employees to operate hand-held barcode scanners instead of recording inventory using clipboards and pencils.

Participants

The participants in this study were line and managerial employees from the five plants participating in the first wave of the organization's technology implementation. These plants are located in five different cities throughout the Midwest. Data were collected from 637 employees in 79 workgroups spanning the production departments across the five different plants. Within production departments of the organization, *workgroups* are defined as groups of individuals (i.e., hourly workers) that work the same production line on the same shift schedule.

Several demographic variables were assessed in the participant sample (see Appendix A). First, respondents were asked to identify their tenure ("How long have you been employed by [company]?"). The tenure breakdown in the sample of usable data consisted of 36% "0 to 5 years", 26% "6-10 years", and 38% "11 or more years". Secondly, respondents identified their level ("What is your job level?"). The response options for the job level demographic were "Hourly", "Manager", or "Clerical".

The sample data set consisted of 79% hourly employees, 17% managerial employees, and 4% clerical employees. Data obtained from both managerial employees and clerical employees were eliminated from the final data set. The managerial data (N=108) were eliminated because it did not make theoretical sense to include manager's data due to the supervisor support variable. Clerical employee data (N=26) were not used due to the fact that they were not part of a production crew and did not have usable performance data at the work unit level. Therefore, the final usable data set consisted of 503 Hourly employees, comprising 79 workgroups (average group size of 7.76).

Measures

Previously established measures of each of the study variables were used where appropriate and available. In some cases, the organization opted to slightly adjust the wording of items to reflect the context of measurement, or chose to add or remove items from individual scales to more adequately capture employee perceptions of internal interest. It should also be noted that the vulnerability of the organization to unionization heavily influenced the selection of items for the present study. Items considered threatening to the organization, or viewed as incendiary in nature were reworded or removed from the scales. For example, the author's original intention to assess the perceived fairness of the change (organizational justice perceptions) was thwarted due to the provocative nature of the construct.

The measure of workgroup performance consisted of metrics commonly used by the organization to assess and track manufacturing performance. All

scales (excluding the workgroup performance indicators) were rated on a 5-point scale, 1 = *strongly disagree* to 5 = *strongly agree*. The items used to assess the various constructs are presented in Appendix B. To maintain confidentiality of the organization and the ERP project, proper names have been removed from the items. Three of the eight self-report scales showed slightly less than acceptable levels of internal consistency (i.e., .70), which is a possible limitation to the study.

Change-related efficacy. Five items were used to reflect perceptions of change-related efficacy. The Likert-type scale, originally developed by Ashford (1988), has been used in several studies (e.g., Jimmieson et al., 2004; Wanberg & Banas, 2000) to assess efficacy perceptions specifically related to organizational change. The same five items were used in the present study to assess change-related efficacy. Similar to past approaches, this efficacy measure taps general perceptions of the ability to master changes on the job occurring as a result of the larger organizational change. Although traditional measures of self-efficacy combine measures of magnitude, strength and generality (Bandura, 1986), there is evidence that Likert-type measures have similar predictive validity and psychometric properties, and may be more appropriate for use in organizational contexts (Maurer & Pierce, 1998). A sample item from the scale is: "I am confident in my ability to deal with the changes resulting from [the technology implementation]." The alpha coefficient in the present study was .67, which is slightly below the generally accepted alpha level of .70.

Communication quality. Perceptions of communication quality were assessed via four items focused on the timeliness and clarity of communications

about the technology implementation. These items were adapted from the V.D. Miller et al. (1994) scale. Participants were asked to rate the degree to which they felt the communication was clear and timely, and also how well the communication prepared them for their new responsibilities under the implementation. A sample item from the communication scale is: "We get the right information about [the technology implementation] at the right time." The Cronbach's alpha for the scores on these four items in the present study was .85.

Supervisory support of change. Perceptions of upper level support for a given change initiative may lead some employees to support the change. In particular, leadership behavior in relation to the change, in terms of change advocacy and acceptance, may serve to influence the behavior and cognitions of subordinates. Likewise, if supervisors openly and actively oppose change, employees may model this behavior. Three items were used to measure supervisory support of change, using a scale adapted from Antoni (2004). Sample items include "Our supervisor provides a good example of how our plant should function with [the change]" and "Our supervisor has been supportive throughout the implementation of [the new technology]". Antoni (2004) reported an internal consistency coefficient of .78, which is considered acceptable. In the present study, a slightly higher level of reliability was achieved ($\alpha = .81$).

Participation in the change process. This variable was measured with four items adapted from Antoni's (2004) three-item measure of participation in the change process. In this scale, participation is operationalized as a willingness to communicate problems experienced with the new system and the seeking out of

information related to the change. An additional item was developed that assessed employee's participation in change-related training sessions offered by the organization. Sample items include "We participated in the training sessions related to [the change implementation]" and "We communicated problems that we noticed with [the new technology]". Antoni (2004) reported an internal consistency coefficient of .70 for the original three items. The internal consistency reliability for the scores from the four-item scale used in the present study was .78.

Perceptions of change favorability. Employees' perceptions of the outcomes of the organizational change were assessed with three items adapted from Antoni's four-item measure of organizational effects (or the perception that positive organizational outcomes will occur as a result of the change). Sample items from the scale are "[The change] will allow us to better serve our customers" and "[The change] will have positive effects". Antoni (2004) reports an internal consistency of .89 for her four-item measure. In the present study, a lower internal consistency ($\alpha = .62$) was found, perhaps due to the inclusion of only three of the original four items.

Job satisfaction. Job satisfaction was measured using a one-item, global assessment of satisfaction. Wanous et al. (1997) supported the notion that a single-item measure of overall job satisfaction is acceptable, particularly for global assessments of job satisfaction. In the interest of space and the practical limitations of using a longer measure, the organization chose to select a one-item measure of job satisfaction: "Overall, I am satisfied with my job." The internal

consistency of a one-item measure is impossible to assess. However, Wanous et al. (1997; p. 250) stated that "a minimum estimated reliability" for a single item measure of job satisfaction is likely to be "close to .70".

Commitment to change. Six items from Herscovitch and Meyer (2002) measured affective commitment to change. Although the Herscovitch and Meyer (2002) measure conceptualizes commitment as a three-dimensional construct, measured with three different scales, the organization that was the focus of the present study elected to use the affective commitment scale, and opted not to use the continuance and normative commitment scales. Their greatest interest was in measuring emotional commitment and support for the value of the change initiative, and they were less interested in determining whether their employees committed to the change due to a sense of duty (normative) or the perceived costs associated with failing to commit to the change (continuance commitment). In support of the distinct nature of the three components of change commitment, Herscovitch and Meyer (2002) stated that "by definition, any one of the three commitment components should be sufficient to produce [commitment] behavior" (p.476). Therefore, measuring only the affective commitment of employees was viewed as sufficient for the purposes of this study.

Herscovitch and Meyer (2002) report an alpha coefficient of .94 for the affective commitment scale and sample items include "I believe in the value of this change" and "[The technology implementation] is a good strategy for [the organization]". For the present study, the commitment to change scale (affective commitment) achieved an excellent level of reliability at .96.

Construct validity of the self-report measures was assessed using confirmatory factor analysis. The results indicated that the model was a good fit for the data. Eight factors were extracted from the data (participation, communication, supervisor support, self-efficacy, coping with change, change favorability, commitment to change, and job satisfaction) and the goodness of fit indices were acceptable (GFI = .90, RMSEA = .05)

Workgroup performance. Several potential metrics were available for assessing workgroup performance, which were obtained from the project accounting tools. Internal subject matter experts including key plant personnel (e.g., plant manager) and project members (e.g., project financial analyst) were consulted to understand each of the potential measures of business performance available for analysis. Based on the assimilation of their recommendations, the following measures were selected for use:

Order management is measured using one indicator: Total Shipped Product in Thousand Square Feet (MSF; the volume of product). A higher number on this metric indicates stronger workgroup performance.

Production efficiency is also measured with one metric: Recovery Percentage (a measure of production line efficiency that tracks the percentage of time the production line is recovered after errors). Production lines strive to achieve higher percentages of recovery.

The two measures discussed above were combined to create an aggregate measure of workgroup performance. This was justified due to the fact that the two

measures were highly correlated and thus, likely represent a singular construct of performance.

Procedure

The self-report scales in the present study were administered to participants via a paper and pencil survey, approximately one month prior to the implementation of the new technology and business processes (Time 1), approximately two months after the implementation (Time 2), and approximately three months after the implementation (Time 3). Organizational change researchers suggest that, due to the processual nature of change, longitudinal research is vital to the study of organizational change (Armenakis & Bedeian, 1999). In addition, Ostroff, Kinicki, and Clark (2002) stated that temporal separation of measures may help to reduce common method bias when using self-report measures of study variables.

Human resources representatives within each of the participating plants were responsible for the coordination of the data collection. Employees were given 15 minutes during normal working hours to complete the survey. Following the data collection, completed surveys were returned via bulk shipping to the author for data entry and analysis.

At Time 1 (one month prior to implementation), *coping with change*, *communication quality*, *supervisory support of change*, *perceptions of change favorability* and *job satisfaction* were assessed. At Time 2 (two months post-implementation) *participation in the change process*, *affective commitment to change* and *job satisfaction* were assessed. The *workgroup performance* variables

were measured at Time 1, Time 2, and Time 3 (three months post-implementation). Performance measures are collected daily within the plants; for the purposes of this study, the daily performance metrics were averaged for the months that they were collected (e.g., Time 1 performance measures were an average of the daily performance measures in the month that the Time 1 self-report data were collected).

Participants were asked two demographic items, including tenure (number of years employed with the organization) and level (supervisory, hourly or clerical). In addition, participants were asked to identify their workgroup (i.e., department and shift). Although self-report demographic variables were assessed, data collection was initiated in a way to ensure respondent confidentiality, through the use of a four-digit individual identification number (PIN) that allowed for the tracking of respondent data over time. Participants were asked to use either the last four digits of their telephone number or the last four digits of their social security number as their individual PIN. These numbers were selected because it was the organization's belief that they were not easily traceable back to the individual employee, and would be easily recalled by respondents at the second survey administration.

In addition to use in the present study, the survey data were analyzed and reported back to the organization's management at a very high-level (i.e., descriptive statistics and general trends). The survey findings were then used by top management to guide action planning for the remainder of the technology implementation roll-out.

CHAPTER III

RESULTS

To begin the data analysis process, descriptive statistics, including means, standard deviations, and correlations between study variables were generated. These statistics were generated at both the individual level of analysis as well as the workgroup level of analysis.

To justify aggregation of the workgroup level variables, intraclass correlation (ICC) values were computed to assess within-group agreement and the reliability of group means (James, 1982). ICC(1) is a measure of inter-rater reliability that indicates the amount of variance that can be explained by group membership (Bliese, 2000). On the other hand, ICC(2) is an index of the reliability of group means (Bliese, 2000). ICC statistics were computed for four constructs: participation in change (ICC(1) = .17; ICC(2) = .62), change communication (ICC(1) = .19; ICC(2) = .65), supervisory support (ICC(1) = .13; ICC(2) = .54), and commitment to change (ICC(1) = .16; ICC(2) = .59). The ICC(1) values for all variables met the recommended minimum of .12. However, only two of the four variables satisfied the ICC(2) recommended minimum of .60, although they were very close to the target cut-off. The decision to continue with data analysis at the workgroup level was made due to the ICC(1) scores, and the argument that ICC(1) be used as the primary basis for aggregation (James, 1982).

Means, standard deviations, and correlations for the individual level variables are presented in Table 1. As previously discussed, the alpha coefficients for the scores on the scales used in the study ranged from .62 to .96. The majority

Table 1

Means, Standard Deviations, Coefficient Alphas, and Correlations for

Individual Level Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8
1.Communication	3.09	0.88	(0.85)	.58*	.37*	.31*	.28*	.44*	.30*	.51*
2. Participation in the Change Process	3.44	0.79		(0.78)	.48*	.27*	.35*	.47*	.34*	.32*
3. Commitment to Change	3.45	0.88			(0.96)	.72*	.42*	.63*	.55*	.37*
4. Perceptions of Change Outcomes	3.38	0.77				(0.62)	.24*	.52*	.55*	.27*
5. Coping with Change	3.49	0.85					(0.69)	.41*	.25*	.29*
6. Supervisor Support of Change	3.55	0.77						(0.81)	.63*	.31*
7. Job Satisfaction	3.60	0.94							n/a	.23*
8. Change Self-Efficacy	3.38	0.95								(0.67)

Note. N=503; *p<.01

of the self-report variables exhibited high intercorrelations (all were significant at $p<.01$).

Table 2 displays the means, standard deviations, and correlations for the workgroup level variables. Since the workgroup performance variables were operationalized as the z-score aggregation of two different production metrics (i.e., Total Shipped MSF and Recovery Percentage), means and standard deviations for these variables are 0 and 1, respectively. For Time 1 Total Shipped MSF, the mean is 13,002 (SD = 1,890), and the Recovery Percentage mean is 97.6% (SD = .66%). The mean for Time 2 Total Shipped MSF is 13,216 (SD = 1,736) and the mean for Recovery Percentage is 97.5% (SD = .89). The mean for Time 3 Total Shipped MSF is 13,221 (SD = 1,801) and the mean for Recovery Percentage is 97.4% (SD = .89).

<u>Hypotheses</u>

Regression was the primary statistical technique used in analyzing the hypotheses and research questions. To analyze the predictive hypotheses, multiple linear regressions were used. For the hypotheses assessing mediation, Baron and Kenny's (1986) approach to analyzing mediation was utilized.

Hypotheses Ia and Ib

Hypothesis Ia proposed that at the individual level, change process variables would be significant positive predictors of commitment to change. A multiple linear regression was performed to assess the significance of the beta coefficients for these three variables. The model consisting of the three process variables accounted for 44% of the variance in commitment to change (Table 3).

Table 2

Means, Standard Deviations, Coefficient Alphas, and Correlations for

Workgroup Level Study Variables

Variable	M	SD	1	2	3	4	5	6	7
1.Communication	3.03	.57	---	.53**	.33**	.31**	.29**	.36**	.29**
2. Participation in the Change Process	3.34	.58		---	.35**	.50**	.27*	.25*	.19
3. Commitment to Change	3.44	.55			---	.63**	.45**	.49**	.48**
4. Supervisor Support of Change	3.55	.45				---	.40**	.41**	.44**
5. Workgroup Performance T1	0.00	1.00					---	.82**	.76**
6. Workgroup Performance T2	0.00	1.00						---	.87**
7. Workgroup Performance T3	0.00	1.00							---

Note. N=79, * $p<.05$; ** $p<.01$; Workgroup performance=summed z-score transformations of Total MSF Shipped and % Recovery

Table 3

Regression Results for the Impact of Change Process Variables on Commitment

to Change

	Full Model		
Variable	B	SE B	β
Communication	.01	.04	.01
Participation in the Change Process	.25	.04	.30**
Supervisor Support of Change	.59	.04	.52**
R^2		.44	
F		162.84**	

Note. N=503; *p<.05; **p<.01

Participation in the change and supervisory support of the change were both significant, positive predictors of commitment to change. However, communication quality was not a significant predictor of commitment. Therefore, Hypothesis Ia was partially supported.

Hypothesis Ib proposed that at the individual level, change process variables would be significant positive predictors of post-change job satisfaction. A multiple linear regression was performed to assess the significance of the beta coefficients for the three process variables. The model consisting of these variables accounted for 39% of the variance in post-change job satisfaction (Table 4). Again, communication quality was not a significant predictor, and neither was participation. Only supervisory support of change was a significant positive predictor of job satisfaction. Hypothesis Ib was partially supported.

Hypotheses IIa and IIb

Hypothesis IIa proposed that at the individual level, individual difference variables (self-efficacy and coping) would be significant positive predictors of commitment to change. A multiple linear regression was performed to assess this hypothesis. The model consisting of the two individual difference variables accounted for 24% of the variance in commitment to change (Table 5). Both change self-efficacy and coping with change were significant positive predictors of commitment to change. Hypothesis IIa was fully supported.

Hypothesis IIb proposed that at the individual level, individual difference variables (self-efficacy and coping) would be significant positive predictors of post-change job satisfaction. The model accounted for 10% of the variance in

Table 4

Regression Results for the Impact of Change Process Variables on Job

Satisfaction

	Full Model		
Variable	B	SE B	β
Communication	.01	.04	.01
Participation in the Change Process	.07	.05	.06
Supervisor Support of Change	.72	.04	.60**
R^2		.39	
F		1325.54**	

Note. N=503; *p<.05; **p<.01

Table 5

Regression Results for the Impact of Individual Difference Variables on

Commitment to Change

| | Full Model | | |
Variable	B	SE B	β
Change Self-Efficacy	.25	.03	.27**
Coping with Change	.35	.04	.34**
R^2		.24	
F		99.66**	

Note. N=503; *p<.05; **p<.01

post-change job satisfaction (Table 6). Both change self-efficacy and coping with change were significant positive predictors of post-change job satisfaction. Hypothesis IIb was fully supported.

Hypothesis III

Hypothesis III stated that at the individual level, individual difference variables (i.e., coping with change, self-efficacy) would mediate the relationships between the process variables and commitment and job satisfaction. Using Baron and Kenny's approach (1986), it was identified that (1) positive significant relationships exist between the individual difference variables and change process variables (see Table 1; $p<.01$) and (2) positive relationships exist between the individual difference variables and the dependent variables (see Tables 5 and 6). However, for step 3 (relationship between independent variables and dependent variables) of the mediation analysis, only participation and supervisor support satisfied this step for the commitment to change dependent variable (Table 3), and only supervisor support satisfied this step for the job satisfaction dependent variable (Table 4). Therefore, the mediation analyses were performed with the participation and supervisor support variables only.

A software program available online was used to conduct the final step in testing the mediation hypothesis (http://www.unc.edu/~preacher/sobel/sobel.htm). This is the approach recommended by Baron and Kenny (1986) and allows the user the test the significance of the reduction in the last step of mediation analysis. To test whether the relationship between the independent variables and dependent variables was reduced when including the mediator, the raw regression

Table 6

Regression Results for the Impact of Individual Difference Variables on

Job Satisfaction

	Full Model		
Variable	B	SE B	β
Change Self-Efficacy	.17	.04	.18**
Coping with Change	.22	.04	.20**
R^2		.10	
F		31.93**	

Note. N=503; *p<.05; **p<.01

coefficients and the standard errors associated with these coefficients were input into the program.

The first set of mediator analyses involved commitment to change as the dependent variable. First, coping with change was tested as a mediator of the participation and commitment relationship. The Sobel statistic of 7.25 was significant at $p < .01$. Second, self-efficacy was tested as a mediator of participation and commitment relationship. This was also significant (6.50) at $p < .01$. Next, coping was tested as a mediator of the supervisory support to commitment relationship. This was supported with a Sobel statistic of 8.08 ($p<.01$). Finally, self-efficacy was tested as a mediator of the relationship between supervisory support and commitment, and was a significant mediator of this relationship (5.74; $p<.01$).

The second set of mediator analyses was for job satisfaction as the dependent variable. Coping with change was tested as a mediator of the supervisory support and job satisfaction relationship. This Sobel statistic of 5.63 was significant at $p<.01$. Finally, self-efficacy was found to be a significant mediator of the supervisory support to job satisfaction relationship (4.87; $p<.01$).

Overall, Hypothesis III was partially supported, as the six mediator analyses were significant. Both the relationships between participation and commitment, and supervisor support and commitment were reduced when including self-efficacy and coping as mediators. In addition, the relationship between supervisor support and job satisfaction was reduced when including self-efficacy and coping as mediators.

Hypothesis IV

Hypothesis IV predicted that at the *workgroup* level, change process variables (i.e., communication quality, participation in the change process and supervisory support of change) would be significant positive predictors of workgroup performance at Time 2 (controlling for the performance at Time 1). A multiple, linear regression was performed on the workgroup level data. Time 1 performance was entered in the first block of the regression as a control variable. The model consisting of the three process variables and Time 1 performance accounted for 69% of the variance in commitment to change (Table 7). However, the process variables were not significant predictors of performance with Time 1 performance included in the model. Therefore, Hypothesis IV was not supported.

Hypothesis V

Hypothesis V predicted that at the *workgroup* level, commitment to change would predict workgroup performance at Time 2 (controlling for performance at Time 1). A linear regression was performed on the workgroup level data, with Time 1 performance entered first in the equation as a control variable. Time 1 performance and commitment to change accounted for 69% of the variance in Time 2 performance (Table 8). The change in r-squared (.02) was significant at *p*=.03. Commitment to change was a positive predictor of performance, above and beyond Time 1 performance. Hypothesis V was supported.

Table 7

Regression Results for the Impact of Workgroup Level Process Variables on

Commitment to Change

	Full Model		
Variable	B	SE B	β
Time 1 Performance	.64	.06	.76**
Communication	.40	.22	.14
Participation in the Change Process	-.19	.24	-.07
Supervisor Support of Change	.34	.29	.10
R^2		.69	
F		39.34**	

Note. N=79; *p<.05; **p<.01

Table 8

Regression Results for the Impact of Commitment to Change on Workgroup

Performance (Time 2)

	Full Model			
Variable	B	SE B	β	ΔR^2
Time 1 Performance	.64	.06	.75**	
Commitment to Change	.47	.22	.16*	.02*
R^2		.69		
F		80.56**		

Note. N=79; *p<.05; **p<.01

Hypothesis VI

Hypothesis VI proposed that change favorability would mediate the relationships between change process variables and performance at Time 2. For the first two change process variables (communication and participation), their relationships with change favorability (the mediator) were not significant, thus not satisfying the first requirement for mediation. Supervisor support satisfied the initial requirements for mediation (i.e., relationships between IV and mediator, and mediator and DV), and, as a result, was tested for mediation. Change favorability was found to be a significant mediator of the supervisory support to Time 2 performance relationship (2.07; $p<.05$). Therefore, Hypothesis VI was partially supported.

Hypothesis VII

Hypothesis VII predicted that commitment to change would mediate the relationships between change process variables and Time 2 performance. First, commitment to change was tested as a mediator of the communication and Time 2 performance relationship. This was significant with a Sobel statistic of 2.57 at $p=.01$. Next, commitment to change was tested as a mediator of the participation and Time 2 performance relationship. Commitment to change was also a significant mediator of this relationship (2.74; $p<.01$). Finally, commitment to change was tested as a mediator of the relationship between supervisor support and Time 2 performance. This mediated relationship was also significant (4.05; $p<.01$). Hypothesis VII was fully supported.

Research Questions

The research questions assessed whether the relationships tested in Hypotheses IV and V would be stronger for Time 3 performance measures than they were for Time 2 performance measures. Linear regressions were performed, with Time 1 performance entered as a control variable. Supervisor support of change was the only process variable that had a significant relationship with Time 3 performance, above and beyond Time 1 performance. The beta coefficient with supervisor support was stronger using Time 3 performance than it was using Time 2 performance. Commitment to change did not show a significant relationship with Time 3 performance above and beyond Time 1 performance ($p=.06$). Therefore, limited support was found for the research questions put forth.

CHAPTER IV

DISCUSSION

This study was aimed at exploring relationships between change process variables, individual differences, change reactions, and post-change performance in the context of a large scale organizational implementation. Relationships were tested at both the individual and workgroup levels. At the individual level, the most important finding was that supervisor support and participation in change were related to commitment to change and job satisfaction. These relationships were mediated by coping with change and change-related self-efficacy. Contrary to what was expected, change-related communication was not a significant predictor of change commitment or job satisfaction.

At the workgroup level, there was strong support for a relationship between employee commitment to change and post-change workgroup performance (above and beyond initial performance levels). Also, the relationships between workgroup-level change process variables and workgroup performance were mediated by commitment to change. These findings are particularly encouraging given that organizations can manage change in a manner that engenders employee commitment to change and this has a demonstrated effect on important post-change performance variables.

Hypothesis I

Hypothesis I predicted that, at the individual level, change process variables would be significant positive predictors of commitment to change and post-change job satisfaction. This hypothesis was partially supported. For

commitment to change, both participation and supervisory support were significant positive predictors. For job satisfaction, only supervisor support of change was a significant positive predictor. Across all analyses in Hypothesis I, supervisor support was the most robust change process predictor of change reactions. Given the strong empirical support for the relationship between communication and change reactions (e.g., Armenakis et al., 1993; Cunningham et al., 2002), it was surprising that communication did not emerge as a significant predictor for either change reaction variable. This may be due to the fact that participation and communication were found to be highly correlated ($r=.58$). Therefore, the majority of the variance shared between communication and commitment may be accounted for by participation. An additional possible explanation for the non-significant relationship stems from Herzberg's (1959) theory of job satisfaction which posits that certain work variables are either motivators or hygiene factors. Motivators are those things that contribute to satisfaction, whereas hygiene factors contribute to *dissatisfaction* only when not at an acceptable level, but do not contribute to satisfaction. In this case, communication may be viewed as a hygiene factor, in that it was not at a level low enough to contribute to dissatisfaction, but it did not contribute to satisfaction or positive change attitudes.

It is not surprising that supervisor support emerged as the strongest predictor across the change reaction variables. It is widely understood that supervisors have an immense direct impact on employees' attitudes and behaviors (Antoni, 2004). The Corporate Leadership Council (2004) found that an

employee's direct manager was the greatest enabler of commitment to their job, organization and team. The present study demonstrates that this holds true for commitment to large scale organizational implementations as well. Organizations involved in large scale changes should invest substantial time and energy into ensuring that front line managers are positive role models for organizational change efforts (Manz & Sims, 1987). Also, training managers to effectively support employees experiencing dramatic organizational shifts will likely engender positive subordinate responses to the uncertainty associated with change.

Hypothesis II

Hypothesis II proposed that individual difference variables (coping and self-efficacy) would be significant, positive predictors of the change reaction variables (commitment and job satisfaction). This hypothesis was fully supported. Change-related self-efficacy and coping with change both emerged as significant positive predictors of commitment to change and post-change job satisfaction. This is consistent with previous research that has shown that an employee's belief in their ability to perform following the change decreases resistance and facilitates commitment (Cunningham et al., 2002). Also, recent research has integrated change research with the stress and coping literature, arguing that employees' coping strategies and ability to cope with uncertainty associated with a change can largely impact change reactions and outcomes (Amiot et al., 2006; Judge et al., 1999). As a whole, these findings indicate that change reactions may be, at least

partially, based on individual differences in the perceived or actual ability to cope with a change.

Hypothesis III

Hypothesis III predicted that, at the individual level, change self-efficacy and coping would mediate the relationships between the change process variables and change reactions (i.e., commitment to change and job satisfaction). Overall, Hypothesis III was partially supported. Several of the relationships failed to satisfy one of the initial steps in the mediator analysis. Of those that did satisfy this step, all mediating relationships were significant. The relationship between participation and commitment was reduced when including self-efficacy and coping as mediators. In addition, the relationship between supervisor support and commitment was reduced when including self-efficacy and coping as mediators. Finally, the relationship between supervisor support and job satisfaction was reduced when including self-efficacy and coping as mediators. These findings indicate that at least part of the relationship between change process variables and change reactions may be accounted for by individual differences in the perceived and actual ability to cope with change. This is not surprising in light of theories such as Bandura's social learning theory (1977) which pinpoint things like participation and modeling as ways to increase self-efficacy and coping in the context of novel situations. In other words, perceptions that the organization is making a substantial effort to prepare employees for a change, demonstrated through communication, participation opportunities, and supervisor support, may enhance employees' perceptions that they will be able to perform well following

the change and will have the ability to cope with the change. It appears that

individual differences in self-efficacy and coping account for much of the

influence of change process characteristics on employee reactions to change.

Hypothesis IV

Hypothesis IV predicted that at the workgroup level, change process

variables would be significant positive predictors of workgroup performance. In

particular, workgroup performance at Time 2 (2 months post-implementation)

was the outcome of interest. Performance at Time 1 (pre-implementation) was

used as a control variable. Although the model consisting of the three process

variables and Time 1 performance accounted for 69% of the variance in Time 2

performance, this was primarily due to the high correlation between Time 1 and

Time 2 performance (r=.82). None of the change process variables were

significant predictors of Time 2 performance when controlling for Time 1

performance.

Hypothesis V

Hypothesis V, which predicted that workgroup level commitment to

change would be a significant positive predictor of post-implementation

performance, was supported. This was the case even when controlling for pre-

implementation performance. The relationship between employee affective

reactions to change and objective outcomes of change has been alluded to in

many previous studies; however this relationship is rarely, if ever, tested

empirically (Piderit, 2000). Little research has systematically examined the

impact of high commitment to change on change success variables that are of

interest to organizational leaders, such as post-change workgroup performance, measured in terms of productivity. In other studies, it is implicitly assumed that commitment to change is positively related to overall change success viewed from the organization's perspective (e.g., Herscovitch & Meyer, 2002). The present study demonstrates that employee reactions to change account for important variance in productivity measures collected after a large-scale organizational implementation (above and beyond initial productivity level) and reinforces the importance of examining employee reactions in the change context.

<u>Hypothesis VI</u>

Hypothesis VI, which proposed that change favorability would mediate the relationships between change process variables and performance, was partially supported. Of the three change process variables, change favorability was found to be a significant mediator of the supervisor support to performance relationship. Therefore, at the workgroup level, supervisor support is related to post-change performance through its effect on perceptions of change favorability. From a theoretical perspective, this finding is not surprising. As previously discussed, supervisor perceptions and behavior have a dramatic impact on subordinates perceptions (Antoni, 2004), demonstrated here in the context of change. In this situation, it appears that supervisors exerted their influence on subordinate behavior following the change implementation through their impact on the perceived favorability of the change. By showing their support for the change, they increased subordinate perceptions of the positive benefits of the change, which filtered down to actual differences in post-change performance. These

findings are encouraging in that front line managers can be selected and trained to

be adaptable and open to change. Given their substantial impact on subordinate

perceptions and behavior in the change context, senior management should work

hard to ensure that front line managers "buy in" to the change vision and can

adequately communicate their support of the change to employees.

Hypothesis VII

Hypothesis VII proposed that commitment to change would mediate the

relationships between the change process variables and post-change performance.

Hypothesis VII was fully supported. Commitment to change was found to mediate

the relationships between all change process variables (communication,

participation, and supervisor support) and performance. These findings indicate

that, at the workgroup level, what the organization does to prepare employees for

change has an effect on employee commitment to change, which translates into

real differences in post-change performance. Workgroups that received quality

communication related to the change vision and benefits, received opportunities

to participate in the change process, and had supervisors that were highly

supportive of the change, demonstrated higher commitment to change and showed

higher post-change performance (productivity) than those groups that responded

less favorably regarding these change process variables. These findings are

particularly useful as a guide for organizations about to undergo large scale

change. Paying attention to how the change is implemented (e.g., change process

variables such as communication, participation and supervisor support) does serve

to increase employee commitment to the change and will likely result in tangible differences in performance following the change.

Research Questions

Since Time 3 performance measures were available for analysis, a research question was put forth to examine whether the relationships hypothesized at the workgroup level would be stronger for Time 3 performance than they were for Time 2 performance as the outcome variable. There is some support for the notion that organizational change initiatives may realize their benefits over time, thus making longitudinal research with a time lag between perceptual and performance measures desirable (Armenakis & Bedeian, 1999). Following this logic, several of the hypotheses (Hypotheses IV and V) were re-examined to determine whether the results would be stronger for performance measures collected after a longer lag time. There was some support for this idea, in that supervisor support of change was more strongly related to performance when using Time 3 measures than when using Time 2 measures. On the other hand, commitment to change did not show a significant relationship with Time 3 performance above and beyond Time 1 performance. Based on these findings, it appears that supervisor support continues to build in its influence on post-change performance over time, whereas commitment to change has a lesser relationship with performance over time.

Limitations

The present study was subject to several limitations that may have affected the reported findings. The first limitations are related to measurement and scale

characteristics. Three of the self-report scales demonstrated less than adequate internal consistency (generally recommended levels exceed .70). Perceptions of change favorability achieved $\alpha=.62$, whereas coping with change was $\alpha=.69$ and change-related self-efficacy was $\alpha=.67$. Item deletion did not improve the reliability of any of the aforementioned scales. Because reliability is thought of as the upper-limit of validity, lower scale reliability may have attenuated some of the relationships tested in the hypotheses, although some researchers argue that statistically significant relationships may still be found when reliability is less than the accepted cutoff (e.g., Schmitt, 1996).

In addition to somewhat less than adequate internal consistency measures, only two of four variables satisfied the ICC(2) recommended minimum of .60. ICC(2) refers to the measurement reliability of the group mean. The lower ICC(2) scores may be due to the small mean sample size for each workgroup ($M = 7.76$). Some researchers have argued that ICC(1) should be used as the primary basis for aggregation (James, 1982), and in this study, the decision was made to proceed with the analysis at the workgroup level. Interestingly, the two variables that did not demonstrate adequate ICC(2) scores (commitment to change and supervisor support) showed the most consistent predictive relationships across the hypotheses.

A second limitation has to do with the use of workgroup performance measures as change outcomes. Although the use of objective outcomes is also a strength of this study, workgroup performance in a manufacturing organization is likely to be influenced by countless other factors, many of which are not under the

direct control of the employees within the workgroups under investigation. Thus, although steps were taken to select workgroup performance measures that were less reliant on machine error or other factors, it is unknown in this study precisely how much of the workgroup performance variables are within the control of the employees themselves.

Finally, the sample size at the workgroup level (N=79) was relatively small. Obtaining longitudinal self-report data, in addition to performance data, from a large number of groups proved to be somewhat difficult in this study. The small sample size may have reduced the power to detect some of the relationships that were hypothesized. In future studies, gathering data from a larger number of groups may make the analyses more powerful to detect effects that are present in the data.

<u>Implications and Future Research</u>

The present study has some interesting and powerful implications for organizations undergoing large scale change. For one, this study demonstrates that employee reactions to change *do* matter in the context of change. Employees were more likely to be committed to the organizational implementation if they were given opportunities to participate in the change process and had supervisors that supported the change. These findings especially highlight the important role that front line managers play in influencing employee responses to change. It was surprising that communication quality did not have a significant relationship with either of the reaction variables (commitment and job satisfaction), as communication has been somewhat of a robust predictor of change reactions in

previous research. One potential explanation for this stems from the strength of the relationship between supervisor support and both commitment and job satisfaction. Employees may be more influenced in their change opinions by a source close to them (e.g., their supervisor) than they are by communications coming from senior management or the corporation in general. In future research, it would be interesting to examine whether the communication and commitment relationship holds true at the supervisory level, given that supervisors are higher in the organizational hierarchy and may view corporate communications as being generated from a source closer to them than hourly employees do.

Arguably the most important finding in this study is the demonstration of a relationship between commitment to change and post-implementation workgroup performance, above and beyond pre-implementation performance. Although this relationship is oftentimes alluded to, it has not been demonstrated empirically up to this point. This may be because objective performance measures associated with organizational change are presumably difficult to obtain. By examining this relationship at the workgroup level, workgroup performance was used as the outcome of interest.

In addition, performance variables that were directly related to the overall strategic objectives of the change were used. By doing this type of research in the context of change, organizational leaders can obtain a better understanding of the factors that affect post-change performance. In doing so, they can learn how to better manage the change process, whether it be through training supervisors on how to support employees undergoing large scale organizational change, or

providing greater participation opportunities in the context of change. Ultimately, a focus on the human element of change should lead to a greater success rate for organizational change initiatives.

CHAPTER V

SUMMARY

Organizational change has been hailed as the "one constant" in organizational life (Trahant & Burke, 1996). Both large and small organizational changes are becoming the norm within organizations, and top management creates the expectation that organizational members should be able to continuously adapt to these changes (Caldwell, Herold, & Fedor, 2004). Due to the increasing amount and complexity of organizational changes, a large literature base has emerged that examines various change phenomena (Armenakis & Bedeian, 1999). However, much of the literature takes a macro- versus micro- oriented approach to the study of change (Judge, Thoreson, Pucik, & Welbourne, 1999). Although a macro approach to the study of change is oftentimes appropriate, increasing evidence indicates that an examination of the human side of change is imperative for the success of change initiatives.

This line of research is becoming increasingly important as evidence that most change initiatives result in failure continues to mount (Porras & Robertson, 1992), and researchers are pointing to a lack of consideration for the human element of change as a likely culprit. Given this assertion, change management experts are now advocating for a greater focus on managing change at the employee level, or at least complementing change efforts at the organizational level with increasing attention to organizational member's reactions and coping with change.

Although a significant base of research looking at employee reactions to change has emerged in the literature, there is still little to no research linking employee perceptions with objective change outcomes (Fedor et al., 2006). Allusions to a linkage between employee reactions and the success or failure of change initiatives are often made (e.g, Judge & Church, 2000), but rarely subject to empirical test.

The present study examined relationships between change process variables, individual differences, change reactions, and post-change performance in the context of a large scale organizational implementation. At the individual level, supervisor support and participation in change were related to commitment to change and job satisfaction and these relationships were mediated by coping with change and change-related self-efficacy. Contrary to expectations, change-related communication was not a significant predictor of change commitment or job satisfaction.

At the workgroup level, employee commitment to change accounted for important variance in productivity measures collected after the implementation (above and beyond initial productivity levels). In addition, commitment to change mediated the relationships between workgroup-level change process variables and workgroup performance.

Support of these hypotheses can help guide large-scale organizational implementations from an employee-oriented perspective. This study consistently demonstrated the importance of the supervisor in influencing employee reactions to change. Most importantly, this study indicated that employee commitment to

the organizational implementation was related to important post-change

performance variables.

REFERENCES

Amiot, C. E., Terry, D. J., Jimmieson, N. L., & Callan, V. J. (2006). A longitudinal investigation of coping processes during a merger: Implications for job satisfaction and organizational identification. *Journal of Management, 32,* 552-574.

Antoni, C. H. (2004). Research note: A motivational perspective on change processes and outcomes. *European Journal of Work and Organizational Psychology, 13,* 197-216.

Armenakis, A. A., & Bedeian, A. G. (1999). Organizational change: A review of theory and research in the 1990s. *Journal of Management, 25,* 293-315.

Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993). Creating readiness for organizational change. *Human Relations, 46,* 681-703.

Armenakis, A. A., Harris, S. G., & Feild, H. (1999). Paradigms in organizational change: Change agent and change target perspectives. In R. Golembiewski (Ed.) *Handbook of organizational behavior.* New York: Marcel Dekker.

Arthur, W. Jr., Bell, S. T., & Edwards, B. D. (2007). A longitudinal examination of the criterion–related validities of additive and referent–shift operationalizations of team–efficacy. *Organizational Research Methods, 1,* 35–58.

Ashford, S. J. (1988). Individual strategies for coping with stress during organizational transitions. *Journal of Applied Behavioral Science, 24,* 19-36.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator distinction in

    social psychological research: Conceptual, strategic, and statistical

    considerations. *Journal of Personality and Social Psychology*, *51*, 1173-

    1182.

Bandura, A. (1977). *Social learning theory.* New York: General Learning Press.

Bandura, A. (1977). Self-efficacy: Toward a unified theory of behavioral change.

    Psychological Review, 84, 191-215.

Bliese, P. N. (2000). Within-group agreement, non-independence, and reliability:

    Implications for data aggregation and analysis. In K.J. Klein & S.W.J.

    Kozlowski (Eds.), *Multilevel theory, research, and methods in*

    organizations (pp.349-382). San Francisco: Jossey-Bass.

Brown, J., & Quarter, J. (1994). Resistance to change: The influence of social

    networks on the conversion of a privately-owned unionized business to a

    worker cooperative. *Economic and Industrial Democracy, 15,* 259-282.

Caldwell, S. D., Herold, D. M., & Fedor, D. B. (2004). Toward an understanding

    of the relationships among organizational change, individual differences,

    and changes in person-environment fit: A cross-level study. *Journal of*

    Applied Psychology, 89, 868-882.

Chan, D. (1998). Functional relations among constructs in the same content

    domain at different levels of analysis: A typology of composition models.

    Journal of Applied Psychology, 83, 234-246.

Coch, L., & French, J. R. P., Jr. (1948). Overcoming resistance to change. *Human*

    Relations, 1, 512-532.

Corporate Leadership Council (2004). *Driving Performance and Retention Through Employee Engagement.* http://www.corporateleadership council.com

Crosby, F. (1984). Relative deprivation in organizational settings. In B.M. Staw & L.L. Cummings (Eds.), *Research in organizational behavior* (Vol. 6, pp.51-93). Greenwich: CT: JAI Press.

Cummings, T. G., Mohrman, A. M., Jr., & Mitroff, I. I. (1990). The actors in large-scale organizational change. In A.M. Mohrman (Ed.), *Large-scale organizational change* (pp.48-61). San Francisco: Jossey-Bass.

Cummings, T. G., & Worley, C. G. (2005). *Organization development and change (8ʰ ed.).* Cincinnati, OH: South-Western College Publishing.

Cunningham, C. E., Woodward, C. A., Shannon, H. S., MacIntosh, J., Lendrum, B., & Rosenbloom, D., et al. (2002). Readiness for organizational change: A longitudinal study of workplace, psychological, and behavioral correlates. *Journal of Occupational and Organizational Psychology, 75,* 377-392.

de Caluwe, L., & Vermaak, H. (2004). Change paradigms: An overview. *Organization Development Journal, 22,* 9-18.

Dent, E. B., & Goldberg, S. G. (1999). Challenging "resistance to change". *Journal of Applied Behavioral Science, 35,* 25-41.

Dunphy, D. & Stace, D. A. (1993). The strategic management of corporate change. *Human Relations, 46,* 905-920.

Erickson, B. (1988). The relational basis of attitudes. In B. Wellman & S.

Berkowitz (Eds.), *Intercorporate relations: The structural analysis of*

business (pp. 99-121). Cambridge, UK: Cambridge University Press.

Fedor, D. B., Caldwell, S., & Harold, D. M. (2006). The effects of organizational

changes on employee commitment: A multilevel investigation. *Personnel*

Psychology, 59, 1-29.

Glick, W. (1985). Conceptualizing and measuring organizational and

psychological climate: Pitfalls in multilevel research. *Academy of*

Management Review, 10, 601-616.

Gilmore, T. N., Shea, G. P., & Useem, M. (1997). Side effects of corporate

cultural transformations. *Journal of Applied Behavioral Science, 33,* 174-

189.

Gist, M. & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its

determinants and malleability. *Academy of Management Review, 17,* 183-

211.

Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change:

Extension of a three-component model. *Journal of Applied Psychology,*

87, 474-487.

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The Motivation to Work.*

New York: John Wiley & Sons.

Herzing, S. E. & Jimmieson, N. L. (2006). Middle managers' uncertainty

management during organizational change. *Leadership & Organization*

Development Journal, 27, 628-645.

Hendry, C. (1996). Understanding and creating whole organizational change through learning theory. *Human Relations, 49,* 621-641.

Huber, G. P., Sutcliffe, K. M., Miller, C. C., & Glick, W. H. (1993). Understanding and predicting organizational change. In Huber, G. P. and Glick, W. H. (Eds.), *Organizational change and redesign* (pp.216-265). New York: Oxford University Press.

Isabella, L. (1990). Evolving interpretations as a change unfolds: How managers construe key organizational events. *Academy of Management Journal, 33,* 7-41.

James, L. R., Demaree, R. G. & Wolf, G. (1993). (r_{wg}): An assessment of within group interrater agreement. *Journal of Applied Psychology, 78,* 306-309.

Jimmieson, N. L., Terry, D. J., and Callan, V. J. (2004). A longitudinal study of employee adaptation to organizational change: The role of change-related information and change-related self-efficacy. *Journal of Occupational Health Psychology, 9,* 11-27.

Judge, T. A., & Church, A. H. (2000). Job satisfaction: Research and practice. In C.L. Cooper & E.A. Locke (Eds.), *Industrial and organizational psychology: Linking theory with practice* (pp. 166-198). Oxford, UK: Blackwell.

Judge, T. A., Thoresen, C. J., Pucik, V., & Welbourne, T. M. (1999). Managerial coping with organizational change: A dispositional perspective. *Journal of Applied Psychology, 84,* 107-122.

Judson, A. (1991). *Changing behavior in organizations: Minimizing resistance to change.* Cambridge, MA: Basil Blackwell.

Korunka, C., Weiss, A., Huemer, K. H., & Karetta, B. (1995). The effect of new technologies on job satisfaction and psychosomatic complaints. *Applied Psychology: An International Review, 44,* 123-142.

Kotter, J. P. (1996). *Leading change.* Boston: Harvard Business School Press.

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein, & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (p. 3-90). San Francisco, CA: Jossey-Bass.

Kraut, A. I. (2006). *Getting action from organizational surveys.* San Francisco, CA: Jossey-Bass.

Lapointe, L., & Rivard, S. (2005). A multilevel model of resistance to information technology implementation. *MIS Quarterly, 29,* 461-491.

Latham. G. P., Winters, D. C., & Locke, E. A. (1994). Cognitive and motivational effects of participation: A mediator study. *Journal of Organizational Behavior, 15,* 49-63.

Leiter, M. P., & Harvie, P. (1998). Conditions for staff acceptance of organizational change: Burnout as a mediating construct. *Anxiety, Stress, and Coping, 11,* 1-25.

Lewin, K. (1947). Frontiers in group dynamics. *Human Relations, 1,* 5-41.

Locke, E., & Schweiger, D. (1979). Participation in decision-making: One more look. In B. Staw (Ed.), *Research in organizational behavior* (Vol. 1, pp. 265-339). Greenwich, CT: JAI Press.

Manz, C. C., & Sims, H. P. (1987). Leading workers to lead themselves: The external leadership of self-managing work teams. *Administrative Science Quarterly, 32,* 106-128.

Maurer, T. J., & Pierce, H. R. (1998). A comparison of Likert scale and traditional measures of self-efficacy. *Journal of Applied Psychology, 83,* 324-329.

Meyer, J. P. & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review, 1,* 61-89.

Micklethwait, J. & Wooldridge, A. (1996). *The witch doctors: Making sense of the management gurus.* New York: Times Books - Random House.

Miller, V. D., & Monge, P. R. (1985). Social information and employee anxiety about organizational change. *Human Communication Research, 11,* 365-386.

Miller, V. D., Johnson, J. R., & Grau, J. (1994). Antecedents to willingness to participate in a planned organizational change. *Journal of Applied Communication Research, 22,* 59-80.

Novelli, L. Jr., Kirkman, B. L., & Shapiro, D. L. (1995). Effective implementation of organizational change: An organizational justice perspective. In Cooper, C.L., & Rousseau, D.M. (Eds.), *Trends in organizational behavior* (Vol. 2, pp.15-36). New York: Wiley.

Oreg, S. (2003). Resistance to change: Developing an individual differences measure. *Journal of Applied Psychology, 88*, 680-6903.

Ostroff, C., Kinicki, A. J., & Clark, M. A. (2002). Substantive and operational issues of response bias across levels of analysis: An example of climate-satisfaction relationships. *Journal of Applied Psychology, 87,* 355-368.

Piderit, S. K. (2000). Rethinking resistance and recognizing ambivalence: A multidimensional view of attitudes toward an organizational change. *Academy of Management, 25,* 783-794.

Porras, J. I. & Robertson, P. J. (1992). Organizational development: Theory, practice and research. In M.D. Dunnette & L.M. Hough (Eds.) *Handbook of industrial and organizational psychology* (pp. 719-822). Palo Alto, CA: Consulting Psychologists Press.

Rafferty, A. E., & Griffin, M. A. (2006). Perceptions of organizational change: A stress and coping perspective. *Journal of Applied Psychology, 91,* 1154-1162.

Rafferty, A. E., & Simons, R. H. (2006). An examination of readiness for fine-tuning and corporate transformation changes. *Journal of Business and Psychology, 20*, 325-350.

Schein, E. H. (1996). Kurt Lewin's change theory in the field and in the classroom: Notes toward a model of managed learning. *Systems Practitioner, 9,* 27-47.

Schneider, B., & Reichers, A. E.. (1983). On the etiology of climates. *Personnel Psychology, 36,* 19-39.

Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment, 8,* 350-353.

Schweiger, D., & DeNisi, A. (1991). Communication with employees following a merger: A longitudinal field experiment. *Academy of Management Journal, 34,* 110-135.

Shaw, J. B., Fields, M. W., Thacker, J. W., & Fisher, C. D. (1993). The availability of personal and external coping resources: Their impact on job stress and employee attitudes during organizational restructuring. *Work and Stress, 7,* 229-246.

Sutton, R. I., & Kahn, R. L. (1986). Prediction, understanding, and control as antidotes to organizational stress. In J. Lorsch (Ed.), *Handbook of organizational behavior* (pp. 272-285). Englewood Cliffs, NJ: Prentice Hall.

Terry, D. J., & Jimmieson, N. L. (2003). A stress and coping approach to organizational change: Evidence from three field studies. *Australian Psychologist, 38,* 92-101.

Trahant, B., & Burke, W. W. (1996). Traveling through transitions. *Training and Development, 50,* 37-42.

Vroom, V. H. (1964). *Work and motivation.* New York: Wiley.

Wanberg, C. R., & Banas, J. T. (2000). Predictors and outcomes of openness to changes in a reorganizing workplace. *Journal of Applied Psychology, 85,* 132-142.

Wanous, J. P., Reichers, A. E., & Austin, J. T. (2000). Cynicism about

    organizational change: Measurement, antecedents, and correlates. *Group*

    and Organization Management, 25, 132-153.

Wanous, J. P., Reichers, A. E., & Hudy, M.J. (1997). Overall job satisfaction:

    How good are single-item measures? *Journal of Applied Psychology, 82,*

    247-252.

Watzlawick, P., Weakland, J., & Fisch, R. (1974). *Change: Principles of problem*

    formation and problem resolution. New York: W.W. Norton & Company.

Weick, K. E., & Quinn, R. E. (1999). Organizational change and development.

    Annual Review of Psychology, 50, 361-386.

APPENDIX A

DEMOGRAPHICS

Tenure

How long have you been employed by [company]?

a. 0 to 5 years
b. 6 to 10 years
c. 11 or more years

Job Level

What is your job level?

a. Hourly
b. Manager
c. Clerical

APPENDIX B

ITEMS

Change Related Self-Efficacy

1. Wherever [the new technology] takes me, I'm sure I can handle it.

2. I may not be able to do all that is demanded of me under [the new technology].

3. I may not be able to perform my job under [the new technology].

4. I have little doubt that I will be able to perform my job under [the new technology].

Communication Quality

1. [The technology implementation] is being clearly communicated.

2. It is clear who to contact with questions about [the technology implementation].

3. We get the right information about [the technology implementation] at the right time.

4. We know what our responsibilities will be once [the new technology] is implemented.

Affective Commitment to Change

1. I believe in the value of [the new technology].

2. [The new technology] is a good strategy for [company].

3. [The new technology] serves an important purpose.

4. Things will be better in the future with [the new technology].

5. [The new technology] is a necessary change.

6. [Company] is doing the right thing by introducing [the new technology].

Participation in the Change Process

1. We received the training needed to do our jobs effectively under [the new technology].

2. I participated in the training sessions related to [the new technology].

3. I communicated problems that I noticed with [the new technology].

4. I sought out information related to [the new technology].

Supervisory Support for Change

1. Our supervisor provides a good example of how our plant should work with [the new technology].

2. Our supervisor has been supportive throughout the implementation of [the new technology].

3. Our supervisor is accepting of changes related to [the new technology].

Perceptions of the Favorability of the Change

1. [The new technology] will allow us to better serve our customers

2. Our plant will become more efficient with [the new technology].

3. [The new technology] will have positive effects.

Job Satisfaction

1. Overall, I am satisfied with my job.