

# Profiling Change

## *An Empirical Study of Change Process Patterns*

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Profile analysis is proposed as a means for advancing empirical change process research. In the context of organizational studies, a profile can be viewed as a set of sequentially arranged factors that expresses the relative strength of individual factors and holistic patterns inside or between organizational entities. To demonstrate the utility of the approach in change process research, profile analysis was employed in a cross-sectional study. Hypotheses related to Lewin's three-step model of change were tested using data obtained from managers involved in change implementation. Results confirmed a progression through Lewin's unfreezing-movement-refreezing sequence during implementation. Profiles that reflected higher systematic use of change process factors were also found related to implementation success. Many future research opportunities are apparent, such as investigating interorganizational change profile types and using profile analysis to enhance longitudinal research designs.

**Keywords:** implementation; profile analysis; empirical methods; change management

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Understanding the process of planned change and the elements necessary for successful implementation is an essential undertaking for managers. Implementation research has lagged practical interest however. This situation has prompted numerous calls for more change process research (e.g., Huy, 2001; Pettigrew, Woodman, & Cameron, 2001; Robertson, Roberts, & Porras, 1993). Change processes can be

viewed as sequences of individual and collective events, actions, and activities unfolding over time in context that describe or account for how entities develop or change (Pettigrew et al., 2001). Temporality is linked to this process perspective and lends dynamism to the phenomenon and its study.

The temporal dynamic has nudged change process research toward longitudinal designs (Van de Ven & Huber, 1990). However, longitudinal methods possess some limitations. When longitudinal research is of the qualitative, case-based variety (e.g., Brown & Eisenhardt, 1997; Gersick, 1994), investigators are often positioned to answer explanatory questions such as how and why but less capable of answering prevalence or predictive questions such as what, how many, and how much (Yin, 1994). Although case studies can yield richly textured findings, generalizing is often difficult without considerable replication (Eisenhardt, 1989). Whether qualitative or quantitative in nature, longitudinal change process research is also susceptible to measurement error stemming from changing frames of reference as implementation progresses (Golembiewski, Billingsley, & Yeager, 1976; Zmud & Armenakis, 1978).

Carefully considered cross-sectional studies offer an interesting complement to longitudinal change process research. Survey-based designs could illuminate issues that challenge small numbers methods, such as evaluating the strength of relationships between change process factors and performance outcomes over a variety of contexts. Cross-sectional studies could also reveal general patterns of change while reducing biases inherent to repetitive measurement in a changing organizational context.

Although cross-sectional studies often neglect vibrant factors that shape change (Pettigrew et al., 2001), survey-based research can be designed to improve dynamic sensitivity. It is possible for example to obtain cross-sectional samples with temporal content. Like a core sample of earth that illuminates geological understanding across millennia, a well-conceived organizational sample holds a spectrum of images that is capable of capturing a chronology of change. Analytical methods can be amended to extract dynamic information from these organizational core samples. Specifically, we suggest profile analysis as a means for converting the myriad snapshots found in a cross-sectional sample into a motion picture of change.

In this investigation, we consider the merits of profile analysis for advancing change process research. In the sections that follow, we introduce the profile concept and argue for its utility in an empirical change process research setting. As a demonstration, we employ Lewin's (1947) three-step model of planned change to hypothesize about change process patterns during implementation. The hypotheses are then tested using data gathered from a cross-sectional sample of more than 100 managers

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involved in change implementation. Finally, we discuss the implications of our findings for both research and practice. Our primary contribution lies in demonstrating the value of profile-based study in change process research.

## BACKGROUND AND HYPOTHESIS DEVELOPMENT

### Profiles and Change Process

Broadly defined, a profile denotes a side view, examination of something in contour, a short sketch, a graph summarizing relevant data, or a side or sectional elevation (Guralink, 1982). In the context of organizational studies, a profile can be viewed as a set of relevant factors that, when arranged in a side by side fashion, can be examined to comprehend relative strength of individual factors and holistic patterns inside or between organizational entities.

Growing interest in identifying configurations, gestalts, or archetypes among organizational variables (e.g., D. Miller, 1981; Drazin & Van de Ven, 1985; Greenwood & Hinings, 1993; Venkatramin, 1989) supports profile analysis. High-level groupings encourage understanding of organizational structures and systems through analysis of general patterns rather than through assessing narrow sets of organizational characteristics (Greenwood & Hinings, 1993). Profiles provide building blocks for these high-level groupings. D. Miller and Friesen (1977) demonstrated how they developed and aggregated more than 80 firm-level profiles of organizational characteristics to generate six archetypes of strategy making behavior. Once high-level patterns are established, individual profiles can be assessed for the extent to which they deviate from a categorical reference profile (Venkatramin, 1989). When analyzing various forms of fit in contingency theory for example, Drazin and Van de Ven (1985) compared profiles of work group characteristics to ideal profiles thought to match particular levels of task uncertainty.

Greenwood and Hinings (1993) argued that archetypal groupings of structure and system factors are important to the understanding of organizational change. Movement from one archetype to another reflects effective change, thereby providing the researcher with an indicator of implementation success or completion. By assigning profiles of organizational data to one of three predetermined archetypes, Amis, Slack, and Hinings (2004) used attainment of an archetype to judge radical change achievement in their longitudinal study of pace, sequence, and linearity of change. Their investigation exemplifies how profiles can be employed in longitudinal change process research designs. However, it also highlights issues inherent to case-based longitudinal studies. As noted by the authors, limitations included concerns about the reliability and validity of data collected over a multiyear time frame, the relatively small number of change process factors examined in the analysis, and limits to the generalizability of findings from data collected from a small, single-sector sample group.

Carefully designed cross-sectional studies address these limitations in a manner that can extend progress in change process research. A rare empirical implementation study by Skivington and Daft (1991) hints at the mechanism. Using a sample of 60 firms

drawn from three industry sectors, the authors investigated the relationship between structural and systemic factors and the implementation of strategic decisions. They found that the combination of factors related to low-cost strategic decisions differed from the combination related to differentiation decisions. Although graphical features were lacking, their analytical approach included a profile-like dimension in that relevant structural and systemic factors were measured and arranged so that general patterns could be examined and compared. Indeed, the researchers suggested significant opportunity in investigating relationships between content of strategic changes and the patterns, or *gestalts*, of organizational elements used for implementation.

The empirical approaches employed by Skivington and Daft (1991) address many of the limitations of qualitative case-based change process research. The cross-sectional nature of their sample, although focused on three industrial sectors, encourages findings that are more generalizable across organizational contexts. Large numbers statistical analysis of many implementation factors can be applied toward answering prevalence and predictive questions. Sampling once from each organizational stream reduces measurement error stemming from changing frame of reference across multiple data collection periods.

One shortcoming of Skivington and Daft's (1991) study was that the analysis was based on strategic decisions that had already been implemented. Little can be concluded about the motion of structural and systemic factors while implementation was in progress. For example, some factors may have moved before others (Amis et al., 2004) while other factors perhaps remained stationary until implementation approached completion. It would be desirable to view factor profiles at various points in the implementation cycle to better discern process dynamics.

Although empirical studies are often derided for their static nature, a well-planned cross-sectional sample can provide temporal detail. Plausibly, an empirical sample can contain organizations engaged in various stages of implementation process—some may be getting change underway while others may have initiatives nearing completion. If each organization's chronological location in the process can be identified, then the cross-sectional sample previously viewed as static and lifeless can now be seen as teeming with information that spans the life cycle of change. Data can be aggregated in various ways to study change processes from dynamic perspectives. Similar to Amis et al. (2004) for example, cutoff points could be created to differentiate between early, middle, and late in the implementation cycle for comparative purposes.

Profile analysis enriches cross-sectional change process studies. Visual display and pattern scrutiny that flow from profiling complement statistical approaches and promote triangulation of methods and generalizability of findings. Change processes are often separated into stages or phases (Kanter, Stein, & Jick, 1992), and each phase is defined by groups of activities or events aimed at similar goals (Garvin, 1998). To the extent that characteristics of each activity, such as intensity of use during implementation, can be measured, the resulting measures can be grouped to express a profile of factors and their characteristic levels in each change process phase. Merging the profiles of various phases might in turn reveal notable patterns in overall implementation process along a temporal or other dimension. Combined with statistical

methods, profile analysis can offer insight into change dynamics difficult to obtain in many longitudinal designs.

Many change process research initiatives could benefit from this approach. For example, it can be used to pursue various issues on the research agenda proposed by Pettigrew et al. (2001). Identifying common patterns and structures during the process of change, linking change capacity and action to organizational performance, comparing multiple contexts and levels of analysis, and evaluating the strength of relationship between sequential process patterns and outcomes constitute some of the issues that could be examined by the profiling/cross-sectional combination. To be clear, we are not suggesting that cross-sectional approaches replace the longitudinal change process research movement. Rather, we believe that complementing longitudinal methods with well-designed empirical approaches using profiling promises a richer stream of inquiry.

### **Demonstration Using Lewin's Model**

To demonstrate how profiling when combined with cross-sectional methods can provide insight, we offer an example by means of Lewin's (1947) three-step model of change. In Lewin's view, the process of change could be efficiently divided into three phases. Unfreezing is the first phase and involves questioning the organization's current state, and if a different state is desired, then equilibrium needs to be destabilized before old behavior is discarded. The second phase, movement, is a state of flux, where new behavior is modified and fresh approaches are developed to replace old work patterns. Refreezing constitutes the final phase and requires activities to institutionalize the new behaviors and attitudes and to stabilize the organization at a new equilibrium.

Lewin's (1947) framework has garnered significant conceptual and face validity as studies suggest that many models of change processes articulated in a variety of disciplines contain similar characteristics (Elrod & Tippett, 2002). The model is not without its critics however. For example, some scholars take issue with the sequential implication of the three-stage progression, claiming that planned change is a dynamic process that should not be treated as a series of linear events (e.g., Dawson, 1994; Kanter et al., 1992). Although Lewin's framework remains broadly embraced by scholars (e.g., Burnes, 2004; Schein, 1996), the theoretical controversy suggests value in empirically validating the model.

Zand and Sorenson's (1975) work constitutes a rare published empirical change process study using Lewin's (1947) model as a theoretical framework. Since Lewin conceptualized organizations as dynamic systems of driving and resisting forces, the researchers hypothesized that forces favorable to each phase of Lewin's model would be positively correlated to successful outcomes and that forces unfavorable to each phase would be negatively correlated to success. After employing expert panels to identify common favorable and unfavorable forces and to classify them according to the three phases, the researchers administered a questionnaire to approximately 150 management scientists involved in organizational interventions. Respondents rated the extent to which these positive and negative forces were present in both

effective and ineffective change initiatives with their clients and the success of the initiative. Results supported the hypothesized relationships.

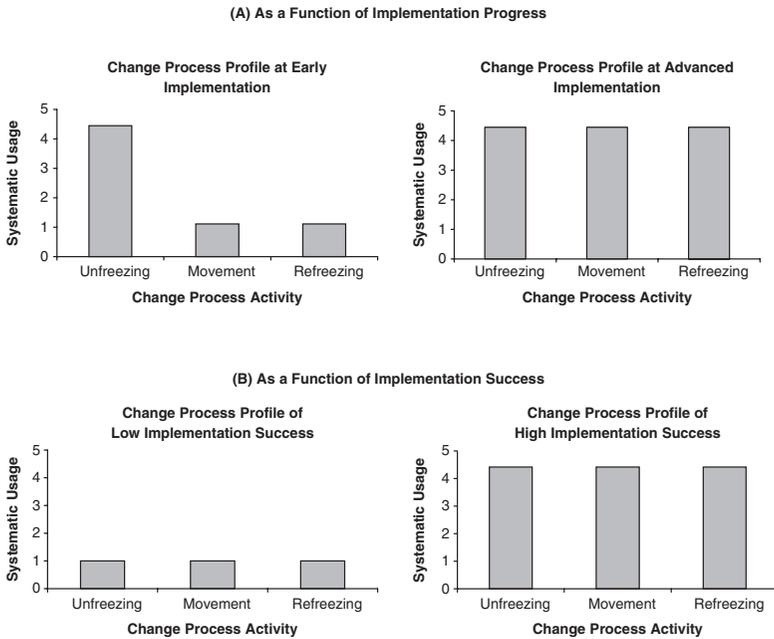
In addition to lending empirical support to Lewin's (1947) framework, Zand and Sorenson's (1975) study offers an interesting example of the value that can be realized from empirical change process research. Their findings confirmed the influence of various change process forces on outcomes and suggested the benefit of separating change process activities into those that facilitate and impede successful implementation. Zand and Sorenson's work was subject to a number of limitations however. Sample respondents were expert consultants involved in interventions with client organizations who based their responses on completed interventions. It would be helpful to assess the validity of Lewin's model through the lens of individuals with actual implementation responsibilities. To study the model from a more dynamic perspective, it would also be useful to gather data while implementation is still in progress. Using Lewin's framework and tools of profile analysis, further insight into the process of change can be obtained.

One promising application of profile analysis relates to the investigation of temporal issues in change process. The sequence implied by Lewin's (1947) three-phase model suggests that activities related to unfreezing for example should be observable prior to activities related to movement and refreezing. Indeed, Zand and Sorenson (1975) proposed that unless early attention is paid to unfreezing, later attempts to implement a solution may be futile because the organization was poorly prepared for change at the outset. Equilibrium needed to be destabilized before old behavior could be discarded (Lewin, 1947). In a similar vein, refreezing activities to stabilize the organization at the new equilibrium likely requires new behaviors to be established first. As noted earlier, many scholars contest the sequential implications of this theory, arguing instead for a more iterative, nonlinear model of change (e.g., Dawson, 1994). Empirical investigation that includes profile analysis can help resolve this conflict.

If a progression or sequence exists, then intensity levels of factors linked to each of the three stages of Lewin's (1947) model should change as implementation proceeds. As portrayed in Figure 1a, profiles that reflect the change process factors should display more intense use of late-stage activities as precedents have been satisfied during implementation. Therefore, we posit the following:

*Hypothesis 1:* As implementation progresses, change process profiles will display higher levels of movement and refreezing factors.

Profile analysis can also be employed in an empirical research context to investigate the structure of change processes. For example, relevance of particular change process phases could be assessed, and/or the significance of specific profile patterns could be determined. One interesting issue related to Lewin's (1947) model is whether each of the three steps is equally important to the achievement of effective change or whether a particular step matters more than others. Some scholars have suggested for instance that formal controls commonly associated with refreezing are ill advised and that the organizations should rely instead on shared values, culture, and empowered employees to encourage effective implementation throughout the process (Watson, 1997).



**FIGURE 1: Hypothetical Change Process Profiles**

In samples of organizations realizing different degrees of success from their implementation projects, change process factor profiles may differ between high and low performers. Because Lewin’s (1947) theory suggests no bias toward any particular phase, it follows that implementation success is associated with more intense use of activities associated with all change process factors (see Figure 1b). Therefore we posit the following:

*Hypothesis 2:* Change process profiles associated with higher degrees of implementation success will display higher levels of unfreezing, movement, and refreezing factors than change process profiles associated with lower degrees of success.

## METHOD

### Sample

Data for this study were obtained from managers participating in change management seminars sponsored by an industrial coalition. During the seminars, participants completed a questionnaire that included the items used in this study. Participants were asked to identify a change initiative that their organizations were implementing

or had recently implemented and then address items on the questionnaire with this "reference change" in mind. The captive nature of the respondent group ensured close to a 100% response rate, although a few questionnaires were discarded because they were insufficiently complete. We secured 107 usable questionnaires from managers representing 43 organizations.

A total of 57 unique reference changes were assessed by the respondents. Of these changes, 22 were rated by more than one manager from the same organization. Despite the presence of some multiple respondents, we pooled all responses into a single group of 107 and set the unit of analysis at the individual level. The demonstrative theme of this research prompted us to aggregate all responses so that we could examine change process profiles in a general form. We also observed that responses between individuals in multirater groups varied significantly and appeared to pose little risk of introducing bias into the sample. To more formally check this, we developed a partial sample where each of the 57 reference changes was represented by a single respondent (the respondent for each multirater group was randomly selected). A MANOVA was conducted using all relevant questionnaire items as dependent variables. No significant difference was detected between the full and partial sample, which suggested little influence from multiple respondent bias. These findings are consistent with Bowman and Ambrosini's (1997) observation that inferences about processes and outcomes made by managers from the same organization often vary widely.

Demographic analysis found the sample group evenly divided between manufacturing (49%) and service (51%) organizations. About 70% of the respondents were from private for-profit enterprises, followed by public for-profit (18%) and public sector/government agencies (12%). Nearly 95% of respondents were from organizations of more than 50 employees; about 25% of respondents were from organizations of greater than 1,000 employees. More than 90% of respondents were at least middle-level managers; more than half were upper-level managers. Questions designed to reveal status and impact of planned change indicated that about half of the reference changes were estimated to be at least 50% completed at the time of the evaluation. Respondents forecast that once implemented, nearly half of the reference changes would impact at least 60% of the organization's employees, suggesting that the majority of changes evaluated in this study were strategic, second-order changes rather than incremental, first-order changes (Bartunek, 1984; Nadler & Tushman, 1989). Examples of higher impact changes evaluated by respondents included developing a new strategic business unit, corporate restructuring following a merger, and moving from conventional supervision-led departments to self-directed work teams on an organization-wide basis. Examples of lower impact changes included streamlining an accounts payable process, implementing a predictive maintenance system, and outsourcing select product assemblies.

## Measures

### *Change Process Variables*

To operationalize Lewin's (1947) three-phase model, we sought factors that would adequately reflect each step in the sequence. Zand and Sorenson (1975) relied

on an expert panel of management science consultants to convert Lewin's conceptualization into a list of favorable and unfavorable forces linked to each of the three change process phases. Given the demonstrative nature of our investigation, we felt that identifying a comprehensive set of factors linked to Lewin's three-change process constructs was beyond the scope of this study. As noted by Pettigrew et al. (2001), comprehensiveness is one route to perspective; another is selectivity and focus. We strove to develop a focused set of measures that would adequately reflect Lewin's three phases. Although we sought to satisfy thresholds of construct validity necessary for results to be meaningful, we focused less on saturating each construct's theoretical domain and more on developing a working representation of Lewin's framework that would buttress our analytical approach.

To obtain our set of change process factors, we studied conceptualizations of change proposed by Nadler and Tushman (1980), Tichy (1983), Burke and Litwin (1992), and Kotter (1996). These "reference models" represent prominent contemporary frameworks that have shaped both theoretical and practical aspects of organizational change (e.g., Burke, 1995; Van de Ven & Poole, 1995; Werr, 1995). We studied the content of these reference models in search of a manageable set of common change process factors that could be linked to Lewin's (1947) three phases and converted into a measurement model for hypothesis testing. The change process factors distilled from this analysis were goal setting, skill development, feedback, and management control. Explanation of these in the context of Lewin's theory and how we measured them appears next.

*Unfreezing: Goal setting.* To facilitate organizational change, the equilibrium of driving and restraining forces that evens out behavior at a particular level must first be destabilized (Lewin, 1947). By disconfirming extant expectations and redefining cognitive boundaries of an organization's environment, destabilization processes motivate learning and change (Schein, 1996). A common destabilizing mechanism in our reference models related to setting goals and objectives about a desired future organizational state. Nadler and Tushman (1980), Tichy (1983), and Burke and Litwin (1992) identified the development of change-related goals and objectives as an early-stage activity that required analysis and assessment of the organization's relationship to its environment. Kotter (1996) emphasized creating an early sense of urgency and developing a vision and strategy for directional purposes. Indeed, a teleological, objective-driven mechanism is evident in a broad class of organizational development and change conceptualizations (Van de Ven & Poole, 1995). Goal setting was measured using a three-item scale that reflected the extent to which the organization conducted analysis and set goals related to the change. The items for this scale and for the other scales in this study can be found in the appendix. Responses to this and other change process measures were assigned using a Likert-like scale where 1 represented infrequent use of activity (*low usage intensity*) and 5 represented systematic use of activity (*high usage intensity*).

*Movement: Skill development.* Once destabilization has occurred, forces can move the organization toward a new and improved state (Lewin, 1947; Zand & Sorenson, 1975). Although these forces can assume many forms, they tend to manifest in modified behavior (Burnes, 2004). Indeed, organizational change is realized largely through

behavioral adjustment (Goodman & Dean, 1982; Robertson et al., 1993; Tannenbaum, 1971) as the nature of behavior significantly influences organizational performance (Porras & Hoffer, 1986). All of our reference models included behavior-related factors. These factors were commonly expressed as assessing task- or work-related aspects of behavior (e.g., Nadler & Tushman, 1980; Tichy, 1983) and developing and delivering new skills and capabilities as needed (Burke & Litwin, 1992). Although training programs constitute one means for developing new skills and capabilities that shape behavior (Goldstein, 1993), other approaches are possible, including vicarious mechanisms (Bandura, 1986; Manz & Sims, 1981), trial and error (Schein, 1996), or market purchase (Kogut & Zander, 1992). Skill development was measured using a three-item scale that reflected the extent to which skills and capabilities were assessed and developed in a timely fashion to support the change effort.

*Refreezing: Feedback and management control.* Behavior changes must be reinforced to stabilize the organization at new levels of performance and to avoid regression to old practices (Lewin, 1947). Refreezing activities must be confirmatory in nature (Schein, 1996). Confirmation is feedback that performance is effective and may come from measurements, comments from others, social comparisons, and rewards (Zand & Sorenson, 1975). All of our reference models contained evidence of confirmatory feedback processes. Tichy (1983) noted that feedback on implementation progress and on individual and group performance can be communicated through both formal and informal channels. Feedback about successes generates credibility that drives change to systems, policies, and structures that do not align with the desired future state (Kotter, 1996). Reward systems provide feedback that promotes and reinforces desired behavior during change implementation (Burke & Litwin, 1992; Nadler & Tushman, 1980). Feedback was measured using a four-item scale that reflected the extent to which change-related feedback was provided via communication and reward systems during the implementation process.

A second refreezing factor surfaced during our scrutiny of the reference models. Each reference model acknowledged the importance of effective structure and systems to support the change process. One system consistent with the confirmatory feedback theme of refreezing was the management control system. Monitoring of behavior and outcomes provides a sense of congruence indicative of a suitable current state (Nadler & Tushman, 1980). Various indicators of performance may be monitored at both the organizational and individual levels (Burke & Litwin, 1992). Failure to monitor implementation progress often impedes successful change (Kotter & Schlesinger, 1979). Essentially, management control systems help keep things on track (Merchant, 1985). Management control was measured using a three-item scale that reflected the extent to which managers used information to assess implementation progress and took action to correct progress of the change when necessary.

### *Dependent Variable*

*Implementation success.* Each of the reference models we studied specified a relationship between change process factors and outcomes. Therefore, in addition to

the change process variables, a factor related to implementation success was included. Implementation success was measured using a four-item scale meant to reflect completion, achievement, and acceptability dimensions employed by S. Miller (1997). Responses were assigned using a Likert-like scale where a 1 represented little or no results to speak of and a 5 represented highly effective results. Interestingly, Zand and Sorenson (1975) also employed a self-rated outcomes measure that they labeled *level of success*. Theirs was a five-item measure focused on financial success factors of the project such as cost, profitability, and return on investment. Because degree of implementation success can be evaluated by multiple criteria, many of them nonfinancial (Burke & Litwin, 1992; S. Miller, 1997; Tushman & O'Reilly, 1997), we preferred a more multidimensional measure.

In organizational research, concern about common methods variance often arises when measures related to two or more constructs are rated by a single individual (Avolio, Yammarino, & Bass, 1991). Individual and social factors might influence an individual's rating and create artifactual covariance due to rater error (Kline, Sulsky, & Rever-Moriyama, 2000). One method for assessing the extent of common methods variance among self-reported measures is factor analysis (Podsakoff & Organ, 1986). If a substantial amount of common methods variance exists, then only a small number of factors should emerge from the analysis and account for the majority of covariance between constructs.

Factor analysis using principle components extraction with varimax rotation was conducted on the 17 items representing the change process and outcomes factors proposed previously (Table 1). All factors with an eigenvalue above 1.0 were retained. Using guidelines suggested by Stevens (2002), only factor loadings greater than .498 were viewed as significant for  $N = 107$ . All factor loadings greater than this value appear in Table 1. The rotated solution produced five factors, with each item loading on the appropriate factor as hypothesized. Cumulative variance extracted was 73.6%. Because five factors emerged from the factor analysis, all 17 items loaded significantly on their appropriate factors, and a large amount of cumulative variance was extracted from the factor structure, we concluded that common methods variance was not present to a degree significant enough to influence the validity of the primary constructs employed in this investigation. Values of the internal reliability coefficients for each of the five factors provided further evidence of validity as all were comfortably above the commonly cited .70 benchmark (see appendix).

### ***Context and Control Variables***

A number of measures served as context and control variables for the study. Responses to each of the control variables were on a 1-to-5 scale.

*Percentage completion.* To capture and control for the temporal nature of change process, we employed a self-rated measure of the extent to which the reference change had been implemented similar to those used by S. Miller (1997) and others. Respondents were asked to estimate the reference change's percentage toward completion (1 = *implementation not yet begun*; 5 = *75% to 100% implemented*).

**TABLE 1**  
**Factor Analysis of Main Study Constructs (Includes All Factor Loadings of .498 and Higher)**

<i>Item<sup>a</sup></i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Goal setting					
1.1				.883	
1.2				.833	
1.3				.813	
Skill development					
2.1		.826			
2.2		.841			
2.3		.803			
Feedback					
3.1	.575				
3.2	.856				
3.3	.848				
3.4	.713				
Management control					
4.1			.844		
4.2			.752		
4.3			.690		
Implementation success					
5.1					.546
5.2					.530
5.3					.813
5.4					.783

NOTE: Cumulative variance extracted = 73.6%.

a. Full description of the items can be found in the appendix.

*Change scope.* Scope of a change might also influence the choice of a particular change process factor as well as its potential impact on organizational outcomes. For instance, changes with a broader, strategic scope might be more difficult to implement or have a more significant effect on organizational outcomes than smaller, more incremental changes (Burke & Litwin, 1992; Nadler & Tushman, 1989). Respondents were asked to estimate the percentage of the organization that would be impacted once the change was implemented (1 = 0% to 20%; 5 = 80% to 100%).

*Organization size.* Systematic use of change processes might be linked to hierarchical structure found in larger organizations (Ouchi, 1980; Williamson, 1991). Therefore, size of the organization was estimated by the respondents (1 = 0 to 50 employees; 5 = more than 1,000).

*Previous implementation success.* Extent of use and effectiveness of particular change process factors might depend in part on an organization's change history (Nadler & Tushman, 1980). Respondents were asked to estimate the organization's historical success with implementing change (1 = *not very successful*; 5 = *very successful*).

*Experimenting tendency.* Research suggests that an organization's ability to implement change may depend on capacity for organizational learning (Kloot, 1997). One indicator of a learning organization is tendency to experiment (Nevis, DiBella, & Gould, 1995). Therefore, respondents were asked to estimate the extent to which their organizations tended to try new things (1 = *Our organization frowns on experimenting*; 5 = *It seems like we're trying something new all the time*). Descriptive statistics and bivariate correlations for all variables used in this study appear in Table 2.

## RESULTS

To test Hypothesis 1, the data were split into four groups representing different levels of change implementation or percentage completion (0% to 25% complete; 26% to 50% complete; 51% to 75% complete; 76% to 100% complete). In each group, means and standard deviations were determined for each context and change process variable (Table 3). A MANCOVA was conducted using the change process variables of goal setting, skill development, feedback, management control, and implementation success as dependent variables; the grouped implementation variable (percentage complete) described earlier as a fixed factor independent variable; and the context variables of change scope, organization size, previous implementation success, and experimenting tendency as covariates. The MANCOVA indicated no significant overall difference across the implementation groups although the  $p$  value approached the 10% level (Wilks's Lambda = .781,  $F = 1.46$ ,  $p = .117$ ). However, univariate ANOVAs indicated that the change process variables of feedback ( $p = .038$ ) and management control ( $p = .004$ ) significantly differed across implementation groups. The implementation success variable was also significant ( $p = .001$ ), as was the previous implementation success contextual variable.

Figure 2 offers a graphical perspective of the influence of implementation progress on change process profiles. The top graph in Figure 2 reflects changes in the overall change process profile (goal setting, skill development, feedback, management control, and implementation success) as implementation progresses. Early in the implementation process, rated usage of feedback and management control (i.e., the refreezing variables) is significantly below that of the other change process variables. As implementation progresses, we see that levels of the refreezing variables increase relative to the other change process variables, although feedback consistently lags behind management control. Overall levels of change process variables also appear to increase as well, although as reflected by the wide confidence intervals, many of the observed increases cannot be deemed statistically significant. The bottom graph in Figure 2 offers a different perspective by grouping each of the change process variables together as implementation progresses. This perspective tends to highlight the dynamic behavior of the refreezing variables and the muted increase in feedback.

Hypothesis 1 suggested that implementation progress relates to higher levels of change process activities linked to movement and refreezing. Our results generally support this hypothesis. In particular, findings from Table 3 and Figure 2 indicate

**TABLE 2**  
**Descriptive Statistics and Bivariate Correlations (Internal Reliability Coefficients Noted Where Appropriate)**

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Percentage complete	3.11	1.192										
2. Scope	3.07	1.488	.03									
3. Organization size	3.75	0.891	-.06	.03								
4. Previous success	2.94	1.139	.25**	-.16	.00							
5. Experimenting tendency	3.74	0.986	.04	.06	-.21**	-.05						
6. Goal setting	2.60	0.843	.23**	.10	-.06	.11	.25**					
7. Skill development	2.71	0.940	.15	.06	.16*	.27***	-.07	.10	.10	.10		
8. Feedback	2.13	0.838	.26***	.17*	.09	.26***	.09	.34***	.50***	.50***	.50***	
9. Management control	2.51	0.918	.35***	.11	.16	.22**	.06	.28***	.48***	.51***	.51***	.51***
10. Implementation success	2.20	0.922	.39***	-.03	.12	.26**	-.01	.38***	.54***	.59***	.61***	.61***

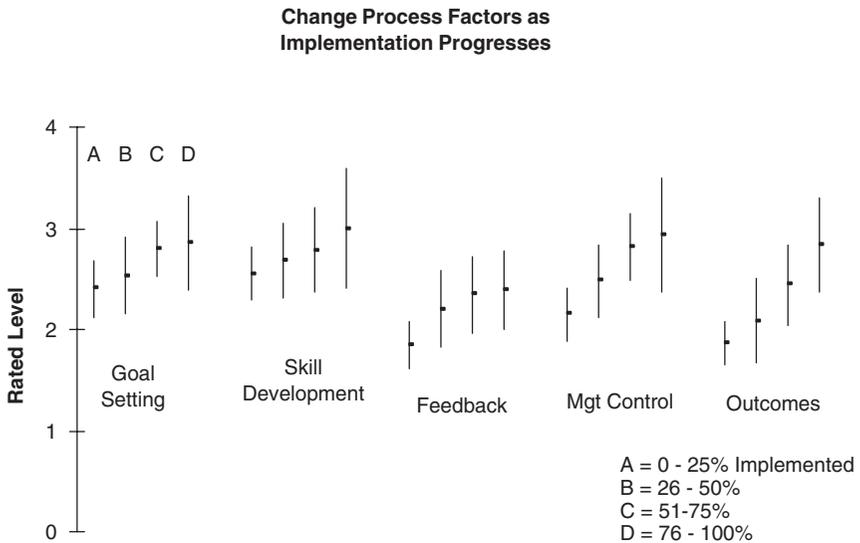
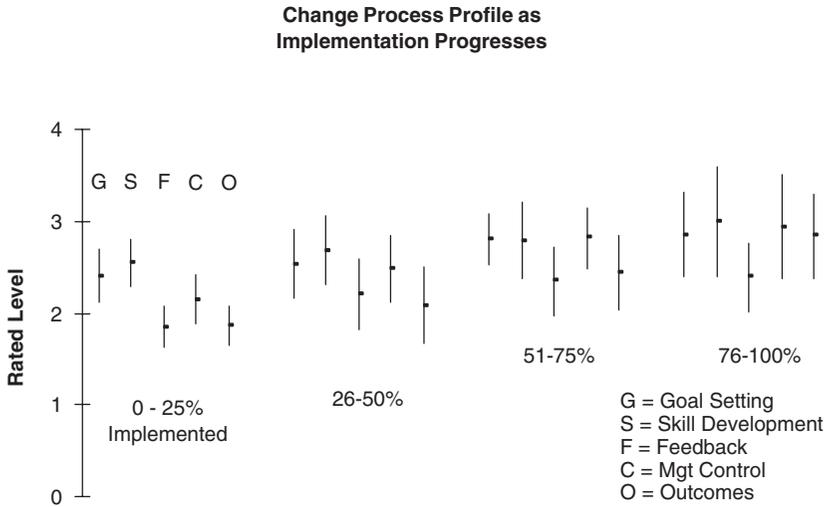
\* $p \leq .10$ . \*\* $p \leq .05$ . \*\*\* $p \leq .01$ . \*\*\*\* $p \leq .001$ .

TABLE 3  
Contextual and Change Process Variables as Implementation Progresses

	Percentage Completion												F Statistic <sup>a</sup>
	0% to 25% (n = 42)			26% to 50% (n = 21)			51% to 75% (n = 28)			76% to 100% (n = 16)			
	M	SD		M	SD		M	SD		M	SD		
Change scope	2.86	1.646		3.43	1.248		2.89	1.370		3.44	1.504		1.16
Organization size	3.88	0.993		3.57	0.926		3.61	0.832		3.88	0.619		0.93
Previous implementation success	2.76	1.265		2.52	1.167		3.45	0.596		3.25	1.065		3.40**
Experimenting tendency	3.62	1.147		3.90	0.889		3.86	0.710		3.69	1.014		0.53
Goal setting	2.41	0.906		2.53	0.819		2.79	0.680		2.85	0.877		1.78
Skill development	2.55	0.823		2.68	0.813		2.79	1.074		3.00	1.116		0.98
Feedback	1.85	0.729		2.20	0.831		2.34	0.966		2.39	0.719		2.91**
Management control	2.15	0.833		2.48	0.800		2.82	0.862		2.94	1.063		4.82***
Implementation success	1.81	0.699		2.08	0.906		2.44	1.038		2.84	0.871		5.92***

a. One-way ANOVA.

\*\* $p \leq .05$ . \*\*\* $p \leq .01$ .



**FIGURE 2: Profile Perspectives as a Function of Implementation Progress (95% Confidence Intervals)**

NOTE: Mgt = management.

that refreezing activities increase with implementation. Movement activities appear to do so as well but to a lesser degree.

To test Hypothesis 2, the data were split into three groups representing different ranges of rated implementation success (1 to 1.9 level of implementation success, 2 to

2.9, and 3+). In each group, means and standard deviations were determined for each context and change process variable (Table 4). A MANCOVA was conducted using the change process variables as dependent variables, the grouped implementation success variable described earlier as a fixed factor dependent variable, and the context variables as covariates. Results indicated a highly significant overall difference across the outcome groups (Wilks's Lambda = .505,  $F = 8.76$ ,  $p = .000$ ). Univariate ANOVAs indicated that the levels of the four change process variables differed strongly across groups ( $p = .000$ ). The context variables of percentage implementation and previous implementation success were also significant.

A graphical perspective of the influence of rated outcome level on change process profiles is offered in Figure 3. The top graph in Figure 3 reflects differences in the overall change process profile as implementation progresses. Clearly, levels of change process variables increased with implementation success. At low-rated levels of success, use of refreezing activities such as feedback and management control appeared to be significantly lower than in change process profiles associated with higher-level success. The bottom graph in Figure 3 isolates the individual change process variables as implementation progresses. From this perspective, the unfreezing variable of goal setting appears to increase only at relatively high success levels. The parabolic profile shape is apparent to some extent with the other change process variables as well. Once again, the graphical approach offers a dynamic perspective difficult to capture by other means.

For additional quantitative perspective on Hypothesis 2, we conducted a hierarchical regression analysis using implementation success as the dependent variable (Table 5). As expected, entry of the control variables (Model 1) indicated the significance of percentage completion. When the change process variables were entered in Model 2, the beta coefficients of each change process variable were found highly significant ( $p < .01$  or better). Overall fit of the model was highly significant (adjusted  $R^2 = .565$ ,  $F = 14.8$ ,  $p < .001$ ). Note also the significant negative relationship between change scope and implementation success in the full model. Given the correlated nature of the change process variables (see Table 2), the regression results are particularly interesting. It is often difficult for correlated predictor variables to demonstrate incremental validity upon entry into a regression model (Stevens, 2002). Model 2 suggests that despite the intercorrelation, each change process variable uniquely accounts for a significant amount of variance in implementation success.

The findings in Tables 4 and 5 and in Figure 3 support Hypothesis 2. As hypothesized, higher levels of implementation success appear associated with higher levels of all change process variables.

## DISCUSSION

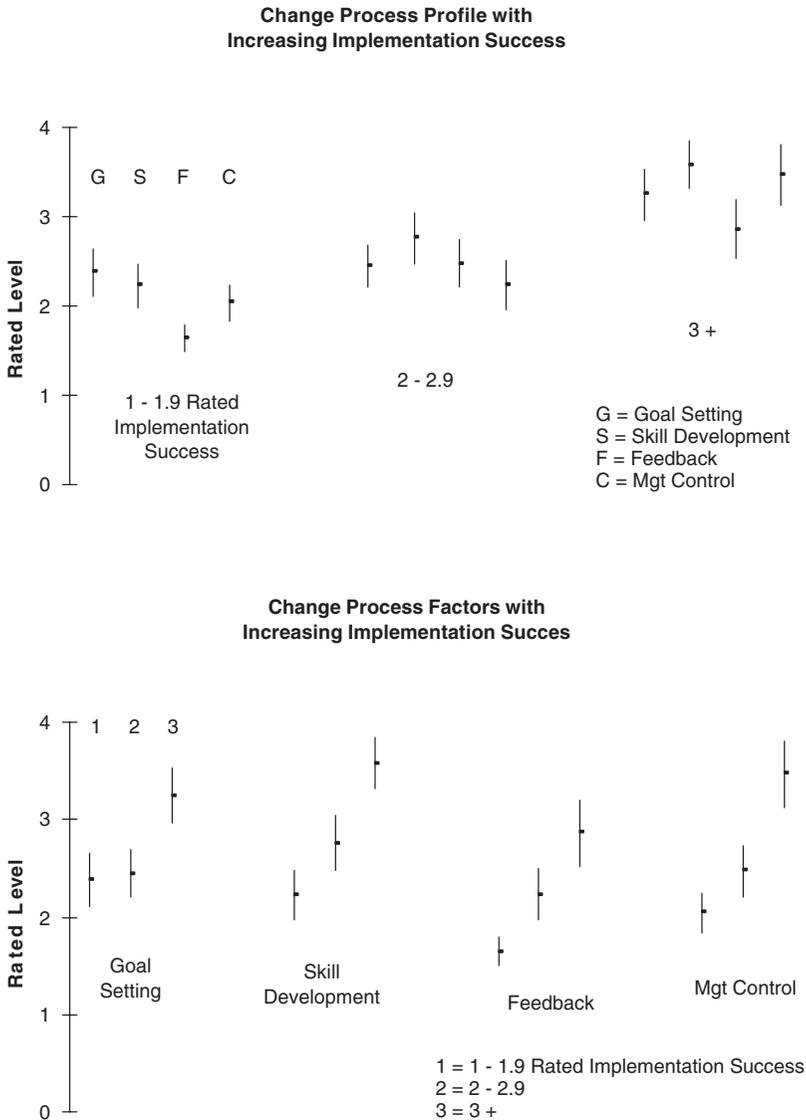
Our primary objective was to demonstrate profile analysis in combination with cross-sectional methods as a tool for advancing change process understanding. A profile can be viewed as a set or combination of change process factors in which each factor can be measured with respect to intensity of use. When viewed in temporal and

TABLE 4  
Contextual and Change Process Variables as Implementation Success Increases

	Rated Implementation Success						F Statistic <sup>a</sup>
	1 to 1.9 (n = 44)		2 to 2.9 (n = 40)		3+ (n = 23)		
	M	SD	M	SD	M	SD	
Percentage complete	2.70	1.069	3.23	1.230	3.70	1.105	6.03***
Change scope	2.98	1.486	3.35	1.460	2.74	1.514	1.37
Organization size	3.66	0.861	3.82	0.931	3.78	0.902	0.38
Previous implementation success	2.62	1.168	3.03	1.102	3.43	0.978	3.91**
Experimenting tendency	3.93	0.973	3.45	1.083	3.90	0.700	2.83
Goal setting	2.38	0.857	2.45	0.749	3.25	0.653	10.45*****
Skill development	2.22	0.806	2.76	0.880	3.58	0.601	21.14*****
Feedback	1.65	0.498	2.23	0.841	2.86	0.773	23.21*****
Management control	2.04	0.662	2.47	0.822	3.46	0.777	27.26*****

a. One-way ANOVA.

\*\* $p \leq .05$ , \*\*\* $p \leq .01$ , \*\*\*\* $p \leq .001$ .



**FIGURE 3: Profile Perspectives as a Function of Implementation Success (95% Confidence Intervals)**

NOTE: Mgt = management.

other contexts, profiles reflect patterns useful for understanding change processes. The identification of frequently recurring clusters or gestalts among variables can illuminate holistic, archetypal properties of organizational phenomena (Greenwood & Hinings, 1993; D. Miller, 1981; D. Miller & Friesen, 1977). By combining quantitative

**TABLE 5**  
**Hierarchical Regression Results Using Implementation Success**  
**as Dependent Variable**

<i>Variable</i>	<i>Model 1</i>	<i>Model 2</i>
Percentage complete	.396****	.189**
Change scope	-.059	-.163**
Organization size	.142	.004
Previous implementation success	.155	-.042
Experimenting tendency	.013	-.072
Goal setting		.221****
Skill development		.183**
Feedback		.276****
Management control		.292****
$R^2$	.210	.605
Adjusted $R^2$	.169	.565
$\Delta$ Adjusted $R^2$		.396
$F$	5.05****	14.83****

\*\* $p \leq .05$ . \*\*\*\* $p \leq .01$ . \*\*\*\*\* $p \leq .001$ .

and visual methods, we have demonstrated that profiling adds depth to the analysis of change dynamics. In particular, we believe that the graphical output that flows from profile analysis adds a novel dimension to research in organizational change.

Although our primary focus was to demonstrate the utility of profiling in conjunction with cross-sectional designs, testing hypotheses linked to Lewin's (1947) model permitted a secondary, more theoretical contribution. Despite the theory's broad acceptance (Elrod & Tippett, 2002), some scholars have criticized Lewin's framework as lacking the dynamic, iterative tone thought to reflect change processes (e.g., Dawson, 1994; Kanter et al., 1992). Although an iterative characteristic is likely present in many if not most change processes (Lindblom, 1959; Mintzberg & Waters, 1985; Robertson et al., 1993), our findings do support a general progression from unfreezing to refreezing as theorized by Lewin—a progression that is in fact measurable by empirical study. We also found, as implied by Lewin's framework, that organizations that achieve higher levels of implementation employ unfreezing, movement, and refreezing activities at a higher level of intensity—namely, their profiles are “taller” than those of lesser performers. As such, our findings extend Zand and Sorenson's (1975) work in evaluating dimensions of Lewin's theory in an empirical context.

We were particularly intrigued by the salience of refreezing factors in differentiating implementation success. The idea that refreezing activities such as monitoring and control are critical to change achievement has been with us for some time (e.g., Kotter & Schlesinger, 1979). Interestingly, Zand and Sorenson (1975) also found strong relationships between refreezing and outcome measures. They cautioned against concluding that refreezing was the primary success factor because refreezing and success both follow and depend on unfreezing and movement. Although path dependence surely exists in Lewin's (1947) model, refreezing's position at the end of the process does represent a bridge of sorts to implementation success. An otherwise

well-crafted change process might generate low levels of implementation success if refreezing factors are poorly structured and executed. Indeed, anecdotal evidence suggests that issues related to refreezing, such as poorly designed reward systems and failure of managers to monitor and follow up, often impede effective change (e.g., Bossidy & Charan, 2002; Charan & Colvin, 1999). Future work that focuses on the refreezing construct and its relationship to change achievement may prove illuminating.

Profiling coupled with cross-sectional methods can be applied toward many opportunities in change process research. One prospect involves investigating the extent to which change processes differ between organizations. Our findings suggest that effective organizations employ change process activities at higher levels of intensity than do less effective organizations, as reflected by taller profiles (Figure 3). Future work could investigate the extent to which change process profiles differ depending on organizational factors. Structural preferences (Ouchi, 1980), learning traits (Nevis et al., 1995), and degree of resource dependence (Pfeffer & Salancik, 1978) are but a few of the organizational characteristics that might shape change process profiles. Research could also explore the extent to which organizations possess their own unique change process profiles and the durability of such process "fingerprints" over time. It is also possible that categorical change process profiles might emerge. By integrating methods employed here with those used elsewhere (e.g., D. Miller, 1981; Drazin & Ven de Ven, 1985; Venkatramin, 1989), we would not be surprised to see future investigations reveal a variety of archetypal change process patterns with colorful labels that reflect themes of planning, communication, control, or other implementation factors.

Profile analysis can also be employed to extract more dynamic meaning from many longitudinal investigations. Amis et al.'s (2004) study demonstrated how profiles of organizational variables collected at various points during implementation help track archetype attainment and movement. Jansen (2004) effectively combined profile and statistical analysis with more traditional qualitative methods in her study of momentum and persistence at a single case organization. Other applications are possible. Researchers seeking to follow up on Gersick's (1994) thought-provoking study of pacing for example might collect panel data linked to Lewin's (1947) three-step model while observing implementation activities at case organizations. Profiles generated from the data panels might reveal particular patterns, such as low levels of movement activities or a spike in refreezing intensity that extend Gersick's finding that managers tend to increase control activities approximately halfway through the implementation process. Using the matched pairs comparative strategy recommended by Pettigrew et al. (2001), profiling could reveal change process differences between high and low performers. For example, expanding the set of potential high-impact elements employed by Amis et al. and comparing profiles of matched organizational pairs should tell us more about sequencing priorities when implementing radical change.

Findings from this study have practical implications as well. Managers have often confided with us that when it comes to managing change, their organizations tend to be "great starters but terrible finishers." Our findings suggest that penalties will

accrue particularly to organizations that cannot execute movement and refreezing activities with sufficient intensity. To diagnose the health of their organizations' change processes, managers could use variations of the graphical approach to profile analysis demonstrated in this investigation to answer a number of salient questions. Does the profile suggest that we are implementing change as planned or advised? Have we identified the controls necessary to help us refreeze the organization at new levels? How does the profile for the current change that we are implementing compare to changes that we have made in the past? Visual profiles that display levels, trends, and other patterns could prove effective tools for intervention and corrective action.

Although there has been some debate over the extent to which self-reported measures result in artifactual covariance (e.g., Spector, 1987; Williams, Cote, & Buckley, 1989), use of self-rated measures invites concern about common methods variance and attribution bias. Our analysis suggested that common methods variance did not weigh heavily on construct validity. However, given the small, convenience nature of this study's sample, alternative explanations of this study's findings cannot be ruled out. One plausible alternative is that the realized profiles reflect intrapsychic experiences of respondents with respect to the change process. Depending perhaps on their degree of involvement in the implementation or on the impact of the change on their personal well-being, individuals might make inferences that are influenced by their personal experiences with the change process—even while trying to objectively assess matters from a larger organizational perspective.

To test the influence of this alternative explanation on results, a future research design could draw multiple respondent samples from a large number of organizations. Following data collection, analysis of variance could be conducted on each change process factor scale at various levels of implementation progress using group sample means from each organization as primary data. Because of the large multigroup nature of the sample, rejecting the null hypothesis would permit a more confident inference that differences observed among mean scores are due to distinctions between organizations rather than to intrapsychic experiences of people within them. Moreover, procedural approaches, such as collecting data on independent and dependent variables from different individuals, offer preventive alternatives for reducing concerns about common methods variance in future studies (Podsakoff & Organ, 1986). Future work could also seek objective measures of change outcomes, although finding measures free of causal ambiguity (Lippman & Rumelt, 1982) have proven elusive for both researchers (Cameron, 1980; Lewin & Minton, 1986) and practitioners (Troy, 1994).

The influence of various contextual factors should be investigated further. The negative relationship between change scope and implementation success noted in Table 5 suggests that change type, perhaps categorized by Bartunek and Moch's (1987) first-, second-, or third-order typology, might result in different profiles. Although organizational size did not prove significant as a control variable in this study, a more focused profiling study might reveal process differences based on size, particularly with respect to the impact of structural factors on outcomes (Sine, Mitsuhashi, & Kirsch, 2006). Particular industrial sectors might also exhibit unique change process profiles due to faddish trends (Abrahamson, 1991) or other drivers.

The change process factors selected for this study were limited to a few widely accepted ones to explore and demonstrate the profile concept. Additional factors should be examined to better saturate the theoretical domain of Lewin's (1947) framework and strengthen the fabric of the profile analysis. Examples of such factors from the reference models we studied include climate and culture (Burke & Litwin, 1992) and politics (Tichy, 1983). Because of the consistent significance of our control variable related to previous implementation success (see Tables 3 and 4), investigating factors related to previous decision history (Nadler & Tushman, 1980) also seems worthwhile. This study's primary measure of temporal progress was each respondent's estimate of the percentage completion of the change they were assessing. Although larger samples compensate somewhat for random rater error bound to occur from such a measure, developing a more robust approach for gauging progress toward completion, perhaps drawing from the methods of stream analysis (Porras, Harkness, & Kiebert, 1983), is advised for future work.

## CONCLUSION

Recent summaries have suggested that future opportunities for change process research lie primarily in a longitudinal direction (e.g., Pettigrew et al., 2001). Although such a path may be well advised, we hesitate to discard other empirical methods entirely. In this study, we introduced profile analysis coupled with cross-sectional methods for generating insight into processes of change. Our primary contribution lies in demonstrating the merits of profile-enhanced research in change process inquiry. Employed thoughtfully, profiling can deepen both theoretical and practical understanding of the change dynamic.

## APPENDIX MEASUREMENT SCALES

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### CHANGE PROCESS VARIABLES (RELIABILITY IN PARENTHESES)

- 1) Goal setting (.84; for each item, 1 = *infrequent use*; 5 = *systematic use*)
  - 1.1 Was fact-based data used to identify the need for change?
  - 1.2 Did organizational leaders evaluate the current condition (financial, competition, labor, etc.) prior to setting goals for the change?
  - 1.3 Was the gap between "where we are" and "where we want to be" determined?
- 2) Skill Development (.84; for each item, 1 = *infrequent use*; 5 = *systematic use*)
  - 2.1 Did organization leaders identify important skills and capabilities needed to make the change?
  - 2.2 Did the organization develop necessary skills and capabilities through training, mentoring, outside acquisition, or other means?
  - 2.3 Did the organization make sure that needed skills and capabilities were in place in time to complete the changes?

- 3) Feedback (.82; for each item, 1 = *infrequent use*; 5 = *systematic use*)
  - 3.1 Were employees kept informed about the ongoing status of the change process?
  - 3.2 How well were successes of the change effort communicated?
  - 3.3 Were successful change results shared in a timely fashion?
  - 3.4 Were employees rewarded for working to support the change effort?
- 4) Management Control (.76; for each item, 1 = *infrequent use*; 5 = *systematic use*)
  - 4.1 Was information about the progress of the change obtained?
  - 4.2 Was information effectively used to enable corrective action when necessary?
  - 4.3 How effective were the actions taken to correct the progress of the change?
- 5) Implementation Success (.85; for each item, 1 = *little or no results to speak of*; 5 = *highly effective results*)
  - 5.1 Did the change have a positive impact on business results?
  - 5.2 To what extent has the change resulted in expected behaviors?
  - 5.3 Overall, how satisfied were you with the changes?
  - 5.4 Overall, how satisfied were you with how implementation was done?

## CONTEXT VARIABLES

Percentage complete: Overall, how far along is the change towards completion? (1 = *implementation has not begun*; 5 = *75% to 100% implemented*)

Change impact: When the change is fully implemented, how much of the organization will be significantly impacted by the change? (1 = *0% to 20%*; 5 = *80% to 100%*)

Organization size: Approximately how many employees does your organization employ? (1 = *0 to 50*; 5 = *more than 1,000*)

Previous change implementation success: Historically, how successful has your organization been at implementing change? (1 = *not very successful*; 5 = *very successful*)

Experimenting tendency: Which of the following best describes your organization's tendency to experiment and try new things? (1 = *Our organization frowns on experimenting*; 5 = *It seems like we're trying something new all the time*)

## REFERENCES

- Abrahamson, E. (1991). Managerial fads and fashions: The diffusion and rejection of innovations. *Academy of Management Review*, *16*, 586-612.
- Amis, J., Slack, T., & Hinings, C. R. (2004). The pace, sequence, and linearity of radical change. *Academy of Management Journal*, *47*, 15-39.
- Avolio, B. J., Yammarino, F. J., & Bass, B. M. (1991). Identifying common methods variance with data collected from a single source: An unresolved sticky issue. *Journal of Management*, *17*, 571-587.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bartunek, J. M. (1984). Changing interpretive schemes and organizational restructuring: The example of a religious order. *Administrative Science Quarterly*, *29*, 355-372.
- Bartunek, J. M., & Moch, M. K. (1987). First order, second order, and third order change and organizational development interventions: A cognitive approach. *The Journal of Applied Behavioral Science*, *23*, 483-500.
- Bossidy, L., & Charan, R. (2002). *Execution: The discipline of getting things done*. New York: Crown Business Books.
- Bowman, C., & Ambrosini, V. (1997). Using single respondents in strategy research. *British Journal of Management*, *8*, 119-131.

- Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Liking complexity theory and time pace evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, 42, 1-34.
- Burke, W. W. (1995). Diagnostic models for organization development. In A. Howard & Associates (Eds.), *Diagnosis for organizational change* (pp. 53-84). New York: Guilford.
- Burke, W. W., & Litwin, G. H. (1992). A causal model of organizational performance and change. *Journal of Management*, 18, 523-545.
- Burnes, B. (2004). Kurt Lewin and the planned approach to change: A reappraisal. *Journal of Management Studies*, 41, 977-1002.
- Cameron, K. (1980). Critical questions in assessing organizational effectiveness. *Organizational Dynamics*, 9, 66-80.
- Charan, R., & Colvin G. (1999). Why CEOs fail. *Fortune*, 139(2), 68-78.
- Dawson, P. (1994). *Organizational change: A processual approach*. London: Paul Chapman.
- Drazin, R., & Van de Ven, A. H. (1985). An examination of alternative forms of fit in contingency theory. *Administrative Science Quarterly*, 30, 514-539.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14, 532-550.
- Elrod, P. D., II, & Tippett, D. D. (2002). The death valley of change. *Journal of Organizational Change Management*, 15, 273-291.
- Garvin, D. A. (1998). The processes of organization and management. *Sloan Management Review*, 39(4), 33-50.
- Gersick, C. J. G. (1994). Pacing strategic change: The case of a new venture. *Academy of Management Journal*, 37, 9-45.
- Goldstein, I. L. (1993). *Training in organizations: Needs assessment, development and evaluation*. Baltimore: Brooks.
- Golembiewski, R. T., Billingsley, K., & Yeager, S. (1976). Measuring change and persistence in human affairs: Types of change generated by OD designs. *The Journal of Applied Behavioral Science*, 12, 133-157.
- Goodman, P. S., & Dean, J. W., Jr. (1982). Creating long-term organizational change. In P. S. Goodman (Ed.), *Change in organizations* (pp. 226-279). San Francisco: Jossey-Bass.
- Greenwood, R., & Hinings, C. R. (1993). Understanding strategic change: The contribution of archetypes. *Academy of Management Journal*, 36, 1052-1081.
- Guralink, D. B. (1982). *Webster's new world dictionary* (2nd ed). New York: Simon & Schuster.
- Huy, Q. N. (2001). Time, temporal capability, and planned change. *Academy of Management Review*, 26, 601-623.
- Jansen, K. J. (2004). From persistence to pursuit: A longitudinal examination of momentum during early stages of strategic change. *Organization Science*, 15, 276-294.
- Kanter, R. M., Stein, B., & Jick, T. (1992). *The challenge of change*. New York: Free Press.
- Kline, T. J. B., Sulsky, L. M., & Rever-Moriyama, S. D. (2000). Common methods variance and specification errors: A practical approach to detection. *Journal of Psychology*, 134, 401-421.
- Kloot, L. (1997). Organizational learning and management control systems: Responding to environmental change. *Management Accounting Research*, 8, 47-73.
- Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3, 383-397.
- Kotter, J. P. (1996). *Leading change*. Boston: Harvard Business School Press.
- Kotter, J. P., & Schlesinger, L. A. (1979). Choosing strategies for change. *Harvard Business Review*, 57(2), 106-114.
- Lewin, K. (1947). Frontiers in group dynamics: Concepts, method and reality in social sciences, social equilibria and social change. *Human Relations*, 1, 5-42.
- Lewin, A., & Minton, J. W. (1986). Determining organizational effectiveness: Another look, and an agenda for research. *Management Science*, 32, 514-538.
- Lindblom, C. (1959). The science of muddling through. *Public Administration Review*, 19, 79-88.
- Lippman, S., & Rumelt, R. (1982). Uncertain imitability: An analysis of interfirm differences in efficiency under competition. *Bell Journal of Economics*, 13, 418-438.
- Manz, C. C., & Sims H. P., Jr. (1981). Vicarious learning: The influence of modeling on organizational behavior. *Academy of Management Review*, 6, 105-114.

- Merchant, K. A. (1985). *Control in business organizations*. Marshfield, MA: Pitman.
- Miller, D. (1981). Toward a new contingency perspective: The search for organizational gestalts. *Journal of Management Studies*, 18, 1-26.
- Miller, D., & Friesen, P. H. (1977). Strategy making in context: Ten empirical archetypes. *Journal of Management Studies*, 18, 1-26.
- Miller, S. (1997). Implementing strategic decisions: Four key success factors. *Organization Studies*, 18, 577-602.
- Mintzberg, H., & Waters, J. (1985). Of strategies, both deliberate and emergent. *Strategic Management Journal*, 6, 257-273.
- Nadler, D. A., & Tushman, M. (1980). A model for diagnosing organizational behavior: Applying the congruence perspective. *Organizational Dynamics*, 9(2), 35-51.
- Nadler, D. A., & Tushman, M. (1989). Organizational frame bending: Principles for managing reorientation. *Academy of Management Executive*, 3, 194-204.
- Nevis, E. C., DiBella, A. J., & Gould, J. M. (1995). Understanding organizations as learning systems. *Sloan Management Review*, 36(2), 73-85.
- Ouchi, W. G. (1980). Markets, bureaucracies, & clans. *Administrative Science Quarterly*, 25, 125-160.
- Pettigrew, A. M., Woodman, R. W., & Cameron, K. S. (2001). Studying organizational change and development: Challenges for future research. *Academy of Management Journal*, 44, 697-713.
- Pfeffer, J., & Salancik, G. (1978). *The external control of organizations*. New York: Harper & Row.
- Podsakoff, P. M., & Organ, D. W. (1986). Self reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531-544.
- Porras, J. I., Harkness, J., & Kiebert, C. (1983). Understanding organization development: A stream approach. *Training & Development Journal*, 37(4), 52-63.
- Porras, J. I., & Hoffer, S. J. (1986). Common behavior changes in successful organization development. *Journal of Applied Behavioral Science*, 22, 477-494.
- Robertson, P., Roberts, D., & Porras, J. L. (1993). Dynamics of planned organizational change: Assessing empirical support for a theoretical model. *Academy of Management Journal*, 36, 619-634.
- Schein, E. H. (1996). Kurt Lewin's change theory in the field and in the classroom: Notes towards a model of management learning. *Systems Practice*, 9(1), 27-47.
- Sine, W. D., Mitsuhashi, H., & Kirsch, D. A. (2006). Revisiting Burns and Stalker: Formal structure and new venture performance in emerging market sectors. *Academy of Management Journal*, 49, 121-132.
- Skivington, J. K., & Daft, R. L. (1991). A study of organizational "framework and process" modalities for the implementation of business-level strategic decisions. *Journal of Management Studies*, 28, 45-68.
- Spector, P. E. (1987). Method variance as an artifact in self-report affect and perceptions at work: Myth or significant problem? *Journal of Applied Psychology*, 72, 438-444.
- Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Mahwah, NJ: Lawrence Erlbaum.
- Tannenbaum, R. (1971). Organizational change has to come through individual change. *Innovation*, 23, 36-43.
- Tichy, N. M. (1983). *Managing strategic change*. New York: John Wiley.
- Troy, K. (1994). *Change management: An overview of current initiatives*. New York: The Conference Board.
- Tushman, M. L., & O'Reilly, C. A., III. (1997). *Winning through innovation: A practical guide to leading organizational change and renewal*. Boston: Harvard Business School Press.
- Van de Ven, A. H., & Huber, G. P. (1990). Longitudinal field research methods for studying processes of organizational change. *Organization Science*, 1, 213-219.
- Van de Ven, A. H., & Poole, M. S. (1995). Explaining development and change in organizations. *Academy of Management Review*, 20, 510-540.
- Venkatramin, N. (1989). The concept of fit in strategy research: Toward verbal and statistical correspondence. *Academy of Management Review*, 14, 423-444.
- Watson, T. J. (1997). *In search of management*. London: Thompson International.
- Werr, A. (1995). Approaches, methods and tools of change—A literature survey and bibliography. *Economic and Industrial Democracy*, 6, 607-651.
- Williams, L. S., Cote, J. A., & Buckley, M. R. (1989). Lack of method variance in self-reported affect and perceptions at work: Reality or artifact? *Journal of Applied Psychology*, 74, 462-468.

- Williamson, O. E. (1991). Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly*, 36, 269-296.
- Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Zand, D. E., & Sorenson, R. E. (1975). Theory of change and the effective use of management science. *Administrative Science Quarterly*, 20, 532-545.
- Zmud, R. W., & Armenakis, A. A. (1978). Understanding the measurement of change. *Academy of Management Review*, 3, 661-669.