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ORGANIZATIONAL STRUCTURE AND CHANGE PROCESS OUTCOMES IN

FACILITY-BASED AND HOME-BASED LONG-TERM CARE

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ABSTRACT

Background. Long-term care organizations have conducted various change initiatives to improve the quality of the workplace environment and the retention of direct care workers. Even within the same general context, some kinds of organizations are better than others at adopting and implementing change. Organizational structure is known to be one of the critical factors in adopting and implementing organizational change. However, neither the structural characteristics of long-term care organizations nor the relationship of those structures to the process of change are well established. In addition, structural differences between facility-based and home-based long-term care organizations remain under-investigated.

Study Objectives. The study examined whether the long-term care service provider organizations are grouped together based on observed (manifest) structural indicators. The six indicators are centralization, formalization, extent of job-related training, vertical communication, horizontal communication, and supervisory span of control. The organizations were designated according to several mutually exclusive latent groups (classes), which were then related to organizational change processes, such as each organizational group's readiness for change, commitment to change, and actual level of implementation.

Hypotheses. Based on Burns and Stalker's typology of organic and mechanistic structure, we hypothesized that long-term care organizations could be classified into more than one group based on their respective structural configurations (H1). We further hypothesized that the grouping pattern would be different within each service provider's setting, such as facility-based vs. home-based settings (H2). Finally, we hypothesized that organic organizations would be more positively related to change outcomes than would mechanistic organizations (H3).

Methods. As structure is not a one-dimensional construct, it is most effectively represented by combinations of several indicators. Latent Class Analysis (LCA), therefore, was

used to identify unobserved (latent) classes of organizations, which have a common structure. The study used cross-sectional survey data from 100 long-term care organizations, all of which participated in the Better Jobs Better Care (BJBC) demonstration project from 2003 to 2006. The study variables were mostly from organizational-level survey data, except centralization (aggregated from individual-worker-level data) and span of control (aggregated from middle-supervisor-level data).

Results. Three latent classes (groups) emerged based on the six observed structural indicators, with the reasonable statistical fit indicators. Classes were (1) organic (professional) hierarchy, (2) mechanistic hierarchy, and (3) minimalist. Facility-based settings had a higher probability of membership in the mechanistic class than in other classes, whereas home-based settings had a higher probability of membership in the minimalist and organic classes than in the mechanistic class. In regard to the relationship between organizational change processes and structure, the organic type was positively associated with readiness for change and commitment to change, while the minimalist type was negatively associated with readiness for change and commitment to change, compared to the mechanistic class. Change implementation level, though, was not significantly related to any of the three structures.

Conclusion and implications. The present study will allow managers, researchers, and policy makers to more comprehensively understand structures in various types of long-term care organizations. In addition, the study results provide information regarding which structures are most positive for organizational change, which, in turn, can be an important criteria for evaluating intervention/implementation strategies in long-term care settings.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF A FIGURE

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Chapter 1

Introduction

Background

Currently in the United States, more than 10 million people who suffer with moderate to severe disabilities need long-term care services (Rogers & Komisar, 2003). According to projections, the number of individuals using paid long-term care (LTC) services in any setting will double from the reported figure of 13 million in 2000 to 27 million in 2050 (DHHS, 2003). Among these individuals, more than 78% of the adults depend on informal care from their families and friends. Those who do not have sufficient informal care receive formal care from long-term care provider organizations, primarily skilled nursing facilities, assisted living facilities, and home health agencies (Thompson, 2004).

Direct care workers (DCWs)—certified nursing aides, home health care aides, and home care/personal care workers—are formal caregivers who spend most of their time interacting with residents/clients on a daily basis. These workers stay close to the residents/clients and help with thee activities of daily living, such as bathing, dressing, eating, and using the toilet. Thus, they are the most critical care providers who can directly influence the quality of care the residents/clients receive and thus their quality of life. In 2006, 2.3 million direct care workers (DCWs) provided long-term care in the United States (BLS, 2008). Moreover, as Stone and Harahan (2010) pointed out, the numbers would have been much higher had private workers been included.

According to the recent survey, approximately 110,000 DCW vacancies existed in the United States in 2008 [American Health Care Association (AHCA)]. This mismatch between supply and demand of DCWs is partly due to an increasing aging populations and longer life

spans. However, another significant factor is the high rate of turnover among DCWs. Although there are some inconsistencies in the ways that turnover is defined and measured, (Barry, Kemper, & Brannon, 2007) there is no question that it is high for this category of workers. Dresser, Lenge, & Sirkus (1999) reported that the turnover of DCWs in nursing homes is as high as 127% in Wisconsin with the national average reported as 78% (American Health Care Association, 2002). Furthermore, state turnover rates of home care workers vary from 12 to 76% (HRSA, 2004). Less evidence exists in regard to the turnover of workers in assisted-living facilities; however, turnover for this group has been estimated at 35 to 40% (American Association of Homes and Services for the Aging, 2002). Some state-level estimates are as high as 164% (Dresser et al., 1999). Worker turnover is not only costly to the provider organization for recruitment and new staff training, but it can also result in negative consequences of resident care, such as disruptions in care continuity for residents and clients (Dawson & Surpin, 2001; IOM, 2008).

Researchers have found that major reasons for DCW turnover include the physically and emotionally hard nature of the work, lack of support from supervisors or management teams, low wages and few benefits, lack of autonomy and respect, insufficient job training, and lack of career development (Stone, 2001; Stone & Wiener, 2001). In an effort to solve this high turnover problem, LTC industry leaders have established a number of state- and federal-level initiatives over the past several years (Harris-Kojetin, Lipson, Fielding, Kiefer, & Stone, 2004). One such initiative is Project LEAP (Learn, Empower, Achieve, and Produce), a workforce development program designed to educate, empower, and retain strong nurse managers and staff in nursing homes. By training nurses and nurse aides, the LEAP program is designed to provide high-quality training to LTC leaders and staff who will, in turn, create better outcomes related to their residents/clients well-being and quality of life. Another related initiative is Project Wellspring, which is designed to improve nursing home quality and to develop a process for organizational change. Eleven facilities participated in this program to develop a mutual strategy to improve

clinical outcomes, conduct staff training, and empower staff. The Better Jobs Better Care (BJBC) program, the focal context of this study, was a four-year demonstration project to improve the job environment and retention of DCWs from four different long-term care settings (skilled nursing, assisted-living, home care, and adult day care).

Study Context: The Better Jobs Better Care (BJBC) demonstration

The Better Jobs Better Care (BJBC) demonstration is a long-term care workforce initiative funded by the Robert Wood Johnson Foundation and the Atlantic Philanthropies. The main goal of the BJBC is to "create changes in policy and practice that will lead to the recruitment and retention of high-quality paraprofessional workers in both nursing homes and community-based settings" (BJBC, 2002, p. 3). A total of 148 LTC provider organizations (approximately 7,000 DCWs and 700 supervisors) from five states (Pennsylvania, Oregon, Vermont, North Carolina, and Iowa) participated in the BJBC from 2003 to 2006. Four types of LTC provider organizations, skilled nursing facilities (SNF = 53), assisted-living facilities (ALF = 42), home care service agencies (HC = 42), and adult day services (ADS=11) participated voluntarily.

Management Intervention Programs

Under the common guidelines for management practices, each state coalition independently developed and implemented intervention programs. Most of the interventions used existing training programs to bring "culture change," which values resident-centered models by empowering frontline caregivers in terms of decision-making, promoting individualized care, and

using self-directed teams (Robinson & Rosher, 2006). Programs can be summarized according to six categories (Kemper et al., 2010):

- *Top management training* was designed to facilitate upper management buy-in and support for staff to undertake these interventions.

- *Supervisor training* was designed to improve the quality of supervision for DCWs.

- *Team building* focused on improving leadership and communication among staff using proprietary training programs.

- *Peer mentoring* used one-on-one support to improve the quality of DCWs' jobs by increasing career mobility options and improving the orientation process for new employees.

- *Caregiving skill development* interventions sought to enhance clinical skills through curriculum-based programs, formal classroom-based training, and informal on-the-job training.

- *Provider-specific projects* were an option for providers in all five projects. They varied across providers, focusing on areas such as diversity, staff instability, and workplace issues.

Evaluation Approaches and Results

The Survey Research Center (SRC) and the Center for Health Care and Policy Research (CHCPR) at The Pennsylvania State University evaluated the overall impact of the BJBC on turnover and on the DCWs' job perceptions. The evaluation team collected both qualitative and quantitative data from the stakeholders. Computerized and paper-and-pencil surveys were administered to DCWs, supervisors, and top clinical managers in the participating organizations before and after the intervention. In addition, a Management Information System (MIS) was created to collect comparable turnover measures across states and types of providers. Quasi-experimental pre- and post-design was used to compare the mean turnover rates and the mean scores of the workers' job perceptions before and after the intervention.

Although researchers found evidence of increased use of improved management practices, as reported by the organizations, in accord with that the BJBC's aims (Stott, Brannon, Vasey, et al., 2010), the extent of the increase varied. About a third of the organizations reported that they had fully implemented the BJBC interventions, another third reported significant progress, and the final third had not yet begun or had made only slight progress. As Brannon, Kemper, Heier-Leitzell, et al. (2010) stated, changing a culture and improving turnover are challenging tasks and require substantial resources, the engagement of staff at all levels, and supportive organizational policies.

<div align="center">**Problems to Solve**</div>

Restricted Approach for Evaluation

The Penn State Research Team used a quasi-experimental design to compare the mean differences before and after the intervention. This approach is focused on testing only the effects of a specific intervention without considering other possible factors that may influence the outcomes of interest. The pre–post comparison design was applied to several previous demonstrations projects for their evaluation. However, the quasi-experimental method may not always constitute the best approach. Researchers agree that more diverse evaluation methods than those used to date are needed to accurately identify the effects of changes and to subsequently design and implement changes appropriate to a given context. Harris-Kojetin et al. (2004) argued that using an appropriate evaluation method is important, as such a method enables (1) accurate diagnosis of the results of current programs, (2) replication of the existing programs to other settings, and (3) future decisions for more effective resource allocation.

However, current evaluation approaches have mostly focused on a single method, comparison of mean differences before and after the intervention. Although the pre–post comparison design is appropriate for measuring the impact of a given intervention, more research needs to be done on the relationship between the processes of change and organizational characteristics, such as organizational structure.

Consideration of Organizational Structure

Structure has been regarded as one of the key determinants of organizational performance in other industries (Aiken & Hage, 1971; Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Sine, Mitsuhashi, & Kirsch, 2006; Weber, 1947). Understanding organizational structure, including aspects, such as authority relationships, communication channels, and coordinating mechanisms, can help with implementing change. For example, in a highly bureaucratic and rigid structure, an organization-wide change might be more difficult to effect than a similar change in a less bureaucratic and more flexible structure. That is, in the former structure, more time may be needed to prepare documentation for change, employees may be less motivated by decisions made at the top level of the organization, and channels for information exchange are likely to be restricted within units or departments. On the other hand, organizations with more flexible structures might find it easier to initiate and adapt to change. In such organizations, employees at all levels may have opportunities to contribute to the critical decision-making necessary in change processes.

However, the concept of structure and its relationship to organizational change processes have not generated much attention in long-term care. Few studies have conceptualized structure under the contingency framework; instead, most studies have used the Structure-Process-Outcome framework developed by Donabedian (1966). Even among the studies that used a

contingency framework, structure in most cases was not one of the main variables of interest. Moreover, studies focused on only one type of long-term care setting, such as within nursing homes or home health care agencies.

Furthermore, previous studies of organizational structure have focused on the linkage between abstract dimensions of structure and a set of discrete contingent factors (e.g., size, history, and ownership status), or the relationship between these links and organizational outcomes. This approach prevents understanding of organizational structure by limiting results to a restricted set of linear relationships. Consequently, this literature may not capture the multi-dimensional characteristics of organizational structure. A configuration approach, based on patterns of organizational characteristics that result in organizations falling into several distinct groups, may broaden the understanding of organizational structure (Meyer, Tsui, & Hinnings, 1993).

Consideration of Different Long-Term Care settings

In addition, more work is needed to assess whether interventions from one setting (e.g., nursing homes) are "transferable" to other settings (e.g., assisted-living, other residential settings, and home- and community-based settings). The BJBC participant organizations are each from a different setting: facility, residential, home-based care, and day care. However, in the evaluation process, how one setting is different from other settings in terms of organizational structure was not sufficiently considered. The BJBC results showed that some structures (e.g., frequency of communication, degree of formalization, and span of control) were different among provider types (i.e., facility-based vs. home-based delivery models). Previous research has not clearly explained "why" and "how" those differences among provider types are associated with change implementations. For example, a more formalized structure may be positively related to change

implementation for skilled nursing facilities, rather than for home care agencies, because explicitly defined tasks and a decreased number of subordinates per supervisor can facilitate the top–down implementation of change. Even within each type of care, structural factors related to better change outcomes have not been explored.

Research Questions

Given the previously explained problem statements, I focus on three research questions:

1. How can we identify organizational structure in long-term care organizations using a holistic approach (a configurational approach)?

2. Do differences exist in structural configurations (classes) between facility-based settings and home-based settings? If differences are identified, how do they differ?

3. Once we identify structural configurations (classes), what are the relationships between structural configurations and organizational change processes, i.e., readiness for change, commitment to change, and level of change implementation?

Study Objectives

The goal of the study is to address the gap in the literature on long-term care culture change by identifying structural conditions capable of promoting change across the different types of providers that rely on non-professional caregiving staff. Because structure is not a one-dimensional construct, it is best represented by combinations (configurations) of several indicators. Therefore, latent class analysis (LCA) was used to identify unobserved classes (latent classes) of long-term care organizations, which have common structural combinations (configurations). Six structural indicators were used: centralization, formalization, extent of job-related training, vertical communication, horizontal communication, and span of control. In

addition, this study tests the ways in which these latent classes are associated with organizational

change processes in the context of the BJBC demonstration.

Significance of the Study

This study will allow managers, researchers, and policy makers to more comprehensively

understand structures in various types of long-term care organizations and the relationship

between structure and processes and the outcomes of organizational change. In particular, this

study identifies several distinct types of "structural configurations" of long-term care service

provider organizations. This will enable long-term care stakeholders to understand the multi-

dimensional concept of structure. Previous studies have not fully addressed the complexities of

the multiple dimensions of structure and how these complicated components interact with other

organizational factors or outcome variables.

Leaders of long-term care service providers would benefit from understanding how

organizational structure influences organizational members' views on adopting and implementing

new management practices. This study will help introduce new management practices in the

context of structural conditions, Organic, Mechanistic, and minimalist, so that administrators can

make better decisions about the contents, methods, and/or delivery of interventions based on the

context. As Kemeny (2010) pointed out in her study, current literature does not sufficiently offer

guidance about how implementing management practices may vary with structural components.

The study results will help policy makers understand how structural conditions in long-

term care service provider organizations relate to the needs, challenges, and strategic planning

associated with implementing new workforce development programs. Different long-term care

service provider settings, such as facility-based and home-based, may require different needs and

strategic plans for workforce improvement initiatives. However, no research has addressed this

issue. Rather than continuing a one-size-fits-all strategy for improving workforces, identifying the key needs of service provider organizations according to different provider types (e.g., facility-based vs. home-based) might reveal more accurate profiles of needs and opportunities.

Finally, although evidence-based implementation are generally considered necessary in any context, studies to date have offered very little empirical evidence in regard to the efficacy of initiatives promising culture change through improving workforce engagement and retention. This study, however, does provide relevant empirical data for establishing appropriate evaluation criteria for each provider type. The study, therefore, has the potential to assist in decision-making for implementing successful change, such that policy makers can benefit from the information it offers about structural conditions as they relate to different levels of change outcomes.

Chapter 2

Prior Research and Hypotheses

In the previous chapter, I set three research questions pertaining to (1) how we can identify organizational structure in long-term care settings, (2) how these structures (or structural configurations) differ between different LTC service settings (facility-based vs. home-based), and (3) how these structures (or structural configurations) relate to organizational change processes. To answer these questions, I first examined how prior research has defined and typified organizational structure. The typology of mechanistic vs. organic, based on structural contingency theory, is introduced in this chapter. The chapter also discusses previous research on organizational structure and associated outcomes in LTC settings, both in facility-based and home-based settings. Finally, the chapter concludes with a summary of the areas that the literature has yet to address.

Organizational Structure

Definitions

Henry Minzberg (1979) stated that every organization has two fundamental roles: division of labor into specific tasks to be performed and coordination of those tasks in order to achieve organizational goals. Organizational structure, by Minzberg's definition, is simply the total number of ways to divide the organization's labor and how to integrate them to attain organizational goals (1979, p. 2). Donaldson defined organizational structure as a set of relationships among organizational members: "authority relationships, the reporting relationships

as signified in the organizational chart, the behaviors required by organizational rules, the patterns in decision making such as decentralization, patterns of communication and other behavioral patterns" (1996b, p. 57) in both formal and informal organizations.

Minzberg's definition puts more emphasis on the systematic arrangements of the parts, whereas Donaldson's definition emphasizes the relationships among the parts. Because of these somewhat broad definitions of organizational structure, researchers have looked at various multi-dimensional aspects of organizational structure, including both tangible (e.g., number of specialties) and intangible, or socially constructed components (e.g., communication intensity).

Modules of Structure

Van De Ven and Ferry (1980, pp. 9–14) described organizational structure using multiple levels (modules) of organizational hierarchies: a macro-organizational module, an organizational-unit module, and a job-design module. Macro-organizational modules encompass the overall structural configuration of an organization, such as vertical, horizontal, and spatial differentiation, forms of departmentation (e.g., by function, program, geography, or matrix), and administrative intensity. It also focuses on the distribution of power and authority among corporate decision makers. Organizational-unit modules consist of various characteristics of the task, structure, and process of all organizational units or work groups, such as unit specialization, personnel composition, unit standardization, unit decision making, unit performance, and norms and standards. Job-design modules measure the ways in which individual jobs or positions are structured, such as job specialization (e.g., number of different tasks performed), job expertise (e.g., education or on-the-job training), job standardization (e.g., number of job rules), job discretion (e.g., latitude in making job-related decisions), and job incentives (e.g., feedback from work, supervisor, and peers). Among the three different modules, the present study focused both

on the organizational and the job-design module because this study employed organizational level of measures, such as formalization and supervisory span of control, as well as the job-design level of measures, such as DCWs' decision authority, job-related training, and communication with peers and with supervisors.

Theoretical Overview

Structure/Process/Outcome (SPO) Model

Throughout the health care sector, including long-term care, structure has generally been understood as a component of the Structure/Process/Outcome (SPO) model developed by Donabedian (1966; 1980). In the SPO model, structure refers to professional or organizational resources, or capacity, relating to the provision of care, such as staffing ratios or capacity (e.g., number of operating beds). Process refers to all the aspects associated with patient care from medication schedules, waiting times for treatment, and communication protocols to special activities. Outcome measures describe ideal states resulting from the treatment, including technical (e.g., the absence of postsurgical complications) and interpersonal outcomes (e.g., patient satisfaction). Donabedian (1966) argued that these three elements of quality measures are interdependent within an underlying framework. Good structure promotes good process, which in turn promotes good outcomes. For example, insufficient staff (structure) may result in a lack of communication between patients and medical staff (process), which could also mean that patients' needs are not met leading to dissatisfaction (outcome).

However, contingency theory posits that the fit between an organization's structure and its technical and environmental context determines organizational performance (Donaldson, 1996a). In this framework, rather than having one "best" structure, organizations can have

different forms according to their different operating processes and environments. Zinn and Mor

(1998) compared the SPO view and contingency view of structure in their article about

organizational structure and the quality of primary care for older adults (p. 356):

> While SPO model views structure as *immutable* characteristics such as size,
> control status, or chain membership, contingency theorists include strategic
> dimensions reflecting the organizational choice of mechanisms for
> communication, coordination, and integration of efforts across organization.

History of Structural Contingency Theory

Two counter-arguments about the relationship of organizational structure and

performance are that: (1) only one organizational structure (Woodward, 1958; 1965) produces the

best organizational outcome and (2) organizational structure can have different forms according

to its technological (operational) traits and associated environment (Donaldson, 1996b). The first

point is influenced by Taylor's scientific management (1911) and Weber's bureaucratic

organization (1947, p. 196), both of which posited that bureaucratic (mechanistic) structures of

organizations, characterized by specified roles and clearly defined division of labor and

hierarchically arranged authority, perform better than all other forms of organizations in all

settings.

Since the 1960s, the Weberian (bureaucratic) view of structure has been complicated by

the views of the contingency theorists, who argued that organizations can have different forms

and show better performance when their respective structures match their environmental contexts

(Blau, 1970; Burns & Stalker, 1961; Chandler, 1962; Lawrence & Lorsch, 1967; Perrow, 1967;

Sine et al., 2006; Thompson, 1965; Woodward, 1958; 1965). Burns and Stalker (1961) argued

that organic structure performs better when the organization faces a high level of technological and market change, whereas mechanistic structure is more suitable for stable environments.

Woodward (1958; 1965) correlated operational technology to organizational structure by using the same typology as that used by Burns and Stalker. She argued that "primitive" technology characterized by hand-crafting skills and the production of small batches, such as the manufacture of musical instruments, requires flat and organic organization, whereas "advanced" technology characterized by mass production using specialized machinery, such as the manufacture of cars, is better matched to a formalized and mechanistic structure. Woodward used measures such as the span of control of the first-line supervisor, the number of managers in the hierarchy, and the ratio of direct to indirect labor, to validate her hypothesis.

Lawrence and Lorsch (1967) introduced the term "contingency theory." They theorized that the rate of environmental change can differently affect each sub-unit (e.g., R&D unit vs. production unit) and emphasized that a higher level of integration is needed to effectively coordinate different structures among units. Broadly agreeing with Lawrence and Lorsch, Perrow (1967) suggested that the fewer exceptions in operations, the more the organizations could be centralized in decision-making.

Thompson (1965) viewed organizations as open systems and closed systems. Organizations tend to protect their core production technology as a closed system. In addition, he distinguished between three technologies (long-linked, mediating, and intensive) and three activities (pooled, sequential, and reciprocal) and identified different coordination mechanisms to handle each of these interdependencies. Blau (1970) addressed the theory of structural differentiation: as an organization grows in size, the more divisions, sub-units, levels are created. Chandler (1962) argued that a functional structure fits an undiversified strategy, whereas a multidivisional structure fits a diversified and complex strategy.

The Aston Group developed measurements of organizational structure: (1) structuring of activities (how far the organization adopts specialization by function, rules, and documents) and (2) concentration of authority (centralization of decision-making) (Pugh, Hickson, Hinings, & Turner, 1968). They investigated a large number of contingencies, such as size and whether or not the organization was a subsidiary of a parent organization. Large organizations were found to be more structured than were small organizations. Large independent organizations were more decentralized than large dependent organizations.

Scholars also linked structure to organizational innovation (Aiken & Hage, 1971; Hage, 1965; Pierce & Delbecq, 1976). Decentralized, flat (organic) structures were shown to help organizational members to suggest and support innovative ideas and facilitate the implementation of those new ideas effectively throughout the organization, whereas this was not found to be the case for centralized, tall (mechanistic) organizations.

During the 1960s and 1970s, contingency theorists focused on identifying factors associated with key dimensions of organizational structure, such as environmental uncertainties (Burns & Stalker, 1961), operational technologies (Woodward, 1958, 1965), innovation (Aiken and Hage, 1971; Hage & Aiken, 1967; Pierce & Delbecq, 1976), size (Blau, 1970), and strategies (Chandler, 1962). Contingency views predominated the field of organizational structure until ecological perspectives in the 1980s and institutional perspectives in the 1990s were introduced.

Dimensions of Organizational Structure

This study focuses on six structural dimensions: (de)centralization, formalization, extent of job-related training, vertical communication, horizontal communication, and span of control. The degree of *decentralization* is the extent to which organizational decision-making authority is distributed throughout the organization (Aiken & Hage, 1971; Zinn & Mor, 1998). If an

organization's decision is made at the top-management level, we refer to this organization as centralized. The degree of *formalization* is the extent to which an organization operates based on written rules and regulations (Aiken & Hage, 1971). In LTC settings, formalization is often operationalized as the number of written documents in the organization (Zinn & Mor, 1998). *Job-related training* is another dimension of organizational structure. Aiken and Hage (1971) measured the degree of professional training as the amount of professional training for staff within the organization and the interactive training they receive outside the organization. A large body of literature has supported the position that *communication* among workers, with their supervisors and management teams, is a critical factor for organizational outcomes (Aiken & Hage, 1971; Anderson et al., 2003, 2004; Cherry, Ashcraft, & Owen, 2007; Eaton, 2000; Forbes-Thompson et al., 2006; Thompson, 1965). Communication refers to the intensity of interaction among workers, between hierarchical levels (vertical communication), or among work groups from all directions (horizontal communication). In previous research, vertical communication is active in formalized structure, whereas lateral communication is more fluent in organic structure (Aiken & Hage, 1971). *Span of control* refers to the number of subordinates (frontline workers) per supervisor. The lower the number of subordinates the higher the control over workflow (Pugh et al., 1968).

Typology: Organic vs. Mechanistic Structure

The term "organic organization," which was first used by Burns and Stalker (1961), is used to refer to organizations that have relatively decentralized decision making (low centralization), put less emphasis on written rules and procedures (low formalization), and allow a high level of discretion regarding how tasks are performed based on individual professionalism (high level of professional training). Such organizations have been further described by scholars

according to five characteristics: (1) special knowledge and experience are valued, (2) individual tasks are adjusted and redefined continually, (3) structure of control, authority, and communication is interconnected (high span of control), (4) communication is lateral rather than vertical (higher lateral communication than vertical communication), and (5) affiliations and expertise are important (Aiken & Hage, 1971).

"Mechanistic" organizations are those in which tasks are very specialized and divided (high specialization), supervisors are responsible for only their special areas, roles and obligations are precisely defined (high formalization), authorities are centralized (high centralization), and vertical communication between supervisor and subordinates is highly developed (high vertical communication). The expected combinations of structural indicators for organic and mechanistic types are described in Table 1.

The rationale behind this argument is that the organic structure, unlike the mechanistic structure, can identify new problems and requirements and is, therefore, able to respond quickly to a constantly changing environment. The mechanistic structure often cannot detect problems as they arise within the functional roles defined by hierarchical structure (Burns & Stalker, 1961, pp. 119–125). Later, Aiken and Hage (1971) empirically tested Burns & Stalker's contention of organic vs. mechanistic organization using the six non-profit public service organizations.

Table 2-1. Typology of Mechanistic vs. Organic Forms by Structural Indicators

Structural indicators	Mechanistic	Organic
Centralization	High	Low
Formalization	High	Low
Job-related training	High in very specialized area	High
Vertical communication	High	Low to middle
Lateral communication	Low to middle	High
Span of control	Low (emphasize control)	High (flat organizations)

Source: Burns & Stalker (1961), Aiken & Hage (1971).

As Burns and Stalker pointed out in their book, not all organizations fit into in these two extreme types of organizational structure. Instead, there are intermediate positions. Although Burns and Stalker's typology of organic and mechanistic forms has some drawbacks in that they are too simplistic to account for various organizational contexts, the typology has been recognized as one of the most representative forms in contingency theory.

To summarize, organizational structure is defined as a set of relationships among organizational members related to communication, authority, rules and procedures, decision-making, and strategies. Though the SPO perspective focuses on elements of organizational capacity such as size, contingency theory involves an organization's strategic choices for mechanisms regarding communication, coordination, and integration. According to contingency theory, organization is effective when its operating and environmental context fits with key elements of structure. Among the most-cited contingency theorists, Burns and Stalker (1961) proposed that an organic structure is better in an uncertain environment and a mechanistic structure is better suited to a static environment. The six structural dimensions—formalization, centralization, extent of job-related training, vertical communication, horizontal communication, and span of control—were used to describe organic vs. mechanistic structure. In the next section, I review past studies of organizational structure and various organizational outcomes in facility-based and home-based LTC settings.

Previous Literature

Although it is difficult to find literature that investigated [structure] + [long-term care] + [innovation and change], there are two main streams of literature about organizational structure in long-term care. One stream focuses on the culture change movement derived from the nursing

home industry in the early 21st century; the other focuses on the control mechanism adopted by

LTC institutions to implement quality initiatives and to enhance the quality of care provided for

residents/clients.

Culture Change Movement in Long-Term Care

As the provision of LTC service originated from the sub-unit of hospital systems, most

nursing homes in the 1980s and 1990s continued to operate under this bureaucratic and

administrative culture. Industry leaders and scholars argued that creating a resident-centered

environment that would allow older adults more autonomy and give their care-givers more

discretion would benefit both (Robinson & Rosher, 2006). The main component of the culture

change movement is to change the work structure for direct care staff, so that they can participate

in care planning and scheduling resident activities. This decentralized authority is intended to

help organizations retain caregivers in the organization longer so that residents would have been

able to enjoy sustained and close relationships with their caregivers. Further, in order to enhance

staff involvement in decision-making, organizations are encouraged to use self-directed teams.

Staff turnover is one of the potential barriers to culture change because changes in organizational

structure cannot be achieved without support from the staff.

A large body of literature supports the idea of culture change including empowering

caregivers by providing them with job-related training and decision-making authority,

opportunities to participate in care planning, and involvement in coordinating mechanisms such

as interdisciplinary teams. Smyer, Brannon, and Cohn (1992) investigated how training and

changes in the job design of nursing assistants improve staff knowledge, motivation, and

performance. Although this study did not find significant differences in job motivation and

performance, it emphasized that changes in organizational structure at the job-design level, such

as training, participation in care planning, and feedback, are likely to enhance workers' job knowledge, motivation, and performance, the result of which could be to provide better care for residents. Though they did not test their theory, Banaszak-Holl and Hines (1966) offered a similar argument: organic settings in which nurse aides exert more autonomy and flexibility can help them to respond more quickly to daily variations in the residents' status.

Studies have also been conducted on how decentralized authority, one of the main characteristics of organic structure, is associated with high job satisfaction for nurses and nurse aides (Acorn et al., 1997; Blegan, 1993; Cherry et al., 2007). Coordination and the use of teams were the two most frequently cited structures associated with positive outcomes in LTC settings. Care coordination with multiple teams was positively associated with high-quality outcomes in nursing homes (Fries et al., 1997; Mor et al., 1997; Phillips et al., 1997; Teresi et al., 1993).

Although studies have examined several features of organic structure, focusing on variables such as participation, training, decentralization, and care coordination, these studies only investigated some dimensions of organizational structure without reference to others. Organizational structure has other dimensions such as formalization, standardization, and specialization. None of these studies found complicated interactions among the multiple dimensions. For example, an organization might have decentralized authority as well as highly formalized procedures. It is possible that formalization, such as heavy reliance on documentation or rules, may counteract the effects of decentralized authority on organizational outcomes. In other words, DCWs in highly decentralized and less formalized settings are likely to have more freedom to implement innovation without seeking administrative approval than their counterparts in a highly formalized setting. Current literature does not capture the interactions among multiple structural dimensions or their impact on organizational outcome variables, such as workers' job perceptions, the quality of care received by residents, or organizational change processes.

Kroposki and Alexander (2004), in their study of nursing technology and organizational structure on resident outcomes in home care, focused on the three structural dimensions, vertical participation (VP), horizontal participation (HP), and formalization (FO). They conducted multiple regression analysis to determine the best fit of nursing technology (instability, variability, and uncertainty) and structure (VP, HP, and FO) associated with positive resident outcomes. Using surveys at 43 home health sites with 205 nurses and 325 clients, Kroposki and Alexander identified the three technology–structure combinations associated with good client outcomes: (1) when clients are unstable, nurses interact with peers, (2) when care is complex, nurses consult with supervisors, and (3) when clients' needs are varied, nurses use rules to guide clinical decisions. Although contributing to understanding the relationship between the structure–technology fit and resident outcomes, this study did not consider other dimensions of structure, such as decentralization, specialization, or communication. Also, the study results from Kroposki and Alexander (2004) cannot be generalized into all home health settings in the U.S. due to the convenient sampling. In addition, only registered nurses participated in this study, whereas in the present study all levels of workers are considered, such as clinical managers, supervisors, and DCWs on the frontline. Moreover, the study's findings about structure–technology fit could have been influenced by the interaction of complex dimensions of structure that the study neither conceptualized nor measured.

A qualitative study by Eaton (2000) considered multiple dimensions of organizational structure: level of job-training for DCWs, staffing, supervision, communication, and quality of care provided. Eaton typified three distinctive management systems in the nursing home, using the case studies of 20 facilities in California and Pennsylvania: (1) a traditional low-service low-quality model, (2) a high-quality high-service model, and (3) a regenerative community model. About 70% of nursing homes fell into the traditional low-service low-quality model. The work systems of this model can be summarized as little or no supervision on the job, limited or minimal

training, and a lack of communication regarding the condition of the residents to whom they are assigned.

Organizations of the second type, the high-quality high-service model, are often, but not always, non-profit, and part of a religious chain, and only 30% of their patients were on Medicaid compared to the industry average (62%). Nurse aides often work in teams and there is a higher level of lateral and vertical communications among team members and with supervisors. This model relies on formal meetings or written documentation, and the records are well-maintained. These homes have more nursing staff (RN, LVN, and NA levels) working on each shift and more professional training for all staff than do the organizations designated as low-quality low-service and those belonging to the regenerative community group.

The regenerative community model, the third model, represents nursing homes that successfully adopt innovative approaches in their work systems. They transform nursing care into a more patient-centered enterprise, giving enormous decision-making authority and autonomy to nurses and nurse aides in their daily activities. Staff create several "neighborhoods" and "families" of residents with helpers, and the physical environments and care models are re-designed. Residents can choose when to rise and when to go to bed, what and where to eat, and the activities they wish to schedule. Nurse aides' tasks are, therefore, redefined with no restrictions on any "specific" job duties. Workers are cross-trained so that any staff member can respond to various needs of residents appropriately at any time. In order to compensate for the costs of adopting this innovative model, the organizations in this study eliminated some middle-management jobs and thus flattened the organizational structure (Eaton, 2000).

While Eaton's study offered ways to better understand organizational structures as multi-dimensional systems, the small sample size of the study restricts the generalizability of the study results to other nursing home settings. More research needs to be conducted on the interaction patterns of the multiple dimensions of organizational structures.

Control Mechanism for Quality Improvement

On the other hand, some studies suggest that a more mechanistic structure is effective for adopting or implementing quality improvement initiatives in LTC settings. Studies have shown that a high-control structure is effective in quality improvement or resident outcomes in psychiatric nursing units in hospitals (Boys Town National Research Hospital, 2005) and nursing homes (Beers et al., 1993; Karuza & Katz, 1994; Roher, Momany, & Chang, 1993). However, very few studies in this vein have been conducted in home health care settings or assisted living facilities in terms of organizational structure. Boys Town National Research Hospital (2005)[1] reported that changes toward centralizing nursing services have reduced medication errors by increasing the level of continuity associated with medication dispensing. Control mechanisms, such as controlling staff members' rights to admit residents/clients at nursing homes and using formalized tools (Resident Assessment Instrument and the Minimum Data Set), were found to have high quality outcomes (Karuza and Katz, 1994; Roher, Momany, & Chang, 1993).

Katz et al. (2009) suggested that the medical staff model, which focuses on coordination and a tightly structured medical staff, including medical director and other attending physicians, nurse practitioners, and physician assistants, are likely to be associated with high-quality care. Originated by Roemer and Friedman (1971) in a study of acute-care hospital settings, the medical staff model found that hospital performance was associated with the physicians' job commitments and a highly structured hospital staff organization. The seven dimensions in this model are staff composition, appointment process, level of physicians' job commitment, reporting and coordination systems, number of control committees, documentation, and informal interpersonal relationships. These dimensions originate from the Structure/Process/Outcome perspective, the

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[1] This study was conducted in psychiatric nursing units in the hospital. Although the study context is not a nursing home, I included the study because the psychiatric unit for children has a similar environment to nursing homes and there are few studies about nursing home structures and outcomes.

contingency view of structure, and organizational culture theory.

Although the medical staff model received support from later studies (Shortell, Becker, & Neuhauser, 1976; Flood & Scott, 1978; Shortell, Schmittdiel, & Wang, et al., 2005), these studies, though, are all in the context of acute-care hospital settings.

Structure and Innovation

Organizational innovation is defined as the generation, acceptance, and implementation of new ideas, processes, products, or services for the first time within an organizational setting (Thompson, 1965, qtd. in Aiken & Hage, 1971, p. 64). The type of innovation in the present study is in regard to adopting and implementing improved management practices as part of a culture change in long-term care organizations. The three organizational change processes used are the readiness for change, commitment to change, and implementation of the change intervention in the context of the BJBC demonstration. The first two outcomes, organizational readiness for change and commitment to change, are the adoption stages of innovation, according to Pierce and Delbecq's classifications of innovation (1976). The implementation of change refers to the installation phase of an idea adopted in the organization.

Organizational researchers generally agree that organic organizations more readily take to organizational innovation than do mechanistic organizations (Aiken & Hage, 1971; DeCanio, Dibbie, & Amir-Atefi, 2000; Pierce & Delbecq, 1976; Zmud, 1982). In their study of organic structure and innovation in 16 health and welfare organizations, Aiken and Hage (1971) tested several variables that characterize organic organization to ascertain if those variables related to the rate of innovation. According to their research, the number of occupational specialties, the magnitude of communication, and the decentralization of decision-making are all factors that influence innovation.

In previous studies, researchers have explained why these organic characteristics enhance organizational innovation. First, professional training for staff and interactive training outside the organization, as measured by the number of occupational specialties, improves organizational diversity, which, in turn, improves the potential for innovation in organizations. Staff members who are exposed to up-to-date field information and professional training in their disciplines are more likely to accept new ideas and be more supportive of efforts to apply these new concepts in their organizations (Evan & Black, 1967; Hage & Aiken, 1967; Mytinger, 1968; Palumbo, 1969). Second, decentralized structures can contribute to the implementation of innovation because dispersed authorities are more imaginative in solving problems and they have more supporters for possible solutions (Hage & Aiken, 1967; Thompson, 1965). However, Aiken and Hage pointed out that fewer participatory management styles may accelerate the top–down implementation of innovation. Third, an organization should have well-developed communication channels in all directions if it is to be innovative. Communication increases the chances that a variety of ideas will arise from all levels and units in the organization, and these ideas will result in both initiating and adopting innovation. Evan and Black (1967) found that there is more communication between line and staff workers in innovative organizations. Finally, freedom from rules and from narrowly divided and specified work roles are critical factors for innovation (Burns & Stalker, 1961; Thompson, 1965). Several subsequent studies support this hypothesis. Rosner (1968) found that hospitals with numerous formal rules and procedures implement new ideas less frequently and less quickly than those with fewer formal rules and procedures. Evan and Black (1967) and Palumbo (1969) also found some evidence that innovation is negatively related to the degree of formalization.

Implementation of Change. Pierce and Delbecq (1976) suggested a slightly different idea about structure (organic)–innovation fit. The authors theorized relationships between organizational structure and three phases of innovation—initiation, adoption, and implementation.

In doing so, they hypothesized that some organizational structural characteristics, such as differentiation and decentralization, would be more positively associated with initiating an idea than with its adoption or implementation. Unlike Aiken and Hage (1971), though, Pierce and Delbecq argued that formalization may have a modest positive impact on the adoption and implementation phases of innovation because a single goal may be an effective structure for successful implementation and adoption. However, they did not test these propositions.

Similar arguments were made by Dansky and Brannon (1996). In a paper about strategic orientation and total quality management (TQM) practices in home health care organizations, the researchers suggested that both mechanistic and organic features are possible in today's home health care environment. Although an organic organization—one characterized by decentralization, lateral communication, and flexibility—is more likely to implement TQM cultures, bureaucratic and formalized characteristics in home health agencies are also essential to preserve the internal stability of the organization. The study showed that the mechanistic features of home health care organizations, i.e, formalization and standardization, are positive for TQM implementation.

Readiness and commitment to change. Organizational readiness for change has been defined as the extent to which organizational members are psychologically and behaviorally prepared to implement organizational change (Weiner et al., 2008). According to Lewin's (1951) three-stage model of change, change first needs to unfreeze the organization by changing the existing mindset and creating motivation to change. Organizational readiness for change is generally understood to be a critical precursor to successful implementation (Berlowitz et al., 2003; Kotter, 1996; Shortell et al., 1998). Kotter (1996) argued that half of all failed attempts to implement large-scale organizational change occur when organizational leaders underestimate the importance of readiness. When organizations are not prepared for change, change may begin inappropriately such that the organization is unable to recover, resistance to change might grow,

and/or the change effort might fail altogether. When organizational readiness is high, organizational members are more invested in the change effort, expend greater effort in the change process, and are more persistent in the face of obstacles or setbacks—all of which contribute to more successful change implementation. Shortell et al. (1998) reported that the extent to which quality improvement (QI) practices are implemented is greater for hospitals with a culture that highly values innovation, risk-taking, and teamwork. Berlowitz et al. (2003) examined QI implementation in nursing homes in regard to how organizational culture relates to pressure ulcer care outcomes. The authors found that QI implementation was greater in nursing homes with organizational cultures that emphasize innovation and teamwork.

In summary, the two precursor measures, readiness for change and commitment to change, are important in predicting the actual implementation level of change. The present study examines each of these three measures in order to understand the relationships between the type of structure and organizational change.

Gaps in the previous literature. Studies of innovation do not fully address different organizational circumstances according to types and phases of innovation. As Pierce and Delbecq (1976) pointed out, structural elements might be differently related to innovation according to whether innovation is in an initiation, adoption, or implementation stage. A recent study by Walker (2007) showed that type of innovation is associated with a different set of organizational and environmental variables. According to Walker, four types of innovations exist: (1) service innovations (launching new services of product), (2) marketization innovation (modifying operational process to increase efficiency and effectiveness), (3) organizational innovation (innovations in structure, strategy, and administrative process), and (4) ancillary innovation (innovations in organizational boundaries). Walker found that organic structures (empowered and specialized) are positively associated with service and organizational innovation, whereas mechanistic structures (formalized and centralized) are positively related to marketization

innovation. In addition, Walker found that ancillary innovation, which deals with the external relationship of organizational boundaries, has a negative relationship with mechanistic structures. Walker also showed that for collaborative activities, such as ancillary innovations, a mix of decentralized and formalized approach is needed.

The literature on innovation in LTC includes implementation of new management practices or training (organizational innovation), adoption and implementation of new technologies (service innovation), and implementation of quality improvement initiatives or tools (marketization innovation). As Walker posited, organizational innovation such as implementing worker development programs can be fostered under the organic structure, whereas service innovation such as TQM adoption can be successful under the mechanistic structure. No research, though, has been conducted on various innovation circumstances, including types and stages, or their associations with organizational LTC structures.

Moreover, in previous studies the structural dimensions used for organic and mechanistic structure were not standardized. For example, Walker used measures of two dimensions, formalization and centralization, to describe mechanistic structures, whereas Dansky and Brannon (1996) used formalization and standardization. Although decentralization was the most frequently used dimension for organic structure, other measures, such as flexibility, participation, or specialization have also been used. These variations in structural dimensions often restrict the comparability of the study results, making it difficult to cumulate the existing knowledge about structure–innovation relationships.

Facility vs. Home-Based Settings

In this study, I categorize LTC provider organizations into two different types: facility-based and home-based. The facility-based organizations include skilled nursing facilities[2] and assisted-living facilities. The home-based organizations comprise home care agencies.

A nursing home is defined as a "facility with three or more beds that routinely provides nursing care services, including both Medicare- or Medicaid-certified facilities or not [certified], but licensed by the state as a nursing home" (Jones, 2002). Nursing homes provide skilled care and support services to residents who need LTC services, and they tend to be the most specialized and nursing-oriented among various types of LTC providers. An assisted-living facility is "a housing option that involves the delivery of professionally managed supportive services and nursing services in a group setting that is residential in character and appearance" (Assisted Living Federation of America, [ALFA], in Goldsmith, 1994, pp. 296). The goal of these facilities is to provide maximum independence for physically and mentally frail older adults.

Home care agencies send nurses or nurse aides to customers' homes and provide care and support services in that context. As home care customers vary in their physical, mental, and functional severity, service provision is diverse from very technical and skilled care; it ranges from ventilation, respiratory therapy, or chemotherapy, to daily support, such as durable medical equipment and home-delivered meals. Most services are offered at the customers' homes where less collaboration with supervisors or co-workers is needed; therefore, home care workers have considerable autonomy in their jobs as compared to workers in other settings, such as nursing homes or hospitals (Flynn & Deatrick, 2003).

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[2] The term "nursing home" is often used interchangeably with "skilled nursing facility", and "home health care" and 'home care agency" are also often use synonymously.

Besides differences in their residents' characteristics, service provision, and working

conditions between facility-based and home-based types, the organizational structures may be

different. Previous studies suggest that the types show differences in the degree of "organic" and

"mechanistic" combinations of structure. In facility-based settings, mostly in nursing homes, the

literature supports both organic and mechanistic forms. Organic structure, such as decentralized

decision authority, team formations, and care coordination, predicts higher job satisfaction and/or

better quality outcomes. At the same time, the mechanistic approach, such as centralizing nursing

services, controlling staff privileges for admitting residents, and using standardized resident

assessment tools, are more effective for quality improvement.

On the other hand, home care agencies are referred to as "loosely coupled" systems by

some researchers (Pinelle & Gutwin, 2006). Home care workers, mostly nurse aides, share

common patients with other professions, such as occupational therapists, physical therapists,

nurses, pharmacists, dietitians, and social workers. Each team member works independently, but

the work is interrelated because change in care plans by service coordinators may influence how

tasks are to be carried out by other workers. Pinelle and Gutwin (2005) described this work

relationship among home care workers as "loosely coupled" because work is not organized in a

way that would facilitate interaction among workers. Although they need collaboration, i.e., they

need to share information about clients, these workers conduct most of their work independently.

Most home care workers spend their time planning the workday, visiting patients, driving

between patients' homes, and filling out paper work. In this way, workers are interconnected in

the system, but they have considerable independence.

Another study showed that home care workers valued having autonomy at work.

According to Flynn and Deatrick (2003, p. 387), "home care nurses viewed autonomy as an

inherent characteristic of home care nursing practice, … [they did not view] autonomy [as] an

organizational attribute that could vary among home health agencies."Because by its nature

home care practice provides greater autonomy, home care workers perceived that they needed a comprehensive, preceptor-based orientation and an organized and supportive office environment, such as the guidance of easily accessible and experienced supervisors.

Kroposki and Alexander (2004) stated that there are no differences in organizational structure, represented by participation and formalization, between nursing practice settings: home health (Kroposki & Alexander, 2004), acute care (Alexander & Randolph, 1985), psychiatric care units (Alexander, 1996), and clinics (Cumbey & Alexander, 1993). Researchers have interpreted these findings to mean that organizational structure is not related to differences in nursing practice settings. Rather it seems related to factors that can be changed by organizations, such as nursing characteristics and the leadership/management style of the organization. However, structural differences between facility-based and home-based LTC settings were not compared in these studies.

Summary of Gaps in the Literature

From the review of the literature on organizational structure in long-term care, it is evident that there are theoretical and methodological gaps in the literature. First, structural dimensions in the culture change movement literature, such as decentralization, autonomy, communication, and flexibility in work, were not adequate to measure compound relationships among multiple dimensions of organizational structure. Some studies consider various dimensions of structure (Eaton, 2000). However, due to convenience sampling or small sample size, the study results may not be generalized to other organizations in long-term care settings.

Some researchers argued that using a control mechanism, such as introducing the medical staff model, formalized tools, and centralizing services, leads to better quality of care outcomes as well as successful implementation of quality improvement initiatives (Beers et al., 1993; Boys

Town National Research Hospital, 2005; Karuza & Katz, 1994; Roher, Momany, & Chang, 1993). However, these studies were challenged by other scholars who posited that both organic and mechanistic characteristics are needed in LTC organizations to improve care outcomes and implement changes (Dansky & Brannon, 1996).

Although the research generally supports organic forms as more suitable for organizational innovation, some studies do offer slightly different conclusions. However, to date no study has addressed the types and stages of innovation and how structural variables relate to different contexts of innovation. Moreover, when the typology of organic and mechanistic structures was stated in the study, only one or two dimensions of structure were used to describe organic or mechanistic settings. Studies also used different dimensions for the same structural type. This lack of standardized measures and limited use of structural dimensions may impede scholars in efforts to compare or integrate the findings of these studies.

There are some methodological gaps in the literature, too. The analytical approaches used mostly assume that a linear relationship obtains between structural variables, or between the fit of structure and contingent factors, and outcome variables using regression models. This approach was criticized by Myers et al. (1993) for its inability to show more than a very limited relationship among the variables. Researchers incorporated interaction terms to examine complex associations among structural dimensions and outcome variables. However, only restricted sets of interaction terms can be added to the regression model due to practical limitations, such as the difficulty of obtaining a large sample.

Likewise, current studies vary in terms of selecting (conceptualizing) structural dimensions and relate these restricted measures to a limited set of other contingent factors, such as technology and size. Even though this contingent approach is useful for exploring a simplified relationship among a few variables, it has some restrictions in terms of understanding complex, multifaceted interactions of organizational structures and their relationships with other

organizational outcomes.

Finally, the literature addresses differences in care provision, resident/client health outcomes and needs, staff composition, and operating processes between facility-based settings and home-based settings in long-term care. Although a few studies indicate that more control mechanisms are used in facility-based than in home-based settings and that there is more autonomy and flexibility in home-based settings, no study has investigated the structural differences between the two settings.

Chapter 3

Conceptual Framework and Hypotheses

This chapter illustrates a configurational approach, research framework (Figure 1), and hypotheses. In order to address the gap in the literature, this chapter explains what a configurational approach is and how this approach can improve on the current literature on organizational structure and facilitate a better understanding of its impact on change efforts in long-term care. The conceptual framework of the study and research hypotheses are also introduced.

A Configurational Approach

In the previous chapter, I discussed the limitations of current approaches in identifying organizational structure and its relationship with contingent factors or outcomes. As organizational structure is a complex concept, a single structural indicator cannot capture all the structural dimensions. However, previous studies only addressed limited elements of structure using one or two variables. With the limited number of dimensions, complicated interactions among multifaceted dimensions of structure could not be apprehended, e.g., interactions between formalization and decentralization. Also, the measurements of the key elements were not standardized. Such a simultaneous restricted and non-standardized approach not only prevents researchers from cumulating knowledge, but it also prevents researchers from comparing results across studies. Even if the researchers were to consider multiple dimensions of structure, the established analytical approach of using a linear model cannot test all the possible interactions due to several practical issues, such as multicolinearity problems or sample size.

Organizational configuration refers to "any multi-dimensional constellation of conceptually distinct characteristics that commonly occurs together" (Meyer et al., 1993). Structure is a good example of an organizational configuration. Due to its multiple attributes and the complex interactions among those attributes, there are infinite possible structural combinations. As these attributes tend to fall into groups that show similar patterns, the number of possible sets of combinations can be limited. Hence, configurational researchers try to generate typologies and taxonomies, i.e., "sets of different configurations that collectively exhaust a large fraction of the target population of organizations under consideration" (Miller & Friesen, 1984, p. 12).

Thus, by analyzing patterns of structural elements that are systematically interdependent, we can classify organizations according to a set of distinct configurations. The key principles of this classification are *coherence* between organizational elements and the *holistic nature* of organizational phenomena. Scholars have asserted that the configurational approach may help integrate previous findings of contingency theory by analyzing overall patterns and adding rich, multivariate descriptions. In particular, organizational structures and management systems are best understood by looking at the overall patterns, rather than by analyzing narrowly drawn sets of organizational properties (Meyer et al., 1993).

Using the configurational approach, I explored how LTC organizations can be grouped into several distinct types of structure, or sets of configurations, that share similar patterns of structural elements. Six structural indicators were used: centralization, formalization, job-related training, vertical communication, horizontal communication, and supervisor's span of control.

Hypotheses

The study's first research question was "Can organizational structure be identified in long-term care using a configurational approach?" Organizational structure is not a simple construct; it is a multi-dimensional one. Since the various dimensions of structure are interdependent and often change only discretely, certain patterns exist. This study used these patterns for classifying organizational structure into several distinct groups, each of which has a distinct structural configuration. Burns and Stalker's typology of organic and mechanistic structures is one of the most representative typologies of organizational structure in contingency theory. In long-term care, across all settings, several studies have suggested that certain features of organic structure, such as decentralized authority and flexibility, are likely to promote worker commitment and high-quality care, whereas other studies argued that a few mechanistic characteristics, such as relying on written rules and documentation or using standardized tools, are better for adopting and implementing quality initiatives. However, no study has classified organizational structure based on organic vs. mechanistic typology in long-term care using various dimensions of structure. Therefore, I hypothesize that:

> **Hypothesis 1**: *LTC organizations, including both facility-based and home-based settings, will be classified into at least two distinct structural groups, relatively organic and relatively mechanistic, based on six structural indicators.*

The second research question asked whether the structural configurations (patterns) differ between facility-based (skilled nursing + assisted living) and home-based (home care agencies) settings. A review of the research on LTC organizations implies that there are differences in the use of organic and mechanistic structures. Home care workers enjoy more autonomy and

discretion than do nursing home workers. Also, workers in facility-based settings may be more effective at vertical communications as they have more interaction with their supervisors. Dependent on task characteristics, mechanistic structure produces more efficient outcomes in facility-based organizations such as nursing homes than in home care contexts. Facility-based workers will have a higher probability of being a member of a class that has relatively mechanistic characteristics than will home-based workers. Home-based workers will have a higher probability of being a member of a class that has relatively organic structure. Therefore, we hypothesize that:

> *Hypothesis 2-1: Facility-based organizations will have a higher probability of belonging to the mechanistic class than the organic class*

> *Hypothesis 2-2: Home-based organizations will have a higher probability of belonging to the organic class than the mechanistic class*

The final research question asked which structural types are most positively related to the three organizational change outcomes: readiness for change, commitment to change, and the level of implementation of change. I termed these three change outcome measures as "change processes" because the two precursor measures, readiness for change and commitment to change, are crucial antecedents for anticipating the actual implementation level of change. Generally, organic structure was found to be more positively related to organizational change or innovation than was mechanistic structure. Organic features, such as professional training, decentralization, high level of communication, and fewer formal rules and procedures, help organizational members create and accept new ideas and concepts (Aiken & Hage, 1971; DeCanio, et al., 2000; Pierce & Delbecq, 1976; Zmud, 1982). Therefore, I hypothesize:

Hypothesis 3: Organic structure, compared to mechanistic structure, will be more positively related to change process outcomes, which include readiness for change, commitment to change, and the level of change implementation.

Conceptual Framework

The conceptual framework of the study is illustrated in Figure 3-1. First, the study classified distinct types of structure based on analyzing the grouping patterns of six structural indicators, or dimensions: centralization, formalization, job-related training, horizontal communication, vertical communication, and span of control. I hypothesized that LTC organizations across all settings could be classified into at least two structural groups: relatively mechanistic and relatively organic. Then I investigated the grouping patterns of structures within two separate long-term care settings: facility-based and home-based. Organizations in facility-based settings were expected to be predominantly mechanistic, whereas organizations in home-based settings were expected to be predominantly organic. Finally, I examined the relationships between structural types and three change process outcomes. Compared to the mechanistic type, the organic type was expected to be more positively related to the three change process outcomes: readiness for change, commitment to change, and level of change implementation.

Structural Indicators

Centralization
Formalization
Job Training
Horizontal Comm.
Vertical Comm.
Span of Control

Type of Structure

Mechanistic

Organic

Change Process Outcomes

Readiness for Change

Commitment to Change

Level of Change Implementation

Type of Structure

Facility-based

Home-based
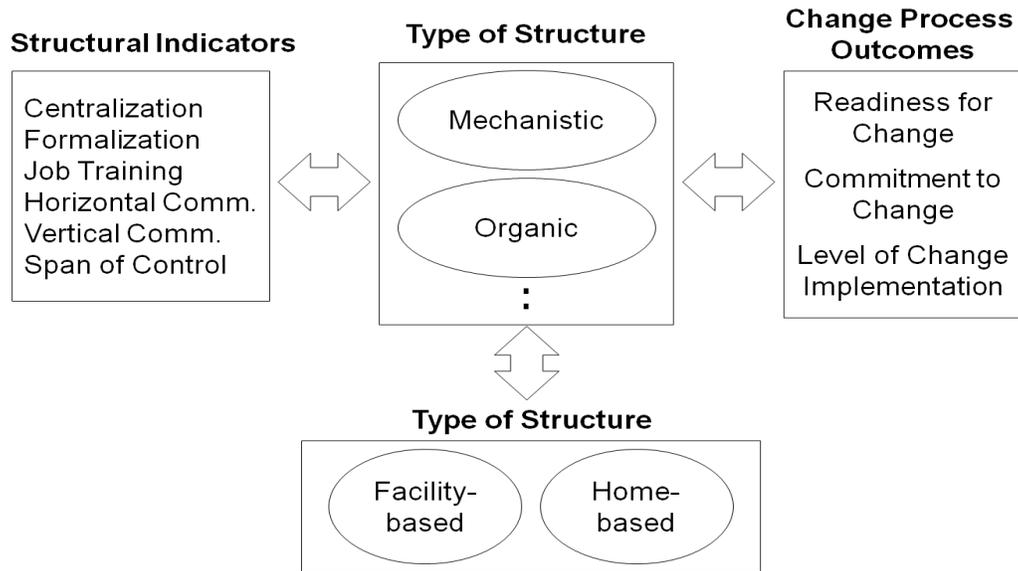
Figure 3-1. Conceptual Framework of the Study

Chapter 4

Research Methods

The goal of the study was to identify underlying (unobserved) classes of organizational structure in LTC organizations by examining six structural indicators, i.e., centralization, formalization, extent of job-related training, vertical communication, horizontal communication, and span of control (H1). In addition, the study tested whether facility-based organizations, such as skilled nursing facilities and assisted-living facilities, are more likely to have a relatively mechanistic structure (H2-1), whereas home-based organizations are more likely to have a relatively organic structure (H2-2). Finally, three organizational change process outcomes, readiness for change, commitment to change, and change implementation level, were correlated with emerging latent classes (types of structure) to find the structural conditions that promote organizational change in the context of the BJBC demonstrations (H3).

Data and Sample

From the initial 148 participating organizations, 127 providers participated at time 1 of the survey. Then I excluded adult day care services due to the small sample size (n = 5). Organizations with more than 75% of the structural items missing (n = 22) were also excluded. The final sample consisted of 100 LTC organizations that participated in the BJBC project across different types of provider settings: 39 skilled nursing facilities (SNFs), 29 assisted living facilities (ALFs), and 32 home health agencies (HHAs). Sample organizations were from five states, Pennsylvania, North Carolina, Vermont, Iowa, and Oregon.

As organizations participated in the BJBC voluntarily, the study employed convenience sampling. Organizational characteristics, such as ownership type, chain affiliation, wages, and urban/rural setting, were not statistically different from the national sample, except that there was a slightly larger proportion of not-for-profit organizations in the BJBC sample (Kemper et al., 2010).

Each organization had three levels of respondents: a top clinical manager, frontline supervisors, and DCWs. A clinical manager was defined as "the member of the management team in charge of clinical services" and one was selected for each organization. Frontline supervisors were defined as the middle managers responsible for supervising DCWs on a daily basis. Lastly, DCWs were defined as the frontline caregivers who provide most of the care.

Both before and after the BJBC intervention, a pencil-and-paper survey was delivered to a census of DCWs in nursing homes, home care agencies, and assisted-living facilities that participated in the BJBC demonstration in five states. Clinical managers were asked to respond to the Web-based survey before and after the intervention. Each clinical manager received a Web address and a confidential identification number via a pre-notification letter. For the clinical managers who were not available for the Web surveys, pencil-and-paper surveys were mailed. The surveys were also delivered to frontline supervisors as identified by the clinical managers.

The survey questionnaires were created, distributed, and collected by research teams at the Center for Health Care and Policy Research and the Survey Research Center at Penn State. The DCW survey included questions about job perceptions, job rewards, and job problems, as well as questions about workers' demographics and other job-related information. The clinical manager survey included questions about facility characteristics, management practices targeted to DCWs, supervisor training, benefit information, and level of implementation of the BJBC intervention. The supervisor survey asked additional questions that pertained to job perceptions, span of control per supervisor, and demographics. Data for the degree of implementation of the

program were gathered through semi-structured interviews with the practice manager at the state level.

Measurements

To exclude the influences of the BJBC on any perception of change related to structure, items or scales that characterize organizational structure were developed based on the first survey period only. All structural indicators were from CM surveys, except for centralization (DCW survey) and span of control (Supervisor survey).

Structural Indicators

Centralization. The degree of centralization is the extent to which organizational decision-making authority is concentrated at the center of an organization (Aiken & Hage, 1971; Zinn & Mor, 1998). The DCWs were asked how rewarding their jobs were in terms of the following items: (a) being able to work on their own, (b) having the power they need without permission from someone else, and (c) having the freedom to decide how to do their work. The response scale ranged from 0 (not at all rewarding), 1 (somewhat rewarding), 2 (very rewarding), to 3 (extremely rewarding). The three items were aggregated up to an organizational level and well loaded into a scale with Cronbach's alpha value of .74. Given that the number of indicators in the LCA can enlarge the contingency cells of probability, possibly resulting in a loss of power for the analysis, the centralization scale was dichotomized (1 = high, 2 = low) by median for latent class analysis.

Formalization. The degree of formalization was operationalized as the number of written documents in the organization (Zinn & Mor, 1998). This study used several items to capture the

degree of organizational dependence on formalized rules. Clinical managers were asked three

binary questions: (a) Do you use an employee handbook when you handle employees' poor

performance? (b) Do you use written documentation when you handle employees' poor

performance? (c) Does the human resource management communicate through formal meetings?

Formalization is high (1) if the answer was "Yes" for all three items and low (2) if at least one

item was answered "No."

Job-related training. The present study used the extent of DCWs' training both within

and outside their organizations during the previous year: (a) Percentage of DCW participation in

formal in-service programs beyond certification requirements, (b) percentage of DCWs who

completed self-directed educational programs, and (c) percentage of DCWs who attended a

conference or workshop away from work. The three items were merged into a scale with a

Cronbach's alpha of .64, which is not ideal, but is acceptable. Again, the scale was dichotomized

(1 = high, 2 = low) by median for analysis.

Vertical communication. Communication was operationalized according to the intensity

of interaction among workers, between hierarchical levels and among work groups from all

directions. Clinical managers were also asked how well and frequently the management teams

communicated with the direct-care workers: (a) management communicates effectively with staff

at all levels of the organization, (b) management solicits input from all levels of clinical staff

when deciding on purchases related to care delivery, (c) management solicits input from all levels

of the organization when deciding on policies and protocols. The response scale was as follows: 0

(never), 1 (seldom), 2 (occasionally), 3 (frequently), and 4 (always). The items were incorporated

into one scale with Cronbach's alpha value of .79.

Horizontal communication. Clinical managers were asked about their DCWs'

communication with their peers: (a) DCWs communicate verbally with other DCWs to relay

information, (b) DCWs communicate in writing with other DCWs to relay information, and (c)

DCWs communicate either in writing or orally with other DCWs to relay information about patient/resident/clients. The three items were loaded into one scale (α = .71) and dichotomized.

Span of control. Structural indicators also included the span of control, i.e., the number of DCWs reporting to the supervisors. Frontline supervisors in the participating organizations were asked this question: "How many DCWs do you supervise?" The average number of DCWs per supervisor was dichotomized and used for analysis at the organizational level. In some small organizations, clinical managers were also identified as supervisors. I included only supervisors who were not also clinical managers.

Change Process Outcomes

Readiness for change. Clinical managers were asked whether (a) employees take personal responsibility for their behavior, (b) the organizational culture encourages continuous improvement, (c) senior management has presented a clear vision of the future of the organization, and (d) the organization rewards staff for being innovative. The responses were coded using a 5-point Likert scale. The four items were loaded into a scale (α = .69).

Commitment to change. Commitment to Change measured the extent to which organizational members were committed to a particular change initiative, the BJBC: (a) the BJBC is being supported by a senior-level executive in your organization, (b) all levels of management are committed to the BJBC, (c) senior management has clearly articulated the need for the BJBC, and (d) the BJBC conflicts with other major activities going on in the organization (reverse coded). The four items were loaded into a scale (α = .79).

Level of implementation of change. The Penn State research team developed the implementation index by using three sources of information: the clinical manager survey, the supervisor survey, and interviews with practice managers in each state. The clinical managers and

supervisors were asked to indicate their level of agreement with the statement that "the programs that are part of the Better Jobs, Better Care project have been well executed in your organization," using a five-point scale of agreement (strongly disagree to strongly agree). The clinical managers were asked to indicate the most significant BJBC intervention undertaken by their organization. As a follow-up question, they were asked to "please indicate on the following scale from 0 to 10 the level of progress your organization has made in implementing this intervention." The practice managers were asked to indicate on a scale of 0 to 100 the point that best described each organization's degree of implementation. As a result of the factor analysis, these four items were well loaded onto one scale with an Eigen value greater than 1 and with a factor loading greater than .06. A factor score of the implementation scale with a mean of zero and standard deviation of 1 was then used.

Table 4-1. Measurements of Structural Indicators and Change Process Outcomes

Measures	Sources	Response scales	Cronbach's α

Structural indicators
  Centralization (decision authority)
    Being able to work on your own is…
    Having the power you need without permission from someone else is…
    Having the freedom to decide how to do your work is…
	DCW survey	0 = never
		1 = seldom
		2 = occasionally
		3 = sometimes
		4 = always
			.743

Formalization
    Approaches to handling poor performance: employee handbook
    Approaches to handling poor performance: written documentation
    How is human resource management communicated at formal meetings
	CM survey	0 = no
		1 = yes
			n/a

Degree of professional training (DCW training)
    Percentage of DCWs who participated in formal in-service programs beyond certification requirements
    During past year, percentage of DCWs who completed any self-directed educational program
    During past year, percentage of DCW who attended a conference or workshop away from work
	CM survey	0 = none
		1 = 1–25%
		2 = 26–50%
		3 = 51–75%
		4 = 76–100%
			.64

Horizontal communication
    DCWs communicate verbally with other DCWs to relay information
    DCWs communicate in writing with other DCWs to relay information
    DCWs communicate either in writing or verbally with other DCWs to relay information about patient/resident/clients
	CM survey	0 = never
		1 = seldom
		2 = occasionally
		3 = sometimes
		4 = always
			.71

Vertical communication
    Management communicates effectively with staff at all levels of the organization
    Management solicits input from all levels of clinical staff when deciding on purchases related to care delivery
    Management solicits input from all levels of the organization when deciding on policies and protocols
	CM survey	0 = never
		1 = seldom
		2 = occasionally
		3 = sometimes
		4 = always
			.79

Span of control How many DCWs are you supervising?	Supervisor survey	numeric	n/a

Change process outcomes
    Readiness for change
        Employees take personal responsibility for their behavior
        The organizational culture encourages continuous improvement
        Senior management has presented a clear vision of the future of the organization
        The organization rewards staff for being innovative
	CM survey	0 = strongly agree
		1 = agree
		2 = Neither agree nor disagree
		3 = disagree
		4 = strongly disagree
			.69

Commitment to change
    The BJBC is supported by a senior-level executive in your organization
    All levels of management are committed to the BJBC
    Senior management has clearly articulated the need for the BJBC
    The BJBC conflicts with other major activities going on in the organization (reverse coded)
	CM survey	0 = strongly agree
		1 = agree
		2 = Neither agree nor disagree
		3 = disagree
		4 = strongly disagree
			.79

Level of implementation
    The programs that are part of the BJBC have been well executed in your organization
    Please indicate the level of progress your organization has made in implementing this intervention
	CM survey
	
	Supervisor survey
	
	Practice Manager Interview
		Multiple scales
		5-point scales
		0-10 scale
		0-100 scale
			Factor analysis
			
			Eigen value >1
			
			Factor loading >.6)

<div align="center">**Analysis**</div>

This study used Latent Class Analysis (LCA) to examine heterogeneity of different aspects of organizational structure among long-term care organizations, using structural indicators, such as centralization, formalization, extent of job-related training, vertical communication, horizontal communication, and span of control. In this section, I describe the principles and parameters of LCA, steps taken to execute LCA in the study, and the comparison of clustering analysis and LCA.

Latent Class Analysis (LCA)

LCA is a statistical method used to identify subgroups that are discrete and mutually exclusive based on individuals' (or organizations') responses to a set of observed categorical variables (Lanza, Flaherty, & Collins, 2003). Latent variables are unobserved variables that are measured by multiple observed items. For example, to examine "life style" as a latent variable, indicators (observed variables) may include multiple observed items measuring behaviors, such as eating habits, sleeping patterns, physical activities, etc. In LCA, these observed variables should be categorical.

Latent class analysis utilizes patterns of responses to multiple categorical variables to construct latent classes or subgroups of individuals. LCA presumes that at least two mutually exclusive and exhaustive latent classes exist in the population based on their response patterns (Goodman, 1974). In this study, the latent classes were constructed based on the responses of members of each organization to the six structural indicators designed to identify different organizational structural groups. LCA has been previously employed in the health services research to identify underlying classes of behaviors, such as social phobias (Kessler, Stein, &

Berglund, 1998), motivations for teen drinking (Coffman, Patrick, Palen, Rhoades, & Ventura,

2007), disordered eating (Bulik, Sullivan, FRANZCP, & Kendler, 2000), and identifying risk

groups for hypercholesterolemia (BeLue, Lanza, & Figaro, 2009). Although most of the studies

used LCA at an individual level, this study used LCA at an organizational level.

Specifically, LCA was used in the present study to (1) identify the optimal number of

latent classes that show heterogeneity across organizations in their responses to observed

structural indicators, (2) describe the sizes and characteristics of each latent class, and (3)

examine how the three change process outcomes influence the probability that an organization

will be associated with each of the identified latent classes. Maximum likelihood estimation

procedures were used to obtain two sets of parameter estimates: latent class membership

probabilities (γ) and item-response probabilities (δ) for each latent class (see Equation 4-1).

$$P(Y = y) = \sum_{c=1}^{C} \gamma_c \prod_{j=1}^{J} \prod_{r_j=1}^{R_j} \rho_{j,r_j|c}^{I(y_j=r_j)} \qquad \text{(Equation 4-1)}$$

Where

γ_c = probability of membership in Latent Class c

$\rho_{j,r_j|c}$ = probability of response r_j to item j, conditional on membership in Latent Class c

The latent class membership probability indicates the probabilities of membership for

organizations in latent class C. For example, when the membership probability (γ) equals .35, the

probability of being a member of the organic class is .35. The item-response probabilities (δ)

represent the probability of each response (e.g., high or low) to the observed variables conditional

on membership in a particular latent class. For example, the item-response probability of .9

indicates that there is a 90% chance of responding to this particular item j when an organization is

a member of Latent Class c. These parameters are the basis for interpreting the size and

characteristics of each latent class discovered.

Steps of LCA

LCA provides fit statistics, such as G^2 statistics, degrees of freedom, the Akaike Information Criteria (AIC), and the Bayesian Information Criterion (BIC), which help researchers to select the optimal LCA model for analysis. In accord with usual LCA procedures, in the present study I first forced multiple models to fit different numbers of latent classes, after which I chose the best model by using the fit statistics and interpretation of the models. The lower the BIC the better the balance between fitting the data and parsimony. I then evaluated the models to establish whether the identified classes were both of significant size and sufficiently different from one another, and whether the item-response probabilities for each latent class were interpretable (Lanza, Collins, & Schafer, 2005; Lanza, Flagherty, & Collins, 2003). Once a meaningful model had been identified, I analyzed the item-response probabilities of the selected model to identify the characteristics of each Latent Class. Based on these characteristics, each latent class was labeled.

The next step was to fit the model by group (facility-based and home-based setting). The membership probabilities and item-response probabilities were then compared between settings. The final step was to add covariates (change process outcomes) to the model in order to ascertain the relationship between latent classes and change process outcomes. Models were fitted three times separately for each change process outcome (readiness for change, commitment to change, and level of implementation of change). Beta coefficients and odds ratios were then analyzed for each run. All analysis was conducted using SAS version 9.2 and Proc LCA version 1.2.5. beta (Lanza & Collins, 2008; Lanza, Lemmon, & Schafer, 2006).

Chapter 5

Results

Organizational and Worker Characteristics

Table 5-1 illustrates the characteristics of the sample organizations as well as DCWs in these organizations. Of the total 100 sample organizations, 68 were facility-based and 32 were home-based organizations. On average, the sample organizations had 54 full-time DCWs. The home-based organizations employed a higher mean number of full-time workers (n = 74) than did the facility-based organizations (n = 45). Approximately 60% of the sample organizations were not-for-profit. Chain membership was unevenly distributed between facility-based organizations (52.9%) and home-based organizations (25%). For both settings, managers perceived 4 to 6 competitors as being within their market area.

DCWs' demographic and job characteristics were similar for facility-based and home-based settings, with the exception of the workers' hourly wages. For both settings, DCWs were employed for five years on average, and slightly less than 50% of workers were aged 45 or older. About half of the sample participants had completed college or higher education of some kind. Approximately 84% of the sample organizations offered health insurance for DCWs in all settings. The mean hourly wages of workers were slightly higher for facility-based organizations ($9.80) than for home-based organizations ($9.00).

Table 5-1. Descriptive Statistics of Sample Organizations and DCWs

	Facility-Based (n = 68)	Home-Based (n = 32)	All (n = 100)
Organizational characteristics			
Size[1]	45.2 (39.1)	74.1 (67.2)	54.4 (51.3)**
Not-for-Profit	55.9%	65.6%	59%
Chain	52.9%	25%	44%**
Competitors[2]	2.1 (1.1)	2.0 (1.2)	2.1 (1.1)
DCW characteristics			
Tenure[3]	5.0 (2.4)	5.1 (2.3)	5.0 (2.4)
Age > 45	45.1%	46.6%	45.6%
More than high school	51.5%	48.0%	50%
Insurance	83.7%	84.5%	84%
Wage per hour	9.8 (1.6)	9.0 (1.3)	9.5 (1.6)**

Note, [1] Number of full time DCWs quarterly
[2]Competitors are coded as 0 if none, 1 if 1–3, 2 if 4–6, 3 if 7–9, and 4 if larger than 10.
[3] Years worked as a direct care worker for this organization.
* $p < .05$, ** $p < .01$

Six structural indicators were dichotomized into the high group and the low group. Table 5-2 shows the percentage of those reporting high on these structural indicators. Fifty-three percent of organizations responded that they were highly centralized, 71% reported that they relied on written documents in organizational procedures. Forty-five percent of organizations reported that they offered a high level of job-related training. More than half of the organizations responded with high for both horizontal and vertical communications (58% and 57%, respectively). Span of control was reported as high by 54% of all the sample organizations.

Table 5-2. Percent of Sample Organizations Responding "High" on Structural Indicators

Item	*Percent "High"*
Centralization	53%
Formalization	71%
Extent of job-related training	45%
Horizontal communication	58%
Vertical communication	57%
Span of control	54%

Latent Class Analysis

This section includes the selection process of the best model based on fit statistics and interpretation of models, interpretation of the item-response probabilities in order to label each latent class for all samples and subgroups (facility-based and home-based settings). In this section, I undertake also an examination of the influence of three change process outcomes related to the probability of latent class membership.

Model Validity

To identify the best-fitted model, I compared several models each of which was based on a different number of classes. An important point for comparison purposes is sparseness, and according to Koehler (1986), Koehler and Larntz (1980), and Larntz (1978), sparseness of less than 5 is acceptable (Collins & Lanza, 2010, p. 80). The two-class model had a sparseness of 8.3 (100/6*2 = 8.3), and the three-class model had a sparseness of 5.5 (100/*6*3 = 5.5). The fit-statistics of the two models were similar. For both two-class model and three-class model, G^2 statistics were close to the degree of freedom. AIC and BIC were slightly lower in the two-class

model, but there were no big differences between the two-class model and the three-class model (Table 5-3). The model with three classes was chosen as optimal based on this comparison and on the following validity criteria: (1) sparseness, which represents the overall sample size (N) divided by the number of cells in the contingency table (W), (2) fit statistics, such as G^2, AIC, and BIC, and (3) the theoretical explanation of the model itself. The choice of the three-class model is in accordance with the organizational structure theory in the previous literature (Aiken & Hage, 1971; Burns & Stalker, 1961).

Table 5-3. Fit Statistics

No. of Classes	G^2	df	AIC	BIC	Sparseness[1]
1	81.65	57	93.65	109.29	16.7
2	52.45	50	78.45	112.32	8.3
3	42.65	43	82.65	134.75	5.6
4	34.54	36	88.54	158.88	4.2

[1]Sparseness = N/W (N = sample size; W = number of contingency cells), expected to be higher than 5 (Koehler, 1986; Koehler and Larntz, 1980; Larntz, 1978).

Latent Class Model of Organizational Structure: All Settings

Three unique latent classes of organizational structure emerged across all settings. In order to identify these classes, the item-response probabilities for each class were analyzed first. The item-response probabilities, shown in rows 4 to 9 of Table 5-4, show the probabilities of reporting high for each item given that each organization is a member of a certain class. Each class consisted of six item-response probabilities, corresponding to the six structural indicators. Probabilities were calculated based on the response of high for all six items.

Mechanistic hierarchy. In the first class (in the second column of Table 5-4), the item-response probability for centralization was .62. This means that there is a 62% chance of

reporting high in the category of centralization given that an organization is a member of this class. The item-response probability of formalization is very high (1.00) for this class, indicating that an organization has a very high probability of relying on written documents and formal procedures in the organizational process, given the membership of this class. The probability of responding high to the extent of job-related training was .45, indicating that the level of job-related training in this class was moderate , neither high nor low. The same result was found for span of control (.53), which suggests that there is a 53% chance of falling in the high category in regard to the average number of DCWs per supervisor in the organization. The probability for vertical communication (.74) was higher than that for horizontal communication (.67), indicating that frontline workers' communication with management teams is more active than their peer-to-peer communications in this class.

In short, for organizations in this class, item-response probabilities were high for centralization, formalization, and vertical communication, whereas the probabilities of job-related training, horizontal communication, and span of control were moderate. In other words, the first class showed a pattern of responses that reflects a structure type in which all the decision-making is centralized, organizational procedures rely heavily on written documents, vertical communication channels are more active than horizontal communication channels, a moderate level of job-related training is conducted, and the average span of control per supervisor is in moderate. This pattern of responses (configurations) is in accord with descriptions of mechanistic structures in previous work (Aiken & Hage, 1971; Burns & Stalker, 1961). Therefore, I decided to refer to the first class as *mechanistic hierarchy*.

Organic (professional) hierarchy. Unlike mechanistic hierarchy class, the second class (in the third column of Table 5-4) showed low and low-to-middle item-response probabilities for centralization (.33) and formalization (.49). However, organizations in this class were very likely to respond high to the following items: extent of job-related training (1.00), horizontal

communication (.82), and vertical communication (.79). In addition, span of control (.42) was moderate and slightly lower compared to the same measure in the first class (.53) and the third class (.65). The configurations of the item-response probabilities for this class indicated a structure type in which decision-making authority is distributed throughout the organization, DCWs have relatively flexible work plans or duties, communication flows in all directions, DCWs have a high degree of job-related training, and the average number of DCWs per supervisor is low to moderate. This configuration accords well with descriptions of organic structures in previous studies (Aiken & Hage, 1971; Burns & Stalker, 1961). Therefore, I labeled the second class as *organic (professional) hierarchy.*

Minimalist. Interestingly, in addition to the mechanistic and organic classes, a third class was found (in the fourth column of Table 5-4). For this class, the item probabilities of centralization and formalization were moderate (.58 and .55, respectively). However, the next three items had extremely low probabilities: the extent of job-related training (.00), horizontal communication (.29), and vertical communication (.18). Span of control had the highest item-response probability among the three classes at .65. As organizations in the third class appear to have a minimal structure—one that is just sufficient for operating its functions with little effort expended for job-related training and communication, I named this class *minimalist.*

Latent class membership probabilities, shown in the third row of Table 5-4, indicate the proportions of organizations associated with each latent class. The mechanistic class has the highest membership probability (39%), followed by the minimalist class (33%) and the organic (27%).

Table 5-4. Latent Class Model of Organizational Structure: All Settings

	Probability of "High"		
	Mechanistic	*Organic*	*Minimalist*
Item	39%	27%	33%
Centralization	.62	.33	.58
Formalization	**1.00**	.49	.55
Job-related training	.45	**1.00**	**.00**
Horizontal communication	.67	**.82**	**.29**
Vertical communication	**.74**	**.79**	**.18**
Span of control	.53	.42	.65

Note. Shaded areas represent low or high item-response probabilities that characterize each class.

Latent Class by Groups (Facility vs. Home-Based Settings)

I hypothesized that facility-based organizations would have a higher probability of belonging to the mechanistic class (H2-1), whereas home-based organizations would have a higher probability of belonging to the organic class (H2-2). In order to test these hypotheses, I fitted the three-class model within each setting.

Latent classes in facility-based settings. Three classes emerged in facility-based settings: organic, minimalist, and mechanistic (see Table 5-5). The grouping patterns of responses to the items as represented by item-response probabilities were consistent with the patterns of the full sample. However, the group sizes (membership probabilities) were different. Membership probability for the mechanistic class was the highest (57.3%) among all classes, followed by

minimalist (27.1%) and organic (15.7%). Thus, hypothesis 2-1, which stated that facility-based

organizations would be more likely to have a mechanistic structure, was supported.

Table 5-5. Latent Class Prevalence and Item-Response Probabilities: Facility-Based
Organizations

	Facility-Based (n = 68)		
	Mechanistic	*Minimalist*	*Organic*
Items	57.3%	27.1%	15.7%
Centralization	0.70	0.70	0.55
Formalization	1.00	0.51	0.25
Job-related training	0.45	0.00	1.00
Horizontal communication	0.67	0.34	1.00
Vertical communication	0.65	0.00	1.00
Span of control	0.46	0.49	0.19

Latent classes in home-based settings. In home-based settings, both the two-class

model and the three-class model emerged with reasonable fit statistics (see Table 5-6). Parameter

estimates of the two models are shown in Table 5-7. In the two-class model, the organizations

were grouped into two latent classes: minimalist and organic. Similar to the patterns of the

minimalist class in the full sample, the item-response probabilities of job-related training,

horizontal communication, and vertical communication items were low to moderate (.31, .26,

and .49, respectively). The organic class showed high probabilities (.81 to 1.00) on five items

(formalization, training, horizontal communication, vertical communication, and span of control),

but not in regard to centralization (.27). Patterns of high training, high communication, and low

centralization were consistent with those of the organic class in the full sample. However, item-

response probability for formalization was high (.93) in home-based settings only.

Table 5-6. Fit Statistics for Home-Based Organizations

No. of classes	G^2	DF	AIC	BIC	Log-likelihood
1	52.79	57	64.79	73.59	-119.62
2	36.97	50	62.97	82.03	-111.71
3	23.6	43	63.66	92.98	-105.05

Latent classes in the three-class model consisted of the organic class, the minimalist class, and the high trainer class (Table 5-7). In the organic and minimalist classes, the item-response probabilities were similar to the same classes in the two-class model. However, a new class emerged with an extremely high probability of job-related training (1.00), and a very low probability for centralization (0.00) and formalization (0.00), and a moderate probability for the remaining three items: horizontal communication (.50), vertical communication (.50), and span of control (.50) (see fifth column of Table 5-7). I labeled this class "high trainer" as the salient feature that distinguishes it from other classes is only its extremely high item-response probability in regard to job-related training. Approximately 19% of the organizations were highly likely to be with a member of this high trainer class. The subsequent descriptive analysis shows that organizations in this new class (n = 6) were small, free-standing agencies with a highly flexible organizational structure (see Appendix Table 2).

Table 5-7. Latent Class Prevalence and Item-Response Probabilities: Home-Based Organizations

	2-class model (n=32)		3-class model (n=32)		
	Minimalist	*Organic*	*High trainers*	*Minimalist*	*Organic*
Items	*68.4%*	*31.6%*	*18.8%*	*46.1%*	*35.1%*
Centralization	0.21	0.23	0.00	0.27	0.27
Formalization	0.48	0.93	0.00	0.59	1.00
Job-related training	0.31	0.99	1.00	0.00	0.98
Horizontal communication	0.26	0.89	0.50	0.18	0.82
Vertical communication	0.49	1.00	0.50	0.46	1.00
Span of control	0.76	0.81	0.50	0.87	0.82

Comparison of facility-based vs. home-based settings. Each group showed common as well as different patterns of structural configurations. The two classes, organic hierarchy and minimalist, emerged consistently in both facility-based and home-based settings. However, the mechanistic class was only found in facility-based settings, whereas the new class, high trainer, emerged only in home-based settings.

Even for the two same classes between settings, organic and minimalist, differences existed in the item-response probabilities for certain indicators. The most interesting indicators were centralization and span of control. Within facility-based settings, item-response probabilities of centralization for all three classes were consistently high or medium-high (.55 to.70), whereas the probabilities of centralization for all three classes were consistently low (.00 to .27) within home-based settings. On the other hand, the probabilities for responding high on span of control were higher for home-based settings (.50 to .87) than for facility-based settings (.19 to .49). For

example, the minimalist class in facility-based settings had a higher probability in centralization (.70) and lower probability in span of control (.49) than those of the same items for minimalist across all settings (.58 and .65, respectively). On the other hand, the minimalist class in home-based settings reflected a lower likelihood of reporting high on centralization (.27) and a higher likelihood of reporting a high span of control (.87) compared to those of the same class (minimalist) across all settings.

Structural configurations in organic class slightly differ between facility-based and home-based settings. The item-response probabilities for both formalization and span of control were higher in the organic class in home-based settings (1.00 and .82, respectively) than in the organic class in facility-based settings (.25 and .19, respectively). However, both settings showed similar patterns in the organic class, particularly with very high item-response probabilities in job-related training, horizontal communication, and vertical communication. It seemed that the organic class in facility-based settings was closer to the descriptions of organic structure from the previous research. However, the organic class in home-based settings has its own unique feature in that organizations in this class evidenced a very high level of formalization (1.0).

In summary, from the comparison of the two different settings, we found that two classes, organic and minimalist, were consistent with the model across all settings, in both facility-based and home-based settings. Mechanistic class was only found in facility-based settings. In addition, the small new class of high trainer was found exclusively in home-based settings. The membership probabilities for each latent class within both settings differ as well. Within the facility-based settings, the mechanistic class had the highest membership probability (57.3%), followed by the minimalist class (27.1%) and the organic class (15.7%). However, within home-based settings, the percentage of minimalist class was highest (46.1%), followed by organic class (35.1%), and the high trainer class (18.8%).

Thus, Hypothesis 2-1, which stated that facility-based organizations have higher probability of belonging to a mechanistic class, was supported. However, Hypothesis 2-2 was not supported because home-based organizations had a higher probability of being minimalist than organic. This was the case, even though in home-based settings, membership probability for the organic class was higher than it was in facility-based settings.

Relationship between Latent Classes and Change Outcomes

Next, I examined how the three change outcome variables of organizational readiness for change, commitment to change, and the level of change implementation predict class membership. This analysis was conducted by means of ordinary logistic regression, with outcome variables as latent classes rather than being directly observed. The three latent classes, mechanistic, organic, and minimalist, were used based on the same six structural indicators. The mechanistic class was used as a referent in the analysis.

First, organizational readiness for change was introduced to the model to predict class membership (see the second column of Table 5-6). For the organic class, the beta estimate of readiness for change was positive (.80) and the odds ratio was 2.23. This means that the odds of being in the organic class were 2.2 times greater with a 1-unit increase in the organizational readiness for change indicator (p < .0001), compared to the reference group (mechanistic). However, the odds ratio for the minimalist class was .27, which indicates that the odds of being in the minimalist class, relative to the mechanistic class, decrease with a 1-unit increase in readiness for change. Thus, in this analysis, the organic class was positively associated with and the minimalist class negatively associated with readiness for change, relative to the mechanistic class.

Organizational commitment to change showed the same trend. The beta estimates and odds ratios were .28 and 1.32, respectively, for the organic class, and -1.02 and .36, respectively,

for the minimalist class (P = .003). The odds ratios indicated that with a 1-unit increase in

commitment to change, the odds of being in the organic class were 1.3 times greater than being in

the mechanistic class, whereas the odds of being in the minimalist class were .64 times lower than

being in the mechanistic class. Thus, commitment to change was found to be a significant

predictor of class membership.

Finally, the change implementation level was regressed for the three classes. Compared

with the beta estimates of the reference group (mechanistic), the beta estimates were 1.80 for the

organic class and 1.53 for the minimalist class. The odds ratio for the organic class was 6.05,

whereas the odds ratio for the minimalist class was 4.81. The P-value was .20 for the model

differences. Therefore, change implementation level was not found to be a significant predictor of

class membership. This result showed that there were no significant differences in the likelihood

of being in any of the three classes due to the level of implementation.

Table 5-8. The Relationship of Organizational Readiness for Change, Commitment to Change, and Level of Change Implementation on Latent Classes: Beta (β) Parameters and Odds Ratios

Class	Organizational readiness for change		Organizational commitment to change		Level of change implementation	
	Beta (β)	Odds ratio	Beta (β)	Odds ratio	Beta (β)	Odds ratio
Mechanistic[a]	-	-	-	-	-	-
Organic	.80	2.23**	.28	1.32**	1.80	6.05
Minimalist	-1.33	.27**	-1.02	.36**	1.53	4.81
Test of significance	**p < .0001		**p = .003		P = .2047	
Change in 2logL	11.69		3.17		24.03	

Note, **p<.01
  [a] *Mechanistic class was used as a reference group.*

Chapter 6

Discussion

The study identified the configurations of structure in the long-term care service provider organizations by analyzing the response patterns associated with six structural indicators: centralization, formalization, extent of job-related training, horizontal communication, vertical communication, and span of control. Three structural types emerged based on the characteristics of the structural configurations: mechanistic hierarchy, organic hierarchy, and minimalist. The study also investigated differences in grouping patterns and group sizes between facility-based and home-based settings. In addition, the present study examined relationships between types of structures and organizational change process outcomes. The results suggest that readiness to change and commitment to change are significant predictors of class membership (type of structure), though level of change implementation is not. It

Organizational Structure and Change Processes in Long-Term Care

Structural configurations in long-term care. Although the structural configurations of the two classes (organic and mechanistic) accorded with suggestions made in previous research (Aiken & Hage, 1971; Burns & Stalker, 1961), I did find some interesting characteristics associated with several items: The item-response probabilities for formalization were extremely high (1.00) for the mechanistic class; yet, they were moderate, .49 and .55, respectively, for the organic class and the minimalist class. Even though these two classes are less formalized than the mechanistic class, they still need a medium level of reliance on written rules and documentation. This may reflect the fact that the health care sector, including long-term care, has become more reliant on written documentation and formal procedures in order to abide by regulations and

protect organizations and staff from potential lawsuits. Maintaining a moderate level of formalization even for the organic class might represent the common characteristics of the structure in health care settings.

The study's finding in regard to the minimalist structure was consistent with the typology developed by Eaton (2000) in her qualitative study of 20 nursing homes in Pennsylvania and California. She reported that more than two thirds of nursing homes had a "traditional low-service low-quality model" characterized by little or no supervision on the job, limited or minimal training, and a serious lack of communication between DCWs and their supervisors and peers. In the present study, 33% of organizations were probable to be a member of the minimalist class. The emergence of the minimalist type has critical implications for managers and policy makers such that the minimalist type could be a target group for quality improvement.

Eaton (2000) also found that some organizations operate on what she referred to as a regenerative community model, featuring a more resident-centered practice, a high level of decision-making, autonomy, and greater discretion in their work for nurses and nurse aides, and frequent use of cross-training among workers. This model has many characteristics in common with the organic type as determined in the present study. Given that the present study's change context involves changes in management practices in LTC organizations as a part of the resident-centered culture change movement, the study findings pertaining to the organic class supported Eaton's proposition about the management systems of LTC organizations that are proactive in implementing culture change.

Structural differences in facility-based vs. home-based settings. Structural differences between facility-based and home-based LTC settings have been largely under-investigated. Therefore, this study investigated how group sizes and grouping patterns for structure differ between facility-based and home-based settings. The study hypothesized that facility-based

organizations would be more likely to belong to the mechanistic class, whereas the home-based

organizations would be more likely to belong to the organic class.

Group sizes, represented by membership probabilities, were found to be different

between settings. As I expected, facility-based organizations were more likely to be mechanistic

(57.3%). This result supported the previous studies that asserted centralized and controlled

systems are characteristic of facility-based LTC organizations (Katz et al., 2009). Katz et al.

suggested that the medical staff-oriented model is more likely to be associated with a higher

quality of care in nursing homes. Kitchener and Harrington (2004) described the two archetypes

of long-term care: nursing homes and home- and community-based care. They argued that the

traditional nursing home archetype historically originated from the hospital field, which

legitimates provision of care under the control of medical professionals (2004). Thus nursing

home structures have traditionally been characterized by a high level of formalization and

centralization. Later in late 1990s as market managerialism was introduced to the LTC industry,

some traditional nursing homes tried to become more resident-centered. However, the authors

also pointed out that despite these efforts many nursing homes continue to follow traditional

practices.

Within home-based settings, however, almost half of the LTC organizations were

members of the minimalist class (46.1%), which was characterized by its very low item-response

probabilities for training and communication. Although the provision of home care services

usually takes place at a client's home and consequently there is less interaction between workers,

it was interesting to find that almost half the sample organizations were likely to be members of

this class. The federal government set a minimum requirement of 75 hours of training for nursing

assistant certification. Most states mandated more training than the federal government requires

(PHI, 2009), from 75 to 175 hours. However, only eight states had training mandates for workers

not covered by federal requirements, such as personal care assistants, home care aides, and

assisted living aides (Bryant & Stone, 2008). This lack of training requirements for certain kinds of workers could account for the low probability of training in the minimalist class.

The present study found that home-based organizations have a flat and decentralized structure. Within home-based settings, the item-response probabilities for centralization were consistently low (.00-.27) in all latent classes, whereas the probabilities for span of control were moderate to high (.50 - .87) for all classes. This indicates that DCWs have a high level of discretion and autonomy at work in this context. Studies have shown that home care nurses highly value autonomy at work (Flynn & Deatrick, 2003), and nurses gain autonomy when they feel competent about their job, including both administrative and clinical tasks (Ellenbecker, Boylan, & Samia, 2006; Kramer & Schmalenberg, 2003). Researchers have noted also that recent changes in federal and state regulations for home care workers, such as requirements for completing the Outcome Assessment and Information Set (OASIS), could constitute a threat to home care workers' autonomy due to changes in procedure and increased documentation requirements (Anthony & Milone-Nuzzo, 2005; Ellenbecker & Byleckie, 2005).

Grouping patterns (configurations) for the organic class between the two settings were similar except for formalization and span of control. In home-based settings, formalization was very high (1.00), whereas it was very low (.25) in facility-based settings. Span of control also showed higher probability (.82) in home-based settings than in facility-based settings (.19). For organic classes in both settings, extent of training, horizontal communication, and vertical communication were very high, and the item-response probabilities of these items were consistent with the characteristics of the organic class in the full sample. The organic structure in home care was typically associated with a highly decentralized and flat form; however, as Dansky and Brannon (1996) posited, this structure was also associated with a highly formalized form (one of the characteristics of the mechanistic type) as well as with high levels of job-related training and communications. This is a unique type of organic structure that was observed only in the home

care setting. As noted, high formalization might be due to recent changes in federal and state requirements, such as those set out by OASIS, which requires increased documentation of administrative and clinical data.

Relationship between structure and change processes. The hypothesis of the study was that a relationship exists between structure types and change process measures. Although readiness to change and commitment to change were found to be significantly related to class (type of structure) membership, there was not a significant association between level of implementation and structural type.

It may be that the follow-up measure did not allow enough time for implementation. On average, a period 18 months elapsed between the administering of the first survey and the administering of the follow-up survey. However, the period between surveys for some organizations (mostly organizations in NC) was only 9—12 months because these organizations participated in the BJBC later than the other organizations did. Thus, a relatively short period of time for implementing the intervention could be a reason for a low level of implementation, which, in turn, might have influenced the relationship between latent classes (structure) and implementation of change.

As organic structure is not always the "best fit" for implementation of change, studies have become more focused on the mechanistic features of structure as they affect organizational change and innovation (Dansky & Brannon, 1996; Kitson, Harvey, & McCormack, 1998; Pierce & Delbecq, 1976; Sine, Mitsuhashi, & Kirsch, 2006). Sine, Mitsuhashi, and Kirsch (2006) showed that even in turbulent and uncertain environments, organizations with mechanistic forms outperform those with organic structures if the organizations are relatively young. Given that new ventures tend to be extremely flexible and sensitive to their environments, they often lack the organizational efficiency that can arise from clearly defined roles, specific rules and regulations, and managerial efforts to coordinate sub-parts. Kitson, Harvey, and McCormack (1998)

developed the Promoting Action on Research Implementation in Health Services (PARIHS) framework and suggested that organic and mechanistic features are both essential for implementing change in health services organizations. Though organic structures seem to promote efforts to initiate change, mechanistic features may be important for implementation (Pierce & Delbecq, 1976).

Limitations and Suggestions for Future Studies

The present study has several limitations. Specifically, the study has some weaknesses in regard to construct validity. First, four out of six structural indicators were measured by a single rater from each organization, a clinical manager, whose opinion could be biased in any given way, such that it is not representative of the whole organization. Second, as most of the structural indicators and change outcome measures of the study came from the same source, the BJBC clinical manager survey instruments, common method biases may have occurred. Therefore, it is possible that the estimated coefficients for the relationship between structure and change processes may be distorted due to the common measurement error between the two variables (Doty & Glick 1998). Third, structural dimensions used in this study may not capture all the characteristics of the organizational structure. Other attributes, such as standardization or specialization, might have better represented the multi-dimensional characteristics of the structures. Fourth, the study lacks face-validity because dimensions of organizational structure were derived from the management literature, which itself is largely based on manufacturers and other large business corporations. In order to establish more meaningful dimensions, it is necessary to develop measures that are appropriate to long-term care settings and validate those measures for the future research of organizational structure. In addition, more objective measures of organizational structure rated by multiple respondents are needed.

The study also has a threat to external validity. Due to the convenient sampling of study participants, the study results should be carefully generalized for LTC organizations in a different context. To deal with the sampling problem, the BJBC team compared the sample of the study to the national sample and found no differences in affiliation status, hourly wage, or location. The only difference was that for all three provider types, skilled nursing, assisted living, and home care, the BJBC sample had a higher proportion of not-for-profit organizations than did the national sample (Kemper et al., 2010). In addition, given the response rate of the study participants (54%), a non-response bias may have distorted the study results. In this study, structural attributes were measured by using a cross-sectional dataset. In order to record the consistent patterns of an organizational structure over time, or to understand how the grouping patterns of structure changes over time, researchers should consider using nationally representative longitudinal data for future studies of organizational structure and changes in long-term care. Such an approach would also enhance the generalizability of study results to broader LTC settings in the United States.

Due to the limited sample size, the study could not control factors, such as ownership type, affiliation status, size, and competition, that might have influenced structure and change processes in the sample organizations. An organization's ownership status can be differently associated with structure as well as change implementation. It is likely, for example, that for-profit organizations predominantly have a mechanistic structure in order to maximize operational efficiency by controlling costs and standardizing procedures. On the other hand, for-profit organizations might be negatively related to organizational innovation due to limited resources. Some studies about care coordination and control found that the impact of structure on quality outcomes was independent of for-profit status, staffing, or reimbursement levels (Mor et al., 1997; Phillips et al., 1997; Fries et al., 1997). In our subsequent descriptive analysis for organizations by latent class, there was no significant difference in regard to ownership status among the latent

classes (see Appendix Table 1).

Organizational size could be another factor that influenced structure and change outcomes. Size has long been a controversial issue in the organizational structure. Generally as an organization grows, more divisions are created and tasks become highly specialized and delegated to different levels/kinds of workers. In terms of change, bigger organizations usually experience greater inertia in regard to change. However, the study sample did not show differences in size, as measured by the average number of full-time DCWs quarterly. Further, chain membership can affect organizational structure because of the economies of scale and information exchange that accrue through membership. Members of the chain might have a more controlled and standardized structure than freestanding organizations do. In addition, organizations in a more competitive market might be more ready to accept organizational change. Descriptive statistics of the sample organizations by latent class showed no significant differences in affiliation status and competition, either. In order to tackle this issue in future studies, a larger sample is needed to identify the relationship between structure and organizational change outcomes.

Finally, the BJBC interventions of management practices were not conducted in the exact same way for all participants. The leading agency set up the guidelines for organizations. However, each state coalition, consisting of trade associations, consumers, DCWs, and/or the organizations that represent them, and educational institutions, decided on their own intervention program and developed detailed contents and methods for intervention. Therefore, it is possible that the change implementation level is correlated with the type of intervention. A set of chi-square tests was conducted to determine whether the differences exist between the type of intervention and latent class. No significant difference was found in the sample.

A larger, representative sample—one that is also longitudinal—would enable researchers to better understand organizational structure and its relationship with change process outcomes.

Study measurements, as have been developed in other fields, should be developed to represent the unique structural characteristics of LTC organizations. Change contexts, such as the contents and methods of change intervention, should be identical in order to investigate the relationship between structure and change outcomes more accurately. Lastly, future studies should control various individual, organizational, and market factors that might influence LTC organizational structure and change outcomes.

Implications

This study has several implications both in theory and practice. Principally, this is the first study to classify LTC organizations into three distinct types based on the configurations of structural dimensions. A configurational approach would provide a holistic view of the multi-dimensional characteristics of organizational structure. As Meyer et al. (1993) pointed out, a contingent approach, which has been predominantly used in organizational studies, uses a limited range of abstracted variables, such as formalization or centralization, and interacts with a limited set of other situational concepts, such as size and technological uncertainties. This may result in fragmented relationships between structure and contingent factors. By analyzing broad patterns based on rich, multi-variate descriptions, the configuration approach may help to synthesize the past gains of contingency theory (Meyer et al., 1993).

This study also addresses the gap in the current literature on culture change movements and the implementation of management practices in LTC organizations by examining structural conditions that promote organizational change processes. Although structural elements, such as the participation of frontline workers in the care planning and communication of frontline workers with their peers or supervisors, are one of the cultural artifacts of LTC organizations, few

studies have been conducted regarding structure and its relationship with organizational change outcomes.

Also, it extends LCA, which has typically been used at an individual level, to an organizational level. As noted in Chapter 4, LCA has been predominantly used in the health services research to identify underlying classes of behaviors, such as social phobias, motivations for teen drinking, disordered eating, and risk groups for hypercholesterolemia (Kessler et al., 1998; Coffman et al., 2007; Bulik et al., 2000; BeLue at el., 2009). Researchers have also used LCA at an organizational level. Hill, for example, used both individual-level and organization-level data to classify high schools' college-linking strategies and to investigate the impact of high schools on college enrollment (Hill, 2008). Jensen, Johnson, Lorenz, and Lundvall (2007) used LCA to identify groups of firms that use different modes of innovation, including the Science, Technology, and Innovation (STI) mode and the Doing, Using, and Interacting (DUI) mode (Jensen, 2007). Although LCA has been extensively used in health care to identify individual health behavior groups, it has not been widely used at an organizational or market level. This study offers further support for the use of LCA at an organizational level in health care.

Organizational process change, such as changes in management practices, is challenging and takes time. Managers are struggling to find more effective ways to successfully adopt and implement such changes. By providing a better understanding about the structures of LTC organizations, this study offers information that managers could draw on to develop strategies appropriate for the respective structures and change contexts of their organizations. In addition, this study provides evidence that certain organizational structures may promote change by building organizational readiness for and commitment to change. In this study, the minimalist class, which is defined by low training and low communication, was found to be less ready for and less committed to change as compared to the mechanistic class. To remedy this situation, managers in the latter class could provide more job training and try to develop more channels for

communication to help organizational members get ready for the change. As pointed out by Hage & Aiken (1967), staff members who are exposed to up-to-date field information and professional training in their disciplines are more likely to accept new ideas and be more supportive of efforts to apply new concepts in their organizations. Evans and Black (1967) also commented that communication increases the chances that a variety of ideas will arise from all levels and units in the organization, and these ideas will result in both initiating and adopting innovation.

Furthermore, it is necessary that managers understand their organizations' structural type and develop strategic plans in a way that retains the positive side of their current structure and offsets the weaknesses of the current structure. For example, managers may introduce organic features, such as shared governance (decentralization) and less formalization, to mechanistic organizations to facilitate change adoption processes. On the other hand, managers may adopt strategies that entail more mechanistic characteristics, such as setting specific goals and standardized courses of action, for organic organizations in order to promote change implementation. Johnson, France, Meyer, Speyer, and Cox (1998), in a study of implementing information systems for treating cancer, contended that formalization may decrease role ambiguity and role conflict in the organization as well as increase communication quality, which, in turn, enhances organizational innovation.

From a policy standpoint, knowing how organizational structure relates to organizational change outcomes will provide rationales for allocating limited public resources to change initiatives or activities, such as changing organizational cultures and structures, improving workplace environments, increasing direct care worker retention, and enhancing care outcomes. Given that this study provides evidence that a combination of low training and low communication is negative for change outcomes compared to other structural types, policy leaders may target organizations in this group (minimalist) and provide guidelines or incentives for enhancing these structural elements. Although the federal government has set a minimum

requirement of 75 hours' training for nursing assistants, there are other categories of DCWs, such as personal care attendants, home care aides, and assisted living aides, who are not covered by these requirements (Bryant & Stone, 2008). In addition, governmental regulations only focus on entry-level training, and do not address continuing education and career development. However, this study has shown that organizational structure, especially as it relates to worker training and communication, may act as an important factor for organizational change, policy makers will be able to take this into account in rethinking training requirements and budget planning for training and communication programs within long-term care organizations.

This study also suggested that structural patterns differ between facility-based and home-based long-term care settings. Facility-based organizations were more likely to be classified as mechanistic, whereas none of the home-based organizations were in this class. Centralization was consistently low within home-based settings, whereas it was consistently high within facility-based settings. In evaluating the change interventions, policy makers, therefore, should know that facility-based settings and home-based settings have very different structural patterns. For example, decentralization, or autonomy, one of the salient features of the structure in home-based settings, might not increase or decrease dramatically before and after the intervention because the level of autonomy might have already been high from the starting point (ceiling effect).

Conclusion

The study found three distinct latent classes of structure in long-term care organizations: mechanistic, organic, and minimalist, based on the grouping patterns of six structural indicators. This study also showed that group size and group patterns differ between facility-based settings and home-based settings in long-term care. Facility-based organizations were more likely to be mechanistic, and home-based organizations were more likely to be minimalist or organic. Among

the three change process outcomes, readiness for change and commitment to change were positively associated with the organic class and negatively associated with the minimalist class, as compared to the mechanistic class. The level of implementation of change, however, was not significantly related to any of the structural types.

Long-term care organizations are experiencing various kinds of changes, including those relating to new technologies or service protocols, organizational change processes, and market/regulatory changes. Among these different types of changes, organizational process changes, such as changes in management practices, are incremental and require a long time frame and sufficient organizational capacity. As Brannon et al. (2010) observed in their paper about incremental change in long-term care, leaders need to protect the positive aspects of their organization's structure when introducing change. To facilitate change implementation, leaders first need to understand the organizational structure, whether organic, mechanistic, or minimalist, and ensure that they retain the positive aspects of the existing structure as they introduce change.

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Appendix

Descriptive Statistics by Latent Classes

Appendix 1. Descriptive Statistics by Latent Classes: Full Sample

	Organic (n=28)	Minimalist (n=31)	Mechanistic (n=41)	All (n=100)
Org Characteristics				
Size (No. of FTEs)	44.21	62.01	55.63	54.41
Not-for-Profit	60.7%	64.5%	53.7%	59.0%
Chain	32.1%	38.7%	56.1%	44.0%
Competition	20.4	2.35	1.85	2.06
Worker Characteristics				
Tenure	4.94	5.47	4.74	5.03
Age 45 and older	45.4%	44.5%	46.6%	45.6%
More than high school	49.1%	52.1%	49.8%	50.3%
Insurance	83.3%	88.9%	80.7%	84.0%
Hourly wage	9.28	9.8	9.50	9.53
Change Outcomes				
Readiness for change	2.97[a]	2.17[b]	2.73[a]	2.62**
Commitment to change	3.31[a]	2.79[b]	3.23[a]	3.12**
Implementation index	.57	.54	.56	.56

Appendix 2. Descriptive Statistics by Latent Classes: Home-Based Settings (three-class model)

	High trainer (n=6)	Minimalist (n=15)	Organic (n=11)	All (n=32)
Org Characteristics				
Size (No. of FTEs)	36.1	81.3	84.8	74.0
Not-for-Profit	83%	46%	81%	66%
Chain	0%	26.7%	36.4%	25%
Competition	2.17	2.0	1.82	1.96
Worker Characteristics				
Tenure	6.39	4.69	5.01	5.12
Age 45 and older	.52	.42	.50	.47
More than high school	.57	.44	.48	.48
Insurance	.87	.87	.80	.84
Hourly wage	9.29	9.12	8.70	9.00
Full-time ratio	54.08	43.61	28.93	40.53
Change Outcomes				
Readiness for change	2.83	2.45[a]	3.04[b]	2.73**
Commitment to change	3.44	3.27	3.46	3.37
Implementation index	.54	.58	.44	.53

Appendix 3. Descriptive Statistics by Latent Classes: Home-Based Settings (two-class model)

	Minimalist (n=22)	Organic (n=10)	All (n=32)
Org Characteristics			
Size (No. of FTEs)	71.7	79.1	74.0
Not-for-Profit	59%	80%	66%
Chain	23%	30%	25%
Competition	1.95	2.00	1.96
Worker Characteristics			
Tenure	5.0	5.39	5.12
Age 45 and older	45%	50%	.47
More than high school	47%	50%	.48
Insurance	86%	80%	.84
Hourly wage	9.08	8.83	9.00
Full-time ratio	42.7	32.7	40.53
Change Outcomes			
Readiness for change	2.57	3.06	3.37**
Commitment to change	3.34	3.45	.53
Implementation index	.56	.47	2.73

Appendix 4. Descriptive Statistics by Latent Classes: Facility-Based Settings

	Organic (n=8)	Minimalist (n=19)	Mechanistic (n=41)	All (n=68)
Org Characteristics				
Size (No. of FTEs)	35.4	49.1	45.3	45.2
Not-for-Profit	37.5%	57.9%	58.5%	55.9%
Chain	50%	47.4%	56.1%	52.9%
Competition	2.14	2.53	1.90	2.10
Worker Characteristics				
Tenure	3.66	5.50	4.96	4.97
Age 45 and older	39.1%	45.9%	45.8%	45.1%
More than high school	47.0%	55.2%	51.0%	51.5%
Insurance	87.5%	85.5%	82.3%	83.7%
Hourly wage	9.4	9.9	9.8	9.8
Full-time ratio	62.7%	72.8%	67.6%	68.5%
Change Outcomes				
Readiness for change	2.70[a]	2.09[b]	2.77[a]	2.58**
Commitment to change	3.14	2.55[a]	3.17[b]	3.00**
Implementation index	.58	.49	.60	.57

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SELECTED PUBLICATIONS

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Kim, J. & Chang, H. (2007). The model predicting telemedicine adoption by physicians: Comparison of theory of planned behavior and technological acceptance model. *Health Service Management Review*, 1:1-10.

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SELECTED PRESENTATIONS

Kim, J., McCaughey, D., Brannon, D., & McGhan, G. (2010). What makes them leave? The relationship between worker training, injury, and turnover intent of direct care workers in nursing home. The 27th AcademyHealth Annual Research Meeting, Boston, MA, (Poster presentation).

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