

**SPROTT SCHOOL OF BUSINESS  
CARLETON UNIVERSITY**

**THE KEY DRIVERS OF ORGANIZATIONAL CULTURE CHANGE IN THE  
PUBLIC SECTOR: AN ANALYSIS OF THE CANADIAN FEDERAL  
GOVERNMENT**

by

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A thesis submitted  
in partial fulfillment of the requirements for  
the degree of Doctor of Philosophy, Management

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## **ABSTRACT**

Continuous change has become the norm for many organizations (e.g., Rossi, 2006). Unfortunately, success rates, even for small scale change initiatives, are unimpressive (e.g., Hirschhorn, 2002). These poor success rates may be attributed to the lack of clear guidance regarding the key independent variables, or change drivers, that are available for manipulation in order to effect change (Porras & Hoffer, 1996; Kemerle, Johnson & Srinivasan, 2000). According to Rodrigues (2006), very little is known about how organizational culture changes over time and what drives the process.

This six-year study provided a rare and important opportunity to study a large-scale organizational culture change initiative in the Canadian federal government. Fourteen organizational culture dimensions were identified from the Public Service Employee Surveys conducted in 1999, 2002 and 2005. Fifty one organizations in the Canadian federal government were included in this study. The unit of analysis was the organization.

Seven drivers of organizational culture change were examined: vision, leadership actions, changes in leadership personnel, turnover of personnel, changes in human resources practices, communication, and enabling changes in structure and processes. Data on these change drivers were collected from multiple sources including questionnaires sent to each organization and data held by central government agencies.

The impact of each of these seven drivers of change on the fourteen culture dimensions was examined using regression analyses and bivariate correlation analyses. Results suggest that organizational culture change drivers include five of the seven change drivers considered in this research: changes in leadership personnel, turnover of personnel, changes in human resources practices, communication and enabling changes in structure and processes. The results suggest that excessive changes in leadership personnel can have a negative impact on a culture change initiative. Finally, the results suggest that a culture shift can be attained in as little as three years.

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## 1 INTRODUCTION

The purpose of this chapter is to provide a brief introduction related to organizational change generally, as well as organizational culture change, and to highlight why they are concepts worthy of study. This chapter includes an overview of some of the important factors that trigger organizational change, including examples of key recent events that have had a profound impact on global economies, as well as organizations. Also included is a discussion of the implications for academic research relating to organizational change. In addition, this chapter briefly introduces the research relating to a public sector culture change initiative. It concludes with an overview of the organization of this thesis.

### 1.1 Why Study Organizational Change?

Organizational change is a very important area of study for researchers and practitioners alike. Abrahamson (2000) succinctly summed up perhaps the most compelling reason for focusing on organizational change: “Organizations have to change to stay alive” (p. 75).

Organizational change has become more challenging in recent decades. Until the 1980s, most organizational changes had been simple responses to demographic, economic, social and political forces (March, 1981). However, by the 1990s, organizations faced numerous complex changes in their operating environment (Greenwood & Hinings, 1996). By the late 1990s, continuous change had become the norm for many organizations (Brown & Eisenhardt, 1991; Rossi, 2006). This increased complexity in

organizational change begs the question: What has caused this increased complexity in recent years? Kanter (1991) offered the following explanation of why the late 1990s marked a significant acceleration in organizational change. She observed that for most of the twentieth century, business managers around the world were confronted by a series of walls, but that by the 1990s, many of these walls had disappeared. The following is Kanter's (1991) description of these walls:

“...Walls between nations that establish the boundaries of national markets, national practices, or national social, economic, and political systems. Walls between the company and the society in which it exists, drawing sharp distinctions between corporate interests and social interests. Walls between work and home, separating those activities that involve earning a living from those that constitute just plain living. Walls within the workplace itself, dividing managers from workers, function from function, line from staff. And walls between the company and its stakeholders, including suppliers, customers, and venture partners. Now, we are told, the walls are crumbling” (p. 151).

One important factor that has led to these crumbling walls, and the related changes, is rapid technological change (Tichy, 1983; Kaestle, 1990; Recardo, 1995; Morrison, 1998; Kemelgor, Johnson & Srinivasan, 2000; Ivancevich & Matteson, 2002; Kanter, 1991; Greenwood & Hinings, 1996; Cummins & Worley, 1997; Harper, 1998). Other important factors include the globalization of markets (Kanter, 1991; Cummins & Worley, 1997; Harper, 1998; Recardo, 1995; Jick, 1995; Morrison, 1998; Kemelgor, Johnson & Srinivasan, 2000), and increased competition (Goodstein & Burke, 1991; Kanter, 1991). Socio-political issues (Greenwood & Hinings, 1996), legal factors (Ivancevich & Matteson, 2002) and changing demographics (Senge, 2000; Calo, 2005) also compel organizations to change. These factors are beyond management's control

and cause significant shocks that force organizations to modify internal processes and systems (Ivancevich & Matteson, 2002).

Some of the recent changes are considered very positive advancements, such as the impact of the Internet and new market opportunities that have resulted due to globalization. However, there have also been negative impacts on organizations as a result of these changes. Checa, Maguire and Barney (2003) provided the following example. In the late 1990s, the downside of financial globalization emerged. Thailand's 1997 financial crisis triggered another in Korea that same year. This economic virus spread to Russia in 1998, and in 1999, Brazil was forced to abandon its policy of a fixed exchange rate. While these countries had little in common, the financial crises propagated like a virus from one to the other because of the links established by the new global economy. The world had changed from "order" to "disorder", and, according to Checa, Maguire and Barney (2003), organizational leaders need to carefully consider this new world disorder as they develop the strategic direction for their organizations.

Tragically, international terrorism provides another significant example of a shock that has also led to massive changes for societies, governments and business alike. September 11, 2001 was a devastating illustration of the profound impact that one act can have on the world. One example of the consequences of 9/11 and the Bush administration's "war on terror", is that the United States may be losing out on the critical talents of a host of foreign scientists, engineers, inventors, and other professionals (Florida, 2004). While applications to many leading U.S. graduate schools from China, India, Russia and

elsewhere have plummeted by 30 per cent or more, other countries, including Canada, are benefiting (Florida, 2004).

Another example of the post-9/11 world is the changing political climate that is overturning conventional marketing wisdom and its related tactics (Checa, Maguire & Barney, 2003). According to Checa, Maguire and Barney (2003), many pundits are of the view that the consumer backlash against U.S. products in the Middle East is here to stay, and may spread to other countries. For example, Coca-Cola, which is perhaps the best recognized commercial symbol of America, is facing a new competitor in the Middle East – Mecca-Cola. This product is targeting Muslim consumers, and it mimics Coca-Cola's branding, including the red and white label. Mecca-Cola promises to donate 20 per cent of its profits to Palestinian and Muslim charities (Checa, Maguire & Barney, 2003).

These examples underscore some of the profound impacts that recent changes have had on our world. They provide a sense of the complexity of the changes required by organizations. In some cases, in order to survive, organizational transformations have been required. Organizational culture change, which is the focus of this research, is the most common form of organization transformation in the United States (Cummins & Worley, 1997). The next section discusses the related implications for academic research.

## 1.2 Implications for Academic Research Relating to Organizational Change

From an academic research perspective, there has been a plethora of literature concerning organizational change since the 1970s (e.g., Greiner, 1972; Kotter & Schlesinger, 1979; Kanter, 1983; Meyerson & Martin, 1987; Gersick, 1991; Van de Ven & Poole, 1995; Armenakis & Bedeian, 1999; Sirkin, Keenan & Jackson, 2005). An indication of the extent of the organizational change literature was provided by a quick scan of the international journal database, ABI/INFORM. It revealed 8,919 change management articles published between January 1994 and November 1995 (De Cock & Richards, 1996). A recent search on Amazon.com identified 6,153 books on “change and management” (Sirkin, Keenan & Jackson, 2005).

Organizational culture change has emerged as a key area of focus for academics and practitioners alike (Cummins & Worley, 1997). During the 1980s, organizational culture change became a central theme in the fields of management and organizational studies, and practitioners also embraced the concept of culture as an instrument of competitive advantage following books such as *In Search of Excellence* published in 1982 by Peters and Waterman (Willmott, 1993). The decade of the 1980s saw many researchers (e.g., Ouchi, 1981; Deal & Kennedy, 1982; Kanter, 1983) heralding culture as a key opportunity to enhance organizational performance by securing greater commitment and flexibility from employees (Willmott, 1993). This resulted in a great number of executives and managers who became interested in learning how to change organizational culture to obtain the best culture possible for achieving excellence in performance (Kotter & Heskett, 1992). The linkage of performance and organizational

culture continued throughout the remainder of the 20<sup>th</sup> century, and continues today. As noted by Alvesson (2002), in most contemporary organizations, organizational culture is a popular focus, and is seen as a crucial element of good performance. In these turbulent times, the ability of organizations to change quickly and effectively has perhaps never been more critical.

It is important to recognize the challenge involved in an organizational transformation, such as culture change. According to Cummins and Worley (1997), an organizational transformation involves radical changes in how organizational members perceive, think and behave in their work environment. These changes fundamentally alter the assumptions underpinning how the organization relates to its environment and how it functions. Changing these assumptions involves significant shifts in the organization's philosophy and values, and in numerous structures and organizational arrangements that shape members' behaviours (Cummins & Worley, 1997).

Despite the interest in organizational culture change, there has been relatively little empirical analysis of cultural changes over time (By, 2005). Therefore, this research provides an ideal opportunity for such an analysis. The next section briefly introduces the organizational culture change initiative that is the focus of this thesis.

### 1.2.1 Research Related to the Canadian Federal Government's Culture Change Initiative

Like the private sector, public sector organizations are also involved in massive changes. Ingraham, Thompson and Sanders (1998) noted that change is underway at all levels of government, in virtually all nations. The public sector is facing many of the same reasons for change that apply to the private sector such as new information and communication technologies (Larson & Coe, 1999); globalization (Isaac-Henry, 1993); and changes in economic, social and political orders (Isaac-Henry, 1993).

The Canadian federal government is no exception as it, too, is involved in making organizational changes, including attempting to shift its organizational culture. This Canadian federal government culture change initiative is the focus of this research. Organizational culture is a pattern of basic assumptions that have been accepted as the correct way to perceive, think and feel in relation to the organization (Schein, 1990). As there is little consensus regarding how to change the organizational culture of public organizations (Claver, Llopis, Gasco, Molina & Conca, 1999), this study provided an excellent research opportunity. It involves the Canadian federal government's organizational culture change initiative undertaken during the period 1999 to 2005.

According to the President of the Treasury Board of Canada:

"...Our goal is a workplace culture where public service values are clear and all employees are treated with dignity and respect..." (Treasury Board of Canada, 2002b).

Such a change initiative is regarded as very difficult, given the size of the Canadian federal government (more than 200,000 employees), and the diversity of the

approximately 70 organizations within the Canadian federal government, which have offices located across Canada. As noted by Nadler and Tushman (1989), organizations become more challenging to change as they increase in complexity, where complexity is measured by the number of employees and the number of different businesses, and geographic locations. As well, it is expected to take a considerable period of time to accomplish this culture change. According to a 2003 newspaper article, the Minister responsible for the Treasury Board of Canada expected that the cultural change in the Canadian federal government would take 10 years (May, 2003).

### 1.3 Overview of this Research

Similar to many other governments, the Canadian federal government has implemented many organizational change initiatives in the past few decades. This research is related to a large-scale public sector organizational culture change initiative undertaken by the Canadian federal government that spanned the six-year period 1999 to 2005. The research was based, in part, on the results of three Public Service Employee Surveys (PSES) that were conducted by the Canadian federal government to track the progress of this culture change initiative over this six-year period. In 1999, the Treasury Board of Canada decided to invite public service employees to express their views of their workplace and their work through the PSES. This survey was designed to gauge employees' opinions on a wide range of issues reflective of the health of the overall public service, as well as individual organizations and work units. It has now been administered three times using the same general approach – in 1999, 2002 and 2005 -

generating very large data bases of approximately 100,000 responses for each survey. These surveys represent a very significant undertaking on the part of the Canadian federal government. According to the Treasury Board of Canada, Canada is the only country in the world to systematically survey all of its federal public service employees (Treasury Board of Canada, 2002b).

In addition to these PSES results, additional data was gathered on possible drivers of organizational culture change. This research concentrates on change drivers that are available to management in order to effect organizational culture change. As there is little agreement in the literature regarding change drivers (Porras & Hoffer, 1996; Kemelgor, Johnson & Srinivasan, 2000), the research objective was to identify the key drivers of organizational culture change. Most organizational culture studies utilize a case methodology, however, a case study does not allow for cross-organization comparisons. The approach utilized in this study was to look across 51 organizations in order to identify the change drivers. As this cross-organizational methodology is rarely found in the literature, this research makes a valuable contribution to our understanding of change drivers.

#### 1.4 Organization of this Thesis

Chapter 2 presents a review of the related literature. It is divided into four main sections addressing the following topics: organizational change, change in the public sector, organizational culture, and change drivers. Chapter 3 features the research model of

change drivers in relation to organizational culture change. As well, Chapter 3 presents seven hypotheses relating to seven key change drivers. Chapter 4 describes the measures of organizational culture used in this research. Chapter 5 presents the methodology used in this work, including the measures of change drivers. Chapter 6 features the data analysis and results. Chapter 7 presents the discussion related to this research including the implications. Chapter 7 also includes the limitations and contributions of this study, as well as ideas for future research.

## 2 LITERATURE REVIEW

This literature review is divided into four sections. First, an overview of the organizational change literature is provided. Second, the literature related to change in the public sector is presented. Third, an overview of the literature related to organizational culture change is discussed. Finally, in the fourth section, the topic of change drivers is discussed. This section includes a comparative review of change drivers in relation to both organizational change generally, and culture change. This chapter also presents a summary of the key similarities and differences in the literature relating to drivers of change in the private and public sectors.

### 2.1 Organizational Change

Organizational change is a complex subject. Van de Ven and Poole (1995) noted that many scholars are unable to agree on the meaning of organizational change and how to study it. They offered the following definition of organizational change:

“Change.....is an empirical observation of difference in form, quality, or state over time in an organizational entity” (Van de Ven & Poole, 2005, p. 512).

In addition to the disagreements concerning the definition of organizational change, theories and approaches to change management are often contradictory (By, 2005; Sirkin, Keenan & Jackson, 2005). Explanations for inconsistencies in the literature are varied. For example, theorists and practitioners of organizational change disagree on the independent variables, or change drivers, that are available for manipulation (Porras &

Hoffer, 1996; Kemelgor, Johnson, & Srinivasan, 2000). Other researchers, (e.g., Barnett & Carroll, 1995; Ogbonna & Harris, 1998; By, 2005) have highlighted the lack of empirical evidence related to organizational change research. Sastry (1997) noted that critics of existing research argue that, too often, the causal structures of the theories are not sufficiently specified, and theoretical frameworks and empirical results are not well integrated. However, the overarching reason for the contradictions and confusion regarding organizational change is probably the subject's complexity (Porras & Hoffer, 1996).

Organizational change initiatives range from fine-tuning exercises to radical, large-scale initiatives. Whereas fine-tuning is referred to as "convergent" change (Greenwood & Hinings, 1996), radical change, such as attempting to change an organization's culture, is often referred to as "frame-bending" change (Nadler & Tushman, 1989; Greenwood & Hinings, 1996). The majority of change initiatives are intended to fix problems or fine-tune the organization, rather than to implement a large-scale change in the organization (Goodstein & Burke, 1991).

There are numerous organizational change theories, and many of these are contradictory (By, 2005; Sirkin, Keenan & Jackson, 2005). While a comprehensive review of all of the change theories is beyond the scope of this thesis, subsection 2.1.1 provides a brief overview of some important organizational change theories. Subsection 2.1.2 highlights some of the key process models relating to organizational change. Subsection 2.1.3 provides information relating to the success of change initiatives.

### 2.1.1 Organizational Change Theories

A review of the literature revealed many organizational change theories. For example, Van de Ven and Poole (1995) conducted a computerized literature search across disciplines using change and development as key words. This search revealed more than 1 million articles relating to organizational change. From this, Van de Ven and Poole (1995) reviewed about 200,000 titles and perused approximately 2,000 abstracts. Ultimately they considered approximately 200 articles that helped them identify approximately 20 different process theories of development or change. These were grouped into four “ideal-type developmental theories”: life-cycle theory, teleological theory, dialectical theory, and evolutionary theory (Van de Ven & Poole, 1995). Life-cycle theory assumes that organizational change follows a linear sequence of events including birth, growth, development, decline and death of an entity (Van de Ven & Poole, 1995). Teleological change theory assumes that the organization is working toward a goal or an organizational vision and follows a repetitive sequence of a goal/vision formulation, implementation, evaluation and modification of the goal/vision, based on what was learned by the organization (Van de Ven & Poole, 1995). Dialectic change theory assumes that conflict between two or more entities produce change. The change occurs when one of the entities gains sufficient power to produce change (Van de Ven & Poole, 1995). Evolutionary theory assumes that change moves through a continuous cycle of variation, selection and retention. Evolutionary change happens by random chance (Van de Ven & Poole, 1995).

Fernandez and Rainey (2006) identified two additional important theories relating to general organizational change: rational adaptive theories and institutional theory. According to Fernandez and Rainey (2006), rational adaptive theories include Lawrence and Lorsch's contingency theory (1967), resource dependency theory (Pfeffer & Salancik, 1978) and transaction cost economics (Williamson, 1981). These theories depict managers as agents of change in organizations who analyze their organization's environment and then make rational choices to modify and adapt their internal processes and structures so that the organization can thrive in that environment (Fernandez & Rainey, 2006). Institutional theory involves conformity to the norms, values, rules and cognitive systems found in organizations that drive organizations to change in order to increase legitimacy and improve chances for survival (Fernandez & Rainey, 2006). According to Aldrich (1999), institutional theorists see change as mainly external in origin to which organizations must respond.

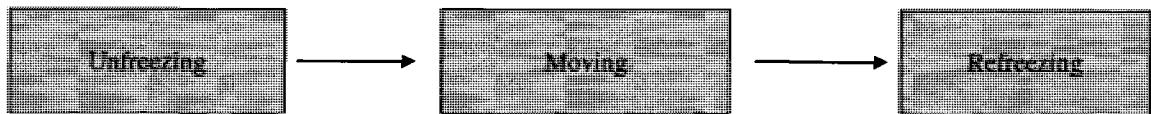
Much of the general organizational culture literature is relevant for the public sector. However, the public sector, which is the focus of this research, faces some unique considerations. One change theory that is relevant to the public sector is policy diffusion theory. Establishing policies is typically a key activity for public sector organizations. According to Fernandez & Rainey (2006), policy diffusion theory is particularly relevant for the public sector as it explains why and how public organizations adopt new policies and programs. For example, public sector managers emulate their peers in other governmental organizations to learn about and borrow successful practices (Fernandez & Rainey, 2006).

### 2.1.2 Organizational Change Process Models

A comprehensive review of all of the organizational change process models is beyond the scope of this thesis. However, this section will feature some general change process models, as well as change models that are particularly relevant for the public sector.

Considerable research exists relating to change processes, beginning as far back as Lewin's (1951) conceptualization of change progressing through three successive phases of unfreezing, moving and freezing.

**Figure 1: Lewin's Three-Step Change Model**



According to Armenakis and Bedeian (1999), the 1990s saw considerable efforts that built on Lewin's work, with multi-phase models for change advanced by Judson (1991), Kotter (1995), Galpin (1996a) and Armenakis, Harris and Field (1999). These research efforts are briefly described in this section.

Judson's model (1991) incorporated five phases of implementing change that included: 1) analysis and planning; 2) communication relating to the change; 3) gaining acceptance of new behaviours; 4) moving from the current situation to the desired state and 5) consolidating and institutionalizing the new state. Judson's research highlighted the

importance of recognizing resistance to the change efforts, and offered strategies to address resistance to change including rewards, bargaining and persuasion.

Kotter's model (1995) identified eight steps for change initiatives that included:

1. establishing a sense of urgency;
2. forming a power coalition of individuals who support the need for change and who can motivate others to support the effort;
3. creating a vision to accomplish the desired end-result;
4. communicating the vision via numerous communication channels;
5. empowering others to act on the vision, for example, by modifying structures, systems, policies, and procedures in ways congruent with the vision;
6. planning for and creating short-term wins by communicating success, thereby building momentum for ongoing change;
7. consolidating improvements and changing other structures, systems, procedures, and policies that are not yet congruent with the vision; and
8. institutionalizing the new approaches by communicating the relationship between the change effort and organizational success.

Galpin's (1996a) model depicted a wheel with nine wedges:

“a) establishing the need to change; (b) developing and disseminating a vision of a planned change; (c) diagnosing and analyzing the current situation; (d) generating recommendations; (e) detailing the recommendations; (f) pilot testing the recommendations; (g) preparing the recommendations for rollout; (h) rolling out the recommendations; and (i) measuring, reinforcing, and refining the change” (p. 302).

Two additional models were proposed by Armenakis, Harris and Field (1999). The first model considered establishing a readiness for change to minimize resistance. The second model focused on the adoption and institutionalization of the desired change. Armenakis, Harris and Field (1999) also provided influence strategies useful for transmitting change messages such as persuasive communication, human resource management practices, symbolic activities, and management of internal and external information.

In considering the various models related to the change process, Armenakis and Bedeian (1999) concluded that the change process used to plan and implement organizational change is as important as the state of existing content and contextual factors. They noted that all six implementation models considered in their research revealed two basic lessons. First, the change initiative typically involves multiple steps that take a considerable amount of time to roll out, and that if steps are bypassed, unsatisfactory results are typically experienced. Second, they noted that mistakes in any step can delay implementation, as well as negate successes to date in the change initiative (Armenakis and Bedeian, 1999).

There are also change models specifically related to the public sector. For example, Barber (2006) highlighted three models of change that are particularly relevant for public sector organizations that are seeking enhanced productivity. The first model featured command and control, which is particularly useful when key services, such as health care waiting times, must be improved. The second model involved the creation of quasi-markets. These are appropriate for services that differ from a business in that they are

universal and equitable, but involve similar management challenges found in the private sector, such as education reforms. The third model combined “devolution with transparency”, which involved contracting the services to the private sector, and holding the private sector accountable. According to Barber (2006), public sector reforms around the world combine elements of these three change models.

Having briefly discussed definitions, theories, and process models of organizational change, the next section addresses the success of organizational change initiatives.

### 2.1.3 Success of Change Initiatives

Despite the wealth of advice related to change management, successful fundamental change is very rare (Reger, Mullane, Gustafson & Demarie, 1994). Success rates, even for small scale change initiatives, are unimpressive (Hirschhorn, 2002). A 1992 survey from Arthur D. Little indicated that only one third of companies believed that total quality management projects had a significant impact upon their activities (Fisher, 1994). In 2000, researchers noted that as many as 70 per cent of changes initiatives failed (Higgs & Rowland, 2000; Beer & Nohria, 2000). According to the Gartner Group, failure rates are 80 per cent (Knodel, 2004). Sirkin, Keenan and Jackson (2005) estimated that two out of three transformation efforts failed. Various reasons have been cited for these failures, such as a flawed guiding theory of change (Beer, Eisenstat, & Spector, 1990), an insufficient number of elements of the organization’s systems included in the change initiative (Porras & Hoffer, 1996), the lack of agreement related to independent variables that are available to management to effect the change (Porras & Hoffer, 1996; Kemelgor,

Johnson & Srinivasan, 2000) and the absence of change management competence (Griffith, 2002). In some cases, organizations are worse off than before as a result of these unsuccessful change initiatives (Katzenbach & Smith, 1993).

The discussion in this chapter thus far has focused mainly on the private sector. However, the public sector, which is the specific focus of this research, cannot be run like a business given important distinctions between the two sectors (Osborne & Gaebler, 1993). Since this research relates to the public sector, the next section is dedicated to public sector considerations relating to organizational change.

## 2.2 Change in the Public Sector

Ingstrup and Crookall's (1998) research relating to the public sector hypothesized that the difference between poor performing organizations and well performing organizations is that the successful ones have built a framework of trust, openness, communication and continuous learning that allows them to manage their own change agenda, and ease the burden of change imposed by external agents. They also hypothesized that while change management has not historically been an attribute of the public service, it is now a necessity (Ingstrup & Crookall, 1998).

This section identifies some unique pressures for change in the public sector, which is followed by a discussion of the complexities of change in the public sector. It also highlights some key implications for change in the public sector.

### 2.2.1 Unique Pressures for Change in the Public Sector

The public sector has been confronted by many of the same external factors as the private sector. These include: new information and communication technologies (Larson & Coe, 1999), globalization (Isaac-Henry, 1993), changes in economic, social and political orders (Isaac-Henry, 1993), and changes in the labour market (OECD, 1996). However, the public sector also faces some unique external pressures. For example, a key consideration relates to government leaders' drive to get re-elected (Osborne & Gaebler, 1993). As well, business leaders have been pointing fingers at the slow pace of governments (Lau, 2000). Government organizations have been encouraged to shift from a sluggish bureaucracy into a fast-paced, customer-friendly service organization (Painter, 1993). In addition to greater efficiency, citizens have been demanding greater democracy, greater transparency, and more government services (OECD, 1996; Lau, 2000). These challenges have placed economic strains on the public sector (OECD, 1996; Larson & Coe, 1999). Further, there has been an erosion of public confidence in governments (Larson & Coe, 1999). To compound these problems, the media has been anxious to report dissent (Lau, 2000), which puts considerable pressure on the public sector due to the government leaders' drive to get re-elected.

Many of these issues have been plaguing the public sector for some time. Throughout most of the twentieth century government institutions have been trying to improve their performance. The 1930s brought about administrative management, and the 1960s and 1970s saw efforts to apply a range of tools such as systems analysis, policy analysis, and program budgeting and evaluation to improve the results of government (Barzelay,

1992). In the 1980s, a new global reform movement that was labeled “New Public Management” emerged, and continues today, with a main focus on increasing efficiency (Christensen & Laegreid, 2002).

The following quote from Christensen and Laegreid (2002) succinctly describes the situation generally faced by public sector organizations, and highlights the ongoing nature of change in the public sector:

“The complex and paradoxical nature of government administration guarantees the absence of perfect systems, but the quest for technical perfectibility and the play of political power render change inevitable. Transformation of government systems is an iterative rather than a terminal process, proceeding over time with varying impetus and emphasis. The moment never arrives when conflicting and diverse values like efficiency, effectiveness, equity, responsiveness, due process, fairness, creativity and the like are ever reconciled in some optimal achievement of reformist design” (p. 256).

Given this situation, there have been many phases of public sector reform over recent years including: the reduction of administrative overhead, the use of information technology to improve financial systems, the adoption of strategic planning and performance management regimes, greater reliance on alternate means to deliver services such as contracting out, privatization, and the reduction of unnecessary overlap and duplication of effort (Lau, 2000). Further, most countries in the OECD (Organisation for Economic Co-Operation and Development) have been actively involved in reforming their human resource management in their national public administrations since the late 1980s (OECD, 1996). According to Painter (1993), the need to change the organizational culture of public services has also been identified, including attempts to reduce insularity and increase customer satisfaction.

There are thousands of public organizations that are engaged in an enormous number of activities as they attempt to achieve their organizational and public goals (Kiel, 1994). It is important to recognize, however, that not all public sector organizations change at the same rate (Posner & Rothstein, 1994). For example, due to the nature of its services, the U.S. Internal Revenue Service has a clear focus, while others, like the U.S. State Department, have a mission and objectives that are not as easily defined and measured (Posner & Rothstein, 1994).

As noted previously, the majority of the change initiatives up to the end of the 1980s were intended to fine-tune the organization (Goodstein & Burke, 1991). However, by the 1990s, public sector research found that the public sector required a deeper and sustained change (Taylor, Snellen & Zuurmond, 1997). For example, a study conducted by the OECD (1993) concluded that “radical” change in public service organizational culture was required if efficiency and effectiveness were to be further improved. This impetus is evident in the organizational culture change initiative undertaken by the Canadian federal public service, which is the focus of this research.

### 2.2.2 Complexities of Change in the Public Sector

According to some researchers (e.g., Barzelay, 1992; Koehler & Pankowski, 1997), public management concepts are generally taken from the world of business. However, public sector organizations exhibit some important characteristics that are different from the private sector (Nutt & Backoff, 1993). Rainey (1989) hypothesized 31 distinctive characteristics of public management and public organizations. Some of these key

differences between the public sector and the private sector are highlighted in this section. First, it is important to recognize that there are two key sources of leadership in the public sector: political leaders and administrative leaders, and they may have conflicting objectives. As well, public service organizations need to address short-term pressures that work against strategic reform and are not typically encountered by private sector organizations. These public sector short-term pressures include: bureaucratic transactions such as preparing briefing notes and memoranda for ministers, appearing before legislative committees, monitoring and regulating departments, and political transactions such as responding to ministers, interest groups, and addressing the scrutiny of outside groups and journalists (Lau, 2000). Another key challenge facing the public sector relates to changes in government due to elections (Lau, 2000). Given that successful culture change typically takes an extensive period of time (Nadler & Tushman, 1997), this is a key issue for those governmental organizations undertaking organizational culture change. Government organizations must not only take into consideration the economic reality of the organization, but also the political, social and organizational environment (Cayer, 1994; Taylor, Snellen & Zuurmond, 1997).

Another key management problem for government organizations involved in change initiatives relates to the very difficult social issues that they address. These include difficult challenges such as illiteracy, drugs, and homelessness. An additional complication relates to the fact that each public sector organization typically only has part of the solution, necessitating cross-boundary managerial processes, including planning,

budgeting, human resources and operations, which may cut across numerous public service organizations (Posner & Rothstein, 1994).

It is also important to recognize that public organizations cannot redefine their missions themselves. Their main objectives and authorities are set out in law and regulations (Thaens, Bekkers, & van Duivenboden, 1997). As well, many factors, such as mission and operating environment, make each public service organization unique (Kiel, 1994). Therefore, what may be perceived as a necessary change for one public service organization, may not be appropriate for another.

People management in the public sector often has higher standards than in the private sector. For example, supervision in the public sector requires a thoughtful and balanced approach that takes into consideration complex issues such as fairness, equity and responsiveness (Cayer, 1994). According to Rainey (1989), one of the most consistent empirical findings relating to public organizations is that they experience more highly structured, externally imposed human resource practices than the private sector. Further evidence of the constraints related to human resource practices faced by public sector organizations was confirmed by a meta-analytic comparison of the public sector to the private sector (Robertson & Seneviratne, 1995). This meta-analysis compared the results of 547 organizational development applications that took place between 1945 and 1981 in both the private sector and public sector. The 257 public sector interventions that were included in this review revealed that public sector organizations are subject to a greater range of rules and regulations than the private sector, including inflexible reward

systems, and specialized job designs (Robertson & Seneviratne, 1995). Further, according to Lau (2000), changing public sector organizations involves managing people in a way that is beyond ethical reproach. The next section summarizes some key implications for public sector change.

### 2.2.3 Key Implications for Public Sector Change

As discussed earlier, organizational change is a very complex subject. From the previous discussion, it is clear that those interested in organizational change in the public sector must recognize that the public sector has some important differences from the private sector. Some writers (e.g., Ingstrup & Crookall, 1998; Doyle, Claydon & Buchanan, 2000) have concluded that change is much easier in the private sector than the public sector. Public sector managers manage in a fish bowl, with the public and media watching closely without understanding the difficulties of managing change. This scrutiny can lead to the change process being easily aborted if something negative happens (Ingstrup & Crookall, 1998).

Savoie (1998) found that rarely have public sector change efforts experienced success. Therefore, another key implication involves the need for further research related to organizational change in the public sector to help improve the success rates. One important aspect of a successful change initiative is the identification of appropriate change drivers (Porras & Hoffer, 1996), which is the focus of this research. Literature relating to change drivers is discussed subsection 2.4.

## 2.3 Organizational Culture

This section commences with some introductory remarks regarding organizational culture. Then it highlights the diversity of definitions of organizational culture. This is followed by a discussion relating to the ability to manage organizational culture.

### 2.3.1 Introduction

Organizational culture began to attract widespread attention from researchers in the 1980s (Willmott, 1993; Schumacher, 1997) and interest in organizational culture has exploded in the past 20 years (Sorensen, 2002). As was noted in Chapter 1, various researchers (e.g., Kanter, 1983; Ouchi, 1981) have found that organizational culture is an important means of enhancing organizational performance by securing greater commitment and flexibility from employees (Willmott, 1993). Alvesson (2002) hypothesized that most contemporary organizations regard organizational culture as a crucial element of good performance.

Researchers have also noted the power of cultures, especially when they are strong. As Kotter and Heskett (1992) argue: “they can lead intelligent people to walk in concert off a cliff” (p. 8). Scott (1987) hypothesized that strong cultures provide various benefits to the organization including: the ability to sustain employee commitment to something larger than self, the provision of guidelines by which organizational members can choose appropriate activities, and the creation of sources of meaning and identification for the organizational participants. However, some have questioned the relevance of

organizational culture. For example, in an empirical study, Hofstede, Neuigen, Ohayv and Sanders (1990) found that culture has often been regarded as a “fad” among managers, consultants, and academics. These researchers ultimately concluded that organizational culture has left its traces on organizational theory (Hofstede, et al., 1990). One of the fundamental challenges relating to organizational culture is the considerable diversity in the definitions of organizational culture. This is discussed in the next section.

### 2.3.2 Diversity in the Definitions of Organizational Culture

The research related to culture has resulted in many different and competing definitions of culture (e.g., Barney, 1986; Schein, 2000). Schein (2000) argued that the probable reason for the diversity in defining organizational culture stems from the reality that culture lies at the intersection of several social sciences, that is, anthropology, sociology, social psychology, and organizational behaviour, and reflects some of the biases of each. According to Schein (2000), there is little agreement in terms of what culture does, what it should mean, and how it should be used by organizations. Schein defines culture as:

“a pattern of basic assumptions that a group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems” (Schein, 1990, p. 111).

Similar conceptions of organizational culture have been offered by others, for example, Pettigrew (1979), Trice and Beyer (1984), Dandridge, Mitroff and Joyce (1980) and Lim (1995). Schein’s (1990) definition is particularly appropriate to the study of

organizations for four key reasons. It specifically references forces external to the organization, which is an important factor in most organizations. It also highlights internal integration, something that is critical to the success of most organizations, for example in relation to trying to reduce unnecessary overlap and duplication of effort (Lau, 2000). Further, this definition from Schein also highlights the socialization of new organizational members, which is essential in order to realize the culture shift being sought (e.g., Cummings & Worley, 1997; Schneider, Gunnarson & Niles-Jolly, 2001). Finally, these aspects of culture are amenable to measurement and to management manipulation. Hence, Schein's definition seems particularly appropriate for research purposes.

The next section features the management of organizational culture. It includes a discussion of the challenges and opportunities involved in managing culture.

### 2.3.3 The Management of Organizational Culture

Culture change is considered a fundamental organizational transformation (Hesselbein, 2002), and is usually radical or second-order change (Bartunek, 1984). According to Cummins and Worley (1997), it involves changes in how organizational members perceive, think and behave in their work environment, and to be successful, it must fundamentally alter the assumptions underpinning how the organization relates to its environment and how it functions. Changing these assumptions involves significant shifts in the organization's philosophy and values and in numerous structures and

organizational arrangements that shape organizational members' behaviours (Cummins & Worley, 1997).

Some researchers have taken the position that organizations *are* cultures and organizational culture is not a discrete variable to be manipulated at will (e.g., Smircich & Morgan, 1982; Smircich, 1983; Meyerson & Martin, 1987). However, many other researchers (e.g., Baker, 1980; Schwartz & Davis, 1981; Malinconico, 1984; Kilmann, Saxton & Serpa, 1985; Harrison & Carroll, 1991; Bate, 1994; Schneider, Brief & Guzzo, 1996; Oden, 1997; Cameron & Quinn, 1999; Schein, 2000; Neuhauser, Bender & Stromberg, 2000; Schneider, Gunnarson & Niles-Jolly, 2001; Bernick, 2001; and Hesselbein, 2002), support the view that culture can be managed. Teleological theory also supports the notion that organizational culture can be managed. As noted in section 2.1.1, according to teleological theory, a vision, or desired end state is developed, and the organization takes action to achieve that vision, monitoring progress along the way (Van de Ven & Poole, 1995). In discussing teleological theory, Van de Ven and Poole (1995) noted:

“This approach underlies many organizational theories of change, including functionalism (Merton, 1968), decision making (March & Simon, 1958), epigenesis (Etzioni, 1963), voluntarism (Parsons, 1951), social construction (Berger & Luckmann, 1966), adaptive learning (March & Olsen, 1976), and most models of strategic planning and goal setting (Chakravarthy & Lorange, 1991)”.

Researchers have developed a number of other key conclusions about culture change. For example, Bate (1994) concluded that it is enormously complex in all but the most trivial of organizations. Others (e.g., Kotter & Heskett, 1992; Oden, 1997) noted that

culture change is very difficult, especially in mature organizations. Zamutto and O'Connor (1992) pointed out that culture change is costly, while Vollman (1996) reported that it is often the hardest part of an organizational transformation. Bernick (2001) found that cultural change is not one change, but many, many changes: some big changes, but mainly small changes. These conclusions speak to the challenges relating to organizational culture change.

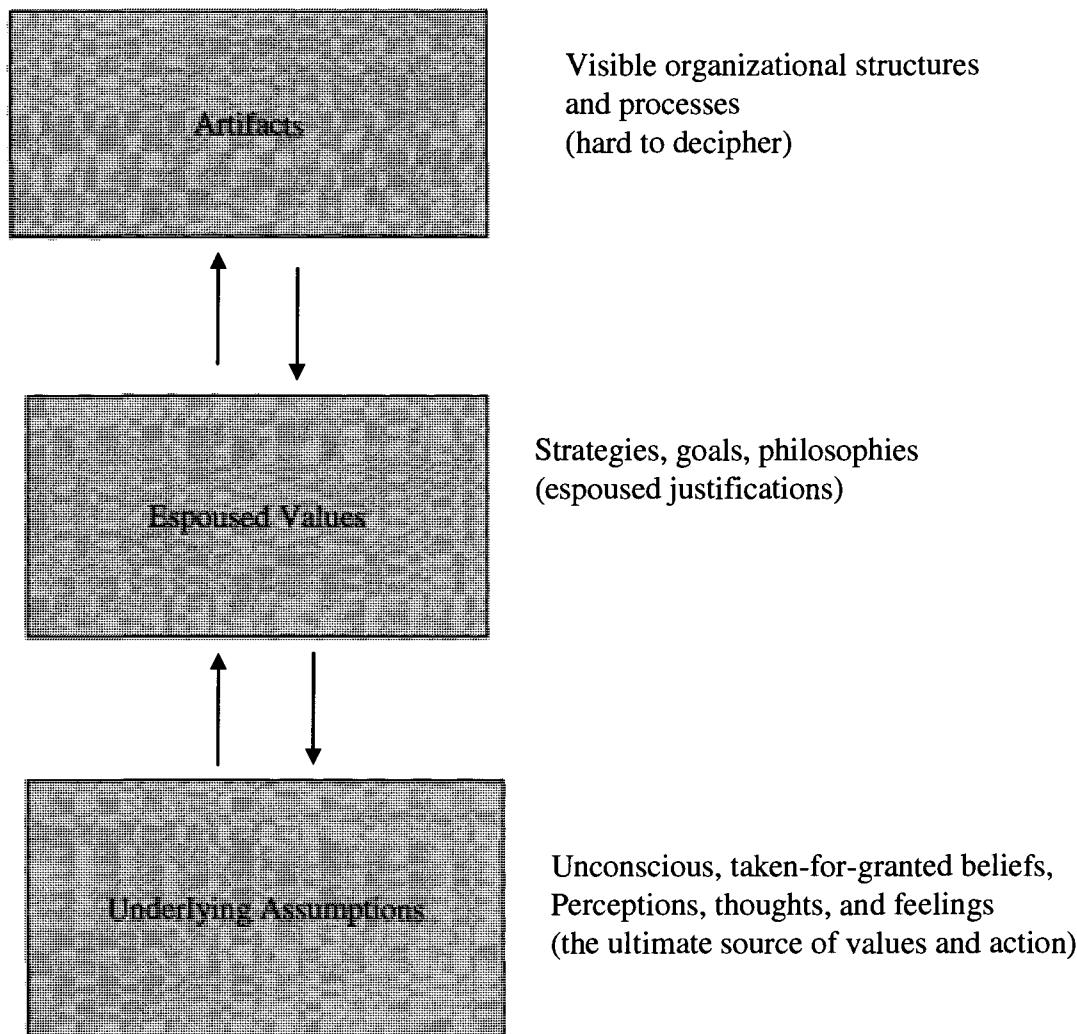
Schein (1999b) agreed that the process to change an organization's culture is complicated and time consuming. However, based on his extensive research in this area, Schein (1999b) concluded that it can be managed providing that one thinks about it and understands its dynamics. He proposed a process for evolving the organization's culture, which included:

- clarifying the purpose of the culture change;
- assembling a group of organizational members to diagnose the current culture, which includes examining the observable organizational artifacts;
- as a group, trying to establish the reasoning that underlies the artifacts, determining the organization's values;
- working with the lists of artifacts and values, moving on to delve into the deeper assumptions ingrained in the culture;
- initiating the culture change, which includes determining what results and new ways of working are desired;
- identifying which characteristics of the current culture are most likely to hinder the change;

- identifying which characteristics of the current culture are most likely to help the change; and
- identifying which attitudes need to be shifted in order to develop the desired results (Schein, 1999b).

Alvesson (2002) noted that talking about culture change is highly fashionable, and he cautioned that some management gurus may have a vested interest in sweeping statements and popular slogans. Too often, however, the complexities involved in changing the culture are not properly explained, and may be misleading (Alvesson, 2002). For example, it is important to recognize that culture is manifested at different levels in organizations. Kotter and Heskett (1992) viewed culture as having two levels. There is a deeper, less visible level, which is the values that are shared by group members, and which tend to persist over time even when changes in group membership are experienced. As well, there is a more visible level that can be observed in behavioural patterns such as working hard, being friendly, or wearing a particular style of clothes (Kotter & Heskett, 1992). Schein (1999b) recognized three levels of culture: 1) artifacts, such as the visible organizational structures and processes; 2) espoused values, such as strategies, goals and philosophies; and 3) underlying assumptions, which are the taken-for-granted beliefs, perceptions, thoughts and feelings that are the ultimate source of values and actions. Figure 2 illustrates Schein's (1996b) three levels of culture. It may be easier to effect change at the first two levels than at the level of underlying assumptions.

**Figure 2: Schein's Three Levels of Culture**



Recognition that there are multiple levels of culture is of particular significance for organizations attempting to shift the organization's culture. For example, Schein (1999b) highlighted the importance of understanding the multiple levels of organizational culture as part of the “cultural diagnosis” that needs to take place in developing the strategy for the formal change intervention.

In addition, it is important to recognize that typically multiple cultures exist in large organizations rather than one monolithic culture (e.g., Riley, 1983; Martin, 1992). As noted by Van Maanen and Barley (1984), multiple sub-cultures appear to be the rule rather than the exception. Various influences can lead to multiple sub-cultures within an organization, for example, education, professional training, gender, and ethnic background (Sackmann, 1992).

The possibility of countercultures should also be considered. Typically countercultures are seen as negative as they present a direct challenge to the core values of the dominant culture. However, a counterculture can be the result of a conscious management strategy.

“A counterculture can serve some useful functions for the dominant culture, such as articulating the foundations between appropriate and inappropriate behaviour and providing a safe haven for the development of innovative ideas” (Martin & Siehl, 1983, p. 52).

The possibility of sub-cultures and counter-cultures, rather than only a monolithic culture, needs to be considered when contemplating a culture shift (e.g., Martin, Sitkin & Boehm, 1985; Sackmann, 1992). For example, in an empirical study of one large organization, Sackmann (1992) found a number of cultural sub-groupings in addition to an organization-wide cultural overlay. Sackmann (1992) hypothesized that in this situation, “strong cultures” as suggested by Peters and Waterman (1982) could actually be less consistent than they appear to be, as a result of other cultural sub-groupings that may exist in the organization. This could have significant implications for the planning and implementation of a culture change initiative.

As noted previously, the length of time required for a successful culture change is an important consideration. Jick (1995) suggested that the question most frequently raised by executives in relation to organizational culture change is: How long it is going to take? Many theorists argue that it takes a minimum of five years to effect cultural change. According to Jick (1995), five-to-seven year time frames are typically required for successful culture changes, however, usually executives and organizations do not have nearly that length of time to invest. Posner and Rothstein (1994) suggested even longer time frames for organizational transformations: six to eight years in the private sector, and longer in the public sector. As noted in Chapter 1, an official with the Canadian federal government estimated it would take 10 years for this organizational culture change initiative. This estimated length of time is reflective of the difficulty of culture change. It also demonstrates the need for longitudinal research and why there is relatively little empirical work to date in this area.

Given the complexities of organizational culture change, identifying the drivers of change is crucial to the success of the change initiative (Porras & Hoffer, 1996). This is an important issue for researchers and practitioners alike, as the proper usage of change drivers is an important aspect of successful change management (Whelan-Berry, Gordon & Hinings, 2003). The focus of this research concerns identification of change drivers appropriate for the Canadian federal public service. Change drivers are further discussed in the next section.

## 2.4 Change Drivers

For the purposes of this research, the definition of change drivers to be used is:

“Change drivers are events, activities, or behaviours that facilitate the implementation of change” (Whelan-Berry, Gordon & Hinings, 2003, p. 100).

The main reason that the definition of change drivers from Whelan-Berry, Gordon and Hinings (2003) was selected for this research is because it can be interpreted as change drivers that are available for leverage by management, such as leadership (e.g., Oden, 1997) and communication (e.g., Hesselbein, 2002). As has been noted earlier, the literature often identifies drivers of change that are external to the organization, and beyond management’s control, such as globalization. However, there is little agreement in the literature regarding the key independent variables, or change drivers, that are available for manipulation in order to effect change (Porras & Hoffer, 1996; Kemelgor, Johnson & Srinivasan, 2000). Studies of successful organization-wide change initiatives revealed that the adoption of multiple change levers involving adjustments of structural arrangements and organizational processes is necessary (Pettigrew, Woodman & Cameron, 2001).

Perhaps one of the reasons for the disagreement in the literature relating to change drivers is because researchers often use incompatible terminology in discussing this topic. For example, while Kemelgor, Johnson and Srinivasan (2000) provided a table entitled “review of drivers of change” that included Jick’s (1995) article, Jick’s (1995) article did not use the terms “drivers of change” or “change drivers” in the article itself. Instead,

Jick (1995) used the terms “change accelerator” and “tactics” in his article. Whelan (1997) referred to change drivers as “catalysts”. Porras and Hoffer (1996) referred to change drivers as “action levers”, and highlighted the following issues relating to them:

“In searching for appropriate variables to analyze, the broad variety of models and practices for achieving OD’s [organizational development] end results quickly becomes apparent. Theorists and practitioners differ widely in their emphases on the “action levers” – or independent variables – to be manipulated in an OD process, on the interventions to use for changing the action levers, and on the organization level to which change efforts are to be directed” (p. 478).

The term “change drivers” will be used in this study as it best reflects the actions necessary by management to effect organizational change.

Notwithstanding these issues, there is considerable consistency between the drivers of general change identified in research relating to private sector and public sector organizations. As well, there is a considerable consistency in the literature on drivers of organizational culture change. Subsection 2.4.1 includes examples of key change drivers related to organizational change generally. Subsection 2.4.2 includes examples of key change drivers related specifically to organizational culture change that are available to management for manipulation. Then, subsection 2.4.3 summarizes the similarities and differences in the literature regarding change drivers for both the private sector and the public sector.

#### 2.4.1 General (Internal) Change Drivers Available to Management

The focus of this research involves internal drivers of organizational culture change that are available to the organizations' management, such as leadership and human resources practices. An analysis of the various levers or actions available to management revealed five main categories of change drivers: vision, leadership, human resources, communication, and enabling changes in structure and processes. The following is a brief explanation of each of the categories of change drivers.

- Vision involves developing a clear picture of the desired end state of the change initiative (e.g., Harvey & Brown, 1996).
- Leadership involves having a number of leaders throughout the organization involved in and committed to the change initiative (e.g., Nadler & Tushman, 1990). Analyzing leadership also involves analyzing the leaders' actions (e.g., Schein, 1992), such as displaying behaviours that are supportive of the change initiative (e.g., Schein 1992), making it possible for others in the organization to make necessary changes (e.g., Hennessey, 1998) and managing resistance to the change initiative (e.g., Beckhard & Harris, 1987). It also involves changes in leadership personnel (Kotter & Heskett, 1992).
- Human resources relates to a number of practices such as recruiting and selecting new employees (e.g., Schneider, Gunnarson & Niles-Jolly, 2001), socializing newcomers (e.g., Cummings & Worley, 1997), rewarding employees (Porras & Hoffer, 1996) and training employees (e.g., Zammuto & O'Connor, 1992). It also includes managing the turnover of personnel (Schwartz & Davis, 1981).

- Communication includes a number of considerations such as the content of communications from the organizational leaders about the change initiative (e.g., Schein, 1985), the frequency of communication (e.g., Schumacher, 1997), and the channels of communication including announcements, letters, and stories (e.g., Sathe, 1985).
- Enabling changes in structure and processes include numerous actions that may be taken to support the goals of the change initiative, such as developing performance measures related to the change initiative (e.g., Cameron & Green, 2004), restructuring the control systems (e.g., Nadler & Tushman, 1990), and modifying the organizational structure (e.g., Hall, Rosenthal & Wade, 1993).

Table 1 lists the literature relevant to each of these five categories of change drivers. Private sector literature and public sector literature have been identified separately in this table. It is important to note that there has not been a high volume of articles in public administration journals that explicitly address the subject of organizational change (Fernandez & Rainey, 2006).

**Table 1: Summary Table of Literature on Key Drivers of General Change**

Key drivers of change generally identified in the literature	Literature Sources – Private Sector	Literature Sources – Public Sector
Vision	Beckhard & Harris, 1987; Nadler & Tushman, 1989; Nadler & Tushman, 1990; Beer, Eisenstat & Spector, 1990; Buchanan & Boddy, 1992; Kotter, 1995; Patrickson & Bamber, 1995; Strebler, 1996; Cummins &	Nutt & Backoff, 1993; Kiel, 1994; Koehler & Pankowski, 1997; Rainey, 1998; Lau, 2000; Osborne & Brown, 2005; Fernandez & Rainey, 2006.

Key drivers of change generally identified in the literature	Literature Sources – Private Sector	Literature Sources – Public Sector
	Worley, 1997; Harper, 1998; Whelan-Berry, Gordon & Hinings (2003).	
Leadership	Beckhard & Harris, 1987; Nadler & Tushman, 1989; Carnall, 1990; Nadler & Tushman, 1990; Goodstein & Burke, 1991; Schein, 1992; Dunphy & Stace, 1993; Hall, Rosenthal & Wade, 1993; Floyd & Wooldridge, 1994; Patrickson & Bamber, 1995; Burke, 1995; Strelbel, 1996; Reichers, Wanous & Austin, 1997; Harper, 1998; Natya, 1999; Charan, 2002, Whelan-Berry, Gordon & Hinings, 2003; McGuire & Hutchings, 2006; Taylor-Bianco & Schermerhorn, 2006.	Nutt & Backoff, 1993; Kiel, 1994; Koehler & Pankowski, 1997; Thompson & Sanders, 1998; Treasury Board of Canada, 1987; Rainey, 1998; Kamensky, 1998; Savoie, 1998; OECD, 2000, Osborne & Brown, 2005; Fernandez & Rainey, 2006.
Communication	Lewin, 1951; Nadler & Tushman, 1989; Hall, Rosenthal, & Wade, 1993; Goodstein & Burke, 1991; Schein, 1992; Kotter, 1995; Patrickson & Bamber, 1995; Schneider, Brief & Guzzo, 1996; Schumacher, 1997; Porras & Robertson, 1987; Larkin & Larkin, 1996; Whelan, 1997; Farmer, Slater & Wright, 1998; Beer & Nohria, 2000; Charan, 2001; Bridges & Mitchell, 2002; Hesselbein, 2002; Whelan-Berry, Gordon & Hinings, 2003; Bridges, 2003.	Nutt & Backoff, 1993; Van Belle, 1997; Treasury Board, 1987; Savoie, 1998; Kamensky, 1998; OECD, 2000; Osborne & Brown, 2005; Fernandez & Rainey, 2006.
Human resources	Beckhard & Harris, 1987; Nadler & Tushman, 1990; Goodstein & Burke, 1991; Kotter & Heskett, 1992; Kotter, 1995; Schneider, Brief & Guzzo, 1996; Schein, 2000; Maira & Smith, 1999; Bridges, 2003; Whelan-Berry, Gordon & Hinings, 2003; McGuire & Hutchings, 2006.	Nutt & Backoff, 1993; Van Belle, 1997; Koehler & Pankowski, 1997; Kamensky, 1998; Savoie, 1998; OECD, 2000; Lindquist, 2000; OECD, 2000; Fernandez & Rainey, 2006.

Key drivers of change generally identified in the literature	Literature Sources – Private Sector	Literature Sources – Public Sector
Enabling changes in structure and processes	Lewin, 1952; Schwartz & Davis, 1981; Beckhard & Harris, 1987; Nadler & Tushman, 1989; Nadler & Tushman, 1990; Beer, Eisenstat & Spector, 1990; Goodstein & Burke, 1991; Kotter & Heskett, 1992; Schein, 1992; Dunphy & Stace, 1993; Kotter, 1995; Burke, 1995; Patrickson & Bamber, 1995; Vollman, 1996; Schneider, Brief & Guzzo, 1996; Cummins & Worley, 1997; Maira & Smith, 1999; Kemelgor, Johnson & Srinivasan, 2000; Bridges, 2003; Cameron & Green, 2004.	Van Belle, 1997; Rainey, 1998; Koehler & Pankowski, 1997; Savoie, 1998; OECD, 2000 ; Fernandez & Rainey, 2006.

There are additional change drivers that are referred to in the literature less frequently, such as employee participation (Whelan-Berry, Gordon & Hinings, 2003); creating a sense of urgency (Kotter, 1995; Harper, 1998); ensuring quick successes (Bridges, 2003; Kotter, 1995) and developing political support (Cummins & Worley, 1997; Kotter, 1995; Kanter, 2002). However, there is a relatively high degree of consensus in the literature that the five key categories of drivers of change are those identified in Table 1.

#### 2.4.2 Organizational (Internal) Culture Change Drivers Available to Management

A review of the organizational culture change literature found that the same five categories of drivers of culture change were predominant. Table 2 provides a listing of the organizational culture change literature for these five categories of culture change drivers. Again, the private sector literature and public sector literature have been

identified separately in this table. As previously indicated, it is important to note that there has not been a high volume of articles in public administration journals that explicitly address the subject of organizational culture change (Fernandez & Rainey, 2006).

**Table 2: Summary Table of Literature on Key Drivers of Organizational Culture Change**

Key drivers of cultural change identified in the literature	Literature Sources – Private Sector	Literature Sources – Public Sector
Vision	Burnes, 1992; Cummins & Worley, 1997; Williams, Dobson & Walters, 1989; Trice & Beyer, 1991; Kotter & Heskett, 1992; Demarie & Keats, 1995; Harvey & Brown, 1996; Galpin, 1996b; Oden, 1997; Schein, 2000; Cameron & Green, 2004.	OECD, 1993; Barzelay, 1992; Nutt & Backoff, 1993; Kiel, 1994; Brooks & Bate, 1994; Lau, 2000.
Leadership	Schwartz & Davis, 1981; Malinconico, 1984; Kilmann, Saxton, Serpa & Associates, 1985; Siehl, 1985; Cummings & Worley, 1997; Schein, 1985; Turnstall, 1985; Oden, 1997; Williams, Dobson & Walters, 1989; Schein, 1985; Trice & Beyer, 1991; Schein, 2000; Cameron & Green, 2004; Burnes, 1992; Kotter & Heskett, 1992; Harvey & Brown, 1996; Whelan, 1997; Neuhauser, Bender & Stromberg, 2000; Schneider, Gunnarson & Niles-Jolly, 2001; Morgan & Brightman, 2001; Miller, 2002; Alvesson, 2002; Hesselbein, 2002; Gill, 2003; Fernandez & Rainey, 2006.	OECD, 1993; Nutt & Backoff, 1993; Brooks & Bate, 1994; Kim, Pindur & Reynolds, 1995; Koehler & Pankowski, 1997; Thompson & Sanders, 1998; Claver, et al., 1999; OECD, 2000.
Communication	Baker, 1980; Turnstall, 1985; Schein, 1985; Sathe, 1985; Siehl, 1985; Trice & Beyer, 1991; Kotter & Heskett, 1992; Galpin, 1996b; Schumacher, 1997; Oden, 1997; Williams, Dobson & Walters, 1989; Beer & Nohria, 2000;	Barzelay, 1992; Brooks & Bate, 1994; Kim, Pindur & Reynolds, 1995; Koehler & Pankowski, 1997; Thompson & Sanders, 1998; Claver et al., 1999.

Key drivers of cultural change identified in the literature	Literature Sources – Private Sector	Literature Sources – Public Sector
	Munck, 2001; Schumacher, 1997; Wetlaufer, 1999; Charan, 2001; Alvesson, 2002; Hesselbein, 2002.	
Human resources	Baker, 1980; Schwartz & Davis, 1981; Allaire & Firsirotu, 1984; Martin, 1985; Siehl, 1985; Schein, 1985; Wiener, 1988; Williams, Dobson & Walters, 1989; Trice & Beyer, 1991; Burnes, 1992; Charan, 2001; Kotter & Heskett, 1992; Zamutto & O'Connor, 1992; Williams, Dobson & Walters, 1989; Oden, 1997; Demarie & Keats, 1995; Galpin, 1996b; Schumacher, 1997; Cummings & Worley, 1997; Wetlaufer, 1999; Neuhauser, Bender & Stromberg, 2000; Schein, 2000; Bernick, 2001; Schneider, Gunnarson & Niles-Jolly, 2001; Munck, 2001; Alvesson, 2002; Cameron & Green, 2004.	Barzelay, 1992; Nutt & Backoff, 1993; Brooks & Bate, 1994; Kim, Pindur & Reynolds, 1995; Claver et al., 1999; OECD, 2000; Linquist, 2000.
Enabling changes in structure and processes	Baker, 1980; Schwartz & Davis, 1981; Davis, 1984; Siehl, 1985; Williams, Dobson & Walters, 1989; Trice & Beyer, 1991; Bernick, 2001; Kotter & Heskett, 1992; Vollman, 1996; Galpin, 1996b; Cummings & Worley, 1997; Turner & Meyerson, 2000, Munck, 2001; Schneider, Gunnarson & Niles-Jolly, 2001; Cameron & Green, 2004.	Barzelay, 1992; Kim, Pindur & Reynolds, 1995; OECD, 2000.

There are additional cultural change drivers that are referred to in the literature less frequently, for example, acceptance of the need to change (Williams, Dobson & Walters, 1989; Cameron & Green, 2004); establishing a sense of urgency (Harvey & Brown, 1996); and establishing a cultural improvement council (Oden, 1997). However, there is a relatively high degree of consensus in the literature that the five categories of drivers of

change identified in Table 2 are the most significant in successfully implementing a culture change initiative.

#### 2.4.3 Similarities and Differences in the Literature Regarding Change Drivers

The categories of change drivers of vision, leadership, human resources, communication, and enabling changes in structure and processes are consistent in both the literature on change generally and the literature on organizational cultural change. This holds true for both the private sector and public sector literature. There is, however, one key difference that emerged from this literature review. It relates to leaders developing political support within the organization, which appears to be more prominent in the literature on private sector general change. For example, Kotter (1995) recommended establishing a powerful guiding coalition. Harper (1998) and Nadler and Tushman, (1990) referred to building coalitions. Kanter (2002) advised that coalition building requires an understanding of the politics of the change and cautions that in any organization, these politics are formidable. Carnall (1990) also stressed the importance of understanding the politics of the organization, and notes that a dominant coalition, especially of senior executives, can have considerable influence over decisions, regarding resources, rules and policies. This concept of developing political support for the change initiative does not appear to be as popular in the cultural change literature. Further, it does not appear to be prominent in the public sector literature. This may reflect the more bureaucratic orientation of public sector organizations.

#### 2.4.4 Summary of Change Drivers

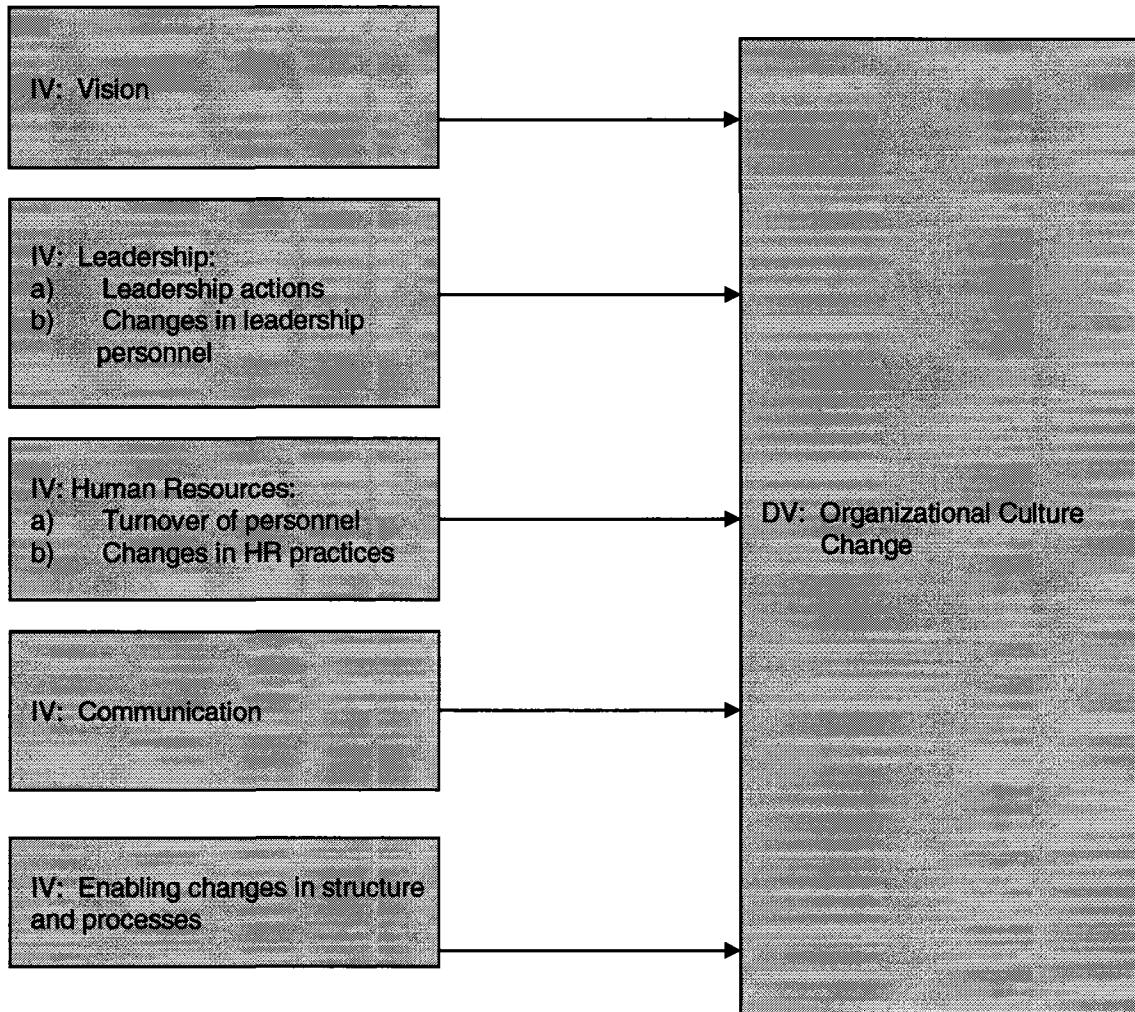
The previous sections relating to general drivers of organizational change and drivers of organizational culture change have provided the justification for focusing on vision, leadership, human resources, communication, and enabling changes in structure and processes as the five categories of change drivers for this research. These five key categories of change drivers are generally consistent for both the private sector literature and the public sector literature. They are also generally consistent for general change initiatives and organizational culture change initiatives. Within each of these categories of change drivers, there are numerous actions that can be employed by the management of organizations seeking to effect cultural changes in the organization. The next chapter describes the research model and the related hypotheses for these five key drivers of cultural change in the public sector.

### **3 RESEARCH MODEL AND HYPOTHESES**

This chapter presents the research model including the dependent variable and the seven independent variables. A brief discussion of the dependent variable, organizational culture change, is provided. This is followed by a discussion of the rationale for the seven independent variables, the key drivers of organizational culture change. The related hypothesis follows the rationale for each of the seven independent variables. A summary of the research model and the hypotheses conclude the chapter.

#### **3.1 Research Model**

Drawing on the research discussed in Chapter 2, a change driver model with seven independent variables related to the five categories of change drivers has been used to explain organizational culture changes (refer to Figure 3). Two of the categories of change drivers have two independent variables each to reflect different types of actions which can drive cultural change. The leadership change driver includes leadership actions and changes in leadership personnel. The human resources change driver includes changes in human resources practices and turnover of personnel. Therefore, the seven independent variables in the research model are: vision, leadership actions, changes in leadership personnel, turnover of employees, changes in human resources practices, communication, and enabling changes in structure and processes. These seven independent variables are expected to be directly associated with the dependent variable of organizational culture change.

**Figure 3: Change Driver Model**

The next section features a discussion of the dependent variable, organizational culture change.

### 3.2 Organizational Culture Change – the Dependent Variable

The dependent variable in this model is organizational culture change. In this study, organizational culture change has been measured over the six year period of 1999 to 2005

using federal government employees' perceptions of organizational culture in 1999 and in 2005. As noted by Schein (1999b), organizational culture reflects the attitudes and climate that result from factors such as organizational structures and processes, strategies, goals and philosophies, as well as taken-for-granted beliefs, and perceptions. Organizational culture is an organizational-level variable that is measured by aggregating across all members of an organization. Individual dimensions of culture such as fairness and learning, as well as a global measure that reflects all culture dimensions simultaneously, will be examined. Chapter 4 provides a detailed description of the measures that will be used to assess organizational culture change.

### 3.3 Drivers of Organizational Culture Change – the Independent Variables

The following sections discuss the independent variables considered in this study: vision, leadership actions, changes in leadership personnel, turnover of personnel, changes in human resources practices, communication and enabling changes in structure and processes. These independent variables relate to formal organizational practices. The related hypotheses are presented at the conclusion of the discussion of each independent variable.

### 3.3.1 Vision

The need to establish a clear vision in order to shift the organization's culture is prominent in the literature (e.g., Trice & Beyer, 1991; Barzelay, 1992; OECD, 1993; Kiel, 1994; Cummings & Worley, 1997; Oden, 1997; Harper, 1998; Schein, 2000; Lau, 2000). According to Cummings and Worley (1997), the vision needs to describe the future state and motivate commitment to moving towards it, if the vision is to be effective in guiding the change. Several researchers have stated that it is the role of the organization's leadership to establish this vision (e.g., Nadler & Tushman, 1989; Nutt & Backoff, 1993; Demarie & Keats, 1995; Oden, 1997). Harvey and Brown (1996) claimed that a shared vision is actually the best starting point for cultural and organizational transitions. Well-known leaders of organizational change, such as Bill Gates of Microsoft and Jack Welch of General Electric, have used a shared vision at the outset of cultural and organizational transformations (Harvey & Brown, 1996).

Nadler and Tushman (1990) summarized the importance of organizational leaders developing a vision, and defining what constitutes a good vision:

"This involves the creation of a picture of the future, or of a desired future state with which people can identify and which can generate excitement. By creating vision, the leader provides a vehicle for people to develop commitment, a common goal around which people can rally, and a way for people to feel successful.....The vision needs to be challenging, meaningful, and worthy of pursuit, but it also needs to be credible. People must believe that it is possible to succeed in the pursuit of the vision..." (p. 82).

According to Kotter (1995), in every successful transformation that he witnessed, the organization had developed a vision that was relatively easy to communicate and that

appealed to multiple stakeholders, such as employees and customers. Kotter (1995) noted that to develop an effective vision that clarifies the organization's direction, it takes considerable effort, and he developed the following rule of thumb relating to vision development:

“If you can’t communicate the vision to someone in five minutes or less and get a reaction that signifies both understanding and interest, you are not yet done with this phase of the transformation process” (p. 63).

Effective communication of the vision is important for a successful culture change (Schumacher, 1997). Communication of the vision should consider not only the vision statement itself, but also the vehicles of communicating the vision, the frequency of the communication, and the target audiences. Communication is further discussed in section 3.3.6.

Based on this theorizing, the hypothesis relating to the vision is:

H1: The more clear and persuasive the vision, the greater the cultural change.

### 3.3.2 Leadership Actions

The importance of leadership in relation to a successful culture change initiative has also been widely recognized in the literature (e.g., Schwartz & Davis, 1981; Malinconico, 1984; Kilmann, Saxton, Serpa & Associates, 1985; Siehl, 1985; Cummings & Worley, 1997; Schein, 1985; Turnstall, 1985; Oden, 1997; Williams, Dobson & Walters, 1989; Schein, 1985; Trice & Beyer, 1991; Kim, Pindur & Reynolds, 1995; Schein, 2000; Cameron & Green, 2004; Burnes, 1992; Kotter & Heskett, 1992; Harvey & Brown, 1996;

Neuhauser, Bender & Stromberg, 2000; Schneider, Gunnarson & Niles-Jolly, 2001; Alvesson, 2002; Hesselbein, 2002). Many theorists have stressed the high level of effort required by leaders to successfully implement organizational change (e.g., Schein, 1992; Morgan & Brightman, 2001; Miller, 2002; Gill, 2003; Fernandez & Rainey, 2006). As hypothesized by Kim (2002):

“..it takes large amounts of energy for people to shift beliefs, habits, thinking, and rationale away from how things have always been done. Such changes require a long-term commitment and sustained application of time and energy from leadership and the organization” (p. 4).

This is thought to be particularly true in public sector organizations, where there is typically a very strong culture (Claver, et al., 1999).

Prior to discussing specific actions that are available to organizational leaders in order to effect a culture change, it is important to identify what is meant by leadership in this context. Many researchers (e.g., Schwartz & Davis, 1981; Malinconico, 1984; Cummings & Worley, 1997; Schein, 1985; Turnstall, 1985; Burnes, 1992; Oden, 1997; Williams, Dobson & Walters, 1989; Nadler & Tushman, 1990; Schein, 2000; Hesselbein, 2002; Cameron & Green, 2004) have advised that the leadership of the change initiative must involve a community of leaders throughout the organization and at every level of the organization. However, in their empirical study, Kotter and Heskett (1992) found that the single most visible factor that distinguishes major cultural changes that succeed from those that fail is competent leadership at the top.

Lindquist (2000) noted that in the public sector, there are two types of leadership that must support a cultural change effort: political leadership and administrative leadership. Recognizing that culture shifts require a considerable period of time to effect (e.g., Zamutto & O'Connor, 1992; Kotter & Heskett, 1992), and that elections in Canada take place at least every four years, or more frequently in the case of minority governments, this requirement for political support can present an important consideration in a culture change initiative in the Canadian public sector.

Whelan's (1997) study found that leadership support is important to change initiatives. In terms of the actions that are taken by leaders, Nadler and Tushman (1990) stressed that actions to support the culture change initiative do not have to be grandiose in order to be effective – “mundane” behaviours on the part of the leaders are also important. Examples of mundane behaviours include the allocation of time to issues and events related to the organizational change initiative and setting agendas of events or meetings (Nadler & Tushman, 1990).

In an empirical study relating to a culture shift initiative involving nine United States' public sector organizations, Hennessey (1998) found that leaders' actions make a difference. In carrying out this study, Hennessey (1998) found that virtually every discussion of the change highlighted what the leaders of each of the nine organizations had, or had not, done in relation to these organizational culture change initiatives.

Harvey and Brown (1996) hypothesized that transformational change such as culture change tends to be shaped coercively through the use of power rather than by more participative approaches. This reinforces the point about leadership actions playing a key role in the change effort, as the formal power within the organization rests with the leadership. As well, the senior management team needs to be visibly empowered in relation to the change initiative, such that all members of the senior management team have the autonomy and resources required (Nadler & Tushman, 1990).

Leaders need to focus on key actions such as developing appropriate structures to facilitate the goals of the change initiative, and establishing necessary monitoring and controlling mechanisms (Trice & Beyer, 1991). Schein (1992) also highlighted the importance of the leaders own actions in successful change initiatives and identified primary “culture-embedding mechanisms” involving the organization’s leaders. These included:

- “What leaders pay attention to, measure and control on a regular basis.
- Deliberate role modeling, teaching and coaching.
- Observed criteria by which leaders allocate rewards and status.
- Observed criteria by which leaders recruit, select, promote, retire and excommunicate organizational members” (p. 231).

The leaders’ actions need to be consistent with the vision (e.g., OECD, 1993). As well, leaders must demonstrate the actions that they want others to model (e.g., Kotter & Heskett, 1992; Cameron & Green, 2004). To facilitate organizational change, leaders need to ensure that individuals in the senior management team and throughout the organization display behaviours that are supportive of the desired change in order for the change to occur (Nadler & Tushman, 1990). As noted by Schneider, Gunnarson and

Niles-Jolly (2001), “management creates a climate by what management does, not by what it says” (p. 22).

Various researchers (e.g., Pondy, Frost, Morgan & Dandridge, 1983; Pettigrew, 1979; Feldman, 1986; Nadler & Tushman, 1990; Trice & Beyer, 1991; Alvesson, 1993; Burnes, 1992; Cummings & Worley, 1997; Schein, 2000) have noted the importance of symbolic leadership. Symbolism may be employed through various leader actions, such as organizational design (Nadler & Tushman, 1990), rewards and recognition (Hall, Rosenthal & Wade, 1993), physical space (Turner & Meyerson, 2000), and stories (Pfeffer, 1981). Cummings and Worley (1997) hypothesized that symbolic leadership is a key mechanism in driving cultural change.

It is important to recognize that organizational change is very stressful to many organizational members, which can cause dysfunctional emotions related to the change (Brooks & Bate, 1994; Whelan-Berry, Gordon & Hinings, 2003; Taylor-Bianco & Schermerhorn, 2006). Resistance to change is well documented in the literature and most researchers agree that the resistance cannot be ignored if the change initiative is to succeed (e.g., Lewin, 1951; Recardo, 1995; Strebler, 1996). Therefore, leaders also need to take action related to managing the resistance to the changes. Recardo (1995) highlighted a number of actions that leaders can take to manage employees' dysfunctional emotions and resistance to the change initiative. For example, the communication of a well developed vision of the change will convey the fact that something needs to be changed, while creating a sense of urgency in employees to act

(Recardo, 1995). Strebler (1996) noted the importance of management persuading employees to personally contribute to the change initiative. Another key strategy to address resistance to change is ensuring that senior management leads the change by acting as role models and demonstrating their personal commitment to the change initiative (Recardo, 1995).

Based on this theorizing, the hypothesis relating to leadership actions is:

H2: The more that the organizational leaders take actions to lead the change initiative, the greater the cultural change.

### 3.3.3 Changes in Leadership Personnel

There is considerable organizational change literature concerning changes in leadership personnel. Farmer, Slater and Wright (1998) hypothesized that of all kinds of organizational change, changes in leadership personnel are among the most common. A number of researchers (e.g., Kilmann, Saxton, Serpa & Associates, 1985; Siehl, 1985; Williams, Dobson & Walters, 1989; Schein, 1985; Sull, 1999; Neuhauser, Bender & Stromberg, 2000; Mader, 2006; Sliwka, 2007) have highlighted the need to select a new leader in order for the culture change initiative to be successful. According to Trice and Beyer (1993):

“Cultural reform from within may be a genuinely rare phenomenon. That’s not to say that there are not numerous attempts made by emergent leaders to try to change their organizations’ culture. Most are probably unsuccessful” (p. 276).

Some researchers (e.g., Dyer, 1984), have hypothesized that the selection of a new leader is critical for an organizational culture shift, as this new leader has a unique opportunity to introduce new values, perspectives, and assumptions into the organization. Other researchers (e.g., Smith, 1996; Sull, 1999) have hypothesized that some organizational leaders resist change and need to be replaced. Sliwka (2007) found that managers are reluctant to alter strategic decisions they themselves made in the past due to reputational concerns. Smith (1996) hypothesized that “high-place” resistors (p. 300) are a very serious problem. He claimed that “one of the most common laments of chief executives who have failed or are struggling with change is that they did not act soon enough to replace top people who would not change” (Smith, 1996, p. 300). Sliwka’s (2007) study found that it may be advantageous to dismiss managers and replace them, even with less talented managers if necessary, when strategic change needs to be enforced.

In relation to change initiatives, Senge (1999) encouraged a focus on the “leadership community” (p. 16) rather than simply focusing on one organizational leader. In terms of changing the leadership personnel, some researchers (e.g., Siehl, 1985; Gersick, 1991; Kotter & Heskett, 1992) have concluded that in addition to introducing one new leader for the change initiative, additional changes in leadership personnel must be made. For example, Kotter and Heskett (1992) hypothesized that new incumbents in key positions are essential. Siehl (1985) hypothesized that an internal revolution needs to be created by installing an entirely new management team.

The literature review strongly suggests that changing the leadership team may provide a driver for positive change. A key benefit of replacing the leaders is the introduction of new values and perspectives to the organization by the new leaders (e.g., Dyer, 1984). As well, new leaders are often more open to the changes that are required, given that they have no previous history with the organization (Sliwka, 2007).

Based on this theorizing, the hypothesis relating to changes in leadership personnel is:

H3: The more changes in leadership personnel, the greater the cultural change.

The next section discusses turnover of personnel generally.

### 3.3.4 Turnover of Personnel

Often, employee turnover may result from the organizational change initiative. For example, current organizational members may decide to leave voluntarily if they feel alienated due to their non-acceptance of the vision of the organizational culture change initiative. However, employees who do not fit with the desired culture may not leave voluntarily, and they may need to be terminated (Harrison & Carroll, 1991). Not only can outsiders provide a source of new skills for the organization, they can also be a source of the values required for a successful culture shift (Schwartz & Davis, 1981). In these cases, the organization's recruitment process should be managed to ensure that the new employees fit with the desired culture through careful evaluation of the candidates, and by motivating desirable candidates to join the organization (Harrison & Carroll, 1991).

It is important to realize that major changes in personnel may be important to effect a shift in the organizational culture (Schwartz & Davis, 1981). Recruitment and selection of new employees who exhibit the desired behaviour provide important opportunities for the culture change initiative because they have not embraced current organizational values, and may, instead, be socialized to adopt the desired new values (Allaire & Firsirotu, 1984; Martin, 1985; Wiener, 1988; Williams, Dobson & Walters, 1989; Schein, 1992; Oden, 1997; Kotter & Heskett, 1992; Burnes, 1992; Schmuacher, 1997; Neuhauser, Bender & Stromberg, 2000; Lindquist, 2000; Schneider, Gunnarson & Niles-Jolly, 2001; Alvesson, 2002).

Based on this theorizing, the hypothesis related to turnover of personnel is:

H4: The more employee turnover, the greater the cultural change.

### 3.3.5 Changes in Human Resources Practices

The integration of human resources practices in relation to the desired culture change is important (Williams, Dobson & Walters, 1989; Burnes, 1992; Shareef, 1994; Oden, 1997), and there are a number of human resources practices that can play a significant role. These range from the recruitment and selection of new employees who display the desired behaviour, through training employees in relation to the desired culture, to incentives and rewards.

Subsection 3.3.4 noted the importance of employee turnover in relation to culture change and the importance of recruiting and selecting new employees who exhibit the desired

behavior for the culture change sought (e.g., Linquist, 2000). As recruiting is typically part of the human resources function, recruitment is discussed in this subsection. As noted by Schneider, et al. (2001), the *kinds* of employees recruited and selected send strong messages about organizational priorities. Sometimes the recruitment and selection of new employees who fit with the new culture is done in conjunction with replacing employees who do not fit with the desired culture (Alvesson, 2002).

The literature also highlights the need to socialize these newcomers based on the desired culture (Sathe, 1985; Cummings & Worley, 1997; Schneider, Gunnarson & Niles-Jolly, 2001; Alvesson, 2002). According to Kotter and Heskett (1992), in a strong culture environment, almost all managers share a set of relatively consistent values and methods for conducting business, and new employees adopt these values very quickly. Additional means of socialization involve a number of human resources practices, including explicit orientation programs, and reward and punishment systems (Harrison & Carroll, 1991). Establishing mentor relationships (Bernick, 2001) and role models (Baker, 1980; Siehl, 1985; Williams, Dobson & Walters, 1989; Neuhauser, Bender & Stromberg, 2000) can also help to facilitate this socialization and assimilation.

Another important human resource practice involves the need to train employees in relation to the sought after changes (Baker, 1980; Malinconico, 1984; Allaire & Firsirotu, 1984; Siehl, 1985; Williams, Dobson & Walters, 1989; Shareef, 1990; Zamutto & O'Connor, 1992; Barzelay, 1992; Schein, 1992; Kim, Pindur & Reynolds, 1995; Oden, 1997; Demarie & Keats, 1995; Whelan, 1997; Wetlaufer, 1999; Lindquist, 2000;

Schneider, Gunnarson & Niles-Jolly, 2001; Alvesson, 2002). According to Whelan-Berry, Gordon and Hinings (2003):

“Training is usually more related to the technical aspects of change, ensuring that employees have acquired the necessary skills to carry out a new task, although it can also convey new values, frameworks and approaches” (p. 103-104).

It is imperative that individuals change their behaviours in order for a change initiative to be successful (Cameron & Quinn, 1999). Once the vision for the change initiative has been developed, this needs to be operationalized through human resources practices at the individual employee level so that all employees understand what is expected of them, and how their performance will be evaluated in relation to the change initiative. Therefore, employee performance evaluation systems that relate to the organizational change initiative are critical for the success of the organizational change (e.g., Charan, 2001; Kotter & Cohen, 2002; Armenakis, Harris & Field, 1999). Misalignment of the employees’ performance evaluation criteria and the desired results of the change initiative can be very harmful (Kotter & Cohen, 2002). The performance appraisal system needs to reward and encourage behaviour that supports the desired culture (Alvesson, 2002). Supervisors need to communicate to employees what the expectations are in relation to the change initiative, and employees’ performance in this regard needs to be monitored (Armenakis & Bedeian, 1999).

Incentives also provide important drivers of change (Schein, 1992; Porras & Hoffer, 1996; Whelan, 1997; OECD, 2000). The alignment of formal rewards in relation to the organizational change initiative can act as an important motivator (Allaire & Firsirotu,

1984; Siehl, 1985; Nadler & Tushman, 1990; Hall, Rosenthal & Wade, 1993; Schein, 2000; Schneider, Gunnarson & Niles-Jolly, 2001; Cameron & Green, 2004). Related human resource practices can include financial incentives (Baker, 1980; Williams, Dobson & Walters, 1989), appraisals (Siehl, 1985; Williams, Dobson & Walters, 1989), recognition (Baker, 1980; Kotter & Heskett, 1992), public rewards (Schumacher, 1997) and promotions (Lindquist, 2000).

It is not always possible to formally reward employees. Rainey (1989) noted that numerous studies show that public managers and employees are of the view that they have greater constraints in relation to pay and promotion as compared to the private sector, for example, given their reliance on governmental appropriations for financial resources. Another important constraint relates to the possibility that some public service managers may not be able to provide financial incentives to employees due to union requirements. This is an important consideration for the Canadian federal public service as more than 85 per cent of Canadian federal government employees are unionized (Government of Canada, 2003). Examples of informal reward systems that are at the disposal of public sector managers include support for organizational funding requests, or lack of support if there is non-compliance with the desired changes (Barzelay, 1992). These types of informal reward systems also provide an opportunity to drive the change (Schein, 1992; Schneider, Gunnarson & Niles-Jolly, 2001).

Based on this theorizing, the hypothesis related to changes in human resources practices is:

H5: The more modifications to human resources practices that are made to support the change initiative, the greater the cultural change.

### 3.3.6 Communication

Communication is another important driver of successful change initiatives (e.g., Baker, 1980; Turnstall, 1985; Sathe, 1985; Williams, Dobson & Walters, 1989; Schein, 1992; Kim, Pindur & Reynolds, 1995; Schneider, Brief & Guzzo, 1996). Key aspects of communication relating to culture change initiatives include what needs to be communicated, the frequency of communication, and the need for multiple communication channels.

Communication is an important means of increasing organizational members' understanding and commitment to the change initiative (Kotter & Cohen, 2002). According to Whelan-Berry, Gordon and Hinings (2003), not only does communication act as a change driver in terms of providing a means for developing and understanding the change initiative, but it also shapes the change initiative as it moves forward by keeping organizational members informed of the status of the change initiative and addressing resistance to the change as the resistance arises. Schein (1985) also noted the importance of communication in addressing resistance to change, and he argued that it is important for management to clearly communicate why the change is necessary. Presumably, in order to address resistance to change, two-way communication is

required. Conversely, poor communication has been raised as one of the most frequently cited reasons for the failure of change initiatives (Richardson & Denton, 1996).

Leaders have a particularly important role in relation to communication about the change initiative. Schein (1985) highlighted the importance of the role of the executive in sending a clear message about why the change is needed. As was noted by Machiavelli (1515, as cited in 1950):

“There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order...” (p. 21).

More recent research continues to emphasize that resistance to change is to be expected when embarking on an organizational change initiative, and this resistance must be addressed (Harvey & Brown, 1996). One way to address this resistance is for management to engage employees emotionally in understanding why the existing approach is not working (Beer & Nohria, 2000; Kotter & Cohen, 2002). Burns (1992) noted the need to pay special attention to the ‘opinion leaders’ in the organization in order to gain organizational members’ acceptance of the change. Various researchers (e.g., Williams, Dobson & Walters, 1989; Brooks & Bate, 1994; Cameron & Green, 2004) have noted that acceptance of the need to change is key for a successful culture change initiative. For example, it is important for the leaders of the change initiative to persuade organizational members that the current organizational culture will not achieve the desired outcomes for the organization (Koehler & Pankowski, 1997; Thompson & Sanders, 1998).

In addition to communicating the need for the change, it is imperative that the future direction is clearly communicated. From the outset of the change initiative, effective communication about the vision and strategies for the culture change is important (e.g., Nadler & Tushman, 1990; Kotter & Heskett, 1992). Communication about the values that are being sought through the change initiative is also key (Williams, Dobson & Walters, 1989; Harvey & Brown, 1996).

In an empirical study, Schumacher (1997) found that it is important for leaders to communicate regularly throughout the change initiative. Regular communication helps to emphasize important issues and motivate organizational members to continue working on the change initiative (Nadler & Tushman, 1990). Charan (2001) cautioned that leaders must also be sensitive to the tone and content of everyday conversations. Further, to be effective, the communication should be two-way, that is, both telling and listening (Nadler & Tushman, 1990; Barzelay, 1992; Osborne & Brown, 2005; Ryan, Williams, Charles & Waterhouse, 2008). Two-way communication creates meanings through interaction and relationship-building between the participants (Osborne & Brown, 2005). Alvesson (2002) noted that leaders' every day communication around practical problems offer important opportunities for a continuous influence of meaning, and have much greater impact than big ceremonies and mission statements.

Hall, Rosenthal and Wade (1993) noted that a variety of methods of communication relating to the change initiative are important. There are a number of vehicles by which information about the culture change initiative may be delivered. Cultural

communication takes place in both explicit and implicit forms (Sathe, 1985). Explicit communication vehicles include: kickoff events, conferences for managers, employee meetings (Oden, 1997); e-mails from the President (Wetlaufer, 1999); announcements to employees (Siehl, 1985); and employee newsletters (Barzelay, 1992). Implicit communication examples include ceremonies, stories, and dress (Sathe, 1985). Nadler and Tushman (1990) also stress the important role that humour can play in the change initiative.

Based on this theorizing, the hypothesis relating to communication is:

H6: The more extensive the communication about the change initiative, the greater the cultural change.

The next section discusses other enabling changes in structure and processes in the organization.

### 3.3.7 Enabling Changes in Structure and Processes

In addition to the changes in human resources practices discussed in subsection 3.3.5, there are additional enabling changes in structures and processes in the organization are also key drivers of organizational culture change. There are a number of mechanisms through which these changes may take place. For example, new organizational performance measures and new organizational systems and processes that are congruent with the culture change initiative are important. Further, the organizational structure and the physical environment need to be supportive of the culture change being sought. These factors are discussed below.

Many researchers (e.g., Nadler & Tushman, 1990; Barzelay, 1992; Schein, 1992; Hall, Rosenthal & Wade, 1993; Galpin, 1996b; Vollman, 1996; Schneider, Brief & Guzzo, 1996; Hennessey, 1998; Cameron & Green, 2004) agree that new organizational performance measures that relate to the culture change initiative are important. In addition to financial performance measures, qualitative measures need to be developed, for example, related to behaviour (Nadler & Tushman, 1990) and quality (Kotter & Heskett, 1992; Munck, 2001). Systems and processes must be established to measure, monitor and assess behaviour and results related to the change initiative, and corrective actions must be taken when necessary to achieve the desired results (Nadler & Tushman, 1990). According to Bernick (2001), in order to experience successful organizational culture change, it is important to measure the progress early, and measure it often.

Restructuring systems throughout the organization are also important (Kotter & Heskett, 1992; Williams, Dobson & Walters, 1989). Examples of systems that should be restructured include: control systems (Baker, 1980; Nadler & Tushman, 1990), planning and budgeting systems (Davis, 1984; Barzelay, 1992; Cameron & Green, 2004) and management information systems (Davis, 1984). It is essential that all key systems in the organization are congruent and supportive of the goals of the change initiative.

In implementing a strategic organizational shift, such as is the case with an organizational culture change, the organization needs to be restructured, as modifications to the organizational structure help to embed the changes (Baker, 1980; Siehl, 1985; Williams,

Dobson, & Walters, 1989; Schwartz & Davis, 1981; Nadler & Tushman, 1990; Trice & Beyer, 1991; Barzelay, 1992; Hall, Rosenthal & Wade, 1993; Kim, Pindur & Reynolds, 1995; Porras & Hoffer, 1996). Altering the organizational structure, along with the other systems and processes will result in mutual and positive reinforcement of the overall changes that are necessary to achieve the desired culture (Schwartz & Davis, 1981). Examples of structural changes include setting up client service teams or eliminating management layers (Galpin, 1996b).

Matching the physical environment of the workplace to the desired organizational culture can be an important way to help to institutionalize the changes (Baker, 1980; Siehl, 1985; Nadler & Tushman, 1990; Porras & Hoffer, 1996; Galpin, 1996b; Turner & Meyerson, 2000). For example, if the desired culture relates to working effectively in teams, office arrangements should be reconfigured to promote a team concept. Another example is using telecommunications to connect people who need to interact from a distance (Galpin, 1996b).

Based on this theorizing, the hypothesis relating to enabling changes to structure and processes is:

H7: The more modifications to organizational structure and organizational processes that are made to support the change initiative, the greater the cultural change.

### 3.3.8 Summary of Research Model and Hypotheses

The research model presented in Figure 3 suggests that seven independent variables predict the organizational culture change. The seven independent variables include: vision, leadership actions, changes in leadership personnel, turnover of personnel, changes in human resources practices, communication, and enabling changes in structure and processes. Based on past theory and research, these independent variables, or categories of change drivers, should play a significant role in achieving the desired organizational culture changes.

## 3.4 The Control Variables

There are two control variables that have been included in this research: organization size and organization type. These control variables will be discussed in the next subsections.

### 3.4.1 Organization Size

Organizations included in this research range from very small to very large. Organization size has implications for an organizational change initiative and there are a number of reasons for this (Bloodgood, 2006). For example, large organizations typically possess greater resources, which may enhance the organization's ability to change (Hannan & Freeman, 1989). Conversely, smaller organizations may be less bureaucratic (Pugh,

Hickson, Hinings & Turner, 1969), enabling them to change more quickly (Bloodgood, 2006).

### 3.4.2 Organization Type

While the most common type of organization included in this study is a government department, there are also other types such as agencies, tribunals, commissions, a court, and a Crown corporation. Although the types of organization included in this study are typically regulated by the same legislation, there are key characteristics that differentiate departments and the other types of organizations. For example, agencies, tribunals, commissions and Crown corporations may enjoy greater autonomy and flexibility than government departments due to less political interference. As well, agencies, tribunals, commissions and Crown corporations are often less bureaucratic, which may result in faster decision making and less record keeping than government departments. It is expected that the effects of organizational type will be independent of organizational size. While some of the agencies, tribunals, and commissions have a smaller number of employees, some have a larger number of employees. For example, Correctional Service of Canada, an agency, has the second largest number of employees of the organizations included in this study (13,409). Conversely, Status of Women Canada, a department, has only 309 employees. Thus organization type will be used as a control variable in addition to organization size.

Chapter Four discusses measures of organizational culture. Chapter Five describes the methodology used in this research.

## **4 MEASURING ORGANIZATIONAL CULTURE**

This chapter begins with an overview of the research model. This is followed by a discussion of the relationship between organizational culture and organizational climate, and presents the case for using organizational climate measures to measure organizational culture. This is followed by a discussion relating to culture dimensions found in the literature. The majority of this chapter is dedicated to a discussion of the culture dimensions that relate to a number of the questions in the Canadian federal government's Public Service Employee Survey (PSES).

### **4.1 Overview of the Research**

This research examines the drivers of change in the context of a Canadian federal government change initiative related to the PSES. To provide the context for the following discussion of the research, the next subsection describes this change initiative.

#### **4.1.1 The Canadian Federal Government's Culture Change Initiative**

Chapter 1 noted that change is underway at all levels of government, in most countries (Ingraham, Thompson & Sanders, 1998). Like other governments, the Canadian federal government has implemented many organizational change initiatives in the past few decades. Recent examples include Public Service 2000, La Rèeve, and Modern Comptrollership. In 1999, the Canadian federal government initiated an organizational culture change initiative to shift the Canadian federal government's workplace culture so

that the public service values were clear and all employees were treated with dignity and respect (Treasury Board of Canada, 2002b). In an unprecedented step to track the progress of a change initiative, the Canadian federal government invited all public service employees to communicate their views related to their work and workplaces through a survey – the Public Service Employee Survey (PSES). The survey was designed to gauge employee opinion on a wide range of issues related to the health of the Canadian federal public service, individual organizations and work units. At the time, the 1999 survey was the most extensive public service survey ever conducted (Treasury Board of Canada, 2002a). More than 200,000 employees working in approximately 70 organizations were encouraged to complete the PSES. The PSES was a key component of this change initiative as it allowed the Canadian federal government to track the results and to take corrective actions where necessary. Following the 1999 survey, considerable effort was put into this culture change initiative by organizations within the Canadian federal government. For example, more than one hundred initiatives stemming from the 1999 survey were developed in central agencies and departments across the Public Service to improve the workplace (Treasury Board of Canada, 2002a). The Treasury Board of Canada developed an inventory of human resources initiatives related to the 1999 PSES, which was posted to their web-site (Oct. 2001). The following are some examples of the initiatives listed in this inventory:

- Natural Resources Canada offered one-day career planning workshops in which employees learned about various career-planning tools. This workshop was also intended to help employees develop awareness about career options, and learn how to manage their professional goals.

- Health Canada developed half-day change management workshops for managers and supervisors to assist their employees in dealing with periods of uncertainty.
- Environment Canada developed various communication tools to keep employees informed of the actions taken to address the issues raised in the survey. These tools included monthly bulletins from the Deputy Minister, and brochures published in June 2000 and March 2001.

The PSES was conducted again in 2002, retaining 39 survey questions from the 1999 PSES. The following describes the rationale and approach used to determine the questions that were included in the 2002 survey:

“The 2002 questionnaire was developed in consideration of recommendations from an interdepartmental/union working group composed of representatives of small, medium and large departments and agencies, Statistics Canada, central agencies, bargaining agents and external advisors. The questions for the survey were chosen based on their usefulness to employees, their managers and bargaining agents in helping to identify problems and provide concrete solutions to improve the work environment and service to Canadians. Topics range from an employee's job world, to communicating with supervisors, to skills and career, harassment and discrimination, client service, official languages and labour relations. Almost half of the questions are repeated from 1999, while the remainder are either revised from 1999 or explore new themes for 2002. The questionnaire was tested by Statistics Canada using focus groups in Edmonton, Ottawa, Montréal and Halifax. Consultations were also held with departments, agencies and bargaining agents” (Treasury Board of Canada, 2002a).

The same survey questions administered in 2002 were administered again in 2005. The results of these three PSES contain a wealth of data on changes over time.

All three surveys were sent to indeterminate employees, seasonal employees, employees on assignment, term employees and casual employees. Ministers' exempt staff, Governor-in-Council appointments, students and private sector contractors or consultants were not eligible to participate in the survey (Treasury Board of Canada, 2002a). There were 46 large departments and agencies, (generally defined as 100 employees or more) and 23 small departments and agencies, for a total of 69 organizations that participated in the 2002 survey. In the 2005 survey, 74 organizations participated – 53 large organizations and 21 small organizations.

Approximately 104,500 employees responded to the 1999 survey, which represented 55 per cent of those invited to participate. In 2002, approximately 95,000 employees responded, which represented a response rate of 58 per cent. The 2005 PSES yielded an even higher response rate of 59 per cent, with approximately 106,000 employee responses. The Government of Canada has interpreted this increase in the 2005 employee responses as a high level of confidence in the reliability of the survey results (Public Service Human Resources Management Agency of Canada, 2006).

Following the 2005 PSES, the Canadian federal government has continued to assess organizational results against specific indicators including a management accountability framework (MAF) that was developed for the federal government organizations. For example, the Department of Canadian Heritage's MAF included indicators related to values-based leadership and organizational culture, which were assessed as “strong”. According to the Treasury Board of Canada, “...The assessment is based exclusively on

the perceptions of employees from the 2005 Public Service Employee Survey (PSES)...” (Treasury Board of Canada Secretariat, 2006).

The following excerpt from the Treasury Board of Canada web-site provides an indication of the valuable role that the PSES are playing in measuring the progress of this culture change initiative for the Department of Canadian Heritage:

“The 2005 MAF assessment described that the Department of Canadian Heritage (PCH) is conducting annual employee/manager surveys to measure engagement and organization health matters. This includes indices for learning culture, business culture, and fairness perception. As well, leaders at PCH consistently inform employees, through their dialogue and actions, of the importance of values-based ethical behaviours. The recent PSES results reveal that such initiatives are making real progress, as 60% of employees believe senior management will try to resolve concerns raised in the survey, 8% above the PS average. The 2005 MAF assessment also described that PCH is providing conflict resolution training for employees and managers, specifically concerning issues regarding the internal disclosure of wrongdoing. Considering the recent PSES results, it appears that such efforts are creating positive outcomes as 77% of employees know where to go to disclose wrongdoing, 9% above the PS average. Overall, PCH is encouraged to share best practices with other departments and to continue building its internal processes and achieving outcomes that work towards a strong performance in values and ethics.” (Treasury Board of Canada Secretariat, 2006).

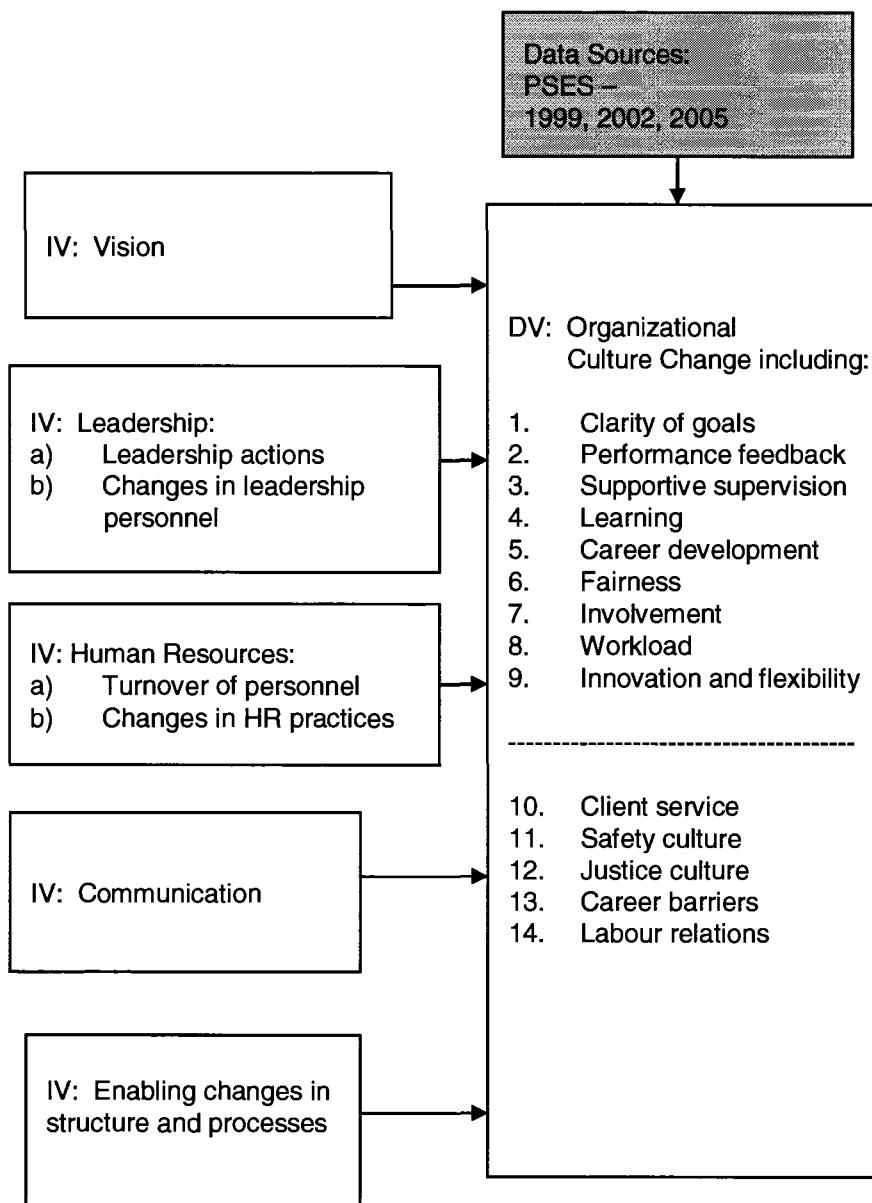
The next section provides an overview of the measurement model.

#### 4.1.2 Overview of the Measurement Model

This research measures the change in organizational culture across 51 different organizations in the Canadian federal government. The unit of analysis is the organization. As is depicted in Figure 4, measures of the dependent variables were derived from the three PSES. The remainder of this chapter will focus on the

development of the 14 dependent variables derived from the PSES. The next subsection describes the relationship between organizational culture and organizational climate.

**Figure 4: Measuring Organizational Culture Change in the Canadian Federal Government**



## 4.2 Relationship of Organizational Culture and Organizational Climate

This section presents a discussion of the relationship of organizational culture and organizational climate, including measurement considerations. As was indicated in Chapter 2, there are many competing definitions of organizational culture. This is because there is virtually no agreement regarding what organizational culture does, what it should mean, and how organizations should use it (Schein, 2000). As explained in subsection 2.3.2, Schein's definition of culture has been adopted here as the one that best reflects organizational issues and meanings. Schein defines culture as:

“a pattern of basic assumptions that a group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems” (Schein, 1990, p. 111).

Like organizational culture, a number of different definitions have been offered for organizational climate (Anderson & West, 1998). Further, there has been a proliferation of climate dimensions (Patterson, West, Shackleton, Dawson, Lawthom, Maitlis, Robinson & Wallace, 2005), such as fairness (e.g., Henley & Price, 2002), performance feedback (e.g., Kopelman, 1976) and supportive supervision (e.g., Patterson et al., 2005). Organizations are complex, and different things are important to different organizations, which results in the identification of numerous dimensions. The definition of organizational climate that best reflects this breadth of conceptualization is that organizational climate is the:

“Perceptions that organizational members share of fundamental elements of their organization” (West, Smith, Feng, & Lawthom, 1998, p. 262).

Since the 1960s, the concept of organizational climate has received considerable attention from organizational sociologists and applied psychologists (Anderson & West, 1998).

Glick (1985) claimed that:

“Organizational climate research has had a prominent, if not glorious, history in organizational science” (p. 601).

Various researchers have highlighted the relationship of organizational climate to organizational culture (e.g., Rentsch, 1990; Reichers & Schneider, 1990; Denison, 1996).

For example, one of the topics of interest to both climate researchers and culture researchers is meaning in organizations (Rentsch, 1990). Reichers and Schneider (1990) identified a number of relationships between climate and culture, including the following:

- both climate and culture address the ways by which organizational members make sense of their environment;
- they are learned, mainly through the socialization process and through symbolic interaction among organizational members;
- culture and climate are both attempts to identify the environment that affects the behavior of organizational members (Reichers & Schneider, 1990).

Patterson et al., (2005) noted that the terms climate and culture are sometimes used interchangeably. Schneider, Brief and Guzzo (1996) also highlighted the relationship of organizational climate and organizational culture:

"Changing the climate is important to changing what an organization's members *believe* and what they believe their organization *values*. These beliefs and values constitute the organization's culture.....climate and culture are interconnected" (p. 9).

There is clearly overlap between organizational climate and organizational culture (Reichers & Schneider, 1990). As was noted in Chapter 2, there are multiple levels of culture. For example, Schein (1999b) highlighted three levels of culture:

1. Artifacts, which include the visible organizational structures and processes;
2. Espoused values, which include strategies, goals and philosophies; and
3. Underlying assumptions, which include unconscious, taken-for-granted beliefs, perceptions, thoughts and feelings.

Climate can best be understood as the more visible practices included in the first two levels of Schein's (1999b) three levels of culture, such as organizational structures, processes, strategies and goals. This approach also corresponds to the definition of climate identified by Reichers and Schneider (1990): "...the shared perception of the way things are around here. More precisely, climate is shared perceptions of organizational policies, practices and procedures" (p. 22). Since unconscious underlying assumptions are not amenable to measurement, quantitative research on culture necessarily measures organizational climate.

Various researchers (e.g., Lim, 1995; Schein, 2000) have noted some shortcomings in the literature relating to measuring organizational culture. These include an absence of published data on the consensual validity of questionnaires, disagreement involving how

culture should be measured, and generally poor psychometric properties of these instruments (Lim, 1995). According to Desatnick (1986) the measurement of organizational climate is the best means to determine an organization's culture. Further, Schein (2000) concluded that because organizational climate has had a longer research tradition than culture, climate has better defined measures than organizational culture. Other researchers, (e.g., Goodman & Svyantek, 1999) have used organizational climate to operationally define dimensions of organizational culture (Patterson, et al., 2005). Therefore, organizational climate measures will be used to measure organizational culture in this research.

The following section provides a discussion relating to the various dimensions of organizational climate found in the literature.

#### 4.3 Organizational Climate Dimensions

An initial assumption of theory and research related to organizational climate was that social environments would be characterized by a limited number of climate dimensions (Patterson et al., 2005). For example, Campbell, Dunnette, Lawler and Weick (1970) identified the following four dimensions common to a number of climate studies: individual autonomy, degree of structure imposed on a situation, reward orientation, and consideration, warmth and support. However, when Glick (1985) conducted his review of the literature, he encountered a proliferation of climate dimensions. Various

researchers (e.g., Jackofsky & Slocum, Jr., 1988; Joyce & Slocum, 1984) have found that multiple climates can exist within a single organization.

According to Patterson et al. (2005), one of the best-known general measures of organizational climate was developed by Litwin and Stringer (1968), and is called the Organizational Climate Questionnaire. This questionnaire includes 50 items that assess nine dimensions of climate (Litwin & Stringer, 1968). However, other researchers such as Muchinsky (1976) and LaFollette and Sims (1975) have argued that a six-factor structure is more appropriate and pointed out reliability issues with Litwin and Stringer's (1968) questionnaire. A review conducted by Rogers, Miles and Biggs (1980), determined that most studies revealed six factors, however, their review also determined that there was virtually no agreement among researchers in terms of which items loaded best on the different factors. Table 3 provides examples of climate dimensions found in the literature.

**Table 3: Sample of Dimensions of Organizational Climate**

Organizational Climate Dimension	Literature Sources
Rewards	Likert, 1967; Litwin & Stringer, 1968; Pritchard & Karasick, 1973; Dieterly & Schneider, 1974; Downey, Hellriegel & Slocum, 1975; Kopelman, 1976; Newman 1977; Jackofsky & Slocum, 1988; Burke & Litwin, 1992; Ostroff, 1993; Anderson & West, 1998.
Structure	Muchinsky, 1976; Litwin & Stringer, 1968; Pritchard & Karasick, 1973; Dieterly & Schneider, 1974; Downey, Hellriegel & Slocum, 1975; Muchinsky, 1976; Bourgeois, McAllister & Mitchell, 1978; Schnake, 1983; Ostroff, 1993.
Decision-making	Likert, 1967; Downey, Hellriegel & Slocum, 1975; Lafollette & Sims, 1975; Jackofsky & Slocum, 1988; Keller, Slocum & Susman, 1974; Newman, 1977; Schnake, 1983; West, Smith, Feng &

	Lawthom, 1998.
Autonomy	Pritchard & Karasick, 1973; Dieterly & Schneider, 1974; Schnake, 1983; Ostroff, 1993; Patterson et al., 2005.
Supportive supervision	Hoiberg & Berry, 1978; Schnake, 1983; Patterson et al., 2005.
Communication	Likert, 1967; LaFollette & Sims, 1975; Drexler, 1977; Keller, Slocum & Susman, 1974; Anderson & West, 1998.
Innovation and flexibility	Payne & Pheysey, 1971; Pritchard & Karasick, 1973; Patterson et al., 2005.
Involvement	Hoiberg & Berry, 1978; Patterson et al., 2005.
Safety climate	Hoffman & Stetzer, 1998; Huang, Ho, Smith & Chen, 2006.
Administrative efficiency	Likert, 1967; Payne & Pheysey, 1971; Sparrow & Gaston, 1996; West et al., 1998.
Justice climate	Colquitt, 2001; Mastrangelo & Popovich, 2000; Roberson, 2006.
Performance feedback	Lafollette & Sims, 1975; Schnake, 1983; Kopelman, 1976; Ellinger, Ellinger & Keller, 2003; Patterson et al., 2005.
Pressure to produce	House & Rizzo, 1972; Newman, 1977; Lafollette & Sims, 1975.
Client service	Schneider, Wheeler & Cox, 1992; Schneider, White, Paul, 1998; West, Smith, Feng & Lawthom, 1998; Schneider, Gunnarson & Niles-Jolly, 2001.
Warmth	Downey, Hellriegel & Slocum, 1975; Litwin & Stringer, 1968; Ostroff, 1993.
Clarity of organizational goals	Hoiberg & Berry, 1978; Locke, 1991; West et al., 1998; Patterson et al., 2005.
Career development/barriers	Lafollette & Sims, 1975; Gould & Penley, 1984; West et al., 1998.
Learning	Sundgren, Dimenas, Gustafsson & Selart, 2005; Wang, Ying, Jiang, & Klein, 2005; Lim & Morris, 2006.
Workload	Maconachie, 2005; Tyagi, 1982; Heaney, Price & Rafferty, 1995; Daly, 2002.
Labour relations	Angle & Perry, 1986; Blyton, Dastmalchian & Adamson, 1987; Deery, Erwin & Iverson, 1999; Deery & Iverson, 2005; Masters, Albright & Eplion, 2006.
Fairness	Parker, Dipboye & Jackson, 1995; Mastrangelo & Popovich, 2000; Henley & Price, 2002; Konovsky & Cropanzano, 1991.

Some of the same dimensions that appear in the culture literature, such as decision-making, communication and rewards (Schwartz & Davis, 1981), and leaders' actions and behaviours (Schneider, Gunnarson, & Niles-Jolley, 2001; Albrecht, 2005) are also cited in the climate literature. This further supports the use of organizational climate measures for this organizational culture research.

The next subsection discusses measuring the culture of the Canadian federal public service using select dimensions.

#### 4.3.1 Organizational Culture Change Dimensions: 1999 to 2005

As was noted in section 2.3.3, many researchers (e.g., Jick, 1995) are of the view that culture change typically takes at least five years. The primary focus of this research involves 39 of the questions from the 1999 Public Service Employee Survey (PSES) that were repeated in the 2002 PSES and the 2005 PSES. The data involving these particular questions cover a six year period, which constitutes a reasonable length of time to observe changes in organizational culture. The dimensions of organizational culture that have been addressed by these questions are featured in this section.

All 39 questions from the 1999 PSES that were repeated in 2002 and 2005 were considered for inclusion in this research. Questions were first sorted into groups that reflected various culture dimensions. Factor analyses, which is a set of statistical techniques used to assess empirically the basic structure underlying a set of items (Rogers, Miles & Biggs, 1980), were then performed to ensure that each item loaded on

to only one factor. The principal component analysis extraction method was used for the factor analyses. However, factor analysis is not appropriate for scales where there are only two items (Tabachnick & Fidell, 1983). In the cases where there are only two items, the correlation, as well as the reliability coefficients, were considered. In these cases, as well as for the other culture dimensions, to determine the reliability of these culture dimensions, Cronbach's alpha was calculated for each scale. Cronbach's alpha is a common technique to assess scale reliability (Peter, 1979) and it provides a good estimate of reliability in most situations (Nunnally, 1978). Ultimately, using the data from the 2002 PSES, the culture items included in this study were chosen based on decision rules that included scale reliability, comparability to other published scales, a undimensional factor structure or high correlations, and face validity. Scale reliability was considered based on Nunnally's (1978) recommended a reliability minimum of .70. Factor loadings were considered based on Nunnally's (1978) norm of .30. Any deviation from these norms will be highlighted in the following sections. This resulted in measures of nine organizational culture dimensions, for the six year period 1999 to 2005, that constitute the primary focus of this research. The nine culture dimensions addressed by the PSES were: clarity of goals, performance feedback, supportive supervision, learning, career development, involvement, fairness, workload, and innovation and flexibility. The following section provides information related to each of the culture dimensions measured in this research over the period 1999 to 2005. For each culture dimension, there is a brief discussion of the construct, as well as a table that presents the items from the PSES survey, the factor loading or correlation for each of the questions, and the Cronbach's alpha.

#### 4.3.1.1 Clarity of Goals

In order for goals to be attained, they need to be clear (Patterson et al, 2005). Organizational culture literature relating to the clarity of goals identifies goals at various levels within the organization. For example, the organization as a whole may be considered (e.g., Patterson et al., 2005), the departmental level may be the focus (e.g., West, Smith, Feng & Lawthom, 1998), and some research considers the clarity of goals at the level of the individual (e.g., Hoiberg & Berry, 1978). In the PSES, there were two questions relating to clarity of goals at the individual level. As is shown in Table 4, these two items are highly correlated. As well, they form a highly reliable scale, with a Cronbach's alpha of .86.

**Table 4: Clarity of Goals: Survey Questions, Correlation and Cronbach's Alpha**

Clarity of goals (1999-2005)	Questions:	Correlation
Cronbach's Alpha: .86	<p>My immediate supervisor assesses my work against identified goals and objectives.</p> <p>My immediate supervisor and I discuss the results I am expected to achieve.</p>	.75

#### 4.3.1.2 Performance Feedback

As noted by Schnake (1983), organizational members should receive regular evaluation against agreed upon goals and standards. This helps to ensure that efforts are correctly

directed, and contribute to the achievement of the goals. Patterson et al. (2005) also highlighted the importance of being able to measure performance. In the PSES, there were two questions relating to performance feedback. As is shown in Table 5, these two items are highly correlated. As well, they form a highly reliable scale, with a Cronbach's alpha of .85.

**Table 5: Performance Feedback: Survey Questions, Correlation and Cronbach's Alpha**

Performance Feedback (1999-2005)	Questions:	Correlation
Cronbach's Alpha: .85	I receive useful feedback from my immediate supervisor on my job performance.  I get adequate recognition from my immediate supervisor when I do a good job.	.74

#### 4.3.1.3 Supportive Supervision

Supportive supervision has been found to correlate to performance (West et al., 2005). It is an indication of how well organizational members perceive that their supervisors treat them (Hoiberg & Berry, 1978). Supportive supervision includes the extent to which employees experience support and understanding from their immediate supervisor (e.g., Patterson et al. 2005). In the PSES, there were three questions relating to supportive supervision. As is shown in Table 6, these three items load highly on a single scale. As well, they form a highly reliable scale, with a Cronbach's alpha of .83.

**Table 6: Supportive Supervision: Survey Questions, Factor Loading and Cronbach's Alpha**

Supportive supervision (1999-2005)	Questions:	Factor Loading
Cronbach's Alpha: .83	<p>I can count on my immediate supervisor to keep his or her promises.</p> <p>My immediate supervisor keeps me informed about the issues affecting my work.</p> <p>I feel that I can disagree with my immediate supervisor on work-related issues without fear of reprisal.</p>	.89 .87 .84

#### 4.3.1.4 Learning

Organizational learning culture assists many organizations that are involved in implementing changes, such as organizations involved in introducing new processes (Lim & Morris, 2006). It is also important for organizations that perform research and development (Sundgren, Dimenas, Gustafsson & Selart, 2005), and organizations that want to foster organizational innovation (Wang, Ying, Jiang, & Klein, 2005). Learning can comprise formal training, as well as on the job learning. In the PSES, there were four questions relating to learning, as is shown in Table 7. These four items all load highly on a single factor. As well, they form a reliable scale, with a Cronbach's alpha of .77.

**Table 7: Learning: Survey Questions, Factor Loading and Cronbach's Alpha**

Learning (1999-2005)	Questions:	Factor Loading
Cronbach's Alpha: .77	I am able to get on-the-job coaching to help me improve the way I do my work.  I get the training I need to do my job.  My immediate supervisor helps me determine my learning needs.  In my work unit, we learn from our mistakes and do what it takes to correct them.	.84 .80 .78 .64

#### 4.3.1.5 Career Development

Career development culture is related to salary progression (Gould & Penley, 1984). Further, career development and salary progression are also correlated with employee satisfaction (LaFollette & Sims, 1975). In the PSES, there were four questions relating to career development, as is shown in Table 8. These four items all have significant loadings on a single factor. As well, they form a reliable scale, with a Cronbach's alpha of .84.

**Table 8: Career Development: Survey Questions, Factor Loading and Cronbach's Alpha**

Career development (1999-2005)	Questions:	Factor Loading
Cronbach's Alpha: .84	I have opportunities to develop and apply the skills I need to enhance my career.	.88
	My department does a good job of supporting employee career development.	.85
	My immediate supervisor does a good job of helping me develop my career.	.84
	I am satisfied with my career in the Public Service.	.72

#### 4.3.1.6 Involvement

This culture dimension involves the extent to which organizational members are concerned or committed to their jobs (Hoiberg & Berry, 1978). Patterson et al. (2005) highlighted that management plays a key role in this dimension, for example, by deciding whether or not to involve people when decisions are made that affect the employees, and by determining how widely information is shared throughout the organization. In the PSES, there were five questions relating to involvement, as is shown in Table 9. These five items all have high loadings on a single factor. As well, they form a reliable scale, with a Cronbach's alpha of .77.

**Table 9: Involvement: Survey Questions, Factor Loading and Cronbach's Alpha**

Involvement (1999-2005)	Questions:	Factor Loading
Cronbach's Alpha: .77	I feel that senior management does a good job of sharing information.	.75
	I believe that senior management will try to resolve concerns raised in this survey.	.75
	In my work unit, we work cooperatively as a team.	.71
	I am proud of the work carried out in my work unit.	.71
	I have a say in decisions and actions that have an impact on my work.	.69

#### 4.3.1.7 Fairness

According to Henley and Price (2002), the benefits of a strong culture of fairness include better team performance and lower levels of absenteeism. In an empirical study related to employees' perceptions of fairness in their employer's drug testing policy, Konovsky and Cropanzano (1991) found that a culture of fairness correlated significantly with measures of job satisfaction, organizational commitment, turnover intentions and job performance. In the PSES, there were five questions relating to fairness, as is shown in Table 10. These five items all load on a single factor. As well, they form a reliable scale, with a Cronbach's alpha of .73.

**Table 10: Fairness: Survey Questions, Factor Loading and Cronbach's Alpha**

Fairness (1999-2005)	Questions:	Factor Loading
Cronbach's Alpha: .73	<p>In my work unit, the process of selecting a person for a position is done fairly.</p> <p>In my work unit, I believe that we hire people who can do the job.</p> <p>My immediate supervisor distributes the work fairly.</p> <p>In my work unit, every individual, regardless of race, colour, gender or disability would be/is accepted as an equal member of the team</p> <p>I am classified fairly (my current group and level) compared with others doing similar work in my organization or elsewhere in the Public Service.</p>	.83 .81 .70 .63 .52

#### 4.3.1.8 Workload

Daly (2002) noted that public sector organizations have been faced with the demand to “do more with less”, particularly in the past two decades, and this has increased employee workloads. These workload pressures can have important implications for organizational culture including the stress faced by employees (Heaney, Price & Rafferty, 1995), negative effects on employee motivation (Tyagi, 1982), and workers’ introduction of emotional expression as a coping strategy (Maconachie, 2005). There are three questions relating to workload, as is shown in Table 11. These three items have high factor loadings on a single scale. As well, they form a reliable scale, with a Cronbach’s alpha of .71.

**Table 11: Workload: Survey Questions, Factor Loading and Cronbach's Alpha**

Workload (1999-2005)	Questions:	Factor Loading
Cronbach's Alpha: .71	I feel that the quality of my work suffers because of having to do the same or more work, but with fewer resources.	.84
	I feel that the quality of my work suffers because of unreasonable deadlines.	.81
	I can complete my assigned workload during my regular working hours. (Reverse Coded)	.73

#### 4.3.1.9 Innovation and Flexibility

In today's environment of constant change (e.g., Rossi, 2006; Taylor-Bianco & Schermerhorn, 2006; Luscher & Lewis, 2008), a culture of innovation and flexibility assists many organizations. Examples include how readily ideas are accepted, how quickly the organization responds to changes that need to be made, and whether people in the organization are always searching for new ways of looking at problems (Patterson, et al., 2005). There are three PSES questions relating to innovation and flexibility, as shown in Table 12. These three items have high factor loadings on a single factor. As well, they form a reasonably reliable scale, with a Cronbach's alpha of .66, which is close to Nunnally's (1978) recommended reliability minimum of .70.

**Table 12: Innovation and Flexibility: Survey Questions, Factor Loading and Cronbach's Alpha**

Innovation and flexibility (1999-2005)	Questions:	Factor Loading
Cronbach's Alpha: .66	If I were to suggest ways to improve how we do things, my immediate supervisor would take them seriously.  I am encouraged to be innovative or to take initiative in my work.  I have the flexibility to adapt my services to meet my clients' needs.	.81 .81 .69

#### 4.3.1.10 Summary: Culture Dimensions: 1999 to 2005

The nine dimensions described above are of primary interest in this organizational culture research. As will be discussed in Chapter 5, data for 2005 was compared to data from 1999 to identify changes in these culture dimensions. This yielded a set of nine dependent variables including: changes in clarity of goals, changes in performance feedback, changes in supportive supervision, changes in learning, changes in career development, changes in involvement, changes in fairness, changes in workload, and changes in innovation and flexibility.

There were eight questions of the 39 questions repeated in the 2002 PSES from the 1999 PSES that were not used in this research for various reasons. In some cases, including

the question substantially reduced the Cronbach's alpha of the culture dimension. In some cases, there was a lack of face validity. In other cases, the question may have related to an operational consideration, rather than organizational culture, such as official languages.

#### 4.3.2 Supplementary Scales: Organizational Culture Dimensions: 2002 to 2005

In addition to the 31 questions that related to the period 1999 to 2005, there were 22 questions related to organizational culture that were introduced in 2002. As discussed in section 4.3, the 2002 PSES introduced new questions while retaining some of the questions from the 1999 PSES. A supplementary analysis for this research involves the questions that were introduced in the 2002 PSES and repeated in the 2005 PSES, which cover a three year period. This is a supplemental analysis as three years may not be long enough to show significant culture change (Posner & Rothstein, 1994; Jick, 1995). This next section features culture dimensions related to 22 questions that were introduced in the 2002 PSES and repeated in the 2005 PSES.

##### 4.3.2.1 Client Service

Service organizations are different from organizations that produce tangible products (Schneider, Gunnarson & Niles-Jolly, 2001). Client service culture involve employee perceptions of the practices, procedures and behaviours that are rewarded, supported, and expected in relation to client service (Schneider, White & Paul, 1998). In the 2002 – 2005 PSES, there were three questions relating to client service. As is shown in Table

13, these three items have high factor loadings on a single factor. As well, they form a highly reliable scale, with a Cronbach's alpha of .87.

**Table 13: Client Service: Survey Questions, Factor Loading and Cronbach's Alpha**

Client service (2002-2005)	Questions:	Factor Loading
Cronbach's Alpha: .87	My work unit regularly applies the client service standards. My work unit has clearly defined client service standards. In my work unit, there are mechanisms in place for linking client feedback or complaints to employees who can act on the information.	.93 .93 .83

#### 4.3.2.2 Safety Culture

Safety culture is an organizational factor frequently cited as a predictor of the occurrence of injury (Huang, Ho, Smith & Chen, 2006). A positive safety culture results when managers are committed to and personally involved in safety activities such as training programs, and communications that emphasize safety issues within the organization (Hoffman & Stetzer, 1998). In the PSES, there were two questions relating to safety culture as is shown in Table 14. These two items are reasonably correlated. As well, they form a reliable scale, with a Cronbach's alpha of .74.

**Table 14: Safety Culture: Survey Questions, Correlation and Cronbach's Alpha**

Safety culture (2002-2005)	Questions:	Correlation
Cronbach's Alpha: .74	Supervisors and senior managers are committed to ensuring occupational health and safety in my workplace.  If I am faced with a health and safety issue in the workplace, I know where I can go for help in resolving the situation.	.59

#### 4.3.2.3 Justice Culture

Although organizational justice has become an increasingly visible construct in the social sciences over the last three decades (Colquitt, 2001), it is a relatively new phenomenon in relation to culture (Roberson, 2006). According to Colquitt (2001), procedural justice is achieved through voice during a decision-making process or by compliance with fair process criteria such as consistency and lack of bias. Roberson (2006) found that justice culture represents shared perceptions of work unit treatment by organizational authorities. In the 2002 and 2005 PSES, there were six questions relating to justice culture. As is shown in Table 15, these six items all load on a single factor. As well, they form a highly reliable scale, with a Cronbach's alpha of .88.

**Table 15: Justice Culture: Survey Questions, Factor Loadings and Cronbach's Alpha**

Justice culture- (2002-2005)	Questions:	Factor Loading
Cronbach's Alpha: .88	I am satisfied with the way in which my work unit responds to matters related to harassment and discrimination.	.76
	I am satisfied with the way in which my department or agency responds to matters related to harassment and discrimination.	.74
	My department or agency works hard to create a workplace that prevents harassment and discrimination.	.73
	I feel I can initiate a formal redress process (grievance, right of appeal, health and safety, etc.) without fear of reprisal.	.55
	I am satisfied with the way in which informal complaints on workplace issues are resolved in my work unit.	.50
	If I am faced with an ethical dilemma or a conflict between values in the workplace, I know where I can go for help in resolving the situation.	.50

#### 4.3.2.4 Career Barriers

The culture dimension career barriers is the opposite of the culture dimension of career development discussed above in subsection 4.3.1.5. As noted previously, career development culture is related to employee satisfaction (LaFollette & Sims, 1975). There were six questions relating career barriers, as is shown in Table 16. These six items all load on a single factor. As well, they form a reliable scale, with a Cronbach's alpha of .80.

**Table 16: Career Barriers: Survey Questions, Factor Loading and Cronbach's Alpha**

Career barriers (2002-2005)	Questions:	Factor Loading
Cronbach's Alpha: .80	<p>To what extent, if at all, have any of the following adversely affected your career progress in the Public Service over the last three years?</p> <ul style="list-style-type: none"> <li>• lack of developmental assignments</li> <li>• lack of access to learning opportunities</li> <li>• lack of information about job opportunities</li> <li>• restriction in the area of competitions</li> <li>• discrimination</li> <li>• lack of access to language training in my second official language</li> </ul>	<p>.85</p> <p>.81</p> <p>.78</p> <p>.73</p> <p>.53</p> <p>.51</p>

#### 4.3.2.5 Labour Relations

The term industrial relations culture typically refers to the quality of labour-management relations in the organization. Of primary importance in developing positive industrial relations are the policies and actions of union officials and management, as well as the tone of contract negotiations. The willingness to adopt a joint problem-solving approach to grievance resolution is also key (Deery, Erwin & Iverson, 1999). In the PSES, there were five questions relating to labour relations culture. As is shown in Table 17, these five

items all have high factor loadings on a single factor. As well, they form a highly reliable scale, with a Cronbach's alpha of .89.

**Table 17: Labour Relations: Survey Questions, Factor Loading and Cronbach's Alpha**

Labour relations (2002-2005)	Questions:	Factor Loading
Cronbach's Alpha: .89	<p>Senior management in my organization engages in meaningful consultation with my union on workplace issues.</p> <p>The relationship between my union and senior management in my organization is highly productive</p> <p>Senior managers respect the provisions of my collective agreement.</p> <p>My immediate supervisor understands and respects the provisions of my collective agreement.</p> <p>The relationship between my union and Treasury Board of Canada is highly productive.</p>	.90 .89 .86 .76 .75

#### 4.3.2.6 Summary: Culture Dimensions: 2002 to 2005

As will be discussed in Chapter 5, data for 2005 was compared to data from 1999 to identify changes in these culture dimensions. This yielded a set of five dependent variables including: client service, safety culture, justice culture, career barriers and labour relations. These five culture dimensions utilized 22 survey questions that were introduced in 2002 and repeated in the 2005 PSES. In the 2002 and 2005 surveys, there were 26 other questions that were repeated but were not used in this research, for various

reasons. In some cases, including the question reduced the Cronbach's alpha of the culture dimension. In other cases, the question may have related to an operational issue rather than culture, such as official languages. As well, some of the questions did not relate to culture dimensions examined in previous research. Although these five culture dimensions are of secondary interest for this organizational culture research due to the shorter time span for observing changes, supplementary analysis was conducted to determine whether there have been notable changes in these dimensions over the three year period.

#### 4.4 Measuring Overall Culture Change: 1999 to 2005 and 2002 to 2005

As discussed earlier in this chapter, this research relates primarily to Schein's (1999b) first two levels of culture, such as organizational structures, processes, strategies and goals. Thus, culture has been measured using constructs developed in the research of organizational climate. While changes in specific culture dimensions will be examined, a key question for this research relates to the measurement of global cultural change for the Canadian federal public service. Some past research, (e.g., Glick, 1985; Seibert, Silver & Randolph, 2004) suggests that aggregate measures of organizational culture are valid. Therefore, this research will examine global changes in organizational culture by creating global culture change scales comprised of the nine culture dimensions for the primary analysis (1999 to 2005) and the five culture dimensions for the supplemental analysis (2002 to 2005). Further information relating to how this global culture change scale will be calculated is provided in the discussion of measures in Chapter 6.

The PSES provides existing measures of organizational culture allowing assessment in changes in culture over time. The PSES does not, however, provide measures of the drivers of change. The next chapter describes the methodology used for collecting data on change drivers and analyzing the relationships between change drivers and culture change.

## 5 METHODOLOGY

A description of the culture change initiative underway by the Canadian federal government was provided in Chapter 4. This chapter provides an overview of the methodology for this research, which is focused on the identification of the culture change drivers in the Canadian federal public service. This chapter begins by discussing the unit of analysis for this research. It then describes the four sources of data used, including the processes and procedures related to developing and administering a questionnaire on change drivers.

### 5.1 Unit of Analysis

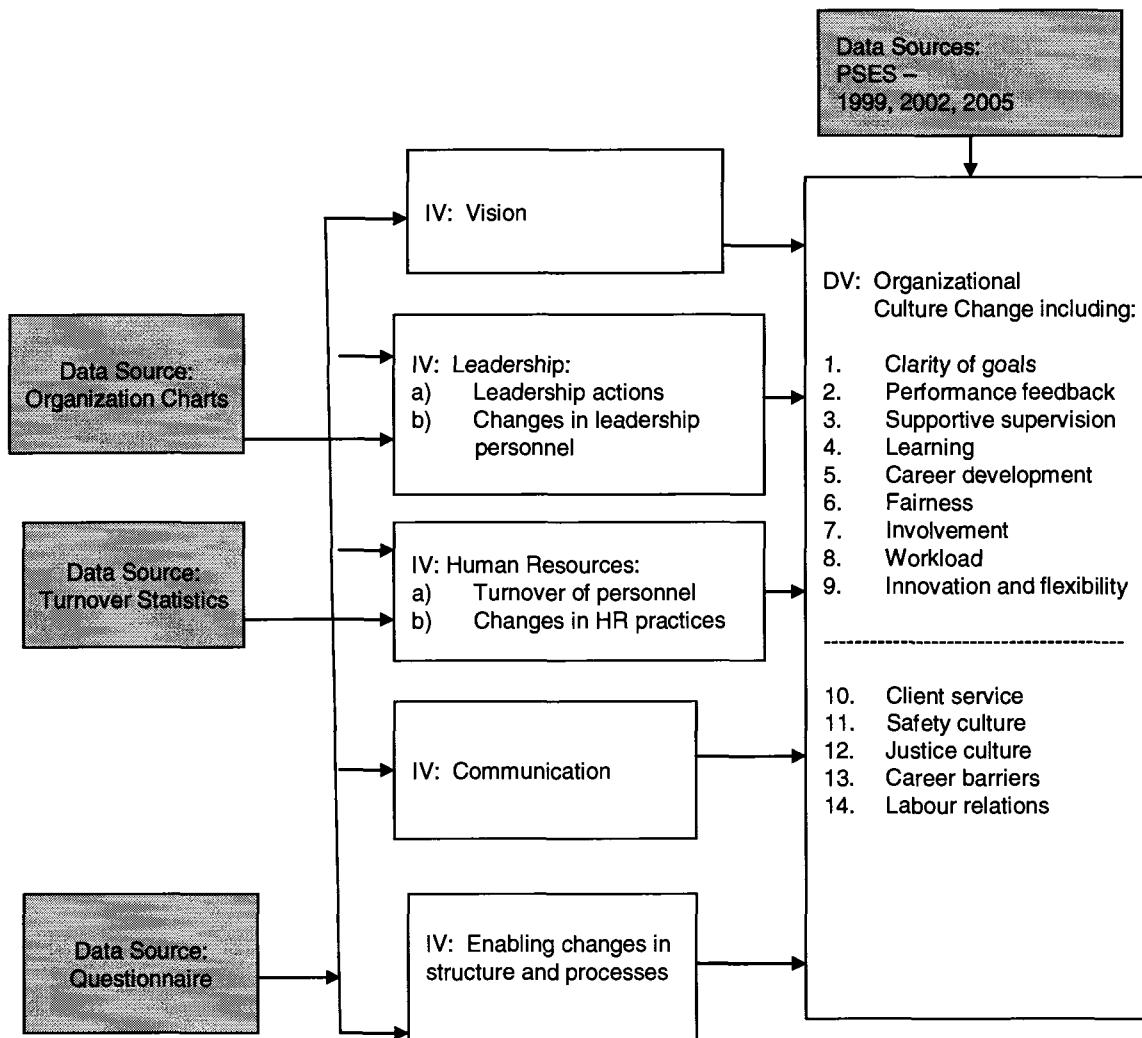
As discussed in the first chapter, most research relating to organizational culture change utilizes a case methodology. However, the case approach does not allow for cross-organizational comparisons to help identify common themes, such as the identification of change drivers. The PSES provided an important and rare opportunity to conduct cross-organizational comparisons, which is something that is missing in the literature. Therefore, the unit of analysis in this research is the organization. In the Canadian federal government this includes 57 departments and agencies that existed during the six year period of 1999 to 2005, and that participated in the PSES. During the six year period bracketed by the PSES, changes in government priorities and policies led to changes in organizational boundaries. Between 1999 and 2005, some departments and agencies in the Canadian federal government were closed, while others were introduced. For example, in 1999, there was an organization called the Millennium Bureau, which

had been disbanded by the time that the PSES was administered in 2002. As well, there have been new organizations introduced to the Canadian Public Service since 1999, such as Public Safety and Emergency Preparedness Canada, which participated in the 2005 survey. This research focuses on the 57 organizations that participated in all three surveys -- 1999, 2002, and 2005. Appendix A provides a listing of the departments and agencies that participated in the three PSES.

## 5.2 Sources of Data

In order to answer the research question, four sources of data, including a mix of primary and secondary data, have been used. The first source is the data obtained from the federal government for the 1999 PSES, the 2002 PSES and the 2005 PSES. These surveys provide measures of the dependent variables related to culture change. The other three sources of data provide information on drivers of culture change. Specifically, the second source of data was organization charts that facilitated an analysis of the changes in leadership personnel for the organizations under study in this research. The third source of data relates to turnover statistics for the organizations included in this research. Finally, the fourth source of data was a questionnaire that was sent to the relevant organizations which assesses activities related to vision, leadership actions, changes in human resources practices, activities related to communication, and enabling changes in structure and processes. Figure 5 provides an overview of these data sources in relation to the research model.

**Figure 5: Research Model with Data Sources**



### 5.2.1 Measuring Culture Change in the Canadian Federal Government Using the PSES

Change in organizational culture in the Canadian federal public service, that is, the dependent variables, was measured by comparing the results of the 1999 PSES and the 2005 PSES as discussed in Chapter 4. This data from the PSES relates to federal government employees' perceptions of organizational culture. Since the unit of analysis

is the organization, data was aggregated across all respondents in each department. Each of the nine culture dimensions was examined separately, and was also combined to assess the global change in organizational culture for these six years. Each of the nine culture dimensions was equally weighted in this composite global measure. In order to determine if the changes differed between the two three-year periods within the primary analysis (1999 to 2002 and 2002 to 2005) analyses were conducted on these two three-year periods, in addition to the analysis of the full six-year period (1999 to 2005). As well, as was described in Chapter 4, a supplemental analysis was completed relating to the five culture dimensions introduced for the period 2002 to 2005.

### 5.2.2 Measuring Changes in Leadership Personnel Using Government Organizational Charts

In order to measure the change in leadership personnel in the departments and agencies during the period 1999 and 2005, organizational charts provided in the federal government telephone directories for 1998-1999 and 2004-2005 were analyzed to determine the degree of change in the senior management team between 1999 and 2005. The senior management team was defined as deputy minister(s), assistant deputy minister(s), associate deputy minister(s), and director(s) general (or equivalent). The change rate of the senior management team was expressed as the percentage of senior management team members in 2005 who were not on the team in 1999.

The 1998-1999 and 2004-2005 federal government telephone directories are held by Library and Archives Canada. For those organizations that completed the questionnaire,

the relevant pages of these telephone directories were used to calculate the leadership change variable. A sample is included in Appendix B.

### 5.2.3 Measuring Turnover of Personnel Using Government Data

Turnover refers to the departure of an employee from the organization. It does not include employees who move to another position within the same organization. In order to determine the rate of employee turnover within the departments and agencies from 1999 to 2005, data was obtained from the Canada Public Service Agency. This data relates to the “core public administration”, that is, indeterminate employees who left their department or agency to transfer out to another department or agency or who left the core public administration altogether. It includes all turnover regardless of the reason, such as retirement and those on leave-without-pay. While not all turnover is related to the change effort, total turnover should indicate the organization’s opportunity to recruit new employees who reflect the desired values and behaviours.

The turnover data obtained from the Canada Public Service Agency does not include seasonal employees. Seasonal employees are not typically terminated but are rehired every year and work for the Canadian federal government indefinitely. Further, this seasonal employee component is considered insignificant (for example in 2007 it was 0.7 per cent of the indeterminate population). For these reasons, the Canada Public Service Agency did not include seasonal employees in the turnover data.

#### 5.2.4 Measuring Culture Change Drivers Using an Organizational Questionnaire

Data on other culture change drivers undertaken during the research timeframe of 1999 to 2005 was collected via a questionnaire that the federal government departments and agencies that participated in all three PSES were asked to complete. The questions in this questionnaire measured the independent variables, that is, the drivers of culture change, other than changes in leadership and employee turnover.

### 5.3 Questionnaire

The focus of the survey questions is the other change drivers identified in this research (in addition to changes in leadership personnel and turnover of personnel), that is, vision, leadership actions, changes in human resources practices, communication, and enabling changes in structure and processes. While the questions in the questionnaire are perceptual in nature, these data were complemented by some objective measures, such as the data previously mentioned related to turnover and changes in leadership. Furthermore, as will be seen below, some of the survey questions are based on fairly observable changes or actions, such as the use of newsletters in communication or changes in education and training practices.

The questionnaire was sent to the “Deputy Minister” (or equivalent, such as the President of an agency) for each of the organizations, with a request that his/her office coordinate the response to the questionnaire on behalf of his/her organization. Typically the completion of the questionnaire was delegated to the relevant staff, such as a human

resources manager and communications staff within the organization. They were requested to respond on behalf of their entire department or agency and report on the variables, such as leadership actions, over the selected six-year time frame of 1999 to 2005.

The following sections provide a brief discussion relating to each of the independent variables measured in the survey, namely vision, leadership actions, changes in human resources practices, communication and enabling changes in structure and processes. This brief discussion of each of the independent variables is followed by a table that incorporates the related questions from the questionnaire.

#### 5.3.1.1 Vision

Many researchers (e.g., Barzelay, 1992; OECD, 1993; Kotter, 1995; Galpin, 1996b; Harper, 1998; Nutt & Backoff, 2000) have highlighted the importance of establishing a clear vision at the outset of the change initiative. Once the vision has been developed, it must be widely communicated throughout the organization (e.g., Harvey & Brown, 1996; Kotter, 1995; Schumacher, 1997). Leaders' communication about the vision needs to be persuasive (e.g., Koehler & Pankowski, 1997; Thompson & Sanders, 1998). As noted by Schein (1992), leaders must communicate to organizational members that achieving the vision is an important priority for the organization. Table 18 presents the seven questions relating to vision that were included in the questionnaire. As the vision was established by the Treasury Board Secretariat of Canada, the focus of the questions included in the

questionnaire primarily concerned the implementation of the vision. The following definitional prompts were provided in the questionnaire before these questions about the vision:

- “In a Dec. 2, 2002 news release related to the 2002 PSES results, Treasury Board of Canada Minister Robillard said: “..Our goal is a workplace culture where public service values are clear and all employees are treated with dignity and respect. ....”.
- The timeframe to be considered in responding was 1999 to 2005.

**Table 18: Questions relating to Independent Variable – Vision**

Questions	Literature References
1a) To what extent was the <b>Treasury Board of Canada's vision</b> for this initiative congruent with your <b>department's/agency's vision</b> for this culture change initiative?	Harvey & Brown, 1996; Richardson & Denton, 1996
1b) To what extent was this culture change initiative a priority for your department/agency?	Nadler & Tushman, 1990; Schein, 1992
1c) To what extent were new values related to this culture change initiative articulated to employees?	Williams, Dobson & Walters, 1989; Kotter & Heskett, 1992; Claver et al., 1999
1d) How widely communicated throughout your department/agency was the vision for this culture change initiative?	Kotter, 1995; Galpin, 1996b
1e) How persuasive was your senior management about the vision for this culture change initiative?	Koehler & Pankowski, 1997; Thompson & Sanders, 1998
1f) To what extent was the vision for this culture change initiative incorporated into departmental/agency documents?	Lapidus, Roberts & Chonko, 1997; Nasurdin, Ramayah & Beng, 2006

### 5.3.1.2 Leadership Actions

Leadership actions are other prominent drivers of change that are highlighted in the literature (e.g., Schein, 1992; Ingstrup & Crookall, 1998), and are multi-dimensional in nature. Key dimensions of leadership include ensuring there is executive leadership of the change initiative at the top of the organization (Kotter & Heskett, 1992), as well as a community of leaders through the organization, and at every level of the organization (Hesselbein, 2002; Cameron & Green, 2004). It is critical that the leaders' words match their actions, and that they are good role models (e.g., Kotter & Heskett, 1992; Cameron & Green, 2004). As well, the organization's leaders need to be visibly empowered in order to change the culture (Nadler & Tushman, 1990). For example, the leaders need to be able to dedicate the necessary financial and human resources to the change initiative (Cummins & Worley, 1997). Table 19 presents the six questions relating to the leaders' actions that were included in the questionnaire. The following definitional prompts were provided in the questionnaire before the questions on leadership actions:

- Executive leader is defined as Deputy Minister or equivalent.
- Senior management is defined as Deputy Ministers, Associate Deputy Ministers, Assistant Deputy Ministers, and Directors General, or equivalent.
- The timeframe to be considered in responding is 1999 to 2005.

**Table 19: Questions relating to Independent Variable – Leadership Actions**

Questions	Literature References
2a) To what extent was the executive leader engaged in actions to lead this culture change initiative?	Nadler & Tushman, 1990; Kotter & Heskett, 1992

Questions	Literature References
2b) To what extent was your senior management able to consistently display leadership relating to this culture change initiative?	Oden, 1997; Lau, 2000; Alvesson, 2002
2c) In relation to this culture change initiative, to what extent was your senior management able to match their words with their actions?	Kotter & Heskett, 1992; Cameron & Green, 2004
2d) To what extent did people throughout the organization (i.e., at different levels) play a leadership role relating to this culture change initiative?	Cummings & Worley, 1997; Hesselbein, 2002
2e) As a group, to what extent was senior management able to be good role models of the culture change sought?	Schein, 1992; Nadler & Tushman, 1990
2f) As a group, to what extent was senior management visibly empowered in order to change the organization's culture (e.g., have the human and financial resources needed for this culture change initiative)?	Nadler & Tushman, 1990

### 5.3.1.3 Changes in Human Resources Practices

The importance of integrating human resources practices that facilitate the desired culture change has been noted by many researchers (e.g., Williams, Dobson & Walters, 1989; Burnes, 1992). Key human resources practices that were addressed include: recruitment and selection of new employees who exhibit the desired behaviour (e.g., Williams, Dobson & Walters, 1989); the socialization of newcomers based on the desired culture (e.g., Cummings & Worley, 1997) and promotion practices (e.g., Linquist, 2000). Training of employees in relation to the sought after changes is also important (e.g., Demarie & Keats, 1995; Alvesson, 2002). Role models (e.g., Williams, Dobson &

Walters, 1989) and mentoring practices (Bernick, 2001) are key practices that can support and facilitate culture change initiatives. As well, changes in employee performance evaluation systems (e.g., Armenakis, Harris & Field, 1999; Charan, 2001), employee recognition practices (e.g., Kotter & Heskett, 1992); formal rewards such as pay incentives (e.g., Nadler & Tushman, 1990) and informal rewards such as support for funding requests (e.g., Barzelay, 1992) are also key human resources practices that should be modified in relation to desired culture change. Table 20 presents the 11 questions relating to the changes in human resources practices that were included in the questionnaire. The following definitional prompts were provided in the questionnaire before the questions on changes in human resources practices:

- “Please consider all changes in human resources practices that were undertaken from 1999 to 2005 that were congruent with the vision that was stated in Section 1 of this questionnaire.”
- The timeframe to be considered in responding is 1999 to 2005.

**Table 20: Questions relating to Independent Variable – Changes in Human Resources Practices**

Questions	Literature References
3a) To what extent were the following human resource processes changed in your department/agency in a way that would contribute to the desired culture:	
• Recruitment and selection?	Williams, Dobson & Walters, 1989; Neuhauser, Bender & Stromberg, 2000
• Socialization of newcomers, (e.g., through an orientation)?	Schneider, Gunnarson & Niles-Jolly, 2001; Alvesson, 2002
• Mentoring and coaching practices?	Schein, 1999; Bernick, 2001

Questions	Literature References
<ul style="list-style-type: none"> <li>• Role modeling practices?</li> </ul>	Williams, Dobson & Walters, 1989; Neuhauser, Bender & Stromberg, 2000
<ul style="list-style-type: none"> <li>• Education/training practices?</li> </ul>	Zamutto & O'Connor, 1992; Demarie & Keats, 1995; Claver et al., 1999
<ul style="list-style-type: none"> <li>• Formal reward practices (e.g., awards), and recognition policies and practices?</li> </ul>	Nadler & Tushman, 1990; Hall, Rosenthal & Wade, 1993
<ul style="list-style-type: none"> <li>• Informal reward practices (e.g., support for funding requests)?</li> </ul>	Barzelay, 1992; Schein, 1992
<ul style="list-style-type: none"> <li>• Employee recognition practices?</li> </ul>	Baker, 1980; Kotter & Heskett, 1992
<ul style="list-style-type: none"> <li>• Promotion practices?</li> </ul>	Linquist, 2000
<ul style="list-style-type: none"> <li>• Employee performance appraisal practices?</li> </ul>	Charan, 2001; Kotter & Cohen, 2002
<p>3b) To what extent did employees of your department/agency participate in new education/training related to the desired culture in areas such as anti-harassment, career-planning and /or others?</p>	Linquist, 2000; Schneider, Gunnarson & Niles-Jolly, 2001

#### 5.3.1.4 Communication

Communication is another important driver of culture change initiatives. Leaders must clearly communicate the reasons for the culture change initiative (e.g., Williams, Dobson & Walters, 1989; Cameron & Green, 2004). In addition to the executive members, management throughout the organization must be committed to communicating about the change initiative (e.g., Cummings & Worley, 1997; Schein, 2000). Regular communication throughout the change initiative is important (Schumacher, 1997).

Change leaders must consider not only the content and frequency of the communications, but they must use multiple communication vehicles such as newsletters and stories (Sathe, 1985). Table 21 presents the 16 questions relating to communication that were included in the questionnaire. A prompt requesting that the 1999 to 2005 timeframe be considered in responding appeared before the questions on communication.

**Table 21: Questions relating to Independent Variable – Communication**

Questions	Literature References
4a) To what extent was there communication throughout your department/agency regarding why this culture change was required?	Schein, 1992; Schmuacher, 1997; Thompson & Sanders, 1998
4b) To what extent were the following vehicles used to communicate about this culture change initiative:	
• Newsletters?	Sathe, 1985; Barzelay, 1992
• E-mails?	Sathe, 1985; Wetlaufer, 1999
• Letters?	Sathe, 1985; Siehl, 1985
• Memoranda?	Sathe, 1985; Hall, Rosenthal & Wade, 1993
• Employee meetings?	Hall, Rosenthal & Wade, 1993; Oden, 1997
• Conferences/retreats?	Hall, Rosenthal & Wade, 1993; Oden, 1997
• Ceremonies?	Pettigrew, 1979; Feldman, 1986; Oden, 1997
• Stories?	Pfeffer, 1981; Nadler & Tushman, 1990
• Humour?	Sathe, 1985; Nadler & Tushman, 1990

Questions	Literature References
<ul style="list-style-type: none"> <li>• Management's every day conversations?</li> </ul>	Charan, 2001; Alvesson, 2002
4c) To what extent was information about this culture change initiative communicated throughout your department/agency by the:	
<ul style="list-style-type: none"> <li>• Executive leader?</li> </ul>	Schumacher, 1997; Cameron & Green, 2004
<ul style="list-style-type: none"> <li>• Senior management?</li> </ul>	Nadler & Tushman, 1990; Cameron & Green, 2004
<ul style="list-style-type: none"> <li>• Middle management?</li> </ul>	Hesselbein, 2002; Cameron & Green, 2004
<ul style="list-style-type: none"> <li>• Supervisors?</li> </ul>	Hesselbein, 2002; Cameron & Green, 2004
4d) To what extent did management seek input from employees throughout the department/agency regarding this culture change initiative?	Barzelay, 1992; Osborne & Brown, 2005

### 5.3.1.5 Enabling Changes in Structure and Processes

Finally, it is important to change the organization's enabling structures and processes to ensure that they are congruent with the desired culture. There are a number of ways to accomplish this. For example, establishing organizational performance measures that relate to the desired culture shift is important (e.g., Vollman, 1996; Cameron & Green, 2004). The restructuring of systems, including budgeting systems (e.g., Cameron & Green, 2004), planning systems (e.g., Barzelay, 1992), and management information systems (e.g., Davis, 1984) are key. Modifying the organizational structure to reflect the desired culture shift is another important mechanism to embed the changes in the organization (e.g., Nadler & Tushman, 1990; Rosenthal & Wade, 1993). Organizational policies and procedures also need to be altered to reflect the desired culture shift (e.g., Nadler & Tushman, 1990). Finally, matching the workers' physical environment to the

changing organizational culture can also be an important means of helping to institutionalize the changes (e.g., Nadler & Tushman, 1990; Turner & Meyerson, 2000). Table 22 presents the nine questions relating to the changes in structure and processes that were included in the questionnaire. A prompt requesting that the 1999 to 2005 timeframe be considered in responding appeared before the questions on enabling changes in structure and processes.

**Table 22: Questions relating to Independent Variable – Enabling Changes in Structure and Processes**

Questions	Literature References
5a) To what extent were the following practices altered in ways that support this culture change initiative:	
• Organization structure?	Nadler & Tushman, 1990; Hall, Rosenthal & Wade, 1993
• Planning processes?	Davis, 1984; Barzelay, 1992
• Budgeting processes?	Nadler & Tushman, 1990; Cameron & Green, 2004
• Management information systems?	Thompson & Wildavsky, 1986; Hall, Rosenthal & Wade, 1993
• Policies and procedures?	Baker, 1980; Nadler & Tushman, 1990
• Quantitative organizational performance measures, (e.g., related to financial or human resource performance measures)?	Nadler & Tushman, 1990; Vollman, 1996
• Qualitative organizational performance measurements, (e.g., managing to create conditions that motivate desired behaviour)?	Nadler & Tushman, 1990
5b) To what extent were organizational performance reports published more	Bernick, 2001; Cameron & Green, 2004

frequently than before 1999?	
5c) To what extent was the physical environment of the workplace altered in relation to this culture change initiative?	Nadler & Tushman, 1990; Turner & Meyerson, 2000

### 5.3.1.6 Summary Question

At the end of the questionnaire, one summary question related to the importance of the five categories of change drivers (vision, leadership, changes to human resources practices, communication and enabling changes in structure and processes) was also included. It asked the respondents to identify how important each of these possible drivers of change was to achieving the desired results.

### 5.3.2 Additional Information Relating to the Questionnaire

The measures in the questionnaire have been compiled from other sources, and as such, have not been previously tested for internal consistency. Cronbach's alphas were calculated to assess reliability, however, due to the relatively small sample size (a maximum of 57), a factor analysis was not conducted. Each measure was an unweighted composite of the items.

The questions in the questionnaire provided for a response using a Likert scale, which is the most frequently used variation of the summated rating scale (Cooper & Schindler, 1998). Given that it may be socially desirable for the respondents to respond in certain ways, a seven-point Likert scale was proposed. A seven-point scale provided the respondents with more options than a five-point scale, potentially leading to more

variance in responses, particularly where responses may be skewed in a positive direction.

Appendix C provides a copy of the cover letter. Appendix D provides a copy of the questionnaire. The cover letter and the questionnaire were translated into French, and this package was presented in a bilingual format – English and French. Respondents were able to respond in the language of their choice.

The next sections describe the pretest of the questionnaire, the survey procedures and how responses were encouraged.

### 5.3.3 Pretest of the Questionnaire

In order to determine the best means of obtaining responses to this questionnaire from the organizations, advice was sought from several professionals working in the Canadian federal government, including a current Deputy Minister, who is very knowledgeable about the Public Service Employee Surveys, as well as the norms of the Canadian federal government generally. The draft questionnaire was pre-tested with knowledgeable representatives from four of the Canadian federal government organizations that have participated in this culture change initiative. These individuals were given a copy of the draft questionnaire and asked to provide feedback regarding the introduction, as well as whether the questions could be answered by the departments and agencies, and whether the questions were clear. Pretesters were also asked whether they thought respondents could adequately recall organizational activities up to six years ago, and they indicated

that it would be possible for respondents to give a reasonably accurate estimate. Based on this pre-testing, two questions were deleted as it was felt that the organizations would likely not have the information to answer them. Further, minor changes were required to provide additional context in the introduction section, and to clarify a few issues. In the pretest, it was found that it took the respondents approximately 35 minutes to complete the questionnaires. As well, based on advice from potential respondents in this pre-test, questions about the political leadership were not included in the questionnaire as it is highly unlikely that respondents would be willing to answer these questions. Therefore, administrative leadership, such as the Deputy Minister, Assistant Deputy Minister, and Director General (or equivalent), were the focus of the leadership questions.

#### 5.3.4 Survey Procedures

There was a consensus amongst those government employees who pretested the questionnaire that the best approach would be to send the questionnaire to the “Deputy Minister” (or equivalent, such as the President of an agency) for each of the organizations, with a request that his/her office coordinate the response to the questionnaire on behalf of their organization. This position of Deputy Minister (or equivalent) is the most senior non-elected official in these organizations. A key reason for this recommendation is that it would likely require more than one person in the organization to complete the questionnaire. For example, it is likely that input from representatives from various departments such as Human Resources, Communications, and other senior management members would be required to complete the questionnaire. Deputy Ministers (or equivalent) receive requests for information comparable to this

survey on a regular basis, and their offices typically take responsibility for ensuring that it is completed by the appropriate representative(s).

Telephone and e-mail information was provided on the questionnaire in the event that the respondents had questions or required clarification. The questionnaire also provided instructions for returning the completed questionnaires via Canada Post or by facsimile. A self-addressed, stamped envelope was provided to each of the organizations to facilitate responses via Canada Post.

### 5.3.5 Encouragement of Responses

Two weeks after the questionnaire was sent to the organizations, a telephone call was made to the offices of the Deputy Minister (or equivalent) to confirm that the questionnaire had been received, and that it was being processed for completion. During that telephone call, an attempt was made to obtain an estimated completion date. Two weeks after that call, a follow up telephone communication was made with the organizations that had not yet responded. Further follow up calls were made every week until the completed questionnaire was received.

To motivate the departments and agencies to respond, the Deputy Minister who was interviewed recommended that in addition to offering a summary of the research, an offer should be made to make a presentation to the Deputy Minister and/or his/her organization regarding the results of the study. Both of these offers were included in the cover letter sent with the questionnaire.

When the initial approach of requesting that the Deputy Minister's office coordinate the response to the questionnaire was unsuccessful, other approaches were utilized in order to attempt to receive a response for the organization. For example, each organization had a "champion" related to the PSES, so that person was sometimes approached for assistance in completing the questionnaire. Alternatively, in some instances a Director General or another key person in the organization was approached for assistance.

The next chapter features the approach to the data analysis, as well as the related results. It is followed by the chapter that discusses the implications of the results.

## 6 RESULTS

This chapter describes the results of the data analysis and the methods used to test the seven hypotheses. First, the data completeness is reviewed. This is followed by a description of the preparation of the data. Next, key issues considered prior to the data analysis such as outliers, multicollinearity and the assessment of measures are discussed. This is followed by the results of the data analysis for the global measure of change and the nine culture dimensions in the six-year period of the primary analysis (1999 to 2005), as well as the analyses of the two three-year periods (1999 to 2002 and 2002 to 2005) within the primary analysis. Next, the supplemental analysis (2002 to 2005) for the global measure of change and the five additional culture dimensions introduced in 2002 is presented. Finally, the results of the summary question included in the questionnaire and a chapter summary are presented.

### 6.1 The Data

This section describes the completeness of the data, and how the data were prepared prior to the data analysis. It relates to four sets of data analyses: the data involved in the primary analysis, the six-year period of 1999 to 2005, the two three-year periods within the primary analysis (1999 to 2002 and 2002 to 2005), and the supplemental analysis, the period of 2002 to 2005. As discussed in Chapter 5, the two three-year analyses (1999 to 2002 and 2002 to 2005) relating to the primary analysis of 1999 to 2005 were examined to determine if the changes differed between the two three-year periods.

The first step in the data analysis consisted of reviewing the completeness of the data to determine the cases that should be kept in the data analysis. From there, variables were calculated. The following subsections describe each of these steps in further detail.

### 6.1.1 Data Completeness

As noted in subsection 5.2, the first source of data was the results for the 1999 PSES, the 2002 PSES and the 2005 PSES. These PSES data sets provided the measures for the dependent variables: changes in nine culture dimensions for the period 1999 to 2005 and changes in five other culture dimensions for the period 2002 to 2005. The three sources of data that related to the independent variables were: organization charts, employee turnover statistics and a questionnaire. This subsection will provide details of the data that were collected and used for this research.

As discussed in subsection 5.1, there were 57 federal public sector organizations that existed during the six-year period of 1999 to 2005, and that participated in the PSES. Ultimately, PSES data was provided by Statistics Canada for 51 of the 57 organizations. Data was not provided by Statistics Canada for six of the 57 organizations for two reasons: one of the organizations was restructured so significantly during the period of 1999 to 2005 that Statistics Canada determined that the data was not close enough to compare. Therefore, this organization was treated as a new organization entirely by Statistics Canada. The other five organizations had too few PSES respondents, and in

order to protect the respondents' confidentiality, this data was withheld by Statistics Canada.

Of the remaining 51 organizations, all had more than 30 respondents to the PSES with one exception – an organization that had 14 respondents for both the 1999 PSES and the 2005 PSES. Bliese and Halverson (1998) found that biases in using aggregate scores begin to diminish with groups of five or more employees. Therefore, as there were more than five respondents for this organization, it was included in the study. This left a pool of 51 potential organizations for which data on the dependent variables (changes in culture dimensions) was available. As will be discussed below, data was not available for some independent variables. In order to preserve power, means substitution was used. Means substitution attenuates relationships but maintains power.

As noted in subsection 5.2.2, the independent variable changes in leadership personnel was measured using government organization charts provided in the federal government telephone directories for 1998-1999 and 2004-2005. For the 51 potential organizations, organization charts were available for all but three organizations. Subsection 5.2.3 indicated that the data to measure the independent variable turnover of personnel was obtained from the Canada Public Service Agency. For the potential 51 organizations, turnover of personnel data was obtained for all but three organizations. Means were substituted for missing data on these variables in order to retain all 51 organizations.

Finally, subsection 5.2.4 described the questionnaire that was developed concerning the five remaining independent variables: vision, leadership actions, changes in human resources practices, communication, and enabling changes in structure and processes. Of the 51 organizations for which PSES data was available, completed questionnaires were obtained from 44 organizations, representing an 86 per cent response rate. This is within the minimum requirement suggested by Tabachnick and Fidell (1983) of at least four to five times more cases than independent variables. For the 44 organizations that did respond to the survey, the proportion of missing data was 2.5 per cent. As noted in section 5.2, the questionnaire was the source of data for five of seven independent variables. With seven organizations out of the 51 not responding to the survey, the percentage of missing data overall for the 51 organizations was 15.8 per cent. To maximize power, means were substituted for the missing data in order to retain all 51 organizations in the research.

Given a sample of 51, other steps were taken to preserve power where possible, and to keep the model parsimonious (Aczel, 1993). These steps included retaining outliers that are valid data points, and in the regression analyses, excluding independent variables that were not significantly correlated with the dependent variables. These issues will be further discussed later in this chapter.

### 6.1.2 Data Preparation

As described in Chapter 5, five sources of data were used to generate the dependent variables and the independent variables: PSES (1999, 2002 and 2005), organization

charts, employee turnover statistics, average number of employees and the questionnaire. This subsection will describe how the data from each of the sources was prepared to enable the data analysis. As well, information will also be provided in this subsection related to the two control variables: organization type and organization size.

### 6.1.2.1 Dependent Variables

There are nine culture dimensions (dependent variables) for the primary analysis related to the period 1999 to 2005, and five other culture dimensions (dependent variables) for the supplemental analysis related to the period 2002 to 2005. As well, a dependent variable, global measure of change, was calculated for the three sets of data involving the primary analysis (1999 to 2005), as well as the supplemental analysis (2002 to 2005). The procedures used to calculate these dependent variables are described in the following subsection.

#### 6.1.2.1.1 Measuring Culture Change in the Federal Government using the PSES

As described in Chapter 4, for the period 1999 to 2005, nine culture dimensions (dependent variables) were identified from 31 questions included in the PSES. The nine culture dimensions for the period of 1999 to 2005 are: clarity of goals, performance feedback, supportive supervision, learning, career development, involvement, fairness, workload, and innovation and flexibility.

The PSES questionnaire used a four-point Likert scale with the following responses: 'strongly agree', 'mostly agree', 'mostly disagree', 'strongly disagree'. As well, there were two additional options: 'don't know' and 'not applicable'. First, the organization mean for each question was calculated by using a weighted average calculation: the value for 'strongly agree' was multiplied by four, the value for 'mostly agree' was multiplied by three, the value for 'mostly disagree' was multiplied by two and the value for 'strongly disagree' was multiplied by one. The responses of 'don't know' and 'not applicable' were not included in this calculation. The one question that was reverse coded (in the culture dimension change in workload) was calculated as follows: the value for 'strongly agree' was multiplied by one, the value for 'mostly agree' was multiplied by two, the value for 'mostly disagree' was multiplied by three and the value for 'strongly disagree' was multiplied by four. These question means were aggregated to the nine culture dimensions by calculating a mean for each culture dimension for 1999 and 2005. Using these aggregated means, the difference in the means from 1999 to 2005 was calculated to determine the amount of culture change for this dimension for the six-year period of 1999 to 2005. As the aggregated means for 1999 were subtracted from the aggregated means for 2005, positive numbers indicate that the mean values on that dimension have increased over the six-year period.

Twenty two of the new questions that were introduced in the 2002 PSES and repeated again in the 2005 PSES were used in this research to develop five other culture dimensions for the three-year period 2002 to 2005. The five culture dimensions for this period are: client service, safety culture, justice culture, career barriers, and labour

relations. The means for these five additional culture dimensions were calculated in the same way as the means for the nine culture dimensions for the period of 1999 to 2005. The amount of culture change for the supplemental analysis covering the period of 2002 to 2005 was calculated in the same manner as for the primary analysis.

Finally, a dependent variable called a global measure of culture change was calculated for the four data sets: the three data sets concerning the primary analysis and the data set concerning the supplemental analysis. In each case, the global measure of culture change was calculated by averaging the difference in the means for each of the culture dimensions included for each of the time periods. To ensure all dimensions reflected positive changes in culture, the two dependent variables that assess negative elements of culture (workload in the primary analysis and career barriers in the supplementary analysis) had their signs reversed prior to summation.

#### 6.1.2.2 Independent Variables

There are seven independent variables: changes in leadership personnel, turnover of personnel, vision, leadership actions, changes in human resources practices, communication, and enabling changes in structure and processes. The procedures used to determine how these independent variables were calculated are described in the following subsections.

#### 6.1.2.2.1 Measuring Changes in Leadership Personnel Using Government Organizational Charts

Subsection 5.2.2 described the process for determining the changes in leadership personnel. This involved analyzing government telephone directories to determine the degree of change in personnel on the senior management team. The rate of change was expressed as a percentage of the senior management team members at the end of the period who were not on the team at a previous point in time. Appendix B provides an example of the calculation relating to the changes in the leadership personnel variable. This process led to the measurement of the rate of change of the senior management team for the three periods considered in this research: the primary analysis of 1999 to 2005, and the two three-year periods examined (1999 to 2002 and 2002 to 2005).

#### 6.1.2.2.2 Measuring Turnover of Personnel Using Government Data

Subsection 5.2.3 described the data that was obtained from the Canada Public Service Agency related to annual turnover of personnel. An average annual rate of turnover of personnel was calculated for the primary analysis of the six-year period 1999 to 2005, and the two three-year periods examined (1999 to 2002 and 2002 to 2005).

#### 6.1.2.2.3 Measuring Culture Change Drivers Using an Organizational Questionnaire

As described in subsection 5.3, the questionnaire focused on five change drivers: vision, leadership actions, changes in human resources practices, communication, and enabling

changes in structure and processes. There were a varying number of questions included in the questionnaire for each of these change drivers. Specifically, the vision section included seven questions, the leadership actions section included six questions, the changes in human resources practices section included 11 questions, the communication section included 16 questions, and the enabling changes in structure and processes section included nine questions. For each change driver, a mean was calculated from the relevant items. Reliabilities for these measures are described in subsection 6.2.3.

#### 6.1.2.3 Control Variables

Subsection 3.4 described the two control variables: organization size and organization type. The procedures used to measure these control variables are described in the following subsections.

##### 6.1.2.3.1 Measuring Organization Size using Government Data

Organization size was used as a control variable. It was measured by calculating the average number of employees in each organization during the six-year period 1999 to 2005 and the two three-year periods (1999 to 2002 and 2002 to 2005). Chapter 5 described the data that was obtained from the Canada Public Service Agency concerning the number of employees in each organization.

#### 6.1.2.3.2 Measuring Organization Type using Government Data

Organization type was also used as a control variable. Organizations were classified either as a department or “other”. The “other” category included various types of organizations such as agencies, tribunals, and commissions. Departments were coded as “0” and “other” was coded as “1”. The information for the coding was obtained from the Canada Public Service Agency. The Canada Public Service Agency bases its coding on the specifications of the Financial Administration Act (FAA).

### 6.2 Key Issues Considered Prior to the Data Analysis

This subsection will describe the key issues that were considered in advance of the data analysis. These include outliers, multicollinearity, and an assessment of the measures used for the dependent variables (14 culture dimensions), the five independent variables measured in the questionnaire, and the two remaining independent variables: changes in leadership personnel and turnover of personnel. Also included are a review of the means, standard deviations and range for each of the variables, and the significant correlations amongst the independent variables.

#### 6.2.1 Outliers

As it is important to examine the impact of any outliers, frequencies for the seven independent variables and the 14 dependent variables were examined in order to identify outliers. An outlier was defined as a data point that was more than three standard

deviations from the mean (Tabachnick & Fidell, 1983). In total, there were 12 outliers. Each outlier was inspected to determine if it was a valid data point. Most variables with outliers had only one outlier; one variable had two extreme data points. Most of these outliers were well under four standard deviations. All of the outliers were valid data points. Preliminary analyses were run with and without the outliers included and the difference was minimal. Therefore, given that they were all valid data points with minimal impact, the outliers were retained to more accurately reflect the differences amongst these organizations.

### 6.2.2 Multicollinearity

Multicollinearity is present when independent variables are perfectly (or nearly perfectly) correlated (Tabachnick & Fidell, 1983). For this research, multicollinearity was assessed in two ways. First, the correlation matrices were examined. Second, the condition indices and variance-decomposition proportions were reviewed in the regression analysis (Belsley, Kuh & Welsch, 1980). Multicollinearity issues will be highlighted in the relevant sections of the following analysis.

### 6.2.3 Assessment of Measures for Culture Dimensions

The reliability of the dependent variables (the culture dimensions) was assessed using Cronbach's alpha. Table 23 provides the number of items and the scale reliability for the 14 dependent variables for both the primary data analysis and the supplemental data

analysis. While the 2002 data were used in constructing the scales in Chapter 4, the reliabilities below are calculated from the 2005 PSES data.

**Table 23: Reliabilities of Culture Dimensions (2005 Data)**

Culture dimensions	Items	Alpha
Clarity of goals	2	.92
Performance feedback	2	.92
Supportive supervision	3	.88
Learning	4	.79
Career development	4	.92
Involvement	5	.80
Fairness	5	.82
Workload	3	.81
Innovation and flexibility	3	.78
Client service	3	.91
Safety culture	2	.94
Justice culture	6	.92
Career barriers	6	.87
Labour relations	5	.88

Note: n = approximately 106,000

These measures all exceed Nunnally's (1978) recommended minimum of .70. These results suggest that the culture dimensions developed from the PSES are all highly reliable.

Appendix E provides the means for the changes in culture dimensions, aggregated across the 51 organizations. Appendix F provides the mean cultural values at three points in time: 1999, 2002 and 2005. The aggregated means for the changes in the 14 culture dimensions show relatively little overall change in the culture dimensions during the six-year period for the primary analysis and the three-year supplemental analysis. However,

some organizations experienced considerable change in some culture dimensions. For example, for the culture dimension innovation and flexibility, one organization (ID 42) experienced a seven percent change negative change, while another organization (ID 11) experienced a 14 percent positive change. In the case of the culture dimension involvement, one organization (ID 5) experienced a 5 percent negative change, while another organization (ID 10) experienced a 13 percent positive change. These results suggest that there is sufficient variance in the dependent variables for further analyses.

#### 6.2.4 Assessment of Measures for Independent Variables in Questionnaire

The reliability of the five independent variables measured in the questionnaire was also assessed using Cronbach's alpha. Table 24 summarizes the number of items and the scale reliability for the five change drivers addressed by the questionnaire. These measures all exceed Nunnally's (1978) recommended minimum of .70.

**Table 24: Reliabilities of Independent Variables Included in the Questionnaire**

Independent Variables Included in the Questionnaire	Items	Alpha
Vision	7	.94
Leadership actions	6	.91
Changes in human resources practices	11	.89
Communication	16	.91
Enabling changes in structure and processes	9	.87

### 6.2.5 Variable Review: Mean, Standard Deviation and the Range

This section provides information relating to the means, standard deviations and the range for all of the variables. Appendix E summarizes this data. This subsection provides a discussion of the highlights of this data for the independent variables, the dependent variables and the control variables.

#### 6.2.5.1 Independent Variables

There are five independent variables -- vision, leadership actions, changes in human resources practices, communication, and enabling changes in structure and processes -- that were measured via the questionnaire using a seven-point Likert scale. The means for these five independent variables range from 3.88 (enabling changes in structure and processes) to 5.42 out of seven (vision). This suggests that implementing the vision is more common than undertaking enabling changes in structure and processes.

For the independent variable changes in leadership personnel, the mean for the six-year period of 1999 to 2005 is .77. Most organizations experienced turnover of a majority of their leaders. The mean for the three-year period of 1999 to 2002 is .55, while the mean for the three-year period of 2002 to 2005 is .53. These are cumulative rates of change, not annual rates of change. Appendix B provides an example of these calculations.

The final independent variable is turnover of personnel. The rate of personnel turnover was relatively stable throughout the six-year period of 1999 to 2005. It has a similar

annualized turnover rate for the six-year period of 1999 to 2005 (8.29 per cent) compared to the three-year period of 2002 to 2005 (8.35 per cent).

#### 6.2.5.2 Dependent Variables

For the six-year period of 1999 to 2005, there are nine dependent variables measuring organizational culture change: changes in clarity of goals, changes in performance feedback, changes in supportive supervision, changes in learning, changes in career development, changes in involvement, changes in fairness, changes in workload and changes in innovation and flexibility. The values for these nine dependent variables for the six-year period range from -.05 (changes in workload) to .06 (changes in clarity of goals). These are means (across 51 organizations) of differences in means at two time periods. These values indicate a low rate of change for this six-year period. On average, the dependent variables improved slightly.

For the three-year period of 2002 to 2005, there are five other dependent variables measuring organizational culture change (changes in client service, changes in safety culture, changes in justice culture, changes in career barriers, and changes in labour relations). The means for these five dependent variables for the three year period range from -.01 (changes in client service) to .02 (changes in labour relations). Overall, the results for this three-year period indicate a slight worsening for one culture dimension (changes in client service), no changes for two culture dimensions (changes in justice

culture and changes in career barriers), and minimal progress for the other two dependent variables (changes in safety culture and changes in labour relations).

#### 6.2.5.3 Control Variables

As discussed previously, there are two control variables used in both the primary analysis and the supplemental analysis. These control variables are organization size and organization type.

Organization size was determined by using the average number of employees in each organization. The average number of employees for the six-year period in the primary analysis (1999 to 2005) is 2,441. The two three-year periods included in this analysis averaged 2,254 employees for 1999 to 2002 and 2,386 employees for the period 2002 to 2005.

As discussed in Chapter 3, organization type was classified as either a department or “other”. There were 19 departments and 32 “other” organizations included in this analysis. The same organizations were used for the primary analysis of 1999 to 2005 as for the supplemental analysis of 2002 to 2005. The next subsection concerns significant correlations amongst the independent variables.

### 6.2.6 Significant Correlations Amongst the Independent Variables

Full correlation tables are available in the appendices: Appendix G provides the correlation table for 1999 to 2005; Appendix H provides the correlation table for 1999 to 2002; and Appendix I provides the correlation table for 2002 to 2005. The significant correlations amongst the independent variables are presented in Table 25. A brief discussion relating to these significant correlations follows the table.

**Table 25: Significant Correlations Amongst Independent Variables**

	Vision	Leader-ship actions	Changes in human resources practices	Commun-ication
Vision	-	.77***	-	-
Changes in leadership personnel – six-year period – 1999 to 2005	-.34*	-	-	-
Changes in leadership personnel – three-year period – 2002 to 2005	-.39**	-	-	-
Changes in human resources practices	.60***	.75***	-	.75***
Communication	.70***	.79***	-	-
Enabling changes in structure & processes	.53***	.71***	.64***	.72***

Notes:

The statistic displayed is the correlation coefficient.

\* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

The independent variable changes in leadership personnel is negatively correlated with the independent variable vision: for the six-year period of 1999 to 2005 ( $r = -.34$ ) and for the three-year period 2002 to 2005 ( $r = -.39$ ). This negative correlation may result from

the new leaders not taking steps to implement the vision for the organization. It is important to note that these new leaders in the Canadian federal government cannot alter the vision concerning the culture change initiative, as it was developed by the Treasury Board Secretariat of Canada. The vision questions in the questionnaire (Appendix D) mainly concerned how the vision was implemented. A less likely explanation is that there are changes in leadership personnel because of the vision.

The independent variable vision is positively correlated with four other independent variables: leadership actions ( $r = .77$ ), changes in human resources practices ( $r = .60$ ), communication ( $r = .70$ ) and enabling changes in structure and processes ( $r = .53$ ). These correlations are all quite strong. One explanation for these results could be that related to accomplishing the organization's vision are a number of other changes in the organization such as leadership actions, changes in human resources practices, communication and structure and processes in the organization. This possible explanation is consistent with the theory presented in the literature (e.g., Nadler & Tushman, 1990).

The independent variable leadership actions is positively correlated with three other independent variables: changes in human resources practices ( $r = .75$ ), communication ( $r = .79$ ) and enabling changes in structure and processes ( $r = .71$ ). These results are strong and a possible explanation could be that leaders play a key role in communications, changing human resources practices, and enabling changes in structure and processes. Often changes such as these are controlled by senior management, and

must receive senior management's approval, which supports the explanation that these results are driven by the leadership team. As well, this possible explanation is consistent with the theory presented in the literature (e.g., Trice & Beyer, 1991).

The independent variable changes in human resources practices is positively correlated with two other independent variables: communication ( $r = .75$ ) and enabling changes in structure and processes ( $r = .64$ ). These correlations are strong, and are consistent with the theory presented in the literature (e.g., Cameron & Green, 2004). Typically, once there have been changes in human resources practices, the organization will take steps to communicate these changes throughout the organization. As well, changes in human resources practices may require modifications to processes such as performance measures. For example, if there are changes made to training procedures, performance measures may be introduced to track the impact of the changes in the training procedures.

Finally, the independent variable changes in structure and processes in the organization is positively correlated with the independent variable communication ( $r = .72$ ). A possible explanation for this strong correlation is that when there are changes in the structure and processes in the organization, there is typically communication that takes place to inform employees.

All of these correlations exceed the medium effect size of .30 (Cohen & Cohen, 1983). One possible explanation for these significant correlations could be common method biases given that most of this data was generated by the same tool, the questionnaire.

Only the data relating to the independent variable changes in leadership personnel was obtained from a source other than the questionnaire. According to Podsakoff, MacKenzie, Lee and Podsakoff (2003), most researchers agree that common method variance is a potential problem in behavioral research. However, since the dependent variables were measured using a separate instrument administered at two different periods, the impact of common methods bias in the final results should be minimized.

The next section provides the results of the data analysis. First, the data analysis for the primary period under consideration (1999 to 2005) is presented. This is followed by the analyses of the two three-year periods within the primary analysis (1999 to 2002 and 2002 to 2005). The primary period features nine culture dimensions. Finally, the supplemental analysis, for which five additional organizational culture dimensions are featured for the three-year period of 2002 to 2005, is presented.

### 6.3 The Data Analysis

This subsection discusses the data analysis. It begins with an introduction to the data analysis. This is followed by the primary data analyses (1999 to 2005) and the supplemental analyses (2002 to 2005). This subsection concludes with the results of the questionnaire summary question.

### 6.3.1 Introduction to the Data Analysis

As has been discussed previously, the main objective of this research is to identify the drivers of organizational culture change. Seven independent variables were identified as possible drivers: vision, leadership actions, changes in leadership personnel, turnover of personnel, changes in human resources practices, communication, and enabling changes in structure and processes. Two control variables were also identified: organization size and organization type. For the primary analysis, there are nine dimensions of culture change which were examined. Ideally, canonical correlation would be used to analyze the relationships between the set of independent variables and multiple dependent variables, however, due to the small sample size, it cannot be used in this study (Tabachnick & Fidell, 1983). Instead, multiple regressions were run for the global measure of culture change and for each dependent variable separately.

The goal of research using multiple regression analysis is to determine the impact of the various independent variables on the dependent variables (Tabachnick & Fidell, 1983). While regression analyses are a powerful set of statistical techniques that allow for the assessment of relationships between independent variables and dependent variables, there are limitations to regression analyses (Tabachnick & Fidell, 1983). For example, an important consideration for researchers is to determine which variables should be included in the regression. According to Tabachnick and Fidell (1983): “The regression solution itself is only as good as the selection and measurement of the variables that are used in it” (p. 91). As well, a good statistical model must be parsimonious (Aczel,

1993). By keeping the regression models as parsimonious as possible, power is increased. As noted previously, given the small sample size in this research, power is a key consideration. Therefore, prior to conducting the regression analyses predicting changes in culture dimensions, bivariate correlations were examined in order to determine if the control variables and the independent variables were relevant to the regression equation. Regressions were run using only those variables that had a significant bivariate correlation with the dependent variables. This results in the maximization of power.

In order to assess the independent effect of the seven independent variables and the two control variables, hierarchical regression was used. In this procedure, the two control variables were included in the equation as a first step and then the relevant independent variables were entered as a second step. This allowed the determination of the independent contribution that the change drivers made to the total variance explained and the significance of this contribution. In the case of the culture dimension changes in safety culture, given the results of the hierarchical regression analyses, stepwise regression was also used.

### 6.3.2 Primary Data Analysis - 1999 to 2005

The following subsections present the data analysis for this six-year period. First, a discussion related to all of the significant bivariate correlations is presented, which includes the six-year period of 1999 to 2005, and the two three-year periods within the six-year period: 1999 to 2002 and 2002 to 2005. This is followed by the regression

analyses for the global measure of culture change, as well as the regression analyses of changes in culture dimensions.

### 6.3.2.1 Bivariate Correlation Analysis

Table 26 summarizes the significant correlations between the dependent variables and the independent variables for the three analyses within the primary data analysis: the six-year period of 1999 to 2005, the three-year period of 1999 to 2002 and the three-year period of 2002 to 2005. Significant bivariate correlations for the global measure of culture change are also included. While the hypotheses suggest causality of relationships, correlations do not indicate causality of relationships, thus, in some cases, plausible alternative causal paths have been described. A discussion relating to the significant correlations is presented after Table 26. Full correlation tables are available in the appendices: Appendix G provides the correlation table for 1999 to 2005; Appendix H provides the correlation table for 1999 to 2002; and Appendix I provides the correlation table for 2002 to 2005.

**Table 26: Significant Correlations Amongst the Control Variables, the Independent Variables and the Dependent Variables**

Dependent Variables:	Organiz -ation size (CV)	Organiz -ation type (CV)	Changes in leadership personnel (IV)	Turn- over of per- sonnel (IV)	Changes in human resources practices (IV)
Six-year period – 1999 to 2005					
Changes in clarity of goals			.36*		
Changes in learning	-.37*	.28*			

Changes in involvement	-.33*	.29*	-.40**		.33*
Changes in workload			.31*		
Changes in innovation and flexibility	-.29*	.41**	-.57***		
Global measure of culture change	-.29*	.30*			
Three-year period – 1999 to 2002					
Changes in performance feedback			-.32*	.36*	
Changes in learning				.41**	
Changes in career development				.30*	
Changes in involvement		.28*	-.41**	.38**	
Changes in innovation and flexibility			-.52***		
Global measure of culture change				.38**	
Three-year period – 2002 to 2005					
Changes in clarity of goals			.29*		
Changes in performance feedback			.34*		
Changes in career development	-.35*				.30*
Changes in involvement					.30*
Changes in innovation and Flexibility	-.40**	.35*			
Global measure of culture change	-.32*				

Notes:

The statistic displayed is the correlation coefficient.

\* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

#### 6.3.2.1.1 Control Variables – Organization Size and Organization Type

For the six-year period 1999 to 2005, the control variable organization size is significantly negatively correlated with three dependent variables: changes in learning

( $r = -.37$ ), changes in involvement ( $r = -.33$ ) and changes in innovation and flexibility ( $r = -.29$ ). For the three-year period 2002 to 2005, the control variable organization size is significantly negatively correlated with two dependent variables: changes in career development ( $r = -.35$ ) and changes in innovation and flexibility ( $r = -.40$ ). The control variable organization size is also significantly negatively correlated with global measures of culture change in two periods: the six-year period 1999 to 2005 ( $r = -.29$ ) and the three-year period 2002 to 2005 ( $r = -.32$ ). These results suggest that in larger organizations, there are less changes in learning, involvement, innovation and flexibility, and career development. As well, these results suggest that organization size affects the ability to impact overall organizational culture change.

For the six-year period 1999 to 2005, the control variable organization type is significantly positively correlated with three dependent variables: changes in learning ( $r = .28$ ), changes in involvement ( $r = .29$ ) and changes in innovation and flexibility ( $r = .41$ ). For the three-year period 1999 to 2002, the control variable organization type is significantly positively correlated with the dependent variable changes in involvement ( $r = .28$ ). The control variable organization type is also significantly negatively correlated with the global measure of culture change for the six-year period of 1999 to 2005 ( $r = .30$ ). For the three-year period 2002 to 2005, the control variable organization type is significantly positively correlated with the dependent variable changes in innovation and flexibility ( $r = .35$ ). These results suggest that, in organization types other than departments, there are more changes in learning, involvement, and innovation and

flexibility. These results also suggest that organization type affects the ability to impact overall organizational culture change.

#### 6.3.2.1.2 Changes in Leadership Personnel

For the six-year period 1999 to 2005, the independent variable changes in leadership personnel is significantly positively correlated with changes in clarity of goals ( $r = .36$ ), and changes in workload ( $r = .31$ ) and is significantly negatively correlated with changes in involvement ( $r = -.40$ ), and changes in innovation and flexibility ( $r = -.57$ ). For the three-year period 1999 to 2002, changes in leadership personnel is significantly negatively correlated with three dependent variables: changes in performance feedback ( $r = -.32$ ), changes in involvement ( $r = -.41$ ) and changes in innovation and flexibility ( $r = -.52$ ). For the three-year period 2002 to 2005, changes in leadership personnel is significantly positively correlated with two dependent variables: changes in clarity of goals ( $r = .29$ ) and changes in performance feedback ( $r = .34$ ).

One explanation for the positive correlation between changes in leadership personnel and changes in clarity of goals suggests that the new leadership may better articulate the organizational goals than the previous leadership. Another explanation is that the new leadership may develop clearer goals than the former leaders.

The positive correlation between changes in leadership personnel and changes in workload suggests that workload has increased because of the changes in leadership

personnel. Typically, new leaders make increased demands on employees, for example related to requests for information and new processes introduced by the new leadership personnel.

One possible explanation of the negative correlation between changes in leadership personnel and involvement is that when there are changes in leadership personnel, employees may feel less involved. This situation may improve as the employees become more familiar with the new leaders.

A possible explanation for the negative correlation between changes in leadership personnel and changes in innovation and flexibility is that when there are changes in leadership personnel, innovation and flexibility suffers. For example, the new leadership may decide to impose tighter organizational controls, limiting innovation and flexibility.

Finally, as noted above, there are both positive and negative significant correlations between changes in leadership personnel and change in performance feedback. The negative correlation was found in the three-year period 1999 to 2002 of the primary analysis while the positive correlation was found in the three-year period 2002 to 2005 of the primary analysis. One explanation for these results may be that in the short term, changes in leadership personnel undermine performance feedback. However, in the longer term, the new leaders enhance performance feedback. These results could be explained as the new leaders needing time to determine what employee objectives should be.

### 6.3.2.1.3 Turnover of Personnel

For the three-year period 1999 to 2002, the independent variable turnover of personnel is significantly positively correlated with four dependent variables: changes in performance feedback ( $r = .36$ ), changes in learning ( $r = .41$ ), changes in career development ( $r = .30$ ) and changes in involvement ( $r = .38$ ). The independent variable turnover of personnel is also significantly positively correlated with a global measure of culture change for the three-year period 1999 to 2002 ( $r = .38$ ). These results suggest that the independent variable turnover of personnel has a positive impact on certain culture dimensions, as well as the ability to shift the overall organizational culture.

One explanation for the significant positive correlation between turnover of personnel and changes in performance feedback is that there may be increased performance feedback because of the turnover of personnel. For example, new employees may be subjected to more frequent performance feedback than longer-term employees.

The significant positive correlation between turnover of personnel and changes in learning may result from increased learning opportunities for remaining employees. For example, these remaining employees may have the opportunity to assume the responsibilities of employees who have left the organization. Similarly, the significant positive correlation between turnover of personnel and changes in career development may be explained as career development opportunities becoming available to remaining employees as a result of employee turnover.

Finally, an explanation for the significant positive correlation between employee turnover and changes in involvement is involvement increasing as a result of employee turnover. For example, employees who have left the organization may previously have had a very negative impact on the involvement culture of the organization. Their departure may have had a positive effect on the involvement culture. As well, the new employees may have introduced new ideas and enthusiasm into the organization that resulted in increased involvement.

#### 6.3.2.1.4 Changes in Human Resources Practices

For the six-year period 1999 to 2005, the independent variable changes in human resources practices is significantly positively correlated with the dependent variable changes in involvement ( $r = .33$ ). For the three-year period 2002 to 2005, the independent variable changes in human resources practices is significantly positively correlated with two dependent variables: changes in career development ( $r = .30$ ) and changes in involvement ( $r = .30$ ).

One explanation for the significant positive correlation between changes in involvement and changes in human resources practices is that when there are changes in human resources practices, the employee involvement culture in the organization may be strengthened. For example, teamwork may be introduced through human resources practices.

One possible explanation for the positive significant correlation between changes in human resources practices and changes in career development is that there may be changes in career development because of changes in human resources practices. For example, there may be changes in human resources practices that provide employees with time off work to take courses. Another explanation is that there may be more career development as a result of changes in human resources practices. Continuing with the previous example, if employees are provided with the opportunity to take courses during regular work hours, they may become qualified for other careers.

#### 6.3.2.1.5 Summary Comments Related to the Bivariate Correlation Analyses

The correlation analyses identify three independent variables that have significant bivariate correlations with dependent variables. The three related independent variables are: changes in leadership personnel, turnover of personnel and changes in human resources practices. As noted previously, the variables with the significant bivariate correlations will be used in the regression analyses.

Contrary to the hypotheses, the correlation analyses suggest that, for this six-year period, four of the seven independent variables are unrelated to the dependent variables. The four unrelated independent variables are: vision, leadership actions, communication, and enabling changes in structure and processes. There are various possible explanations for the lack of relationship between these four independent variables and the dependent variables. These issues will be further discussed in the next chapter.

The next subsection describes the results of the regression analyses for the six-year period 1999 to 2005. This is followed by the data analyses of the two three-year periods included in the primary data analysis: 1999 to 2002 and 2002 to 2005.

### 6.3.2.2 Regression Analysis with a Global Measure of Culture Changes

This subsection features regression analyses with a global measure of culture changes for three time periods within the primary data analysis. First, the six-year period of 1999 to 2005 is presented. This is followed by the two three-year analyses: 1999 to 2002 and 2002 to 2005. Only those independent variables which were significantly correlated with the dependent variables are included in each regression. In order to offset the lower power of the analyses to detect smaller effect sizes (Cohen & Cohen, 1983), marginally significant effects will be reported where applicable in the following subsections.

#### 6.3.2.2.1 Six-Year Analysis – 1999 to 2005

Table 27 provides the results of the regression analysis of a global measure of culture changes for the six-year period 1999 to 2005. This table is followed by a discussion of these results.

**Table 27: Regression Analysis: Global Measure of Culture Changes 1999 to 2005**

Variables	R <sup>2</sup> - Control variables	R <sup>2</sup> - Independent variables	Δ in R <sup>2</sup>	β
Organization size	.11†	-	-	-.16
Organization type				.22

Notes:

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

Due to low power, marginal results are reported.

For the six-year period of 1999 to 2005, the analysis of changes in global culture across all of the organizations reveals that the model summary for the control variables is approaching significance. However, neither of the control variables are individually significant, or approaching significance. Eleven per cent of the variance in the global measure of culture changes is explained by the regression model.

#### 6.3.2.2.2 Three-Year Analysis - 1999 to 2002

Table 28 provides the results of the regression analysis of a global measure of culture changes for the three-year period 1999 to 2002. This table is followed by a discussion of these results.

**Table 28: Regression Analysis: Global Measure of Culture Changes 1999 to 2002**

Variables	R <sup>2</sup> - Control variables	R <sup>2</sup> - Independent variables	Δ in R <sup>2</sup>	β
Turnover of personnel	-	.11*	-	.34*

Notes:

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

For the three-year period of 1999 to 2002, the analysis of changes in global culture reveals that the independent variable turnover of personnel is significant. Eleven per cent of the variance in the global measure of culture changes is explained by the regression model. These results suggest higher turnover of personnel enhances global culture changes.

#### 6.3.2.2.3 Three-Year Analysis - 2002 to 2005

Table 29 provides the results of the regression analysis of a global measure of culture changes for the three-year period 2002 to 2005. This table is followed by a discussion of these results.

**Table 29: Regression Analysis: Global Measure of Culture Changes 2002 to 2005**

Variables	R <sup>2</sup> - Control variables	R <sup>2</sup> - Independent variables	Δ in R <sup>2</sup>	β
Organization size	.09*	-	-	-.29*

Notes::

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

For the three-year period of 2002 to 2005, the analysis of changes in global culture reveals that the control variable organization size is significant. Nine per cent of the variance in the global measure of culture changes is explained by the regression model. These results suggest that smaller organizations can effect global changes.

#### 6.3.2.2.4 Summary

For the six-year period of 1999 to 2005, the model with the control variables is approaching significance. The independent variable turnover of personnel is significant for the global measure of culture changes for the three-year period of 1999 to 2002. Finally, the control variable organization size is significant for the global measure of culture changes for the three-year period of 2002 to 2005. The reason for these relatively few variables of significance revealed by the regression analysis relates to the level of analysis, that is, a global measure of changes. As described earlier in this chapter, the global measure of culture change was calculated by averaging the difference in the means for each of the culture dimensions included for each of the time periods. As a result of this averaging, some of the areas of significance may not be detected in the global measures of culture change. The next subsections feature regression analyses for the nine culture dimensions included in the primary analysis for the period 1999 to 2005.

### 6.3.2.3 Regression Analyses of Changes in Culture Dimensions

As shown in Table 26, there are significant correlations amongst a number of control variables, independent variables and dependent variables. Again, like the procedure used for the multiple regressions for the global measure of culture changes, only those independent variables which were significantly correlated with the dependent variables were included in each regression. Hierarchical regressions were run in two steps. In the first step, when the control variables of organization size and organization type had significant bivariate correlations, they were entered into the equation. In the second step, when the independent variables had significant bivariate correlations, they were entered into the equation.

This section presents the results of the regression analyses of changes in culture dimensions across all nine dimensions for the three periods within the primary analysis of this research: the six-year period 1999 to 2005; the three-year period 1999 to 2002 and the three-year period 2002 to 2005.

#### 6.3.2.3.1 Six-Year Analysis – 1999 to 2005

Table 30 summarizes the results of the hierarchical regression analyses. A discussion of the regression results follows Table 30.

**Table 30: Regression Analysis: Six-Year Period 1999 to 2005**

Variables	R <sup>2</sup> - Control variables	R <sup>2</sup> - Independent variables	Δ in R <sup>2</sup>	β
(DV) Changes in learning (IV) Organization size (IV) Organization type	.13*	n.a.	n.a.	-.26† .15
(DV) Changes in involvement (IV) Organization size (IV) Organization type (IV) Changes in leadership personnel (IV) Changes in human resources practices	.11†	.31***	.20	-.04 .29† -.32** .33**
(DV) Innovation & flexibility (IV) Organization size (IV) Organization type (IV) Changes in leadership personnel	.18**	.42***	.24	-.08 .27* -.50***

Notes:

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

Due to low power, marginal results are reported.

It is interesting to note that although the control variables organization size and organization type have significant bivariate correlations for three dependent variables (changes in learning, changes in involvement and changes in innovation and flexibility), only the control variable organization type is a significant predictor for the dependent variable changes in innovation and flexibility when the hierarchical regressions were run. Organization size for the dependent variable changes in learning is approaching significance with a beta of .095. These control variables are fairly highly correlated ( $r = -.51$ ) (Cohen & Cohen, 1983), so while they jointly have an impact, (for example,  $R^2$  for change in learning is 13 per cent and  $R^2$  for change in involvement is 11 per cent), neither is individually significant, probably due to multicollinearity (Cohen & Cohen, 1983). These results suggest that changes in innovation and flexibility are more likely in

organizations other than departments. As well, these results suggest that changes in learning are inhibited in large organizations.

For the six-year period of 1999 to 2005, only the regression analyses for the dependent variable changes in involvement suggested that more than one independent variable was a significant predictor of organizational culture change. Changes in leadership personnel and changes in human resources practices were both significant predictors of the culture dimension changes in involvement. The relative contribution of these two independent variables was almost equal: changes in human resources practices has a beta of .33 and changes in leadership personnel has a beta of -.32. Thirty one per cent of the variance in the dependent variable change in involvement is explained by the regression model. The independent variables added 20 per cent to the explanation of variance beyond the variance contributed by the control variables. These results suggest that a higher turnover of leaders reduces employee involvement while changes in human resources practices enhance involvement.

The hierarchical regression for the dependent variable changes in innovation and flexibility reveals that organization type (beta .27), and the independent variable changes in leadership personnel (beta -.50) are significant predictors. Forty two per cent of the variance in the dependent variable change in innovation and flexibility is explained by the regression model. The independent variable explained 24 per cent of the variance beyond that contributed by the control variables. These results suggest that there is

greater innovation and flexibility in smaller organizations and there is less innovation and flexibility when there is a high turnover of leaders.

The next subsection discusses the first three-year analysis (1999 to 2002) within the primary analysis of 1999 to 2005. It is followed by the second three-year analysis (2002 to 2005) within the primary analysis of 1999 to 2005.

#### 6.3.2.3.2 Three-Year Analysis - 1999 to 2002

As shown in Table 26, there are significant correlations amongst a number of control variables, independent variables and dependent variables. Hierarchical regressions were run by first entering any control variables that had significant bivariate correlations, followed by entering any independent variables that had significant bivariate correlations.

Table 31 summarizes the results of the hierarchical regression analyses. A discussion of the regression results follows Table 31.

**Table 31: Regression Analysis: Three-Year Period 1999 to 2002**

Variables	R <sup>2</sup> - Control variables	R <sup>2</sup> - Independent variables	Δ in R <sup>2</sup>	β
(DV) Changes in performance feedback (IV) Changes in leadership personnel (IV) Turnover of personnel	n.a.	.18**	n.a.	-.26† .29*
(DV) Change in involvement (IV) Organization type (IV) Changes in leadership personnel (IV) Turnover of personnel	.08*	.25**	.17	.10 -.33* .26†

Notes:

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

Due to low power, marginal results are reported.

The hierarchical regression for the dependent variable changes in performance feedback reveals that the independent variable turnover of personnel (beta .29) is a significant predictor. The independent variable changes in leadership personnel is approaching significance (p = .06) with a beta of -.26. Eighteen per cent of the variance in the dependent variable changes in performance feedback is explained by the regression model. These results suggest that turnover of personnel enhances performance feedback while changes in leadership personnel reduce performance feedback.

The hierarchical regression for the dependent variable changes in involvement reveals that the independent variable changes in leadership personnel (beta -.33) is a significant predictor. The independent variable turnover of personnel is approaching significance (p = .06) for changes in involvement (beta .26). Twenty five per cent of the variance in the dependent variable change in involvement is explained by the regression model. The independent variables explained additional variance (17 per cent) beyond the variance

contributed by the control variable organization type. These results suggest that turnover of personnel enhances involvement while changes in leadership reduce involvement.

For the three-year period of 1999 to 2002, two of the regression analyses suggested that more than one independent variable was a significant predictor of organizational culture changes. Changes in leadership personnel and turnover of personnel were both significant predictors of the culture dimensions changes in involvement and changes in performance feedback. For changes in involvement, changes in leadership personnel provided a slightly greater relative contribution with a beta of -.33 while turnover of personnel has a beta of .26. For changes in performance feedback, turnover of personnel provided a slightly greater relative contribution with a beta of .29 while changes in leadership personnel has a beta of -.26.

The next subsection provides the regression results for the second three-year period within the primary analysis (1999 to 2005).

#### 6.3.2.3.3 Three-Year Analysis - 2002 to 2005

As shown in Table 26, there are significant correlations amongst a number of control variables, independent variables and dependent variables. Hierarchical regressions were run by first entering the control variables with significant bivariate correlations into the equation, followed by independent variables with significant bivariate correlations. Table

32 summarizes the results of the hierarchical regression analyses. A discussion of the regression results follows Table 32.

**Table 32: Regression Analysis: Three-Year Period 2002 to 2005**

Variables	R <sup>2</sup> - Control variables	R <sup>2</sup> - Independent variables	Δ in R <sup>2</sup>	β
(DV) Changes in career development (IV) Organization size (IV) Changes in human resources practices	.11*	.17**	.06	-.29* .24†
(DV) Changes in innovation & flexibility (IV) Organization size (IV) Organization type	.18**	n.a.	n.a.	-.29† .21

Notes:

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

Due to low power, marginal results are reported.

The hierarchical regression for the dependent variable changes in career development reveals that the control variable organization size (beta -.29) is a significant predictor. The independent variable changes in human resources practices is approaching significance (p = .07) with a beta of .24. Seventeen per cent of the variance in the dependent variable changes in career development is explained by the regression model. These results suggest that career development is reduced in larger organizations, while changes in human resources practices enhance career development.

The hierarchical regression for the dependent variable changes in innovation and flexibility reveals that the control variable organization size is approach significance

( $p = .07$ ), with a beta of  $-.29$ . The control variable organization type is not a significant predictor (beta  $.21$ ). Again, this is probably due to multicollinearity amongst the two control variables, given the relatively high correlation between these two control variables ( $r = -.51$ ) (Cohen & Cohen, 1983).

The next subsection relates to the data analysis for the supplemental culture dimensions over the period of 2002 to 2005. It will be followed by a summary of the results of the data analyses and hypotheses testing.

#### 6.3.2.4 Supplemental Data Analysis - 2002 to 2005

##### 6.3.2.4.1 Introduction

As was described in Chapter 5, the supplemental analysis relates to the three-year period 2002 to 2005. For the 2002 PSES, five additional culture dimensions were introduced into the PSES: changes in client service, changes in safety culture, changes in justice culture, changes in career barriers, and changes in labour relations. The seven independent variables remain the same (vision, leadership actions, changes in leadership personnel, turnover of personnel, changes in human resources practices, communication, and enabling changes in structure and processes). As well, the two control variables (organization size and organization type) remain the same.

The approach to this analysis mirrored that of the data analysis for the period 1999 to 2005. It is important to highlight that while specific data for organization size, changes in leadership personnel and turnover of personnel was obtained for the period 2002 to 2005, the data from the questionnaire, which covered the period 1999 to 2005, was used for the other five independent variables (vision, leadership actions, changes in human resources practices, communication, and enabling changes in structure and processes).

This section describes the data analysis for this three-year period. As was the case for the primary analysis for the period 1999 to 2005, first the bivariate correlation analysis is presented. This is followed by the multiple regression analyses.

#### 6.3.2.4.2 Bivariate Correlation Analysis

Similar to the analysis for the primary period of 1999 to 2005, this section will feature the statistically significant bivariate correlations amongst the variables of interest for the supplemental data analysis (2002 to 2005). Appendix J provides the results of all of the correlations. Table 33 summarizes the significant correlations. The table is followed by a discussion of these significant correlations. Although the hypotheses suggest a specific direction of causality, correlations cannot indicate causality. Thus, once again, plausible alternative paths are described below. There were no significant bivariate correlations relating to the global measure of culture change for this supplemental analysis.

**Table 33: Significant Correlations Amongst Control Variables, Independent Variables and Dependent Variables**

	Changes in leadership personnel (IV)	Changes in human resources practices (IV)	Communication (IV)	Enabling changes in structure and processes (IV)
Changes in client service (DV)	-.31*			
Changes in safety culture (DV)		.32*	.32*	.35*
Changes in justice culture (DV)				.33*

Notes:

The statistic displayed is the correlation coefficient.

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

The independent variable changes in leadership personnel is significantly negatively correlated with the dependent variable changes in client service ( $r = -.31$ ). One possible explanation for these correlations is that when there are changes in leadership personnel, client service may suffer. This may result from the new leadership introducing priorities other than client service. Another possible explanation is that when client service suffers, there are changes in leadership personnel. This could happen if it is determined that new leaders with a stronger client service orientation are required.

The independent variable changes in human resources practices is significantly positively correlated with the dependent variable changes in safety culture ( $r = .32$ ). One possible explanation for this correlation is that when there are changes in human resources practices, safety culture may be heightened.

The independent variable communications is significantly positively correlated with the independent variable safety culture ( $r = .32$ ). One possible explanation for these correlations is that when there are changes in communications, safety culture may be enhanced. Another possible explanation is that when safety culture is heightened, there are increased related communications. For example, immediately after an on-the-job accident takes place, there may be enhanced communication in the organization.

Finally, the independent variable of enabling changes in structure and processes is correlated with the dependent variables changes in safety culture ( $r = .35$ ) and changes in justice culture ( $r = .33$ ). One possible explanation for these correlations is that when there are changes in structure and processes, safety culture and justice culture may be positively impacted. For example, safety culture may be increased as a result of the introduction of a safety officer position and an ombudsperson position.

Four independent variables support the hypotheses: changes in leadership personnel, changes in human resources practices, communication and enabling changes in structure and processes. The correlation analysis suggests that, contrary to the hypotheses, three independent variables are unrelated to the dependent variables. These three unrelated independent variables are: vision, turnover of personnel and leadership actions. These issues will be discussed in the next chapter. The next subsection describes the results of the regression analyses for the period 2002 to 2005 concerning the supplemental data analysis.

#### 6.3.2.4.3 Regression Analyses of Changes in Culture Dimensions

As was the approach for the 1999 to 2005 analysis, for the 2002 to 2005 analysis, in order to keep the regression models as parsimonious as possible, thereby increasing power, the correlations amongst the control variables, the independent variables and the dependent variables were reviewed. Hierarchical regressions were run using only those variables that had a significant bivariate correlation. These results are shown in Table 34. A related discussion follows the table.

**Table 34: Regression Analysis – Supplemental Analysis:  
Three-Year Period 2002 to 2005**

Variables	R <sup>2</sup> - Control variables	R <sup>2</sup> - Independent variables	Δ in R <sup>2</sup>	β
(DV) Changes in safety culture	n.a.	.10	n.a.	.10
(IV) Changes in human resources practices				.06
(IV) Communication				.19
(IV) Enabling changes in structure & processes				

Notes:

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

Due to low power, marginal results are reported.

As noted in subsection 6.3.2.4.2, the dependent variable changes in safety culture is significantly correlated with three independent variables: changes in human resources practices, communications, and enabling changes in structure and processes. However, when the hierarchical regression was run for changes in safety culture, it is not significant. This is likely due to multicollinearity amongst these three independent

variables (Cohen & Cohen, 1983). The average correlations amongst these three variables is .70 (see Table 25), which is high (Cohen, 1983). Therefore, the condition indices and the variance proportions were examined for these three independent variables (Belsley, Kuh & Welsch, 1980). Table 35 displays these results.

**Table 35: Changes in Safety Culture – Collinearity Diagnostics**

Model	Dimension	Condition Index	Variance Proportions			
			Constant	SP	HR	Com
1	1	1.000	.00	.00	.00	.00
	2	10.816	.38	.44	.01	.01
	3	16.894	.46	.55	.12	.36
	4	22.510	.16	.01	.87	.63

(Legend: SP – Changes in structure and processes; HR – Changes in human resources practices; Com – Communication)

The relatively high condition indices and relatively high variance proportions suggest multicollinearity amongst these three independent variables. Therefore, to determine the relative importance, stepwise regression was run. Stepwise regression is used to select a subset of independent variables that is useful in predicting the dependent variable, and to eliminate those independent variables that do not provide additional prediction (Tabachnick & Fidell, 1983). The results of the stepwise regression are displayed in Table 36.

**Table 36: Stepwise Regression Results for Changes in Safety Culture**

Variables	R <sup>2</sup> - Independent variable	B
(DV) Changes in safety culture (IV) Enabling changes in structure and processes	.09*	.30*

Notes:

† p ≤ .1; \* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

Due to low power, marginal results are reported.

These results suggest that enabling changes in structure and processes explain the greatest variance in changes in safety culture.

#### 6.3.2.5 Questionnaire Summary Question

The final question included in the questionnaire asked the respondents to what extent each possible culture change driver included in the questionnaire (vision, leadership, changes to human resources practices, communication, and enabling changes in structure and processes) was important in achieving the desired results. A Likert scale of 1 to 7 was provided with 1 indicating “to no extent” and 7 indicating “to great extent”. The means for change drivers included in the questionnaire are presented in Table 37.

**Table 37: Questionnaire Respondents' Ratings of the Importance of Culture Change Drivers**

Organizational Culture Driver	Mean
Leadership actions	6.22
Vision	5.86
Communication	5.80
Changes in human resources practices	5.20
Enabling changes in structure and processes	4.89

The results range from 6.22 for leadership actions to 4.89 for enabling changes in structure and processes. These responses indicate that all of the possible drivers included in the questionnaire are seen as relevant to shifting an organization's culture with most people believing that leaders' actions are most important.

#### 6.4 Chapter Summary

The correlation analyses and the regression analyses revealed that five of the independent variables are related to a number of the dependent variables. These independent variables include: changes in leadership personnel, turnover of personnel, changes in human resources practices, communication and enabling changes in systems and processes.

Table 38 summarizes the results of the hypothesis testing. The hypothesis was rejected if there were no significant bivariate correlations. In Table 38, "partial support" means that at least one culture dimension had a significant bivariate correlation. The hypothesis relating to changes in leadership personnel, H3, was both supported and contradicted for

certain culture dimensions, as noted in Table 38. A brief discussion, organized by independent variable, follows the table.

**Table 38: Summary of Hypothesis Testing**

Hypotheses	Primary Analysis: Six years - 1999 to 2005	Primary Analysis: Three years - 1999 to 2002	Primary Analysis: Three years - 2002 to 2005	Supple- mental Analysis: Three years - 2002 to 2005
H1: The more clear and persuasive the vision, the greater the cultural change.	No support	No support	No support	No support
H2: The more that the organizational leaders take actions to lead the change initiative, the greater the cultural change.	No support	No support	No support	No support
H3: The more changes in leadership personnel, the greater the cultural change.	Partial support – for two culture dimensions: changes in clarity of goals and changes in workload  Negative support for two culture dimensions: changes in involvement and changes in innovation and flexibility	Negative support for three culture dimensions: changes in performance feedback, changes in involvement, and changes in innovation and flexibility	Partial support – for two culture dimensions: changes in clarity of goals and changes in performance feedback	Negative support – for one culture dimension: changes in client service
H4: The more employee turnover, the greater the cultural change.	No support	Partial support – for global measure of culture	No support	No support

		changes and for four culture dimensions: changes in performance feedback, change in learning, changes in career development and changes in involvement		
H5: The more modifications to human resources practices that are made to support the change initiative, the greater the cultural change.	Partial support – for one culture dimension: changes in involvement	No support	Partial support – for two culture dimensions: changes in career development and changes in involvement	Partial support – for one culture dimension: changes in safety culture
H6: The more extensive the communication about the change initiative, the greater the cultural change.	No support	No support	No support	Partial support – for one culture dimension: changes in safety culture
H7: The more modifications to organizational structure and organizational processes that are made to support the change initiative, the greater the cultural change.	No support	No support	No support	Partial support – for two culture dimensions: changes in safety culture and changes in justice culture

The significant bivariate correlation analyses for the global measure of culture changes partially supported one hypothesis. The significant bivariate correlation analyses for the changes in culture dimensions partially supported five hypotheses.

Finally, another key finding from the data analyses relates to the questionnaire respondents' assessment of the importance of the five change drivers identified in the questionnaire. The responses indicate that all of the possible drivers included in the questionnaire (vision, leadership actions, communication, changes in human resources practices and enabling changes in structure and processes) are seen as important to shifting an organization's culture. Leadership actions was identified as the most important driver of organizational culture change. Enabling changes in structure and processes was identified as the least important driver of organizational culture change considered in the questionnaire.

The next chapter will discuss the results of the hypothesis testing in more detail along with some important implications.

## 7 DISCUSSION

The research model offered in this study proposed that seven change drivers will predict organizational culture change. The seven change drivers included: vision, leadership actions, changes in leadership personnel, turnover of personnel, changes in human resources practices, communication, and enabling changes in structure and processes. There were nine organizational culture change dimensions for the primary analysis (1999 to 2005). Due to changes in the PSES questionnaire, there were five additional culture change dimensions for the supplemental analysis (2002 to 2005).

This chapter describes the main findings of the study. First, an overview of the findings is presented. This is followed by a discussion of the impact of the change drivers concerning the seven hypotheses. Next is a discussion of the implications of this study. This is followed by the limitations and contributions of this study. Finally, suggestions for future research are discussed.

### 7.1 Overview of the Findings

As described in Chapter 6, bivariate correlation analyses and regression analyses were conducted for the four time periods under consideration in this research: the six-year period covered by the primary analysis (1999 to 2005), the two three-year periods within the primary analysis (1999 to 2002 and 2002 to 2005) and the supplemental analysis of 2002 to 2005. The results of these analyses found that five of the seven hypotheses

included in this research were partially supported in either the primary analyses or the supplemental analyses. H4, the hypothesis related to employee turnover was supported for a global measure of change and four culture dimensions. The hypothesis concerning modifications to human resources practices (H5) was supported for three culture dimensions. H3, the hypothesis that concerns changes in leadership personnel was supported for three culture dimensions. The hypothesis concerning modifications to the organizational structure and processes (H7) was supported for two culture dimensions. Finally, H6, the hypothesis relating to communication was supported for one culture dimension.

In addition to the support for five of the seven hypotheses, there are two additional important findings suggested by this research. The first is that the change driver changes in leadership personnel had both negative and positive outcomes on the culture change dimensions included in this research, with more negative impacts than positive impacts. This is a very important finding given that most of the literature suggests that changes in leadership personnel have a positive impact on change initiatives. The second concerns the length of time it takes to effect a culture shift. These results suggest that culture can be shifted in as little as three years. This is also an important finding given that most of the literature suggests that it takes at least five years to change an organization's culture.

The following subsection discusses the impact of the change drivers related to the seven hypotheses. This will be followed by a brief discussion concerning the control variables. Then, the implications of this research will be discussed.

## 7.2 The Impact of the Change Drivers

This subsection discusses the impact of the change drivers in relation to the seven hypotheses. As this discussion includes references to the mean scores from the questions in the questionnaire, it is important to note the anchors for the Likert scale associated with these questions. In the questionnaire, the response “1” indicated that the response was true “to no extent”, the response “4” indicated “to some extent”, and “7” indicated “to a great extent”. The questionnaire is contained in Appendix D.

As the change driver changes in leadership personnel has potential implications for five other hypotheses, the hypothesis concerning changes in leadership personnel will be presented first. This will be followed by the hypothesis relating to employee turnover. Then, the other hypotheses will be discussed.

### 7.2.1 Changes in Leadership Personnel

H3: The more changes in leadership personnel, the greater the cultural change.

This change driver, changes in leadership personnel, played the most significant role of all of the change drivers considered in this study. It was significantly related to six of the 14 culture dimensions included in this research. It was also significant in each of the four analyses included in this study: the primary analysis of the six-year period 1999 to 2005, the first three-year period within the primary analysis (1999 to 2002), the second three-year period within the primary analysis (2002 to 2005), and the supplemental analysis

(2002 to 2005). Table 39 summarizes the culture dimensions supported by this hypothesis.

**Table 39: Culture Dimensions Supported by the Change Driver Changes in Leadership Personnel**

	Primary analysis (1999 to 2005)	Primary analysis (1999 to 2002)	Primary analysis (2002 to 2005)	Supplemental analysis (2002 to 2005)
Changes in clarity of goals	Positive relationship		Positive relationship	
Changes in involvement	Negative relationship	Negative relationship		
Changes in workload	Positive relationship			
Changes in innovation and flexibility	Negative relationship	Negative relationship		
Changes in performance feedback		Negative relationship	Positive relationship	
Changes in client service				Negative relationship

As discussed previously, changes in leadership personnel was the most significant change driver considered in this research. It is important to note that the majority of the impact of this change driver was a negative impact, rather than a positive impact. This is contrary to most of the literature (e.g., Tushman, Newman & Romanelli, 1986; Neuhauser, Bender & Stromberg, 2000; Mader, 2006; Sliwka, 2007) that highlights the important benefits that changes in leadership personnel typically have on a change initiative. The most likely explanation for this negative impact of this change driver could be that the amount of leadership turnover was too high. The mean for changes in leadership personnel for the primary analysis (1999 to 2005) was .77 (77 per cent),

representing a high rate of change amongst the leadership team. The mean for changes in leadership personnel for the supplemental analysis (2002 to 2005) was .53 (53 per cent), which also represents a high rate of change amongst the leadership team for this period. This high level of leadership turnover is consistent with Nutt and Backoff's (1993) hypothesis that public sector leaders typically change in less than two year intervals. As a result of this high rate of change, considerable time and organizational resources could have been consumed recruiting the replacement leaders and familiarizing the new leaders with the organization generally before the new leaders were prepared to take actions concerning this organizational change initiative. As well, there could have been considerable negative impact for those remaining in the organization. Hesselbein (1997) theorized that the eyes of every employee are focused on the outgoing executive, and that there are few events in organizations as important, as visible or as stressful as when a leader departs the organization.

As highlighted in Table 39, there are three culture dimensions that were positively impacted as a result of changes in leadership personnel: changes in clarity of goals, changes in performance feedback, and changes in workload. In regards to the positive support for changes in workload, this means that workload has gone up, which is typically regarded as a negative impact on the workplace.

These results suggest that the positive support for the culture dimension changes in clarity of goals could be that as a result of the changes in leadership personnel, the organizational goals were better articulated. However, another possible explanation is

that these positive results were independent of this change initiative, and had more to do with other change initiatives introduced into the Canadian federal government at this time (Zussman, 2008). For example, effective April 1, 2004, a new system of performance management for the executive group in the Canadian federal government was introduced (Canada Public Service Agency, 2008). This new system of performance management for the executives included signed annual performance agreements and related performance assessment. In determining what was included in these performance agreements, a number of factors were considered: the priorities of the government, the priorities of the Clerk of the Privy Council, the priorities and plans of individual departments and agencies, as well as individual development needs (Canada Public Service Agency, 2008). The objectives included in these annual performance agreements were then typically cascaded down to appropriate levels within the individual organizations.

In the case of the dependent variable changes in performance feedback, in the first three years of the primary analysis (1999 to 2002), changes in leadership personnel had a negative impact. However, in the next three years of the primary analysis (2002 to 2005), the changes in leadership personnel had a positive impact. One explanation of this situation is that in the first three years (1999 to 2002), the leaders did not put a priority on performance feedback. However, during the second three-year period of the primary analysis (2002 to 2005), they may have stressed the importance of performance feedback, perhaps as a result of the new performance management program implemented in 2004 (Canada Public Service Agency, 2008).

### 7.2.2 Turnover of Personnel

H4: The more employee turnover, the greater the cultural change.

During the first three-year period (1999 to 2002) of the primary analysis, turnover of personnel had a positive impact on the global measure of culture change and four culture dimensions. Table 40 summarizes the culture dimensions supported by this hypothesis.

**Table 40: Culture Dimensions Supported by the Change Driver Turnover of Personnel**

	Primary analysis (1999 to 2005)	Primary analysis (1999 to 2002)	Primary analysis (2002 to 2005)	Supplemental analysis (2002 to 2005)
Changes in performance feedback		Positive relationship		
Changes in learning		Positive relationship		
Changes in career development		Positive relationship		
Changes in involvement		Positive relationship		
Global measure of culture changes		Positive relationship		

The mean for annual turnover of personnel for the primary analysis (1999 to 2005) was 8.29 per cent while the mean for annual turnover of personnel for the supplemental analysis (2002 to 2005) was slightly higher at 8.35 per cent. As discussed in Chapter 3, employees who do not fit with the desired organizational culture may leave the

organization (Harrison & Carroll, 1991), and they may be replaced with employees who do fit the desired culture (Schwartz & Davis, 1981). Typically, in order to ensure that the new employees do fit the desired culture, the organization's recruitment process would need to evaluate the job candidates carefully to ensure that they possess not only the necessary skills, but also values congruent with the desired culture shift (Harrison & Carroll, 1991). This could explain the support for this hypothesis related to these four culture dimensions.

It is interesting to note that while there was support for this hypothesis in the first three years of the primary analysis (1999 to 2002), there was no support for it in the second three years of the primary analysis (2002 to 2005). One explanation for this result could be that while perhaps during the 1999 to 2002 period the recruitment process was attuned to hiring candidates with values congruent with the desired culture shift, that priority did not continue during the second three years of the culture change initiative. This may reflect changes in the recruitment process from the first three-year period to the second three-year period. Alternatively, the lack of support in the 2002 to 2005 period could be due to bargaining agents' involvement in the development of the 2002 PSES (Public Service Human Resources Management Agency of Canada, 2006). Informal conversations with federal public servants suggest that when this organizational culture change initiative was first introduced in 1999, there was not much involvement in it by the union representatives. However, by 2002, the unions were much more interested in this culture shift initiative, as they had gained an understanding that this culture change

initiative was being taken seriously by the Canadian federal government. This union involvement may have influenced the recruiting process.

Another possible explanation for the lack of support for this hypothesis for the second three-year period of the primary analysis (2002 to 2005) is that the employees hired during 1999 to 2002 initially behaved in a way that supported the culture shift, but that they subsequently modified their behaviour to conform with other employees' behaviour in the organization. As discussed in Chapter 3, in a strong culture environment, there are typically consistent values and ways of conducting business, and new employees adopt these values very quickly (Kotter & Heskett, 1992). According to Kotter (1995): "Until new behaviors are rooted in social norms and shared values, they are subject to degradation as soon as the pressure for change is removed" (p. 67). The high rate of changes in leadership personnel may have resulted in less focus on this change initiative over time. Further, the new behaviours may not have been sufficiently rooted in other human resources practices including reward systems (Harrison & Carroll, 1991), establishing mentoring relationships (Bernick, 2001) and developing role models (Baker, 1980; Williams, Dobson & Walters, 1989). It is possible that insufficient anchoring of the desired behaviours in other elements of the organization resulted in this reversal of support in the second three-year period of the primary analysis (2002 to 2005). This explanation would be consistent with the modest levels of changes in human resources practices and enabling changes in structure and processes.

Finally, there are two important points to note about this hypothesis. First, these results for this hypothesis suggest that significant shifts in some of the core culture dimensions such as performance feedback and learning are possible as a result of the independent variable turnover of personnel. Second, these results suggest that a significant shift can occur in as little as three years.

### 7.2.3 Vision

H1: The more clear and persuasive the vision, the greater the cultural change.

H1 was not supported in the bivariate correlation analyses for any of the culture dimensions for the three analyses conducted for the primary period (1999 to 2005) or the supplemental analysis (2002 to 2005). Given the lack of significant bivariate correlations for the independent variable vision, this variable was not included in any of the regression analyses. On a Likert scale of one to seven, the mean of the responses for the seven vision questions was 5.42, representing a moderate overall score for the vision questions.

As was noted previously, the leaders in these organizations do not have the liberty of revising the vision for this culture change initiative, as the vision was established by the Treasury Board Secretariat. Therefore, the questions in the questionnaire mainly focused on how the vision was implemented. The mean scores for this question indicate that there was less than full support for the Treasury Board Secretariat's vision.

A potential explanation for the lack of support for the independent variable vision is the possibility that a particular threshold point must be reached to be able to see the relationship of the change driver vision with the dependent variables (dimensions of culture change). It may be that a vision partially supported is not supported at all and that for a vision to have an impact, it must be fully and persuasively supported. Perhaps with more time and effort, this threshold level will be realized, and the impact of the independent variable vision will be evident on the dependent variables (culture change).

Another possible explanation for the lack of support for this hypothesis concerns the high rate of change amongst these leaders. For example, perhaps the new leaders did not make their priorities and commitment to the vision sufficiently clear to the organizational members. Alternatively, the replacement leaders may not have been aware of the vision for this change initiative when they joined the organization, particularly if they were new leaders joining from outside of the Canadian federal government. If that were the case, this could have delayed their focus on the vision for this change initiative. As well, even if the replacement leaders were aware of the vision for this change initiative, there is no guarantee that they supported the vision. In their study, Latta and Meyers (2005) found that while some replacement leaders did commit to the articulated vision, some did not commit to it, which negatively impacted the change initiative.

Finally, a possible explanation concerning the lack of support for this hypothesis is that the vision is not important to the success of a change initiative. If this is the case, it is contrary to much of the literature (e.g., Nadler & Tushman, 1990) that states that the

vision is a key element in a successful change initiative. It is hard to imagine how a change could be directed by management without a clearly articulated vision.

#### 7.2.4 Leadership Actions

H2: The more that the organizational leaders take actions to lead the change initiative, the greater the cultural change.

H2 was not supported in any of the bivariate correlation analyses, and, therefore, leadership actions were not included in any of the regression analyses. On a Likert scale of one to seven, the mean of the responses for the six leadership action questions was 5.02, representing a moderate overall score for these questions.

A possible explanation for the lack of support for this hypothesis could be that the leaders' actions were not sufficient to shift the organizational culture. As discussed in Chapter 3, many theorists have stressed the high level of effort required by leaders to successfully implement organizational change (e.g., Schein, 1992; Morgan & Brightman, 2001; Miller, 2002; Gill, 2003; Fernandez & Rainey, 2006). For example, Miller (2002) hypothesized that successful change leaders must 'relentlessly pursue' (p. 366), the objectives of the change initiative, while Fernandez and Rainey (2006) referenced the need for the change leaders to 'exert a concerted effort' (p. 6) for success in change initiatives. According to Kotter and Cohen (2002): "In a recent edition of *Fortune* magazine, Jack Welch is quoted as saying, "You've got to talk about change every second of the day. That's a bit of an extreme position, but maybe extreme is what wins"

(p. 14). Given that there is a significant amount of literature that suggest that a very high level of leaders' actions is required to effect organizational change, perhaps there is a threshold greater than 5.02 for leadership actions that must be attained in order to achieve support for this hypothesis.

Another possible explanation for the lack of support for this hypothesis could involve the leaders' lack of commitment to this change initiative. It is possible for leaders who did not agree with this initiative to resist taking appropriate actions to accomplish the vision. In an empirical study to determine the underlying obstacles to effective organizational change, Hoag, Ritschard and Cooper (2002) found that leadership/management was the most important underlying obstacle. Examples of related issues included the inability to agree or to prioritize issues for change, the inability to garner support in the organization, and while wanting the benefits of implementing the change programs, the leaders also wanted to keep doing things as had been done in the past (Hoag, Ritschard & Cooper, 2002).

It is also possible that the lack of support for this hypothesis is related to the high rate of change amongst these leaders. This high rate of leadership change may have delayed the leaders taking actions relating to this change initiative. For example, once it was determined that the previous leaders were leaving, time and resources would be required to recruit their replacements. There would have been a learning curve for the new leaders relating to the operations of the organization generally, as well as the plans and actions for this change initiative.

It is important to note that the modest level of leader actions is consistent with the moderate scores for the questions in three other sections of the questionnaire: changes in human resources practices (mean score of 4.72 out of 7); communication (mean score of 4.19 out of 7) and enabling changes in structure and processes (mean score of 3.88 out of 7). The bivariate correlation analysis (Appendix G) shows significant correlations amongst these four independent variables. These results suggest that leaders' actions may be related to changes in human resources practices, communication, and enabling changes in structure and processes.

#### 7.2.5 Changes in Human Resources Practices

H5: The more modifications to human resources practices that are made to support the change initiative, the greater the cultural change.

The hypothesis concerning modifications to human resources practices (H5) was supported for three culture dimensions. Table 41 summarizes the culture dimensions supported by this hypothesis.

**Table 41: Culture Dimensions Supported by the Change Driver Changes in Human Resources Practices**

	Primary analysis (1999 to 2005)	Primary analysis (1999 to 2002)	Primary analysis (2002 to 2005)	Supplemental analysis (2002 to 2005)
Changes in involvement	Positive relationship		Positive relationship	
Changes in career development			Positive relationship	
Changes in safety culture				Positive relationship

On a Likert scale of one to seven, the mean of the responses for the 11 questions relating to changes in human resources practices was 4.72. This represents a moderate overall score for these questions.

As discussed in Chapter 3, it is important to align human resources practices with the desired culture change (e.g., Oden, 1997). There are numerous human resources practices that are key to effect a culture shift, including training (e.g., Schein, 1992), mentoring (Bernick, 2001), and employee performance appraisal practices (Alvesson, 2002). The operationalization of the vision for the change initiative through human resources practices at the individual employee level is very important so that all employees understand what is expected of them. For a change initiative to be successful, it is imperative that individuals change their behaviours (Cameron & Quinn, 1999). Thus, changes to human resources practices is an important driver of change and these results suggest that changes in human resources practices are having an effect on this culture change initiative for some culture dimensions relating to the primary analysis as well as one culture dimension in the supplemental analysis.

Given that there were no areas of significance in the first three-year period of the primary analysis, these results also suggest that it may have taken some time to effect the changes in human resources practices. One explanation for this is that it could be related to the need to get the support of the unions and incorporate these changes into the collective agreements, given that the Canadian federal public service is highly unionized. Changes in human resources practices may impact collective agreements, which in turn may increase the time to develop and implement the changes. As discussed earlier in this subsection, there were extensive consultations involving bargaining agents in the development of the survey instrument for the 2002 PSES. As well, the presidents of bargaining agents were involved with Treasury Board and representatives of the departments and the other types of organizations in careful planning and implementation of the 2005 PSES (Public Service Human Resources Management Agency of Canada, 2006). Concerns on the part of the unions may have prevented some changes in human resources practices and/or lengthened the time to effect other changes.

Typically, the organization's leadership is involved with developing any changes in human resources practices. As well, typically, a number of levels of managerial approval are required to make changes to human resources practices. However, as noted above in relation to H2 concerning leadership actions, the level of leadership action was modest. As well, as was discussed in relation to H2, changes in human resources practices are significantly correlated with leadership actions. Therefore, this suggests that the limited support for this hypothesis may result from the lack of leaders' actions on human

resource issues. As well, the high rates of changes in leadership personnel could also have contributed to the limited support for this hypothesis.

#### 7.2.6 Communication

H6: The more extensive the communication about the change initiative, the greater the cultural change.

H6 was supported for one culture dimension in the supplemental analysis (2002 to 2005): changes in safety culture (positive relationship). On a Likert scale of one to seven, the mean of the responses for the 16 questions relating to changes in communications was 4.19, representing a moderate overall score for these questions.

As discussed in Chapter 3, effective communication practices are an important means of enhancing organizational members' understanding and commitment to the change initiative (Kotter & Cohen, 2002). Effective communication also helps to address resistance to change (Schein, 1985), which is particularly important in organizations with strong cultures, such as those typically found in public sector organizations (Claver, et al., 1999).

It is interesting that communication was a change driver with a positive relationship for the culture dimension changes in safety culture, however, it was not a change driver for the other 13 culture dimensions in the primary analysis and the supplemental analysis. These results suggest that it may be easier to shift the culture related to safety than it is to

shift the other culture dimensions. It also suggests that communication may be particularly important to this aspect of culture.

Another explanation for only partial support for this hypothesis concerns the high rate of change in leadership personnel as described previously. Typically, before embarking on a communication campaign, the new leaders become familiar with all of the aspects of the organization including the leadership team and other key employees, the strategic direction of the organization, key operational issues facing the organization and other important activities such as this culture change initiative. As well, undoubtedly it took time for the new leaders to understand the status of this culture change initiative within their organization, and the overall action plan underway to achieve the vision for this culture change initiative. It would typically take considerable time for the new leaders to reach that level of understanding, which likely delayed communication about the change initiative. As discussed in Chapter 3, leaders' every day communication around practical problems offer important opportunities for a continuous influence of meaning (Alvesson, 2002). However, new leaders would need sufficient time in their role to be able to engage in this type of every day communication concerning practical problems.

The relatively low mean for communication (4.19 out of 7) could have a significant impact on the results of this change initiative overall. As discussed in Chapter 3, communication may significantly impact organizational change initiatives in a number of respects (e.g., Nadler & Tushman, 1990; Kotter & Cohen, 2002). It is interesting to note the significant correlation of communication with the following independent variables:

vision, leadership actions, and changes in human resources practices. Appendix G provides the correlations. The correlations suggest that a number of change drivers work in concert and when one area is neglected, others are likely to be neglected as well.

#### 7.2.7 Enabling Changes in Structure and Processes in the Organization

H7: The more modifications to organizational structure and organizational processes that are made to support the change initiative, the greater the cultural change.

The importance of aligning the organizational structure and organizational practices in relation to the vision of the change initiative was discussed in Chapter 3. In addition to the changes in human resources practices that were discussed in relation to H5, there are numerous organizational factors to consider including planning and budgeting systems (Cameron & Green, 2004), management information systems (Davis, 1984), and performance systems (Schneider, Brief & Guzzo, 1996). Nine questions relating to this hypothesis were included in the questionnaire.

H7 was supported for two culture dimensions in the supplemental analysis: changes in safety culture (positive relationship) and changes in justice culture (positive relationship). It is interesting that enabling changes in structure and processes was a change driver for the culture dimensions changes in safety culture and changes in justice culture, however, it was not a change driver for the other 12 culture dimensions included in this research. These results suggest that it may be easier to shift the culture related to safety and justice than it is to shift the other culture dimensions considered in this study. Interestingly,

safety culture and justice culture are typically considered more peripheral elements of organization culture.

On a Likert scale of one to seven, the mean of the responses for the nine questions relating to enabling changes in structure and processes was 3.88 out of 7. This score represented the lowest mean for the questions related to the five drivers of change addressed by the questionnaire. This relatively low mean for enabling changes in structure and processes may have had a significant negative impact on the overall culture change initiative. Fernandez and Rainey (2006) hypothesized that all of the subsystems in the organization, including structures, information systems and control systems, must be consistent with the desired end state in order for fundamental behavioural change in organizations. Nadler and Tushman (1989) hypothesized that organizational transformation will not result from changing only a few subsystems.

Often the organizations' leadership plays a key role in developing and approving enabling changes in structure and processes. However, as noted above in relation to H2 concerning leadership actions, enabling changes in structures and processes is significantly correlated with leadership actions. As was the situation with changes in human resources practices and communication, the limited support for this hypothesis may be related to the lack of leadership actions. Another possible explanation for the limited support for this hypothesis may concern changes in leadership personnel. Once again, undoubtedly it took time for the new leaders to understand the status of this culture

change initiative within their organization, as well as the structure and processes of the organization.

### 7.3 Control Variables

This section provides a brief discussion regarding the two control variables: organization size and organization type.

#### 7.3.1 Organization Size

The control variable organization size was negatively related to three culture dimensions in the primary analysis 1999 to 2005, and two culture dimensions in the second three-year period of the primary analysis (2002 to 2005). As well, it was negatively related to two global measures of culture change: the six-year period of the primary analysis (1999 to 2005), and the second three-year period of the primary analysis (2002 to 2005). Table 42 summarizes the culture dimensions significantly impacted by this control variable.

**Table 42: Culture Dimensions Supported by the Control Variable Organization Size**

	Primary analysis (1999 to 2005)	Primary analysis (1999 to 2002)	Primary analysis (2002 to 2005)	Supplemental analysis (2002 to 2005)
Changes in learning	Negative relationship			
Changes in career development			Negative relationship	
Changes in involvement	Negative relationship			
Changes in innovation and flexibility	Negative relationship		Negative relationship	
Global measure of culture changes	Negative relationship		Negative relationship	

These results indicate that change is more difficult in large organizations. One likely reason for these results is that large organizations typically have many organizational controls that could negatively impact changes in certain culture dimensions. For example, larger organizations typically have controls where certain changes require multiple levels of management approval. As well, larger organizations have more people whose values and beliefs need to be changed.

### 7.3.2 Organization Type

The control variable organization type was positively related to three culture dimensions in the primary analysis (1999 to 2005), one culture dimension in the first three-year period of the primary analysis (1999 to 2002) and one culture dimensions in the second three-year period of the primary analysis (2002 to 2005). As well, it was positively

related to the global measure of culture change for the primary analysis (1999 to 2005).

Table 43 summarizes the culture dimensions significantly impacted by this control variable.

**Table 43: Culture Dimensions Supported by the Control Variable Organization Type**

	Primary analysis (1999 to 2005)	Primary analysis (1999 to 2002)	Primary analysis (2002 to 2005)	Supplemental analysis (2002 to 2005)
Changes in learning	Positive relationship			
Changes in career development				
Changes in involvement	Positive relationship	Positive relationship		
Changes in innovation and flexibility	Positive relationship		Positive relationship	
Global measure of culture changes	Positive relationship			

These results suggest that for some culture dimensions, organization types other than departments find it easier to effect culture changes. An explanation for this could be that public sector organizations tend to be highly formalized, strictly controlled, and standardized (Lee & Graeff, 2006). However, as discussed in Chapter 3, other types of organizations may be less bureaucratic than departments, which may result in faster decision making and fewer formalized rules in these other types of organizations. As well, other types of organizations may enjoy greater autonomy and/or flexibility than departments due to less political interference. This could explain why organizations

other than departments may find it easier to influence changes for certain culture dimensions.

#### 7.4 Summary

The results of this study suggest that five of the seven change drivers considered contributed to shifting the organization's culture for some culture dimensions. The results also suggest that of the seven change drivers considered in this study, changes in leadership personnel had the greatest impact on organizational culture change. Further, changes in leadership personnel may also have impacted five other hypotheses included in this research. It is important to note that changes in leadership personnel had mainly negative impacts in this change initiative, probably due to excessive changes in leadership personnel. This is an important finding, given that most of the literature suggests that changes in leadership personnel have a positive effect on change initiatives.

Another change driver that had a substantive impact on the culture was turnover of personnel. While this change driver significantly positively impacted the global measure of culture change and four culture dimensions in the first three years of the primary analysis (1999 to 2002), turnover of personnel did not impact any culture dimensions in the 2002 to 2005 period. These results suggest that while the change driver turnover of personnel may be necessary, alone it is insufficient. For this change driver to have lasting impact, culture changes may need to be anchored in other mechanisms in the

organization, such as human resources practices and organizational performance measurements.

Changes in human resources practices significantly positively impacted three culture dimensions. However, the impact of this change driver was not evident until the second three-year period covered by this research (2002 to 2005), suggesting that it took time to implement these changes, perhaps due to the heavily unionized environment of the Canadian federal government.

Two change drivers, communication and enabling changes in structure and processes, had effects only in the supplemental analysis (2002 to 2005). This suggests that it may be easier to change certain culture dimensions included in the supplemental analysis (changes in safety culture and changes in justice culture) than the other culture dimensions included in the primary analyses and supplemental analyses, such as changes in learning and changes in career development. In other words, some culture dimensions may be more embedded in the organizational culture than other culture dimensions.

Finally, this study suggests that it is possible to effect changes in organizational culture dimensions in as little as three years. This is also an important finding given that most of the literature (e.g., Jick, 1995) suggests that it takes at least five years for a culture shift. However, these results also suggest that it is important to anchor the changes in order for them to be sustained (Kotter, 1995).

The next subsection will discuss the implications of these findings. It will be followed by the limitations and contributions of this research.

### 7.5 Implications of this Research

There are a number of implications of this research. The first implication relates to the change driver changes in leadership personnel. This research suggests that the driver changes in leadership personnel has mainly negative implications for an organizational culture change initiative. However, most of the literature discusses changes in leadership personnel as a positive change driver, such as adding new energy and ideas to the organization (e.g., Dyer, 1984; Siehl, 1985; Hesselbein, 1997). As discussed earlier in this chapter, this research suggests that too much change in leadership personnel negatively impacts a culture change initiative.

In a study of three organizational change initiatives undertaken at a university, Latta and Myers (2005) found that leadership turnover can threaten to derail the change initiative:

“..In some cases, commitment to the articulated vision was sustained or renewed following the leadership change, although without the benefit of institutional memory. In other cases, attention shifted or lacked focus following the transition, particularly where leadership did not explicitly renew commitment to the change initiative. At best, commitment was fragmented or distracted by the unexpected events, introducing doubt into the minds of members of the academic community. Some of the institutional focus and momentum lost as a result of these transitions was never fully regained..” (p. 357).

Too much change in leadership personnel may negatively impact the time it takes to reach the vision of a culture change initiative. Each time that the organizational

leadership turned over during this change initiative, organizational memory may have been lost. The new leaders likely had to become familiar with the organization including the members of the leadership team and other key employees, the strategic direction of the organization, the key operational issues facing the organization and other important activities such as this culture change initiative. This orientation for new leaders typically takes time and usually delays organizational initiatives. Thus, this high rate of change amongst the organizational leaders could have contributed to the limited progress overall for this change initiative.

Kim (2002) also hypothesized that the culture change initiative will fail if employees, management and the unions sense the lack of active commitment from the organization's leaders. Another implication of the high rate of changes in leadership personnel could be a perceived lack of leadership commitment. This could have heightened resistance to the changes sought, particularly given that public servants know that they can usually wait out leaders who they distrust or disagree with (Nutt & Backoff, 1993). It is important to recognize that there is general agreement that major change initiatives almost always are met with controversy and resistance (Fernandez & Rainey, 2006). This may be an even greater challenge in a public sector change initiative as public sector organizations typically hold deep cultures, which are difficult to change (Claver et al., 1999; Schein, 2000). As discussed in Chapter 3, leaders can play a key role in recognizing and managing resistance to change (e.g., Recardo, 1995; Strebler, 1996). Therefore, a potential implication is that high levels of changes in leadership personnel may increase resistance to change.

To avoid the potentially negative consequences of excessive turnover of leadership personnel, prior to embarking on a major change initiative, the organizational leadership should recognize that changes in leadership personnel can have both positive and negative implications for the change initiative. Steps should be taken to carefully consider and balance the potential positive contributions of new leadership such as new energy and ideas, with the potential negative consequences such as delays and increased resistance from organizational members.

There may also be an opportunity for management to better plan and manage changes in leadership personnel. Hesselbein (1997) hypothesized that leadership transitions are often poorly planned and managed. Given the both positive and negative significance of the driver changes in leadership personnel that are suggested by the results of this study, well planned and managed leadership transitions may be a critical success factor in successful organizational culture change efforts. As well, to address situations that are impossible to anticipate such as sudden illness and death (Farquhar, 1996), effective succession planning for all members of the leadership team may offer an effective means of counterbalancing the potential negative implications due to changes in leadership personnel.

Another implication of the results is that two change drivers (communication and enabling changes in structure and processes) were only able to predict change relating to culture dimensions included in the supplemental analyses (changes in safety culture and

changes in justice culture). An explanation for this could be that safety culture and justice culture are easier to change than some of the more embedded culture dimensions, such as changes in learning and changes in performance feedback.

As discussed previously, the results of this study suggest that it is possible to shift the organizational culture in as little as three years. This has very important implications for practitioners considering an organizational culture change, given that some theorists (e.g., Posner & Rothstein, 1994) suggest that a period of more than six years is required to effect a culture shift in the public sector. For example, management may be more inclined to attempt a culture change initiative with the knowledge that it may be possible in three years. However, it is important to note that the change driver turnover of personnel had four culture dimensions that were significantly impacted in the first three-year period of the primary analysis (1999 to 2002), but were not significant in the second three-year period of the primary analysis (2002 to 2005). The lack of significance in the second three-year period of the primary analysis suggests that for the culture shift to be enduring, these changes must be reinforced and institutionalized (Fernandez & Rainey, 2006). For example, as discussed in Chapter 3, many theorists (e.g., Oden 1997) have referenced the importance of reinforcing changes through training related to the desired culture. This is important as some new employees may adopt existing organizational values very quickly (Kotter & Heskett, 1992) without reinforcements of the desired culture such as training. Eventually management will need to move on to other responsibilities, so there is a need to anchor the recent changes to ensure that they endure (Beer, Eisenstat & Spector, 1990; Kotter, 1995). The implications of this could be

particularly relevant in situations where new employees are being recruited from outside the organization, and have not already adopted the values of the organizational culture generally.

Many theorists (e.g., Cummings & Huse, 1989; Shareef, 1994) agree that important mechanisms to anchor the changes involve alignment of the organizational subsystems. Subsystem congruence theorists believe that failures in planned change initiatives in both the private and public sectors can be attributed to the lack of “fit” between the subsystems and the desired end state, or the vision, of the change initiative (Shareef, 1994). According to Shareef (1994): “The use of any of these change variables must be in the context of an overall holistic approach to organizational change. Any of these change levers must be supported by congruent organizational policies, practices, systems and job redesign” (p. 497). This is sometimes referred to as whole-system change (Pettigrew, Woodman & Cameron, 2001). These notions of a holistic approach and whole-system change are consistent with Fernandez and Rainey’s (2006) hypothesis that altering one or two subsystems is insufficient. Leaders must make systemic changes to all of the subsystems to ensure that they are congruent with the vision of the change initiative for fundamental change in behaviour to occur (Fernandez & Rainey, 2006). Thus, the low rates of culture change overall may be the result of the low overall mean for the change driver enabling changes in structure and processes.

An additional implication of this study concerns the impact of leadership actions on the change initiative generally. The strong impact of the change driver changes in leadership

personnel is an indicator that leadership matters. Further, the bivariate correlation analyses (Appendices G and J) suggest that leaders' actions are very closely positively linked with vision, changes in human resources practices, communications and enabling changes in structure and processes. As well, as discussed previously, when asked to what extent the change drivers were important to achieving the desired results of the Canadian federal government's culture change initiative, the change driver that received the highest rating was leadership actions. These results are consistent with the literature that says top managers play a key role in generating changes in organizational culture (e.g., Pettigrew, 1979; Schein 1992; Kotter and Heskett, 1992; Kim, 2002). Some theorists (e.g., Kim, Pindur & Reynolds, 1995) have hypothesized that leaders drive the culture through various mechanisms including structure, systems, policies and procedures. However, the responses to the questionnaire also indicated that there were only moderate efforts related to leaders actions, changes in human resources practices, communication and enabling changes in structure and processes. It is acknowledged that these questionnaire results could have stemmed from common methods bias, as was noted in Chapter 6. However, the minimal overall progress with the change initiative suggests that more needs to be done by the organizations to effect the desired culture shift. Further, after considering the high significant bivariate correlations amongst the various change drivers, these results may suggest that in addition to selecting the right change drivers, a whole-system approach to change may be important to achieve success with a culture change initiative.

Finally, an implication for successful change initiatives may concern the number of organizational change initiatives that have been introduced into the organization in the

past, or that may be already underway in the organization. The Canadian federal public sector has faced many reform initiatives in recent years (Zussman, 2008), and these continuous change initiatives may induce a general skepticism that confronts well-justified and well-meaning organizational change attempts (Fernandez & Rainey, 2006). Examples of other recent major change initiatives in the Canadian federal government include increased security following Sept. 11, 2001 (Zussman, 2008), the La Relève Initiative (Government of Canada, 1998), Modern Comptrollership (Treasury Board of Canada, 2008), and transforming the government from a paper-driven bureaucracy to a digital organization (Zussman, 2008). These multiple change initiatives may have contributed to skepticism and resistance amongst many of these public servants. Duck (1993) hypothesized that organizations are full of “change survivors” -- cynical people who have learned to endure change initiatives without really changing at all. Informal discussions with several public servants have suggested that this is the situation in some of these federal government organizations, and that “change fatigue” may be a major problem generally in the Canadian federal government, contributing to resistance to change. As discussed earlier, resistance to change is an important consideration in change initiatives, and needs to be effectively managed if the change initiative is to succeed.

The next section presents the limitations of this study. It is followed by a discussion of the contributions of this research and suggestions for future research.

## 7.6 Limitations of this Study

There are seven major limitations of this research. The first major limitation relates to the culture dimensions covered by the questions in the PSES. As discussed in Chapter 4, there are numerous culture dimensions addressed by the research literature. However, the Treasury Board of Canada appears to have approached the dimensions covered by their PSES surveys from an operational perspective, rather than a research perspective. As noted in Chapter 4, in determining the questions to be included in the 2002 survey, the questions were chosen based on operational usefulness. As a result, for example, official languages became a theme in the 2002 and 2005 surveys. Official languages is not a culture dimension typically found in the culture literature. An example of a culture dimension that is not included in this research is decision making. Nevertheless, fourteen important dimensions of culture were included, resulting in research that contributes substantially to a better understanding of the drivers of organizational culture change.

The second major limitation relates to the number of questions repeated from the 1999 survey to the 2005 survey. Unfortunately, the Treasury Board of Canada only repeated 39 of the questions from the 1999 PSES in the 2002 PSES and the 2005 PSES. If all of the questions from the 1999 survey had been repeated, additional organizational culture dimensions could have been studied, and/or the culture dimensions that were repeated would have included additional questions for analysis, which would have enhanced reliability. Despite this limitation, there is still considerable value related to exploring the dimensions that were repeated from the 1999 PSES to the 2005 PSES. Further, the reliability of the dimensions included was generally strong (Nunnally, 1978).

The third major limitation relates to the questionnaire responses used in the supplemental analysis (2002 to 2005). The questionnaire that was sent to organizations for completion covered the period 1999 to 2005. These same questionnaire responses were also used for the supplementary analysis of culture change even though the period being analyzed was 2002 to 2005. Thus there is a partial lag incorporated into the data. While some research (e.g., Jick, 1995) suggests a lag between change initiatives and their consequences, it is impossible to assess this fully using these data.

The fourth major limitation relates to the timeframe under consideration. Given that the timeframe commenced seven years prior to the time respondents were asked to complete the questionnaire, it may have been difficult for some respondents to recall the events relating to the culture change initiative with precision, especially in the early years, such as 1999 to 2002. To try to address this limitation, the questions included in the questionnaire were framed in a relatively general manner, and frequent prompts regarding the timeframe under consideration were included. While this may not have been the case for all organizations, pretesters, who were drawn from the relevant sample, did indicate that it would be possible to provide reasonably accurate data.

The fifth major limitation relates to the multiple change initiatives underway in the Canadian federal government at the time of this study. As noted in the preceding discussion, the federal government undertook other change initiatives during the time period of this study. Thus some of the changes observed in these data may be due to

other initiatives with somewhat different visions. While these other initiatives may have reduced the clarity of the vision for this initiative, the linkages between the other change drivers and the observed culture changes would be unaffected. Regardless of their motivating vision, changes in leadership and changes in human resources practices, for example, did have an impact on dimensions of organizational culture. Thus these other initiatives have minimal impact on the conclusions.

The sixth major limitation relates to the level of analysis for this research, which is the organization. By focusing on the organizational level, issues relating to sub-cultures and counter-cultures cannot be explored. As well, the leadership team of a particular branch or division within the organization may have great influence on the branch/divisional results through his/her actions. When these results are amalgamated for the entire organization, the changes at the branch or divisional level may no longer be detected. However, an advantage to focusing on the organization as a whole is the ability to consider some of the systems that are organization wide such as human resources and communication.

The seventh major limitation concerns the sample size. As noted throughout this document, the sample size for this study was 51, which is a relatively small sample size. Although steps were taken to try to preserve power, the partial support for the hypotheses could be due to reduced power resulting from the small sample size. The consequence of reduced power is that smaller effect sizes cannot be detected – only large effects will be detected in a small sample. Therefore, the drivers or hypotheses that were not significant

may have an impact but one which is smaller. Nevertheless, this research is useful in determining the most effective drivers of change.

### 7.7 Contributions of this Study

The purpose of this empirical study was to identify the key drivers of organizational culture change in the Canadian federal government. As has been discussed in this thesis, there is little agreement in the literature relating to change drivers (Porras & Hoffer, 1996; Kemelgor, Johnson & Srinivasan, 2002). According to Rodrigues (2006), very little is known about how organizational culture changes over time and what drives the process. As well, there has been a dearth of literature in public administration journals that explicitly addresses the subject of organizational change (Fernandez & Rainey, 2006). The results of this research strengthen the literature by identifying those change drivers that significantly impact organizational culture dimensions in the Canadian federal public service. Changes in leadership personnel, employee turnover, modifications to human resources practices, communication and enabling changes in structure and processes should be priorities for those embarking on a culture change initiative. Given the parallels found in the public sector change literature and the private sector change literature, these results should have relevance for both public sector organizations, and for private sector organizations.

Another significant contribution is that this research involves a large-scale empirical study. As noted in Chapter 2, large-scale organizational change initiatives are relatively rare (Rainey, 1998). This study provided a rare and very important opportunity to study a

large-scale organizational change initiative related to 14 dimensions of organizational culture.

Effective management of organizational change is critical to organizations' success. The effective management of organizational change is one of the central challenges facing today's managers, particularly given the absence of change management competence (Griffith, 2002) and the low success rates for change initiatives (e.g., Hirschhorn, 2002). By identifying appropriate drivers of change for the Canadian federal public service, and implementing them properly, such as by anchoring the changes in policies and processes, management can better focus their resources and energy related to change initiatives. Focusing on these change drivers should result in a number of benefits for the organization and for those who work in them. For example, change initiatives may be expedited and may be less costly. Organizational leaders and managers who understand the importance of these change drivers, and who implement them properly, should experience more frequent success overall in their culture change initiatives. Greater success rates for organizational culture change initiatives would obviously be of significant benefit to practitioners.

Another important contribution of this study concerns the potential impact of changes in leadership personnel as a change driver. This research suggests that the change driver changes in leadership personnel can have both positive and negative impacts on a change initiative. Much of the literature (e.g., Kotter & Heskett, 1992) highlights changes in leadership personnel as having a positive impact on change initiatives, and this research

does suggest that changes in leadership personnel may have a positive impact in some situations. However, this research also suggests new leaders can have a negative impact on change initiatives, especially if the leadership changes are too frequent.

A further important contribution of this research is that it suggests that culture change for a large-scale public sector initiative is possible within a three-year period. However, it also suggests that appropriate efforts must be made to anchor the culture changes achieved through the alignment of organizational subsystems such as structures, policies and performance measures (e.g., Fernandez & Rainey, 2006). These efforts to anchor changes through the alignment of organizational subsystems appear to be necessary for the culture changes to be enduring.

As well, this research suggests that the change drivers communication and enabling changes in structure and processes may be able to shift culture dimensions that may be peripheral elements of organization culture (changes in safety culture and changes in justice culture). However, this research suggests that the change drivers communication and enabling changes in structure and processes are not able to shift more core dimensions of organizational culture such as involvement and learning.

As discussed in Chapter 2, changing an organization's culture is enormously complex (Bate, 1994), consumes considerable organizational resources (Claver et al., 1999) and is very time consuming (Schein, 1999b). However, changing an organization's culture may be the decisive factor in improving the organization's service (Claver et al., 1999). The

results of this research contribute to better understanding what is required to successfully implement a culture change initiative by identifying meaningful culture change drivers.

### 7.8 Future Research

An obvious area for future research is to examine other large-scale culture change initiatives that focus on the change drivers identified as significant in this research and utilizes them in a whole-system change approach (Pettigrew, Woodman & Cameron, 2001). The research objective could be to test these drivers and also to test Shareef's (1994) hypothesis that the subsystems must fit the vision of the change initiative by using a holistic approach to organizational change.

As well, two important opportunities for future research related to this culture change initiative underway in the Canadian federal government have been identified. The first may result from a fourth PSES that the Canadian federal government expects to administer in late 2008. If the PSES questions remain unchanged, as they did in 2005, this would provide nine years of data for the nine culture dimensions covered by the primary analysis and six years of data for the five culture dimensions related to the questions that were introduced in 2002. Of particular interest would be the nine culture dimensions covered by nine years of data, given that the Canadian government originally estimated that it would take ten years to accomplish the change initiative. The second potential future research project related to this culture change initiative is the exploration of why more significant culture changes were not accomplished in the six-year period of

1999 to 2005. While this research project focused on the identification of culture change drivers, there are a myriad of other possible reasons for the modest changes in the organizational culture during this period. For example, obstacles may have been encountered regarding conflicting objectives of the political leaders and the administrative leaders (Lau, 2000). As well, the number of other change initiatives underway concurrent with this endeavour may have negatively impacted this culture change initiative (Zussman, 2008). It is my intention to pursue both of these research possibilities related to this change initiative.

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## **Appendix A: Federal Government Organizations that Participated in the PSES**

Table 44 provides the response rate for each of the organizations that participated in the surveys. Over the six year period, some organizations were eliminated (e.g., the Millennium Bureau), and new organizations were introduced (e.g., Infrastructure Canada). As well, some of the organizations names changed (e.g., the Canadian Centre for Management Development was renamed to Canada School of Public Service). These changes are reflected in this table. Fifty seven organizations that participated in the PSES throughout the six year period of 1999 to 2005 were requested to respond to the questionnaire. These organizations have been highlighted in the table below.

**Table 44: PSES 1999, 2002, 2005 Participating Organizations**

Note: Organization name changes during the six year period have been indicated below.

Federal government organizations that participated in the PSES	Response rate: 1999	Response rate: 2002	Response rate: 2005
Agriculture and Agri-Food Canada	54%	59%	52%
Atlantic Canada Opportunities Agency	61%	81%	66%
Canada Border Services Agency	-	-	68%
Canada Labour Relations Board (1999)	48%	66%	74%
Canada Industrial Relations Board (2002 & 2005)			
Canadian Artists and Producers Professional Relations Tribunal	25%	60%	55%
Canadian Centre for Management Development (1999 & 2002)	90%	84%	60%
Canada School of Public Service (2005)			
Canadian Dairy Commission	43%	62%	82%
Canadian Environmental Assessment Agency	73%	86%	83%
Canadian Firearms Centre	-	-	84%
Canadian Forces Grievance Board	-	75%	60%
Canadian Grain Commission	50%	58%	53%

Department of Canadian Heritage (1999)	66%	58%	64%
Canadian Heritage (2002)			
Department of Canadian Heritage (2005)			
Canadian Human Rights Commission	67%	68%	73%
Canadian Human Rights Tribunal	-	78%	81%
Canadian Intergovernmental Conference Secretariat	70%	64%	52%
Canadian International Development Agency	63%	58%	59%
Canadian International Trade Tribunal	57%	38%	62%
Canadian Radio-television and Telecommunications Commission	59%	55%	68%
Canadian Space Agency	57%	53%	85%
Canadian Transportation Agency	57%	75%	68%
Citizenship and Immigration Canada	60%	51%	67%
Civil Aviation Tribunal	60%	33%	-
Commission for Public Complaints against RCMP	-	68%	82%
Canada Information Office (1999)	77%	65%	-
Communication Canada (2002)			
Competition Tribunal	-	75%	100%
Copyright Board (1999)	17%	100%	100%
Copyright Board Canada (2002 & 2005)			
Correctional Service Canada	43%	47%	42%
Courts Administrative Service	-	-	47%
Canada Economic Development Agency for Quebec Region (1999)	60%	68%	80%
Economic Development Agency of Canada for the Regions of Quebec (2002 & 2005)			
Elections Canada	63%	57%	46%
Environment Canada	60%	57%	56%
Department of Finance (1999)	59%	55%	63%
Finance Canada (2002)			
Department of Finance Canada (2005)			
Department of Fisheries and Oceans (1999)	60%	55%	57%
Fisheries and Oceans Canada (2002 and 2005)			
Department of Foreign Affairs Canada and International Trade (1999)	47%	49%	54%
Foreign Affairs and International Trade (2002)			
Department of Foreign Affairs Canada and International Trade Canada (2005)			
Hazardous Materials Information Review Commission	70%	91%	79%
Health Canada	48%	47%	58%

Department of Human Resources Development (1999)	54%	61%	63%
Human Resources Development Canada (2002)			
Human Resources and Skills Development Canada (2005)			
Immigration and Refugee Board	52%	67%	42%
Department of Indian Affairs and Northern Development (1999)	67%	71%	72%
Indian and Northern Affairs Canada (2002)			
Department of Indian and Northern Affairs Canada (2005)			
Indian Residential Schools Resolution Canada	-	-	56%
Department of Industry (1999)	52%	63%	67%
Industry Canada (2002 & 2005)			
Infrastructure Canada	-	-	75%
International Joint Commission	47%	42%	47%
Department of Justice (1999)	50%	56%	54%
Justice Canada (2002 & 2005)			
Law Commission of Canada	-	36%	33%
Military Police Complaints Commission	-	82%	86%
Millennium Bureau	35%	-	-
NAFTA Secretariat	-	63%	38%
Department of National Defence (1999)	43%	46%	50%
National Defence (2002)			
Department of National Defence (2005)			
National Farm Products Council	54%	100%	69%
National Archives of Canada (1999 & 2002)	62%	60%	
National Library of Canada (1999 & 2002)	55%	48%	
Library and Archives Canada (2005)			58%
National Parole Board	70%	84%	71%
Department of Natural Resources (1999)	55%	56%	54%
Natural Resources Canada (2002 & 2005)			
Office of the Commissioner for Federal Judicial Affairs	60%	64%	71%
Office of the Commissioner of Official Languages (1999)	75%	67%	77%
Commissioner of Official Languages (2002)			
Office of the Commissioner of Official Languages (2005)			
Office of Infrastructure of Canada (2002)	-	84%	75%
Infrastructure Canada (2005)			

Office of the Governor General's Secretary (1999)	52%	35%	52%
Office of the Secretary to the Governor General (2002 & 2005)			
Offices of the Information and Privacy Commissioners	58%	58%	59%
Passport Canada	-	-	71%
Patented Medicine Prices Review Board	77%	67%	40%
Privy Council Office	66%	69%	64%
Public Health Agency of Canada	-	-	55%
Public Service Commission of Canada	66%	67%	63%
Public Service Human Resources Agency of Canada	-	-	72%
Public Works and Government Services Canada	66%	66%	55%
Registry of the Competition Tribunal	89%	-	-
Registry of the Tax Court of Canada	61%	-	-
Registry of the Federal Court of Canada	57%	54%	-
Revenue Canada (1999)	57%	NA	NA
Canada Revenue Agency (2002 & 2005)			
Royal Canadian Mounted Police (Public Service Employees)	56%	57%	56%
RCMP External Review Committee	-	-	100%
Service Canada	-	-	62%
Social Development Canada	-	-	67%
Department of the Solicitor General (1999)	58%	75%	65%
Solicitor General of Canada (2002)			
Public Safety and Emergency Preparedness Canada (2005)			
Statistics Canada	68%	74%	80%
Office of the Coordinator Status of Women (1999)	59%	74%	77%
Status of Women Canada (2002 & 2005)			
Office of the Registrar of the Supreme Court (1999)	48%	64%	57%
Supreme Court of Canada (2002 & 2005)			
Tax Court of Canada	-	50%	-
Transport Canada	49%	66%	69%
Transportation Safety Board of Canada	64%	79%	81%
Treasury Board (Secretariat) (1999)	77%	70%	56%
Treasury Board of Canada Secretariat (2002 & 2005)			
Department of Veterans Affairs (1999)	49%	84%	86%
Veterans Affairs Canada (2002)			
Department of Veterans Affairs Canada (2005)			

Department of Western Economic Diversification (1999) Western Economic Diversification Canada (2002 & 2005)	55%	87%	89%
Overall Public Service Response Rate	55% (approximately 104,500 responses)	58% (approximately 95,000 responses)	59% (approximately 106,000 responses)

## Sources:

- 1999: Public Service Human Resources Development Web-Site, Retrieved Aug. 23, 2006.
- 2002: Statistics Canada, Microdata User Guide, Public Service Employee Survey 2002.
- 2005: Public Service Human Resources Development Web-Site, Retrieved Aug. 23, 2006.

## **Appendix B: Example of Calculation Relating to the Changes in Leadership Personnel Variable**

As discussed in Chapter 5, the organization charts contained in the Canadian federal government telephone directories that are held by Library and Archives Canada were the data source for calculating the leadership change variable. The organizational structures for each of the departments and agencies of interest were reviewed in relation to the changes in the senior management team.

The senior management team was defined as deputy minister(s), assistant deputy minister(s), associate deputy minister(s), and director(s) general (or equivalent). The change rate of the senior management team was expressed as the percentage of new senior management team members in 2005 compared to those listed in 1999. A review of some organizations' leadership change during this six year period revealed a reasonable variance on the variable.

Table 45 provides an example: information relating to the leadership of Natural Resources Canada 1998/1999 compared to the leadership of Natural Resources Canada in 2004/2005. In 1998/1999, there were 22 senior managers and in 2004/2005 there were 27 senior managers. Twenty four of the senior managers in 2004/2005 were new, indicating an 88.9% change in leadership over the six year period. Leadership team members from 1998/1999 that remained in 2004/2005 are highlighted.

**Table 45: Leadership of Natural Resources Canada in 1998/1999 and 2004/2005**

<b>Natural Resources Canada - 1998-1999 – Position</b>	<b>Name</b>
Deputy Minister	J. McCloskey
Assistant Deputy Minister Corporate Services Sector	J. Toews
Director General – Audit and Evaluation Branch	E. McRae
Director General – Strategic Planning and Coordination Branch	P. McDowell
Director General – Communications Branch	M. O'Rourke
Director General – Information Management Branch	S. Labrie
Director General – Assets Management and Administrative Services Branch	C. Menard
Director General – Financial Management Branch	J. Klimczak
Assistant Deputy Minister Canadian Forest Service	[REDACTED]
Director General, Industry, Economics and Programs Branch	[REDACTED]
Director General, Policy Planning and International Affairs	J. Carette
Assistant Deputy Minister Earth Sciences Sector	M. Everell
Chief Geoscientist	R. Grieve
Director General Policy, Planning, Information and Services Branch	P. Fisher
Director General Geological Survey of Canada – MRGB	[REDACTED]
Director General Geological Survey of Canada – SMGB	R. Haworth
Director General Canada Centre for Remote Sensing	E. Shaw
Director General Geomatics Canada – Mapping Services Branch	M. Corey
Assistant Deputy Minister Energy Sector	M. Cleland
Director General Energy Policy Branch	S. Kirby
Assistant Deputy Minister Minerals and Metals Sector	L. Keen
Director General Mineral Technology Branch	J. St-Pierre

<b>Natural Resources Canada 2004-2005– Position</b>	<b>Name</b>
Deputy Minister	G. Anderson
Director General – Audit and Evaluation Branch	B. Moore
Director General – Corporate Policy and Portfolio Coordination Branch	F. Des Rosiers
Director General – Communications Branch	F. Girard-Griffith

Office of the Chief Scientist	[REDACTED]
Assistant Deputy Minister – Assistant Deputy Minister	R. Tobin
Director General – Real Property, Environment and Security Branch	D. Oliver
Assistant Deputy Minister Corporate Services Sector	B. Emmett
Director General, Industry, Economics and Programs Branch	[REDACTED]
Director General, Science Branch	G. Munro
Assistant Deputy Minister Earth Sciences Sector	I. Itzkovitch
Chief Geoscientist	R. Grieve
Director General Geological Survey of Canada – MRGB	[REDACTED]
Director General Geological Survey of Canada – SMGB	J. Boon
Director General Canada Centre for Remote Sensing	
Director General Geomatics Canada – Mapping Services Branch	J. Cooper
Assistant Deputy Minister Energy Policy Sector	H. Brown
Director General Energy Policy Branch	S. Riordon
Director General Electricity Resources Branch	T. Wallace
Assistant Deputy Minister Large Final Emitters Group	H. Brown
Director General Office of Energy Research and Development	G. Campbell
Assistant Deputy Minister Energy Technology and Programs Sector	D. Oulton
Director General CANMET Energy Technology Centre	R. Davies
Director General Office of Energy Efficiency	N. McLeod
Assistant Deputy Minister Minerals and Metals Sector	G. Nash
Director General Mineral Technology Branch	D. Lagace
Director General Economic, Financial and Social Analysis Branch	K. Brewer
Director General Policy Analysis and Coordination Branch	R. Gougeon

## Appendix C: Questionnaire Cover Letter



[insert date]

[insert Deputy Minister's name, department/agency, address]

Dear [insert name],

Change is underway at all levels of government, in virtually all nations. As you are undoubtedly well aware, the Canadian federal public service is no exception. In order to improve the success rate of future change initiatives, I am conducting research related to the culture change initiative undertaken by the Canadian federal government **during the period 1999 to 2005**. This research is focused on the identification of key drivers of organizational culture change. It will not be used to compare federal government organizations, but rather to assess what kinds of activities in the different organizations lead to change. Please be assured that specific departments/agencies will not be identified in the resulting report.

I am writing to request that [insert name of organization] participate in this research, and I am hoping that your office could coordinate the completion of the attached questionnaire by appropriate people in your organization. This is the only request that has been sent to your [department or agency]. You will note from the attached document that I am requesting that it be completed on behalf of the entire [department or agency]. In responding to the questions, the six year period of 1999 to 2005 should be the focus of your responses. Pretesting of this questionnaire found that it took approximately 35 minutes to complete.

The results of this study will be of direct relevance to the Canadian Federal Public Service in evaluating various change initiatives. The lessons learned from of this research will have broad implications as the identification of key drivers of culture change will contribute to increasing the success rates of change initiatives both in government and beyond. In addition to the data gathered through this questionnaire, I will also be using the results of the Public Service Employee Surveys in order to measure the progress related to several questions that involve key drivers of organizational change.

If you or your organization would like a summary of my research findings, I will be pleased to provide them. Further, if you or your organization would be interested in a presentation relating to the results of this study, I would be pleased to provide this as well.

I would be happy to answer any questions you might have. My telephone number is 613-596-2659. Concerns about this research can be expressed to my Thesis Advisor, Dr. Lorriane Dyke or the Chair of Carleton University's Research Ethics Board, Dr. Antonio Gualtieri. Their contact information is provided on the cover page of the survey.

Thank you for your assistance.

Yours truly,

Karen Somerville, MBA  
Ph.D. Candidate

## Appendix D: Questionnaire



**Canada's Capital University**

### **A SURVEY RELATING TO THE CANADIAN FEDERAL GOVERNMENT'S CULTURE CHANGE INITIATIVE 1999 – 2005**

You are being invited to respond to this questionnaire on behalf of your department/agency, and this is the only copy that is being sent to your organization for completion. Please be assured that departments/agencies will not be identified in the resulting report. It will not be used to compare federal government organizations, but rather to assess what kinds of activities in the different organizations lead to change in employee attitudes. Only summary results from the questionnaire will be reported. Thank you for taking the time to fill it out. Your response is greatly appreciated.

**It would be appreciated if you could return the completed questionnaire by [insert date].**

**Please return it via Canada Post (self-addressed stamped envelope enclosed) or by fax to:**

Ms. Karen Somerville, Ph.D. Candidate  
PO Box 11032, Stn. H., Ottawa, ON, K2H 7T8  
Fax: (613) 520-2652

If you have any concerns about this research, please contact:

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In order to facilitate follow up that may be required once the completed questionnaire has been returned, please provide information regarding the person in your organization to be contacted:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Telephone number: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Responses relate to the following department/agency: [to be preprinted]

If you or your organization would like a summary of the results of this study, please check here

If you or your organization would like to discuss a presentation relating to the results of this study, please check here \_\_\_\_\_

### Introduction:

This questionnaire relates to the culture change initiative undertaken by the Canadian Federal Government during the period 1999 to 2005. Treasury Board has indicated that the Public Service Employee Surveys conducted in 1999, 2002 and 2005 related to changing the organizational culture. For example, in a Dec. 2, 2002 news release related to the 2002 Public Service Employee Survey (PSES) results, Treasury Board of Canada Minister Robillard said:

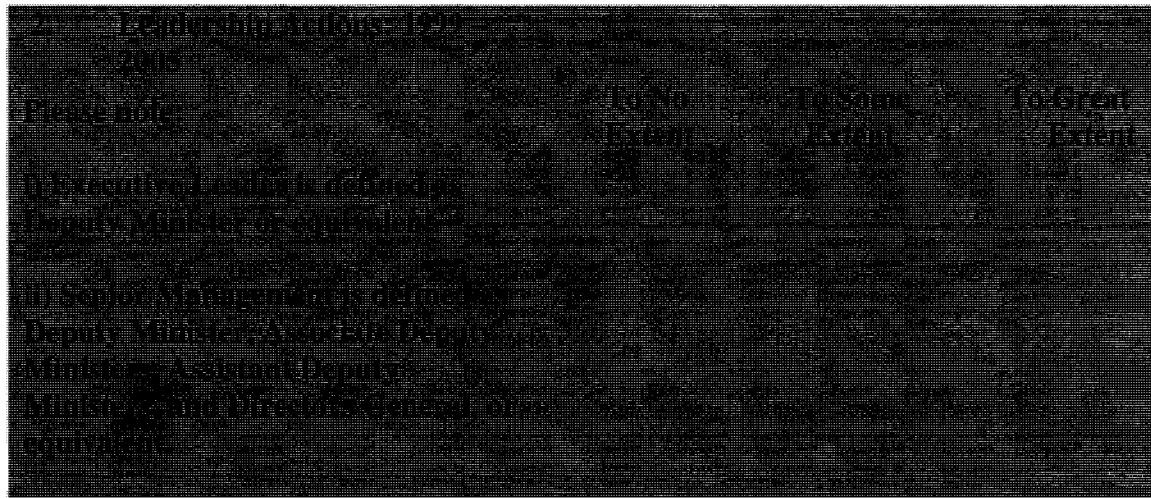
"..Our goal is a workplace culture where public service values are clear and all employees are treated with dignity and respect. Following the 1999 survey, we took several steps to focus on these issues.... Over the coming months we may need to take other steps..."

The progress related to this culture change initiative was measured (by Statistics Canada on behalf of the Treasury Board) by comparing the 2005 Public Service Employee Survey (PSES) results with the results obtained in both the 2002 and the 1999 PSES. This questionnaire relates to key drivers of change that may have had an impact on this culture change initiative. It features questions related to five change drivers: vision, leadership, changes in human resources practices, communication, and enabling changes in structure and processes.

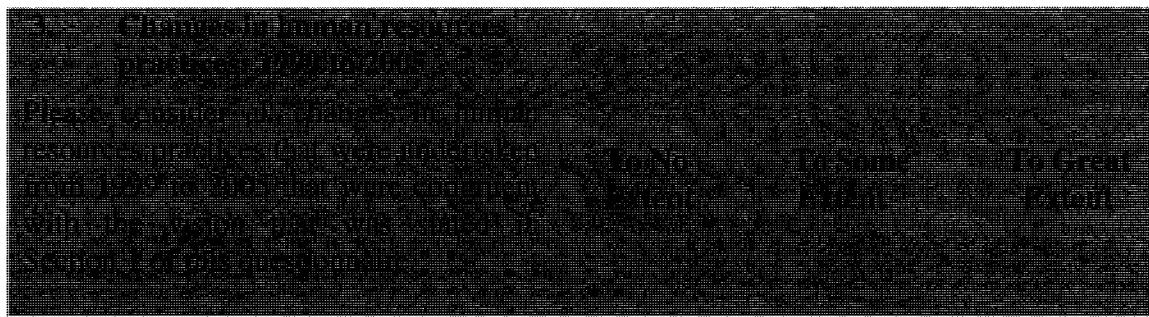
In answering the following questions, please **use the six year period 1999 – 2005 as the timeframe**. As well, please respond on behalf of the entire organization, that is, the department/agency as a whole.



- |  |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|
| a) To what extent was the <b>Treasury Board of Canada's vision</b> for this initiative congruent with <b>your department's/agency's vision</b> for this culture change initiative? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b) To what extent was this culture change initiative a priority for your department/agency?  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c) To what extent were new values related to this culture change initiative articulated to employees?  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d) How widely communicated throughout your department/agency was the vision for this culture change initiative?  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e) How persuasive was your senior management about the vision for this culture change initiative?  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f) To what extent was the vision for this culture change initiative incorporated into departmental/agency documents?   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| g) To what extent was the vision for this culture change initiative pertinent for your department/agency?  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |



- a) To what extent was the executive leader engaged in actions to lead this culture change initiative?      1      2      3      4      5      6      7
- b) To what extent was your senior management able to consistently display leadership relating to this culture change initiative?      1      2      3      4      5      6      7
- c) In relation to this culture change initiative, to what extent was your senior management able to match their words with their actions?      1      2      3      4      5      6      7
- d) To what extent did people throughout the organization (i.e., at different levels) play a leadership role relating to this culture change initiative?      1      2      3      4      5      6      7
- e) As a group, to what extent was senior management able to be good role models of the culture change sought?      1      2      3      4      5      6      7
- f) As a group, to what extent was senior management visibly empowered in order to change the organization's culture (e.g., have the human and financial resources needed for this culture change initiative)?      1      2      3      4      5      6      7



a) To what extent were the following human resource processes changed in your department/agency in a way that would contribute to the desired culture:

- Recruitment and selection? 1 2 3 4 5 6 7
- Socialization of newcomers, (e.g., through an orientation)? 1 2 3 4 5 6 7
- Mentoring and coaching practices? 1 2 3 4 5 6 7
- Role modeling practices? 1 2 3 4 5 6 7
- Education/training practices? 1 2 3 4 5 6 7
- Formal reward practices (e.g., awards) and recognition policies and practices? 1 2 3 4 5 6 7
- Informal reward practices (e.g., support for funding requests)? 1 2 3 4 5 6 7
- Employee recognition practices? 1 2 3 4 5 6 7
- Promotion practices? 1 2 3 4 5 6 7
- Employee performance appraisal practices? 1 2 3 4 5 6 7

b) To what extent did employees of your department/agency participate in new education/training related to the desired culture in areas such as anti-harassment, career-planning, and/or others?

1 2 3 4 5 6 7

	1	2	3	4	5	6	7	For Great System
a) To what extent was there communication throughout your department/agency regarding why this culture change was required?								
b) To what extent were the following vehicles used to communicate about this culture change initiative:								
• Newsletters?	1	2	3	4	5	6	7	
• E-mails?	1	2	3	4	5	6	7	
• Letters?	1	2	3	4	5	6	7	
• Memoranda?	1	2	3	4	5	6	7	
• Employee meetings?	1	2	3	4	5	6	7	
• Conferences/retreats?	1	2	3	4	5	6	7	
• Ceremonies?	1	2	3	4	5	6	7	
• Stories?	1	2	3	4	5	6	7	
• Humour?	1	2	3	4	5	6	7	
• Management's every day conversations?	1	2	3	4	5	6	7	
c) To what extent was information about this culture change initiative communicated throughout your department/agency by the:								
• Executive leader?	1	2	3	4	5	6	7	
• Senior management?	1	2	3	4	5	6	7	
• Middle management?	1	2	3	4	5	6	7	
• Supervisors?	1	2	3	4	5	6	7	
d) To what extent did management seek input from employees throughout the department/agency regarding this culture change initiative?	1	2	3	4	5	6	7	



b) To what extent were the following practices altered in ways that support this culture change initiative:

- Organizational structure?      1      2      3      4      5      6      7
- Planning processes?      1      2      3      4      5      6      7
- Budgeting processes?      1      2      3      4      5      6      7
- Management information systems?      1      2      3      4      5      6      7
- Policies and procedures?      1      2      3      4      5      6      7
- Quantitative organizational performance measures, (e.g., related to financial or human resource performance measures)?      1      2      3      4      5      6      7
- Qualitative organizational performance measurements, (e.g., managing to create conditions that motivate desired behaviour)?      1      2      3      4      5      6      7

b) To what extent were organizational performance reports published more frequently than before 1999?      1      2      3      4      5      6      7

c) To what extent was the physical environment of the workplace altered in relation to this culture change initiative?      1      2      3      4      5      6      7

**Q.5. To what extent do you believe each driver was important to achieving the desired results?**

For each possible driver of organizational culture change identified above, i.e., vision, leadership, changes to human resources practices, communication, and enabling changes in structure and processes in the organization, to what extent do you believe each driver was **important to achieving the desired results?**

• vision	1	2	3	4	5	6	7
• leadership actions	1	2	3	4	5	6	7
• changes in human resources practices	1	2	3	4	5	6	7
• communication	1	2	3	4	5	6	7
• enabling changes in structure and processes in the organization	1	2	3	4	5	6	7

**Thank you for the time and effort you have given in completing this questionnaire. Please be assured that specific departments and agencies will not be identified in the resulting report.**

### Appendix E: Variables: Mean, Standard Deviation and Range

Variable	Mean	Standard Deviation	Range: Lowest	Range: Highest
Vision (IV)	5.42	1.05	2.43	7.00
Leadership actions (IV)	5.02	.90	2.33	6.50
Changes in leadership personnel (IV) 1999 to 2005 – six-year period	.77	.25	0.0	1.0
Changes in leadership personnel (IV) 1999 to 2002 – three-year period – cumulative	.55	.26	0.0	1.0
Changes in leadership personnel (IV) 2002 to 2005 – three-year period – cumulative	.53	.26	0.0	1.0
Turnover of personnel (IV) 1999 to 2005 – annual rate	8.29	3.76	3.98	19.03
Turnover of personnel (IV) 1999 to 2002 – annual rate	8.22	4.13	3.33	24.22
Turnover of personnel (IV) 2002 to 2005 – annual rate	8.35	4.29	3.99	24.75
Organization size - Average number of employees (CV) 1999 to 2005	2,441	3,555.84	16	15,686
Organization size - Average number of employees (CV) 1999 to 2002	2,254	3,283.91	19	14,486
Organization size - Average number of employees (CV) 2002 to 2005	2,386	3,724.45	7	16,886
Organization type – department/other	.62	.49	0	1
Changes in human resources practices (IV)	4.72	.87	2.36	5.90
Communication (IV)	4.19	.92	1.81	5.88
Enabling changes in structure and processes (IV)	3.88	1.11	1.67	6.13
Primary Analysis – six-year period – 1999 to 2005:				
Changes in clarity of goals (DV)	.06	.05	-.05	.21
Changes in performance feedback (DV)	.04	.04	-.05	.15
Changes in supportive supervision (DV)	.03	.04	-.05	.14
Changes in learning (DV)	.04	.03	-.02	.14
Changes in career development (DV)	.04	.05	-.08	.19
Changes in involvement (DV)	.04	.03	-.05	.13
Changes in fairness (DV)	.04	.03	-.05	.12
Changes in workload (DV)	-.05	.04	-.21	.05
Changes in innovation and flexibility (DV)	.01	.04	-.07	.14
Primary Analysis – 3-year period – 1999 to 2002:				
Changes in clarity of goals (DV)	.03	.04	-.12	.12

Changes in performance feedback (DV)	.03	.02	-.02	.10
Changes in supportive supervision (DV)	.02	.03	-.03	.11
Changes in learning (DV)	.04	.03	-.06	.12
Changes in career development (DV)	.03	.04	-.08	.12
Changes in involvement (DV)	.04	.03	-.03	.13
Changes in fairness (DV)	.03	.02	-.08	.07
Changes in workload (DV)	-.04	.04	-.16	.05
Changes in innovation and flexibility (DV)	.00	.03	-.09	.07
Primary Analysis – three-year period – 2002 to 2005:				
Changes in clarity of goals (DV)	.02	.05	-.09	.15
Changes in performance feedback (DV)	.00	.03	-.07	.09
Changes in supportive supervision (DV)	.01	.03	-.07	.15
Changes in learning (DV)	.00	.03	-.07	.11
Changes in career development (DV)	.01	.04	-.06	.14
Changes in involvement (DV)	.00	.03	-.08	.06
Changes in fairness (DV)	.01	.03	-.05	.10
Changes in workload (DV)	-.01	.03	-.10	.10
Changes in innovation and flexibility (DV)	.01	.03	-.04	.10
Supplemental Analysis – three-year period – 2002 to 2005				
Changes in client service (DV) 2002 to 2005	-.01	.04	-.09	.12
Changes in safety culture (DV) 2002 to 2005	.01	.05	-.11	.12
Changes in justice culture (DV) 2002 to 2005	.00	.05	-.09	.19
Changes in career barriers (DV) 2002 to 2005	.00	.03	-.09	.09
Changes in labour relations (DV) 2002 to 2005	.02	.04	-.04	.13

### **Appendix F: Mean Cultural Values at Three Points in Time**

Culture Dimensions	1999 Mean	2002 Mean	2005 Mean
Clarity of goals	.64	.67	.70
Performance feedback	.69	.72	.73
Supportive supervision	.72	.74	.75
Learning	.66	.70	.70
Career development	.63	.66	.67
Involvement	.65	.69	.69
Fairness	.69	.72	.73
Workload	.59	.55	.54
Innovation and flexibility	.71	.71	.72
Client service	-	.64	.63
Safety culture	-	.73	.74
Justice culture	-	.58	.58
Career barriers	-	.68	.68
Labour relations	-	.44	.46

**Appendix G: Primary Analysis - Correlations - 1999 to 2005**

	1. OS	2. OT	3. CLP	4. TP	5. Y	6. LA	7. HR	8. C	9. SP	10. CG	11. PF	12. SS	13. L	14. CD	15. I	16. F	17. W	18. IF	19. GMC
1. OS	-																		
2. OT	-.51***	-																	
3. CLP	.15	-.22	-																
4. TP	.25	.02	-																
5. V	-.04	-.17	-.34*	-															
6. LA	-.08	-.28	-.06	.05	-														
7. HR	-.19	-.26	-.07	-.05	.77***	-													
8. C	-.04	-.29	-.11	-.04	.70***	.75***	-												
9. SP	-.05	-.25	.06	-.08	.53***	.71***	.64***	-.72***	-										
10. CG	-.17	.18	.36*	.10	-.23	-.06	.01	.02	.10	-.10	.04	.81***	-						
11. PF	-.19	.21	-.01	.10	-.07	.02	.01	.02	.10	.10	.03	.65***	.80***	-					
12. SS	-.22	.17	-.15	.15	.11	.15	.10	.15	.10	.10	.03	-.03	.03	.62***	.61***	.62***	-		
13. L	-.37*	.28*	.11	.14	.08	.16	.27	.03	.15	.15	.15	.15	.15	.66***	.61***	.62***	.77***	-	
14. CD	-.24	.25	-.07	.17	.10	.22	.19	.12	.12	.12	.12	.12	.12	.57***	.56***	.57***	.57***	.77***	-
15. I	-.33*	.29*	-.40**	.15	.18	.27	.33*	.19	.19	.19	.19	.19	.19	.32*	.48***	.48***	.44***	.50***	-
16. F	-.09	.09	.02	-.06	.07	.12	.14	.14	.01	.01	.02	.02	.02	.52*	.46***	.46***	.57***	.65***	.56***
17. W	.08	-.14	.31*	.03	.11	-.08	-.18	-.07	.19	.19	.17	.17	.17	.38*	.31*	.31*	.44***	.43***	.37***
18. IF	-.29*	.41**	-.57**	.09	.17	.10	.09	-.02	-.05	.05	.05	.05	.05	.38**	.33*	.33*	.47***	.47***	.26
19. GMC	.30*	-.29*	.30*	-.11	.12	.03	.14	.19	.19	.19	.06	.06	.06	-	-	-	-	-	-

Notes:

\* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

(Legend: OS – Organization size; OT – Organization type; CLP – Changes in leadership personnel; TP – Turnover of personnel; V – Vision; LA – Leadership actions; HR – Changes in human resources practices; C – Communication; SP – Enabling changes in structure and processes; CG – Changes in clarity of goals; PF – Changes in supportive supervision; SS – Changes in performance feedback; L – Changes in learning; CD – Changes in career development; I – Changes in involvement; F – Changes in fairness; W – Changes in innovation and flexibility; IF – Changes in workload; IF – Changes in culture; GMC – Global measure of culture changes

**Appendix H: Primary Analysis - Correlations - 1999 to 2002**

	1. OS	2. OT	3. CLP	4. TP	5. V	6. LA	7. HR	8. C	9. SP	10. CG	11. PF	12. SS	13. L	14. CD	15. I	16. F	17. W	18. IF	19. GMC
1. OS	-																		
2. OT	-.51***																		
3. CLP	.27	-.34*																	
4. TP	-.41**	.29*																	
5. V	-.04	-.17	-.26																
6. LA	-.08	-.28	-.17	.08															
7. HR	-.19	-.26	-.09	-.06	.60***														
8. C	-.04	-.29	-.09	.06	.70***	.79***													
9. SP	-.05	-.25	-.09	.03	.53***	.71***	.64***												
10. CG	-.05	.13	-.05	.23	-.17	-.13	-.01	.17											
11. PF	-.17	.27	-.32*	.36*	.01	.00	.02	-.07	-.08										
12. SS	-.00	.09	-.15	.25	.18	-.04	-.08	-.07	-.19	.51**									
13. L	-.06	.02	-.07	.41**	.05	.16	.05	.13	.02	.47**	.58**								
14. CD	.01	.09	-.01	.30*	.09	.05	-.07	.08	-.06	.42**	.57**	.70**							
15. I	-.16	.28*	-.41**	.38**	.17	.09	.11	.07	-.03	.31*	.52**	.60**	.81**						
16. F	.09	.04	.02	.05	.01	.02	-.04	.00	-.12	.15	.15	.15	.34*						
17. W	-.02	.08	.14	-.13	.13	-.02	-.20	-.21	.12	-.15	.25	.25	.39**						
18. IF	.05	.15	-.52***	.18	.15	-.01	-.13	-.12	-.22	.25	.46**	.46**	.43**	.58**					
19. GMC	-.04	.18	-.25	.38**	.09	.02	.01	.01	-.15	-.15	-.15	-.15	.31*	.26	.62**	.32*	-.30*	-.30*	

## Notes:

\* p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

(Legend: OS – Organization size; OT – Organization type; CLP – Changes in leadership personnel; TP – Turnover of personnel; V – Vision; LA – Leadership actions; HR – Changes in human resources practices; C – Communication; SP – Enabling changes in structure and processes; CG – Changes in clarity of goals; PF – Changes in performance feedback; SS – Changes in supportive supervision; L – Changes in learning; CD – Changes in career development; I – Changes in involvement; F – Changes in fairness; W – Changes in innovation and flexibility; IF – Changes in workload; IF – Changes in workload; GMC – Global measure of culture changes

**Appendix I: Primary Analysis - Correlations - 2002 to 2005**

	1. OS	2. OT	3. CLP	4. TP	5. V	6. LA	7. HR	8. C	9. SP	10. CG	11. PF	12. SS	13. L	14. CD	15. I	16. F	17. W	18. IF	19. GMC
1. OS	-																		
2. OT	-.52***	-																	
3. CLP	.18	-.26	-																
4. TP	-.36*	.15	.26	-															
5. V	-.04	-.17	-.39**	-.11	-														
6. LA	-.08	-.28	-.13	.01	.77***	-													
7. HR	-.19	-.26	-.04	-.04	.60***	.75***	-												
8. C	-.04	-.29	-.20	-.13	.70***	.79***	.75***	-											
9. SP	-.05	-.25	-.09	-.16	.53***	.71***	.64***	.72***	-										
10. CG	-.20	-.14	.29*	-.01	-.20	.02	.02	.21	.21	-									
11. PF	-.14	.06	.34*	-.06	-.10	.03	.12	-.08	.12	.72***	-								
12. SS	-.25	.12	.17	.15	-.03	.20	.18	.02	.19	.68***	.70***	-							
13. L	-.28	.24	-.10	-.04	.04	.02	.23	-.08	.13	.43***	.31*	.50***	-						
14. CD	-.35*	.24	.00	.02	.04	.23	.30*	.07	.21	.46***	.39**	.62***	.68***	-					
15. I	-.20	.04	-.05	-.13	.06	.25	.30*	.17	.24	.48***	.38**	.61***	.69***	.71***	-				
16. F	-.19	.07	.09	-.01	-.09	.11	.20	.01	.15	.60***	.52***	.74***	.35*	.61***	.49***	-			
17. W	.12	-.09	-.10	.02	.02	-.06	.01	.16	.09	-.37**	-.34*	-.67***	.32*	.40**	-.67***	-			
18. IF	-.40**	.35*	-.17	.04	.08	.13	.24	.10	.16	.40**	.33*	.61***	.60***	.54***	.57***	.31*	-.31*	-	
19. GMC	-.32*	.21	.11	.00	-.04	.14	.21	-.02	.18	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-

Notes:

p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

Legend: OS – Organization size; OT – Organization type; CLP – Changes in leadership personnel; TP – Turnover of personnel; V – Vision; LA – Leadership actions; HR – Changes in human resources practices; C – Communication; SP – Enabling changes in structure and processes; CG – Changes in clarity of goals; PF – Changes in supportive supervision; L – Changes in performance feedback; SS – Changes in performance and flexibility; I – Changes in involvement; F – Changes in innovation and flexibility; W – Changes in fairness; IF – Changes in workload; GMC – Global measure of culture changes in career development;

**Appendix J: Supplemental Analysis: Correlations - 2002 to 2005**

	1. OS	2. OT	3. CLP	4. TP	5. V	6. LA	7. HR	8. C	9. SP	10. CS	11. SAF	12. JST	13. CB	14. LR	15. GMC
1. OS	-														
2. OT	-.52***	-													
3. CLP	.18	-.26	-												
4. TO	-.36*	.15	.26	-											
5. V	-.04	-.17	-.39**	-.11	-										
6. LA	-.08	-.28	-.13	.01	.77***	-									
7. HR	-.19	-.26	-.04	-.04	.60***	.75***	-								
8. C	-.04	-.29	-.20	-.13	.70***	.80***	.75***	-							
9. SP	-.05	-.25*	-.09	-.16	.53***	.71***	.64***	.72***	-						
10. CS	-.12	.15	-.31*	-.01	.07	.12	-.04	.01	-.04	-					
11. SAF	-.11	.10	-.11	-.19	.02	.16	.32*	.32*	.35*	.07	-				
12. JST	-.22	.22	-.06	.01	.03	.19	.20	.12	.33*	.19	.65***	-			
13. CB	-.22	.08	-.19	.00	.23	.22	.29	.13	.21	.21	.45***	.38**	-		
14. LR	-.28	.21	-.11	.12	.06	.23	.13	.07	.03	.34*	.18	.30*	.16	-	
15. GMC	-.20	.23	-.16	-.03	.01	.20	.15	.17	.18	-	-	-	-	-	-

Notes:

p ≤ .05; \*\* p ≤ .01; \*\*\* p ≤ .001

(Legend: OS – Organization size; OT – Organization type; CLP – Changes in leadership personnel; TP – Turnover of personnel; V – Vision; LA – Leadership actions; HR – Changes in human resources practices; C – Communication; SP – Enabling changes in structure and processes; CS – Changes in client service; SAF – Changes in safety culture; JST – Changes in justice culture; CB – Changes in labour relations; LR – Changes in career barriers; GMC – Global measure of culture changes