Factors Influencing Readiness for Change in a Military Healthcare Environment

BY
DANNY C. DACEY
A.S., Blinn College, 2002
B.S., Texas A&M University, 2005
M.P.H., Texas A&M University, 2007

DISSERTATION

Submitted as partial fulfillment of the requirements for the degree of Doctor of Public Health in the School of Public Health of the University of Illinois at Chicago
Chicago, Illinois USA
April 2017

Dissertation Committee

Michael Petros, DrPH, Chair, Environmental and Occupational Health Sciences
Christina R. Welter, DrPH, MPH, Community Health Sciences
Eve Pinsker, PhD, Community Health Sciences
Steve Seweryn, EdD, Epidemiology and Biostatistics
Jameson Voss, MD, MPH, Major, USAF School of Aerospace Medicine
ACKNOWLEDGEMENTS

Completing my Doctorate in Public Health at the University of Illinois, Chicago has been both a personal and professional milestone that could not have been completed without the prayers, support and confidence of many individuals.

My precious wife Rebecca has provided unending support for me throughout this entire process. We have experienced much through this 7-year process: a move from Germany, to Washington D.C., to Ohio; the addition of three beautiful children; and a deployment to Afghanistan. I thank her for making the many sacrifices that were necessary for me to have the time to complete my coursework and dissertation. There is no doubt that this incredible journey would not have been possible without her unwavering support. Rebecca, Thank You.

The arrows in my quiver (Psalm 127:5) – Ava, Graceyn, Noah, Caroline and Olivia – are my greatest joys in life. May this degree provide a testament to hard work, dedication and commitment to family. Children, remember the importance of family.

I would also like to thank my committee chairperson, Dr. Michael Petros; and my committee members, Dr. Eve Pinsker, Dr. Christina Welter, Dr. Steve Seweryn and Dr. Jameson Voss for their expertise, wisdom and patience throughout this process. Committee members, Thank You for shepherding me through this process.

My greatest expression of thanks is provided to my Lord and Savior, Jesus Christ. As the Apostle Paul wrote in his epistle to the Colossians, “Whatever you do in word or deed, do all in the name of the Lord Jesus, giving thanks through Him to God the Father” (Col 3:17). Thank You Lord for the ability to accomplish this great task; I give thanks to You!
# TABLE OF CONTENTS

I: INTRODUCTION .......................................................................................................................... 1

B. Background and Context ........................................................................................................... 7
C. Statement of the Problem .......................................................................................................... 13
D. Research Questions .................................................................................................................. 13
E. Leadership Implications .......................................................................................................... 15
F. Chapter Summary .................................................................................................................... 17

II: THEORETICAL AND CONCEPTUAL FRAMEWORK ................................................................. 18

A. Literature Review .................................................................................................................... 18
   Introduction to the Concept of Change Readiness ...................................................................... 18
   Published Definitions of Change Readiness ............................................................................... 21
   Clarifying Resistance and Readiness for Change ...................................................................... 28
   Factors Affecting Readiness for Change ................................................................................... 30
   Organizational Level of Analysis .............................................................................................. 34
   Individual Level of Analysis ...................................................................................................... 37
   Summary of Change Readiness Factors Identified in the Literature ........................................ 40

B. Conceptual Framework ............................................................................................................ 42
C. Chapter Summary .................................................................................................................... 48

III: STUDY DESIGN, DATA, AND METHODOLOGY ................................................................... 50

A. Research Design and Methodology ........................................................................................ 50
B. Site and Participant Selection .................................................................................................. 52
C. Data Collection ....................................................................................................................... 53
D. Validity and Reliability Considerations .................................................................................. 77

IV: RESULTS AND ANALYSIS .................................................................................................... 80

V: DISCUSSION ............................................................................................................................... 132

VI. CONCLUSION .......................................................................................................................... 143

APPENDICES .................................................................................................................................. 145

Appendix A: Search Strategy Flowchart ..................................................................................... 145
Appendix B: The Modified Delphi study implementation process ............................................. 146
Appendix C: Letter of Selection and Consent to Delphi Panelists ............................................... 147
TABLE OF CONTENTS (continued)

Appendix D: Informed Consent ................................................................. 148
Appendix E. Modified Delphi Questionnaire Part 1 ................................. 151
Appendix F. Modified Delphi Questionnaire Part 2 ................................. 154
Appendix G. Informed Consent Form ......................................................... 155
Appendix H. Interview Protocol ................................................................. 156
Appendix I: USAF IRB Approval .............................................................. 159
Appendix J: UIC IRB Approval ................................................................. 162
VII: REFERENCES ..................................................................................... 164
VIII: VITAE ............................................................................................ 171
<table>
<thead>
<tr>
<th>ACRONYMS AND KEY TERMS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AF</td>
<td>Air Force</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>DoD</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>EBLL</td>
<td>Elevated Blood Lead Level</td>
</tr>
<tr>
<td>IRB</td>
<td>Institutional Review Board</td>
</tr>
<tr>
<td>MTF</td>
<td>Military Treatment Facility</td>
</tr>
<tr>
<td>Chain of command</td>
<td>The hierarchy within military organizations. Members of the military have individuals who they report to—or are commanded by. This chain goes up to the Governor in the National Guard or the President in the Active component or if the Guard unit is called to active federal service.</td>
</tr>
<tr>
<td>Change Management</td>
<td>The process of continually renewing an organization’s direction, structure, and capabilities to serve the ever-changing needs of external and internal customers.</td>
</tr>
<tr>
<td>Organizational Change</td>
<td>Burnes (1996) stated that organizational change alludes to comprehension of the changes inside organizations at the broadest level among employees,</td>
</tr>
<tr>
<td>Capacity</td>
<td>Capacity can be defined as an organization’s ability to meet the requirements necessary to implement a program, and includes skills, motivations, attitudes, knowledge, and resources.</td>
</tr>
<tr>
<td>Organizational Change Readiness</td>
<td>For the purposes of the current research, readiness is an organization’s level of preparedness to successfully implement an innovation (program or initiative) and includes motivations, attitudes, knowledge, and resources.</td>
</tr>
<tr>
<td>Change Resistance</td>
<td>Kreitner (1995) stated, “resistance arises from those whose jobs are directly affected by organizational change” (p. 45). Bennis (1963) defined change resistance as “unconsciously clinging to existing institutions because changes threaten existing social defenses against deep and intense anxieties” (p. 145).</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE I</td>
<td>SUMMARY OF EXTANT CHANGE READINESS CONCEPTUALIZATIONS AND LIMITATIONS</td>
<td>27</td>
</tr>
<tr>
<td>TABLE II</td>
<td>SUMMARY OF THE PSYCHOLOGICAL AND STRUCTURAL FACTORS OF READINESS AT THE INDIVIDUAL AND ORGANIZATIONAL LEVEL</td>
<td>33</td>
</tr>
<tr>
<td>TABLE III</td>
<td>OVERVIEW OF CHANGE READINESS FACTORS STUDIES</td>
<td>41</td>
</tr>
<tr>
<td>TABLE IV</td>
<td>DATA SOURCES AND DATA COLLECTION PROCEDURES</td>
<td>54</td>
</tr>
<tr>
<td>TABLE V</td>
<td>DATA SOURCES AND DATA COLLECTION PROCEDURES</td>
<td>73</td>
</tr>
<tr>
<td>TABLE VI</td>
<td>OVERVIEW OF STUDIES INCLUDED IN THE SYSTEMATIC REVIEW.</td>
<td>83</td>
</tr>
<tr>
<td>TABLE VII</td>
<td>CHANGE READINESS FACTORS IDENTIFIED IN THE LITERATURE BY FREQUENCY (2000 – 2016)</td>
<td>86</td>
</tr>
<tr>
<td>TABLE VIII</td>
<td>SUMMARY OF STUDIES AND REPORTED CORRELATION COEFFICIENT</td>
<td>90</td>
</tr>
<tr>
<td>TABLE IX</td>
<td>MEAN CORRELATIONS WEIGHTED BY SAMPLE SIZE</td>
<td>92</td>
</tr>
<tr>
<td>TABLE X</td>
<td>SIZE OF THE MILITARY TREATMENT FACILITY YOU ARE CURRENTLY ASSIGNED</td>
<td>99</td>
</tr>
<tr>
<td>TABLE XI</td>
<td>AIR FORCE SPECIALTY CODE</td>
<td>100</td>
</tr>
<tr>
<td>TABLE XII</td>
<td>YEARS OF MILITARY EXPERIENCE</td>
<td>101</td>
</tr>
<tr>
<td>TABLE XIII</td>
<td>DELPHI RESPONDENT RANK CATEGORY</td>
<td>101</td>
</tr>
<tr>
<td>TABLE XIV</td>
<td>INDIVIDUAL CHANGE READINESS FACTORS</td>
<td>102</td>
</tr>
<tr>
<td>TABLE XV</td>
<td>ORGANIZATIONAL READINESS FACTORS</td>
<td>103</td>
</tr>
<tr>
<td>TABLE XVI</td>
<td>INDIVIDUAL CHANGE READINESS FACTORS</td>
<td>104</td>
</tr>
<tr>
<td>TABLE XVII</td>
<td>ORGANIZATIONAL CHANGE READINESS</td>
<td>105</td>
</tr>
<tr>
<td>TABLE XVIII</td>
<td>ADDITIONAL CHARACTERISTICS</td>
<td>105</td>
</tr>
<tr>
<td>TABLE XIX</td>
<td>LEADERSHIP TRAITS</td>
<td>107</td>
</tr>
<tr>
<td>TABLE XX</td>
<td>PARTICIPANTS IN THE MODIFIED E-DELPHI ROUND ONE</td>
<td>108</td>
</tr>
<tr>
<td>TABLE XXI</td>
<td>CURRENTLY WORKING IN AN MTF</td>
<td>108</td>
</tr>
<tr>
<td>TABLE XXII</td>
<td>AIR FORCE YEARS OF EXPERIENCE</td>
<td>109</td>
</tr>
<tr>
<td>TABLE XXIII</td>
<td>MILITARY CLASSIFICATION</td>
<td>109</td>
</tr>
<tr>
<td>TABLE XXIV</td>
<td>MILITARY RANK CATEGORY</td>
<td>110</td>
</tr>
<tr>
<td>TABLE XXV</td>
<td>AIR FORCE SPECIALTY CODE</td>
<td>110</td>
</tr>
<tr>
<td>TABLE XXVI</td>
<td>MANAGEMENT RESPONSIBILITY</td>
<td>111</td>
</tr>
<tr>
<td>TABLE XXVII</td>
<td>SPAN OF MANAGEMENT CONTROL</td>
<td>111</td>
</tr>
<tr>
<td>TABLE XXVIII</td>
<td>EXPERIENCE IN MANAGING CHANGE</td>
<td>112</td>
</tr>
<tr>
<td>TABLE XXIX</td>
<td>KNOWLEDGEABLE IN MANAGING CHANGE</td>
<td>113</td>
</tr>
<tr>
<td>TABLE XXX</td>
<td>ROUTINE CHANGE MANAGEMENT ACTIVITIES</td>
<td>114</td>
</tr>
<tr>
<td>TABLE XXXI</td>
<td>BARRIERS TO PREPARING FOR ORGANIZATIONAL CHANGE</td>
<td>114</td>
</tr>
<tr>
<td>TABLE XXXII</td>
<td>MOST IMPORTANT FACTOR IN PREPARING FOR AN ORGANIZATIONAL CHANGE EVENT</td>
<td>115</td>
</tr>
<tr>
<td>TABLE XXXIII</td>
<td>RATE THE LISTED INDIVIDUAL CHANGE READINESS FACTORS</td>
<td>116</td>
</tr>
<tr>
<td>TABLE XXXIV</td>
<td>ORGANIZATIONAL CAPABILITIES</td>
<td>117</td>
</tr>
<tr>
<td>TABLE XXXV</td>
<td>RATE ORGANIZATIONAL READINESS FACTORS</td>
<td>118</td>
</tr>
<tr>
<td>TABLE XXXVI</td>
<td>QUESTIONNAIRE COMMENTS</td>
<td>119</td>
</tr>
<tr>
<td>TABLE XXXVII</td>
<td>DELPHI APPROPRIATENESS</td>
<td>119</td>
</tr>
<tr>
<td>TABLE XXXVIII</td>
<td>THEME FREQUENCIES AND PERCENTAGES</td>
<td>128</td>
</tr>
<tr>
<td>TABLE XXXIX</td>
<td>EMERGENT THEMES FROM INTERVIEWS WITH MILITARY HEALTHCARE PERSONNEL</td>
<td>129</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Basic Structure of the Military Health System</td>
<td>8</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Air Force Medical Organization</td>
<td>9</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Readiness for Change adapted from Dennis R. Self, Overcoming Resistance to Change by Managing Readiness for Change.</td>
<td>30</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Multilevel framework of the antecedents and consequences of readiness for change</td>
<td>46</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Conceptual Framework – multilevel framework of the factors of readiness for change</td>
<td>47</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Correlations Analyzed Using Fisher’s $z$ Score</td>
<td>62</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Funnel Plot – Mean Effect Size versus Sample Size</td>
<td>93</td>
</tr>
</tbody>
</table>
SUMMARY

The United States military, and more specifically the military healthcare system, are continually undergoing changes to make improvements to become more efficient and effective. However, many change efforts do not result in their intended aims, achieving only partial implementation success. Therefore, the purpose of this research was to identify the key antecedents and practices that have been tied to successful organizational change management, the influence of these variables on individuals' readiness, and their practical significance to the U.S. military healthcare system. This research represents a: (1) systematic review and quantitative meta-analysis of the literature; (2) the data results and analysis of a modified Delphi study, which used a panel of military healthcare personnel to identify which factors of change readiness contribute to successful change in the United States Air Force; and (3) the synthesis of semi-structured interviews with key informants regarding a programmatic change.

The results of this dissertation indicated that specific change management strategies have a positive impact on preparing for organizational change. Through systematic review and a quantitative meta-analysis of several pooled research studies, change efficacy, change understanding and organizational capabilities were identified as key factors for change readiness. The Delphi panelists indicated that change understanding and organizational capabilities are the most important factors in preparing for a change event. By way of semi-structured interviews with key organizational stakeholders, detailed organizational communication and leadership as an essential part of having successful implementation of organizational change initiatives and using change management strategies effectively.
I: INTRODUCTION

“Nothing is permanent, but change” — Heraclitus, (535–475 BCE)

Although as a society we like to believe that we live in an era of unprecedented change and uncertainty, change has been an ever-present component of human society, as evidenced by the pre-Socratic Ionian philosopher Heraclitus’ statement. It is true that organizations face a significant level of change in today’s dynamic, fast-paced environment; the ability to change and adapt is critical for organizational success (Weiner et al., 2008). A key component of an organization’s ability to implement change successfully appears to be associated with the readiness of the organization and its individual members to change (Armenakis & Harris, 2002). Unfortunately, planning and managing organizational change has often been met with little success (Weiner et al., 2008; Bigelow & Arndt, 2005) with research estimating that about two thirds of change projects fail to meet objects, are under executed, and fail to deliver desired outcomes (Miller, D., 2004; Caldwell et. al., 2008; Beer and Nohria, 2000; Choi and Ruona, 2010). Organizational failure to achieve intended aims when pursuing change is largely credited to implementation failure, rather than flaws in the proposed change itself (K. J. Klein & Sorra, 1996). The failures are often attributed to the organization’s inability to provide for an effective unfreezing process, getting organizational members to let go physically and psychologically, before undergoing a change initiative (Lewin, 1947/1997b; Choi and Ruona, 2010). Unfreezing, as described by Lewin (1947) in the context of organizational change, includes the process by which organizational members’ beliefs and attitudes about a change are altered so that they perceive the change as both necessary and likely to be successful (Armenakis, Harris, & Mossholder, 1993; Lewin 1947; Choi and Ruona, 2010); change theorists often refer to this concept as change readiness.
More fully outlining the variables that increase readiness to change and identifying means of influencing them is paramount if change is to be successful. To that end, the purpose of this research is to identify the key antecedents and practices that have been tied to successful organizational change management, the influence of these variables on individuals' readiness, and their practical significance to the U.S. military healthcare system. It would appear on the surface that the military healthcare system would be a leader in implementing and understanding change readiness strategies as it applies to changes in the military’s workplace; however, as Welborn (2001) suggests, making the transition from implementing wartime tactics to implementing healthcare strategy decisions is a continuous and constantly evolving challenge for military professionals. In years past, Department of Defense budgets appeared less constraining, necessary workforces were in abundance, and doing more with less was not an immediate concern (Welborn, 2001; Lyons et al., 2009). Now, however, in the face of fiscal constraints and significant manpower cuts, the military has a growing need to successfully prepare for and implement change strategies in order to achieve the desired outcomes necessary to remain competitive, responsive and to maintain its status as the world’s most effective military organization (Welborn, 2001).

When making a decision to change, leaders are determining the success or failure of a practice, program, department, or ultimately of an organization. Therefore, for successful implementation of change to occur, leaders must be knowledgeable of the specific factors of preparing for and managing a change effort. By taking advantage of those factors, leadership practices and strategies that are seen as antecedents for successful organizational change within the private sector, military leaders, and more specifically military healthcare leaders, may be better able to prepare for and successfully implement change within their organization
potentially leading to fewer medical errors, improved organizational communication, better patient satisfaction and healthcare outcomes. Though various constructs have been identified in healthcare organizations receptive to change, or ready to change, the saturation of literature has produced a disconcerted cacophony of discordant terms and definitions of organizational readiness (Weiner et al., 2008). Still, these various constructs have never been translated to a military healthcare system and pitted against military-specific healthcare challenges. If military healthcare organizations are to respond to and adapt to change initiatives successfully (i.e. modifications in goals, structure or organizational procedures) to meet military healthcare challenges, great benefits could be achieved by exploring the factors that influence change readiness in the military healthcare system.

A. Background and Problem Statement

Today’s healthcare leaders face an extremely challenging position: how to lead a complex organization through a rapidly changing environment. Today, this environment is more complex as sweeping healthcare reform and market forces transform the way healthcare is delivered and managed (Browning et al., 2016). Rapid change is occurring in indirect ways, but at other times, in major or even disruptive ways as healthcare organizations respond to public health policy, market demands, rising healthcare costs, and advances in medical technology and the practice of medicine (Bazzoli et al., 2004; Bigelow & Arndt, 2005). For decades, healthcare administrators and medical professionals have operated within a challenging, rapidly changing, and fragmented healthcare system (Browning et al., 2016). Foremost have been shortages of key healthcare professionals, increased competition, and uncertainty in the economic conditions confronting healthcare (Lee and Alexander, 1999).
Not surprisingly, many change efforts do not result in their intended aims, achieving only partial implementation success (Bigelow & Arndt, 2005). Change management researchers estimate that about two thirds of change projects fail (Roeleen, 2010; Miller, D., 2004; Caldwell et. al., 2008; Beer and Nohria, 2000; Choi and Ruona, 2010); more cynical results suggest a higher rate of failure that may reach 80% to 90% (Burns, 2004; Cope, 2003). A recent survey of 2,200 civilian hospitals conducted by McKinsey & Company (2012), reports that more than 70% of hospital executives found that their strategic initiatives failed. One of the largest contributors to failure described by Gauthier van Eetvelde, a consultant for McKinsey & Company, is a healthcare organization’s “readiness to launch” (McKinsey & Company, 2012, p. 2). Similarly, whether the change is in the structure of an organization, its function, or the adoption of new medical procedures or processes, Caldwell (2008) suggests that change and innovation fail because healthcare organizations are unable to successfully implement them; many healthcare organization projects take more time and resources than planned and fail to deliver desired business outcomes (Pickens et al., 2005).

Why are these change initiatives deemed as failures? Specifically, why does organizational change and improvement efforts in healthcare often fail to deliver desired outcomes? Healthcare organizations have identified many major reasons, and they affect not only the healthcare system but other industries as well; they include poor planning and unrealistic time and resource estimates; unclear goals and objectives; lack of executive support; and failure to communicate. Longenecker (2014) conducted a series of focus groups with 167 frontline leaders from four community hospitals to explore why hospital change efforts fail. Ten primary barriers to successful hospital change were identified, some of which include ineffective implementation planning and overly aggressive timelines, failure to create
project buy-in and ownership, ineffective leadership and lack of trust in upper management (Longnecker, 2014). There are many examples of change implementation failures to analyze in the literature; however, despite the many reported failures, there are many mechanisms and strategies for successful change available for healthcare leaders in the examination of current approaches and decision making.

In the face of rapid political, economic, and technological developments in healthcare, many healthcare organizations have come to realize that simply conforming to “professional norms and practices” no longer guarantees successful change (Lee and Alexander, 1999). The application of business acumen such as total quality management (TQM) and continuous quality improvement (CQI) have become standard practices of hospital management staff, and many healthcare facilities have restructured their organizations to mimic the features of leading U.S. economic enterprises (Narine and Persaud, 2003; Lee and Alexander, 1999). Yet the ability of healthcare facilities to fully make this adaptation is questionable as healthcare systems continue to report similar failure rates as those experienced in business and industry (as described above). As Narine and Persaud report (2003), these change initiatives (i.e., TQM, CQI and organizational restructuring) have not fulfilled their promise in gaining and maintaining organizational change. Although change within healthcare organizations may be continuous, sporadic, occasional, or rare (Rashid Al-Abri, 2007), successful implementation of change in the healthcare setting is possible, and has been demonstrated, and research has shown it is dependent to a large extent on the readiness level of the organization and its members (Shea et al., 2014; Weiner, 2009; Holt et al., 2008; Narine and Persaud, 2003). In essence, an effective state of readiness must be created for an organization to achieve that desired end state of success.
The change management literature has a number of discussions of organizational change readiness, of which is largely considered the most important and recognized leadership strategy involved in employees’ initial support for organizational change initiatives (Armenakis et al., 1993; Armenakis, Harris and Feild, 1999). Kurt Lewin (1947) first introduced the readiness construct with his three-stage change management model (unfreezing-moving-refreezing) in which he suggested that unfreezing is a necessary step to prepare the organization and its members for a change initiative. Drawing on Lewin’s three-stage model of change, change management experts have prescribed various strategies to create readiness by 'unfreezing' existing mindsets and creating motivation for change (Weiner, 2009). These strategies include highlighting the discrepancy between current and desired performance levels, fomenting dissatisfaction with the status quo, creating an appealing vision of a future state of affairs, and fostering confidence that this future state can be achieved. Therefore, when these actions are present, readiness for change is high; members of the organization are devoted to the change event resulting in greater implementation and a more successful outcome (Armenakis & Harris, 2002; Weiner et al., 2008). Unfreezing and change readiness all describe a similar phenomenon: the process of altering employee cognitions in an effort to facilitate organizational change (Berneth, 2004).

Despite the importance of change readiness as a factor involved in successful change initiatives (Armenakis et al., 1993; Armenakis, Harris, & Feild, 1999), the term change readiness has been ill-defined (Weiner et al. 2008; Findlay & Verhoef, 2004); thus, contributing to the vagueness around its theoretical role in change management efforts, as well as the antecedents that might influence change readiness. Beer and Nohria (2000) go so far as to say that despite the proliferation of research an integrated theory or framework for understanding change
readiness does not exist. Weiner et al. (2008) suggests that this ambiguity is a result of healthcare researchers largely working independently of each other in the examination of organizational readiness, its theoretical components, and how it may influence change implementation. Certainly, change readiness has been subject to extensive empirical study, but the generalizability and transferability of findings are often limited to context of the setting in which the change event was evaluated. Therefore, not surprisingly, there exists an abundance of concepts, terms, and definitions of readiness, its antecedents, from one of several perspectives, leaving healthcare workers without a theoretical common ground to undertake change initiatives successfully.

B. **Background and Context**

The Military Health System is a vast, comprehensive, integrated system that includes combat medical services, peacetime healthcare delivery, public health and preventive medicine services, medical education and training, and medical research and development. The mission of the Military Health System is to provide medical support to military operations across the globe, of which, is unlike any other healthcare system in the United States. The operational aspects of the Military Health System are divided among the three Military Departments (Army; Navy, to include Marine Corps; and Air Force), with each Service controlling and operating their own health centers, hospitals, and clinics across the globe (Military Health System Review, 2014). The basic organizational structure of the Military Health System, which is taken from the TRICARE Handook, is depicted in Figure 1. **Note:** Though Figure 1 presents a more linear structure, the military culture is more hierarchal. Manifested by military rank structures, command authority and resulting in great variety and variability in the extent to which the
leadership gradient is centralized particularly when looking at the different lines of authority that can exist across the military healthcare services.

The Military Health System combines resources from both direct and purchased care components, facilitating ready access to healthcare for 9.6 million Service members, retirees, and their eligible family members (Military Health System Review, 2014; Ringel et al., 2002). In Fiscal Year 2013, the direct care component of military treatment facilities (MTFs) consisted of: 56 hospitals, 361 ambulatory care clinics, and 249 dental clinics, operating worldwide and employing 60,389 civilians and 86,051 military personnel (Military Health System Review, 2014).

In the Air Force, peacetime and operational medical units are integrated under local command and control at each wing command, with the MTF commander reporting to the wing

Figure 1. Basic Structure of the Military Health System
commander. Each major Air Force command (MAJCOM) employs a command surgeon who provides advice to the MAJCOM commander and exercises considerable management authority, but ultimately Air Force MTFs are commanded and controlled by the line command (non-medical personnel) at the installation they serve. Doctrinally, deployable medical units in the Air Force are staffed directly from the MTF of the supported line commander. In practice, the Air Force employs a “building block” approach for providing medical support to deploying units, whereby deploying medical units are often constructed from various MTFs (RAND Corporation, 2014). The Air Force Medical Organization, which is taken from the RAND Corporation, is depicted in Figure 2.

![Air Force Medical Organization Diagram](image)

**Figure 2: Air Force Medical Organization**

The Military Health System and civilian healthcare systems are similar in many aspects but share several distinctions. Like every large healthcare system, the Military Health System is constantly responding and adapting to changing demographics, shifting policies, evolving standards for access and quality, advances in science and medicine, complex payment and cost
considerations, rapidly evolving communications and information technology capabilities, and fluid patient expectations (Military Health System Review, 2014; RAND Corporation, 2014). The Military Health System is unique in that it is structured and operationalized through an extensive array of statutory requirements, instructions, policies, and guidelines from the Military Departments and Department of Defense (Military Health System Review, 2014). Moreover, the Military Health System does not operate on a traditional reimbursement system as found in the civilian sector, and is subject to congressional authorization and appropriation processes that direct its activities and allocation of resources. The Military Health System is engaged in a unique military readiness mission in which it must commit resources to produce prompt responses to peacekeeping (as in Bosnia), to war (Iraq and Afghanistan), as well as to natural disasters (such as the earthquake in Haiti).

The Military Health System has faced many unique challenges over the past decade: support of deployment of a medically ready force fighting two wars; reorganization of governance structure; implementation of enterprise-wide common business processes; and creation of shared services delivery system (Military Health System Review, 2014; RAND Corporation, 2014). Characterized by an ever-changing healthcare landscape are new regulatory stipulations, increased security requirements, budgetary pressures, and base realignment and closure procedures. Unpredictable adversaries, wavering financial demands and resources, and constraints imposed by the political system (Lyons et al., 2009; Ringel et al., 2010) continue to pose challenges for military healthcare leaders. With each challenge, Military Health System leadership has responded, taking action to address opportunities and mitigate risks.

As military healthcare adapts to rapid-complex global, political, social, technological, and budgetary challenges, a dramatic change to the approach and thinking of the military to
prepare for these changes is required. Hence, decisions are often influenced by the above-mentioned factors to name only a few of the distracters that influence an organizations ability to prepare for change. The nature of military decision making process is often characterized as a hierachical top-down approach (Army Study Guide, 2014; RAND Corporation, 2014), which may disallow change readiness and the aforementioned unfreezing state to occur throughout the entire organization. This type of centralized decision making which is effective on the battlefield may in fact act as a barrier to individuals’ attitudes toward organizational change in healthcare and have real impact on change implementation. However, a decentralized approach to managing change is not always possible in military healthcare when the pace and types of change in the contemporary operating environment over the past decade may benefit from system wide reform and standardized implementation of changes. While military leadership is likely heterogeneous across Services, units and contexts, there are likely unique challenges to adaptability that could impact the quality, effectiveness and efficiency of change implementation in the context of the military healthcare environment.

For military healthcare commanders, staff officers, and military healthcare professionals to confidently try new approaches and experiment in real-time to change-related events (whether planned or unplanned), they must critically examine the heuristics by which they prepare their organizations for and understand how they may lead change. This need for adaptability and adaptive leadership in a complex environment points to a challenge in the military decision-making process, which, in turn, may impair how today’s military healthcare leaders prepare for change-related events. The challenges in maintaining a high-level of effectiveness in an environment characterized by uncertainty have increased the need to outline the tenets of change readiness, strategies most effective in fostering readiness, and identify the means of influencing
them.

Very little of the existing literature speaks directly to contributors of change readiness among military organizational staff members (Lyons et al., 2009). Although much research on organizational change management focuses on civilian organizations, there is a need to focus on comprehensive change management in military organizations (Cantwell, 2010). Though the data suggests that 70% of hospital strategic initiatives fail (McKinsey & Company, 2012), consistent with the general findings about organizational change, is it reasonable to expect that the Military Healthcare System has similar failure rates, though estimates for the MHS have not been published? Despite the lack of research on effective organizational change management and readiness within the government sector, there is reason to suspect that military healthcare leaders are more adept at preparing for and implementing rapid organizational change compared to their civilian counterparts. However, those claims on the success rate of change implementation within military healthcare are speculative. Currently, there exists sufficient theory on change readiness in the literature to address the role of change readiness in military healthcare.

The purpose of this research is to identify the key antecedents and practices that have been tied to successful organizational change management, the influence of these variables on individuals’ readiness, and their practical significance to the U.S. military healthcare system. The military healthcare setting provides a rich empirical terrain from which to investigate change phenomena and address the underlying principles supporting change readiness and successful change implementation. This research investigates a program change in a military public health program to further narrow the scope, being representative of a public health problem.
C. **Statement of the Problem**

The problem is that rapid-complex change has been forcing healthcare facilities, both civilian and military, to cope with pressures that have strained their capacity to react to a changing environment successfully. The literature suggests that successful change begins with a state of readiness that is driven by the individual beliefs and attitudes of employees; within the organization however, at this time it appears that no research has been conducted in this area relative to the military healthcare environment. Though a variety of change readiness factors have been identified as successful constructs in organizations that are receptive to change – or ready to change, it is difficult to find common ground among the many theories and approaches to change readiness, leaving military healthcare professionals without a knowledge base of those practices and strategies to undertake change initiatives successfully. **If military healthcare leaders are to experience full value of their change management efforts, supervisors and non-supervisors need a clear understanding of those readiness factors that have been tied to successful change implementation.**

D. **Research Questions**

A key component of the organization’s ability to successfully implement change appears to be associated with the readiness-level of the organization and its employees (Armenakis & Harris, 2002). If that is true, more fully delineating the factors that increase change readiness and identifying means of influencing them is paramount to developing and implementing successful change initiatives within military healthcare. **The primary goal of this mixed-methods approach is to identify the key antecedents and practices that have been tied to successful organizational change management, the influence of these variables on individuals'**
readiness, and their practical significance to the military healthcare system. Specifically, this study has three objectives: (1) characterize factors associated with readiness for change based on systematic review of the literature, quantitative meta-analysis, and/or umbrella literature review as appropriate; (2) utilize a modified e-Delphi technique to gain consensus on the change readiness factors discovered during the systematic literature review and meta-analysis with practical discussion of those factors most pertinent to the military healthcare system; and (3) through semi-structured interviews provide some key insights as to whether or not the change readiness factors identified in the previous phases exists during a programmatic change. Given the substantial investment committed to change efforts in the military, the development of a stronger knowledge base about change readiness should strengthen military healthcare organizational efforts to prepare for and implement change. Accordingly, the primary research question pursued via a mixed-methods approach is: which change readiness factors promote successful change implementation within a military healthcare setting?

To assist in the exploration of this question, the following sub-questions were developed:

For the first phase of this study (building evidence) the overarching research questions are:

Q1. What factors of change readiness have been tied to successful organizational change?
Q2. What kind(s) of organizational change readiness supports individuals change readiness?
Q3. Which leadership strategies will successfully manage needed organizational change?

For the second phase (gaining consensus) of this study the overarching research questions are:

Q4. How do military healthcare professionals within the United States Air Force rate their change readiness experiences?
Q5. Which change readiness factors identified in the systematic literature review and quantitative meta-analysis are most pertinent to preparing for change in military healthcare?
For the third phase (evaluation) of this study the overarching research questions are:

Q6. How do military healthcare professionals within the United States Air Force describe the change readiness factors that influence their decision making related to preparing for a programmatic change?

Q7. What is the relationship between these factors that influence individual readiness for change in organizations, focusing on variables at the individual, workplace, and organizational levels?

E. Leadership Implications

“The military should look at processes that thrive on change, because it will be likely the only unchanging dimension of the future of our military” - Secretary of the Air Force (retired), Michael Donnelly (2008)

Leadership is critical to the success of any organizational change initiative (Kotter, 1996; Lyons et al., 2009); moreover, strong change leadership is related to increased change readiness (Lyons et al., 2009). Bainbridge (1996) states that the responsibility to create and design organizational change initiative frequently falls upon leadership. Indeed, studies show a correlation between the abilities and behaviors of organizational leaders, and change implementation outcomes. For example, while studying obstacles to successful organizational change, Hoag et al. (2002) found that when the change effort was perceived by employees to be ineffectively led the result was an increased resistance to the change effort. However, Herold et al. (2008), in which employee reactions were studied relative to leadership behaviors and commitment to change, found the employee’s level of change commitment remained high when the organizational leader was viewed as credible and trustworthy. Higgs and Rowland (2005) showed that certain leadership behaviors (facilitative or enabling styles of leadership) were more
effective than others in achieving successful organizational change. Leadership clearly is associated with the outcomes of organizational change efforts (Lyons et al., 2009; Kotter, 1996; Bommer et al., 2005; Tyler and Cremer, 2005; Kavanagh and Ashkanasy, 2006; Furst and Cable, 2008); and furthermore, researchers continue to explore change leadership as a readiness factor that effects organizational change initiatives (Herold et al., 2008).

Many scholars, practitioners, and senior military leaders view the military as a complex adaptive system (Cojocar, 2011). Effective military leaders must understand: (1) the relationship between change leadership and change readiness among officers, enlisted, and civilian groups; and (2) the impact of organizational leaders as a key factor that is related to the change readiness of personnel (Lyons et al., 2009). As this study attempts to understand the factors that contribute to change readiness in military healthcare, change leadership will be discussed as a significant component of change readiness as it pertains to managing change within the military. This will be followed by an examination of the change readiness theory and how it applies to the military healthcare system, with an overall goal of providing insight into successful implementation of new policies, programs, and practices within the military healthcare.

To a considerable extent, the link between leadership and the challenges of change management have been studied in the military quite extensively. However, the impact of leadership on change readiness in the US military has been evaluated empirically by relatively few researchers. Lyons et al. (2009) determined that change leadership from senior executives was most predictive of individuals' reported change readiness for military officers and civilian personnel. Comparatively, the value of this research for military health care leaders and the military at large aim to exploit those factors such as change leadership so that military leaders
may be better able to prepare for and successfully implement change within their organization.

F. Chapter Summary

As discussed thus far, this chapter introduced the construct of readiness for change as a more valid and practical concept to understand employees’ attitudes toward organizational change. This research seeks to assist military healthcare leaders in better understanding how they can influence readiness to change, possibly leading to more successful change efforts. This study will provide an evidence-based list for military healthcare leaders to “set the stage” for change efforts through a better understanding of precursors to change readiness. On a theoretical level, an examination of the relationships between and among change readiness variables may help provide a better understanding of how and why organizational change efforts have such variable outcomes. Next, the literature review focuses on concepts of change readiness and a stream of research on readiness factors that focus on the specific behaviors of the organization and its employees through change activities. The review of past theories shows that while there is a laundry list of readiness factors that exist, only a few factors become prominent in facilitating organizational change.
II: THEORETICAL AND CONCEPTUAL FRAMEWORK

A. Literature Review

This study is based on four concepts: the military healthcare environment, readiness for change, factors that influence change readiness, and change management. The literature review presents an overview of each, leading to current thinking. Pertinent research studies and findings are used to illustrate key aspects of each concept, with an emphasis on those components examined in this study. The constructs of change readiness are addressed, with some supporting commentary about military healthcare folded into the discussion. Specifically, this chapter includes: (a) an introduction to the concept of change readiness with a synthesis of published definitions, (b) key concepts in change readiness, (c) a summary of readiness factors identified from the literature, followed by a (d) preliminary systematic review of the literature. The preliminary systematic literature review will evaluate the current flood of evidence found in the change readiness literature and move the literature review away from a casual judgment, and instead provide a framework for summarizing and interpreting the full range of evidence (T.D. Stanely, 2001). Following the literature review, the conceptual framework of the study—the main things to be studied, the presumed relationships among them, and theories that support and inform the research (Miles & Huberman, 1994)—will be presented.

Introduction to the Concept of Change Readiness

“It has always been a characteristic of American industry to change products and methods of doing jobs as often as competitive conditions or engineering progress dictates”–

Coch and French 1948
Early organizational change theorists acknowledged the importance of change readiness as an integral component in the process of planning for a specific change effort. The first use of the term *readiness* may be attributed to E.H. Jacobson (1957) based on reference to the classic study of the Harwood Manufacturing Clothing Plant by Coch and French in 1948 in the town of Marion, Virginia. Traditionally cited as one of the most influential studies of organizational change (Berneth, 2004), this study set the stage for organizational change research and current discussions of change readiness and change resistance as key constructs in managing change (Berneth, 2004). In this study, Coch and French (1948; Berneth, 2004), attempted to address worker’s grievances, high turnover, restricted output, and marked dissatisfaction for management, as worker’s were asked to change from one type of work to another. Coch and French (1948) were interested in identifying what could be done to prevent future resistance to workplace change. Based on their experiment using four research groups to evaluate resistance to change efforts, they demonstrated that employee participation had an effect on productivity and satisfaction during times of change (Holt et al., 2007) and employee resistance to change could be altered by organizational interventions; of which, set the foundation for future discussions of change readiness (Berneth, 2004).

In 1957, Jacobson suggested Coch and French’s 1948 study “proposed the possibility of a complementary construct to resistance to change - readiness to change” (p. 239). Jacobson (1957) went on to suggest that although much emphasis has been placed on employee resistance to change, “there is no analysis of change readiness and no extended discussion of what constitutes successful change” (p. 240). Jacobson’s comments may have been the first to suggest that there is an opposite end of organizational resistance to change, specifically, in the form of change readiness (Berneth, 2004).
Though E.H. Jacobson may have coined the term readiness, other early organizational change theorists lend credence to the change readiness construct (Berneth, 2004). For example, Knickerbocker and McGregor (1941) encouraged “enthusiastic cooperative effort” of their employees by focusing on those processes “perceived” as necessary and reasonable by those directly affected by the change (p.57). Most often cited, in 1947, Kurt Lewin proposed a three-stage model of change (e.g., unfreezing – moving – freezing). In many ways, change readiness is analogous to Lewin’s unfreezing metaphor of process change, whereas, readiness involves preparing organizational members to *unfreeze* before the change process (Berneth, 2004; Lewin, 1947); thus, requiring members to discard old behavior, structures, processes and organizational culture before embracing the change effort (Bamford and Forrester, 2003). The unfreezing stage of the process can be the most difficult and traumatic for organizational members to experience; often referred to as resistance – a restraining force moving in the direction of maintaining the status quo (Choi and Ruona, 2011; Lewin, 1947). Though researchers have defined change readiness in a number of ways (cf. Holt, Armenakis, Harris, & Feild, 2002), the genesis of the readiness constructs stem from the early works of the above-mentioned organizational change theorists.

Today, change readiness can be defined as an individual state of mind reflecting a willingness or receptiveness to changing the way one thinks (Berneth, 2004); similar to Lewin’s (1947, 1951) state of unfreezing which according to other researchers is a collection of cognitions toward a change initiative (Armenakis & Harris, 2002; Bernerth, 2004; Lewin, 1947).

Rather, according to Grier (2012), there is a stark difference between military readiness and change readiness as defined by industry in the change management literature. Specifically,
the military’s use of the term *readiness* is used to assess the availability of able personnel (e.g., meeting deployment requirements), those who have completed the necessary training for their skillset, and the proper functioning equipment to accomplish the mission. Unit-level readiness takes on a more cognitive connotation, referring to a unit’s psychological and behavioral preparedness to fight (Weiner et al., 2008) as well as meeting the necessary requirements for a particular mission. However, there are many parallels between the military and industry, amongst these similarities is the need to identify means of influencing successful change strategies. To push forward the development of a framework of readiness factors tied to implementation success, this chapter reviews the change readiness literature, proposes operational definitions of change readiness that mirror the military’s levels of change readiness, and maps existing measures of constructs known to affect change readiness to these definitions. Without a shared definition of change readiness, it would be difficult for any framework of change readiness factors to satisfy the four universally agreed-on principles of criteria for judging the quality of research designs: (1) reliability, (2) content validity, (3) construct validity, and (4) predictive validity (e.g., Anastassi & Urbina, 1997).

**Published Definitions of Change Readiness**

In the peer-reviewed research literature, there are many different definitions and uses of the term readiness (summarized in Table 1). Stevens (2013), in his attempt to synthesize this diverse body of literature, described the proponents as operating in “silos” rather than “integrating” the existing change readiness literature (Stevens, 2013, p. 343). Similarly, Weiner et al. (2008), in a review of 106 peer-reviewed articles in health services research, suggests that there is little consistency in the use of the term organizational readiness for change. Certainly,
greater clarification in the conceptual meaning of change readiness might promote greater
terminology consistency in practice (Weiner et al., 2008). Despite previous ambiguity, health
services researchers engaged in implementation research are moving closer to a clearer definition
by clarifying the conceptualization of change readiness at a theoretical level (Stevens, 2013;
Weiner et al. 2008).

As is highlighted in Table 1, the definitions of change readiness are all different in some
regard. However, many of the authors who have defined change readiness have done so by
simply defining the two words that comprise the term (i.e., readiness and change). Definitions of
readiness for change include "willingness, motives and aims" (Beckhard & Harris, 1977), "the
extent to which employees perceive the need for organizational change as positive (i.e. change
acceptance), as well as the extent to which employees believe that such changes are likely to
have positive implications for themselves and possibly the organization at large" (Armenakis et
al., 1993; Holt, 2002; Miller, Johnson, & Grau, 1994). Hultman defines readiness as "a state of
mind that reflects receptivity or even a willingness to change the ways we think and behave.
Readiness is manifested in either active initiation of change or cooperation with it" (1998, p. 95).

Weiner et al. (2008) defines readiness as a “two-dimensional” construct (being willing
and able) that refers to organizational employees’ motivation and capability to implement
suggests that change readiness is

“a comprehensive attitude that is influenced simultaneously by the content, process,
context, and individuals involved and collectively reflects the extent to which an
individual or a collection of individuals is cognitively and emotionally inclined to accept,
embrace, and adopt a particular plan” (p. 326).
Despite the differences in change readiness definitions, Stevens (2013) suggests that these two definitions have more recently been merged into a single taxonomy representing change readiness factors (Holt, Helfrich, Hall, & Weiner, 2010). These recent definitions of readiness may take the form of psychological factors (i.e., cognitive and emotional inclination to accept change, motivation) as well as structural factors (i.e., contextual factors that inhibit or facilitate change acceptance). The less studied psychological concepts, such as change valence, change commitment and change efficacy, involve individual and organizational attitudes, of which have been identified as equally necessary components of change readiness. Change Valence is concerned with an individual’s evaluation of the benefits or costs of a change for his or her job and role (Rafferty et al., 2013). Change Commitment refers to members' shared resolve to pursue the courses of action involved in change implementation (Weiner, 2009). The final change belief—change efficacy—refers to an individual’s perceived capability to implement a change initiative (Armenakis et al., 2007). Within each of these categories, factors may also be represented at the organizational, group, and individual (Weiner et al., 2008), which will be described in more detail.

Greater distinction is needed in change readiness terminology as both organizational and individual constructs (Weiner et al., 2008). Organizational readiness for change has been described as an “organizational members' change commitment and change efficacy to implement organizational change” (Weiner et al., 2009). Eby et al. (2000), suggests that organizational readiness for change is based on the employee’s interpretation of the organizational context; whereas, individuals develop a perception based on work-related experiences, as well as personal attitudes about change. When described as an organizational construct, Stevens (2013) suggests
that organizational-level change readiness is “useful in theory and research” in discussing the “implementation of complex innovations” (e.g., electronic medical records, quality improvement initiatives, etc.) where coordinated action is required by many (p.425). Though the notion of organizational readiness is a multi-level construct (Weiner, 2009), equally pertinent at the organizational and individual level (Weiner et al., 2008), implementation success is contingent upon the collective actions of many interdependent individuals (Hot et al., 2009).

A number of researchers have also adopted an individual readiness perspective on change and have put more emphasis on the role of the individual in implementing change initiatives (Armenakis et al., 1993; Choi and Ruona, 2011). Individual readiness to change is defined as a willingness to be open to change (Jones, Jimmieson, & Griffiths, 2005; Eby et al., 2000), cognitively and emotionally (Holt, Armenakis, Harris, & Feild, 2006). According to the researchers, organizations only change and act through their members, and successful change will persist over the long term only when individuals alter their on-the-job behaviors in appropriate ways (George & Jones, 2001; Porras & Robertson, 1992). In fact, Choi and Ruona (2010) argue that many change efforts fail because change leaders often underestimate the central role employee’s play in the change process and individual attitudes toward a change initiative. The central theme underlying this approach is that “change in the individual organizational member’s behavior is at the core of organizational change” (Porras & Robertson, 1992, p. 724). However, as Armenakis et al. posits, while change readiness processes operate at the level of individual cognitions, the goal is to generate organizational readiness, relying on social cognitive processes to diffuse readiness across individuals (1993).

In this section, a comprehensive assessment of how readiness for change has been discussed based on peer-reviewed health services literature is provided. Overall, there is little
consistency in change readiness terminology. These findings held true for articles published in healthcare journals, as well as those published in change management journals. The literature suggests that readiness for change is both a multifaceted and multi-level construct, referring to the motivation and capability to implement change at multiple levels of analysis. This two-dimensional construct mirrors the military’s colloquial use of the term readiness, describing readiness as a psychological and behavioral preparedness (Weiner et al., 2009). For example, a military unit that is low in moral, but well trained and equipped to perform a particular task, is no more “ready” than a unit that is willing but poorly trained and equipped.

While numerous theoretical starting points could have been used to develop an operational definition of change readiness, a formal definition was adopted for this research based on the definition provided by Holt and colleagues (2007). Each of the definitions presented in Table 1 has strengths and weaknesses in relation to generalizability, usefulness, and relevance to practice. For instance, readiness for change might be measured very easily when readiness is defined with respect to the terms that make up the construct. However, simply gauging an employees’ preparedness to embrace a change may not give change managers any insights to how prepared the organization as a whole is for a particular change effort. However, by defining readiness in terms of critical attitudes that may influence readiness, as implied by some definitions in Table 1, healthcare managers may get more useful information. Unfortunately, the organizational and individual level of analysis is not completely consistent amongst the terminology.

In order to eliminate any confusion and standardize the definition of readiness for the purpose of this research study, readiness for change is being conceptualized as a,

“…comprehensive attitude that is influenced simultaneously by the content (i.e., what is
being changed), the process (i.e., how the change is being implemented), the context (i.e., circumstances under which the change is occurring), and the individuals (i.e., characteristics of those being asked to change) involved that collectively reflect the extent to which an individual or a collection of individuals is cognitively and emotionally inclined to accept, embrace, and adopt, a particular plan to purposefully alter the status quo” (Holt et al., 2007; Armenakis et al., 1993).
Table I. Summary of Extant Change Readiness Conceptualizations and Limitations

<table>
<thead>
<tr>
<th>Authors</th>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenakis et al. (1993, p.681)</td>
<td>Readiness for organizational change</td>
<td>Organizational members’ beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization’s capacity to successfully make those changes. The cognitive precursor to the behaviors of either resistance to, or support for, a change effort.</td>
</tr>
<tr>
<td>Beckhard &amp; Harris (1987)</td>
<td>Readiness for change</td>
<td>. . . readiness for change has to do with willingness, motives, and aims, capability involves power, influence, authority to allocate resources, and the possession of information and skills required to carry out the necessary tasks.</td>
</tr>
<tr>
<td>Beer &amp; Walton (1987)</td>
<td>Readiness</td>
<td>Readiness refers to the social, technological, or systematic ability of a group or organization to change or try new things.</td>
</tr>
<tr>
<td>Killing &amp; Fry (1990)</td>
<td>Readiness for change</td>
<td>. . . readiness for change of these target groups [is determined] in terms of their awareness of the need for change, their skills to make the required changes and their commitment to putting changes into place.”</td>
</tr>
<tr>
<td>Eby et al. (2000)</td>
<td>Perceptions of the organization’s readiness for change</td>
<td>An individual’s perception of the extent to which the organization is perceived to be ready to take on large-scale change</td>
</tr>
<tr>
<td>Jansen (2000)</td>
<td>Readiness for change</td>
<td>An organization’s capacity for making change and the extent to which individuals perceive the change as needed</td>
</tr>
<tr>
<td>Jones et al. (2005)</td>
<td>Perceptions of the organization’s readiness for change</td>
<td>The extent to which employees hold positive views about the need for organizational change as well as the extent to which employees believe that such changes are likely to have positive implications for themselves and the wider organization</td>
</tr>
<tr>
<td>Holt et al. (2007)</td>
<td>Readiness for organizational change</td>
<td>Employees’ beliefs that (a) they are capable of implementing a proposed change (i.e., change self-efficacy), (b) the proposed change is appropriate for the organization (i.e., appropriateness), (c) the leaders are committed to the proposed change (i.e., management support), and (d) the proposed change is beneficial to organizational members (i.e., personal valence)</td>
</tr>
<tr>
<td>Weiner et al. (2008)</td>
<td>Organizational readiness</td>
<td>Two-dimensional construct (being willing and able) that refers to organizational members’ motivation and capability to implement intentional organizational change</td>
</tr>
<tr>
<td>Holt, Armenakis, Feild, and Harris (2007)</td>
<td>Change Readiness</td>
<td>A comprehensive attitude that is influenced simultaneously by the content (i.e., what is being changed), the process (i.e., how the change is being implemented), the context (i.e., circumstances under which the change is occurring), and the individuals (i.e., characteristics of those being asked to change) involved. Furthermore, readiness collectively reflects the extent to which an individual or individuals are cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to purposely alter the status quo.</td>
</tr>
</tbody>
</table>

In summary, the above-mentioned definition provides a number of advantages over the inconsistencies that have been documented in the existing literature. First, this definition clearly states that readiness is influenced by many multiple and interrelated aspects—an important point.
for military healthcare leaders. Second, this definition suggests readiness for change is not something inherent to an individual or team; rather, it is an interaction between the individual, the anticipated situation within the context of the organization. Finally, readiness is relational, in that, readiness is not a static one-time state; rather, a definition should suggest that readiness be generalizable, able to be assessed across a number of change situations and organizational types.

**Clarifying Resistance and Readiness for Change**

Armenakis et al. (1993) began to clarify the readiness concept and examine how change agents can influence organizational members’ readiness for change by first contributing to an improved understanding of the differences in change readiness and change resistance. Armenakis and colleagues (1993, 1999) suggest that readiness, as a cognitive evaluation, can either lead to individual or organizational support for or resistance to a change effort (see Figure 3). Eby et al. (2000) continues by suggesting that resistance to change must be overcome in order to achieve any change initiative. Certainly, the lack of organizational readiness can be a precursor to resistance to change and, therefore, it is critical to understand change readiness both to comprehend and prevent resistance to change amongst organizational members and also as a step in successful implementation of change (Armenakis et al., 1993; Eby et al., 2000).

Change resistance has been defined as, “a force that slows or stops movement” (Maurer, 1996, p. 23). Lewin regarded resistance as a restraining force moving in the direction of maintaining the status quo (Lewin, 1947). Kotter (1995) suggests that resistance is an obstacle in an organization’s structure that prevents change. Armenakis et al. (1993) describes the construct of readiness as taking on a more proactive management approach; whereas, monitoring signs of resistance in the workplace appears more reactionary.
Armenakis et al. (1993) first presented readiness as a stand-alone model, focused primarily on providing practitioners with an alternative to resistance. Researchers such as Kotter and Lewin focused on strategies to minimize levels of employee resistance during organizational change; however, Armenakis et al. (1993), as described above, drew a distinction between readiness and resistance. Under the readiness construct, researchers and practitioners are challenged to reframe their thoughts about organizational employees who respond behaviorally to change efforts. Highlighted in Figure 3, Armenakis et al. (1993) deems change readiness as the precursor to resistance or support of a change. Described as a more proactive term, organizational readiness should be the focus of change managers before change efforts commence.

Armenakis et al. (1993) indicates that the most important factor for creating readiness for change and overcoming resistance in an organization is the “readiness message” for change (p.684). Ideally, the message for change should incorporate both (a) the need for change (i.e., the need or discrepancy from the desired state to the current state) and (b) the focus on where the organization is at the moment, which individuals will be affected, and the collective and individual efficacy (i.e., being able to successfully bring about the change). Armenakis and colleagues (1993, 1999) provide a means of changing organizational resistance beliefs to readiness beliefs through the message delivered by management in application through a five-step process, asking if: (1) the change is necessary (discrepancy)?; (2) the change being introduced is the right change to make (appropriateness)?; (3) key organizational members are supportive of the change (principle support)?; (4) the organizational members have the ability to successfully implement the change (efficacy)?; and finally, (5) what’s in it for me if we change (valence)?
Factors Affecting Readiness for Change

There are several conditions or circumstances that promote a shared sense of change readiness - a minimum set of variables that must be present to provide the greatest positive effect on a change initiative. These variables have been referred to as: change readiness factors (Stewart, 1994); change management best practices (ProSci, 1998); management practices (Daniels & Mathers, 1989); change readiness influence strategies (Armenakis, Harris and Mossholder, 1993); contributors to readiness (Cunningham et al., 2002); readiness for change factors (Holt et al., 2008), and change readiness conditions (Weiner, 2009). The term change readiness factor most closely summarizes the current view of the variables described in the literature and suggests variables that can be employed to prepare for the appropriate type of change. Al-Balushi (2014) defines change readiness factors as “any practice or characteristic that aids an organizational transformation by eliminating or nullifying possible inhibitors for success, or providing the knowledge and capabilities required to succeed in establishing change” (p.138).

As is germane to this project, understanding change readiness involves examining the types of change factors within practice.

A number of factors have been identified as significant in impacting readiness for change (see Table 2). A study conducted by Weber and Weber (2001) on the impact of planned change
efforts on specific employee attitudes and perceptions, revealed a number of variables that had an impact on readiness to change. Their results indicated that factors such as trust in management, perceptions of supervisory support, and perceptions of organizational readiness correlated with individual readiness for change (Weber and Weber, 2001). Similarly, Leiter and Harvie (1998), in a study of two hospitals undergoing a merger, indicated that acceptance of the merger was directly related to confidence in management, effective communication, supportive supervisors, and meaningfulness of work. Wanberg and Banas (2000), in a study that examined the predictors and outcomes of employee openness to a series of work-related changes, found that pre-implementation variables (e.g., self-efficacy, increased information, and active participation) were predictive of greater readiness for change and acceptance.

Cunningham et al. (2002), in their longitudinal study in a large Canadian teaching hospital (N= 654), revealed that readiness for change was best predicted by combining both individual (Armenakis et al., 1993) and organizational readiness factors (Prochaska et al., 1997). Workplace variables or contextual variables proved to be the best predictors of organizational change readiness. Individual factors that significantly impacted readiness for change included a more active approach to problem-solving and greater feelings of self-efficacy. Based on Albert Bandura’s theory, self-efficacy deals with the individual’s confidence in his or her perceived ability to cope with the specific desired change over time (2003). Employees in active professions—a workplace measure identified in the study—had higher readiness for change scores because they felt they made a greater contribution to the organizations redesign effort. An important finding of this study was the strong relationship between readiness for change and the staff’s increased participation in reengineering activities, which would presumably contribute to the success of the efforts (Cunningham et al., 2002).
The researchers all agree that readiness for change is comprised of both structural and psychological factors - at both the individual and organizational levels (Holt et al., 2008). Readiness for change involves an individual’s evaluation about the individual and organizational capacity for making a successful change, the need for a change, and the benefits the organization and its members may gain from a change (Armenakis et al., 1993; Eby et al., 2000; Holt, Armenakis, Feild, & Harris, 2007; Jansen, 2000). Taken together, these factors – psychological, structural, individual, and organizational – form four categories of readiness to change which has been described by Holt et al. (2008). Table II provides and illustration of these common factors drawn from two systematic reviews of the literature (Holt et al., 2008).
Table II. Summary of the Psychological and Structural Factors of Readiness at the Individual and Organizational Level retrieved from Holt et al. 2008.

<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Psychological factors</th>
<th>Structural factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Appropriateness</strong>—belief that a specific change is correct for the situation that is being addressed; <strong>Principal support</strong>—belief that formal and informal leaders are committed to the success of the change and that it is not going to be another passing fad; <strong>Change efficacy</strong>—belief that the individual can successfully; <strong>Valence</strong>—belief that the change is beneficial to the individual</td>
<td><strong>Knowledge, skills, and ability alignment</strong>—extent to which the organizational members’ knowledge, skills, and abilities align with the change</td>
</tr>
<tr>
<td>Individual</td>
<td><strong>Collective commitment</strong>—shared belief and resolve to pursue courses of action that will lead to successful change implementation; <strong>Collective efficacy</strong>—shared belief in their conjoint capabilities to organize and execute the courses of action required to implement change successfully</td>
<td><strong>Discrepancy</strong>—an understood difference between the current state or practice and a more desirable state (without a particular change to address this issue in mind) <strong>Support climate</strong>—sufficient tangible (e.g., funding, reward and incentive systems) and an encouraging intangible environment (i.e., culture and climate) to support implementation <strong>Facilitation strategies</strong>—a set of clearly articulated goals and objectives that are supported by a detailed implementation plan defining roles and system to measure progress</td>
</tr>
<tr>
<td>Organizational</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table II highlights change commitment (a psychological construct; shared resolve to implement a change), change valence (do organizational members value the specific change), change efficacy (a measure of perceived capability for the desired change), and contextual factors (organizational culture; flexible policies and procedures; positive past experience;
change
efficacy judgments) as determinants of change readiness within an organization (Holt et al., 2008; Weiner, 2009; Rubenstein et al., 2014). These variables in turn are shaped by how favorably members assess implementation capability - task demands, resource availability, and situational factors such (e.g. whether sufficient time exists to implement the change well or whether the internal political environment supports implementation) (Weiner, 2009; Rubenstein et al., 2014). Weiner (2009) suggests that when these variables of readiness are high, organizational members are more likely to initiate change, exert greater effort, exhibit greater persistence, and display more cooperative behavior; therefore, resulting in more effective change implementation. Next, the theoretical and empirical research examining the psychological and structural factors of readiness at the individual and organizational Level, as multidimensional and multilevel constructs, will be discussed.

Organizational Level of Analysis

Organizational readiness for change is considered a critical precursor to the successful implementation of complex changes in healthcare settings (Weiner, 2009). As an organization-level construct, Weiner (2009) suggests that readiness for change refers to change commitment - organizational members' shared resolve to implement a change - and change efficacy – a shared belief in their collective capability to do so. Weiner (2009) highlights a number of circumstances that promote commonality in organizational members' readiness perceptions to include consistent leadership messages and actions, information sharing through social interaction, and shared-experience with past change efforts. Conversely, Weiner (2009) suggests that organizational members are unlikely to hold common perceptions of readiness when
organizational leadership messaging is inconsistent, when groups or units have limited opportunity to interact and share change information, or when organizational members do not have a common basis of experience. Shea et al. (2014), building on Weiner’s research, analyzed change commitment and change efficacy with interest into whether individual perceptual data on readiness could be successfully aggregated to the organizational-level of analysis. Results of the study suggested that when change efficacy and change commitment are high, there is a greater readiness and change-related effort put forth by organizational members.

Armenakis and Harris (2002) suggest that the fundamental components of organizational change readiness are: (1) an awareness of the need to change; (2) a belief that one can be successful in the change (e.g. change efficacy); (3) a chance to participate; and (4) a belief that the change that is proposed is appropriate (e.g. change valence). Similarly, Eby et al. (2000), based on her research on perceptions of organizational readiness for change, categorized variables of readiness for change into individual attitudes and preferences (e.g. self-efficacy for change, preference for working in teams, perceived organizational support), work group and job attitudes (e.g. trust in peers, participation, skill variety), and contextual variables (flexible policies and procedures, logistics and systems support, trust in division leadership). Eby et al. (2000) found that organizational employees who rated their division as having flexible policies and procedures were more likely to evaluate their organization and the people working there as being more responsive to and ready for change events.

Both Klein (1996) and Armenakis et al. (1999) argued that an effective communication plan is an important factor for creating readiness for change in an organization. Using Armenakis et al.’s (1999) terminology (as introduced in the section on Resistance), change messaging must explain: (1) discrepancy: the difference between where the organization is and where it needs to
be; (2) appropriateness: how the proposed initiative addresses the discrepancy; (3) efficacy: that the organization has the capacity to implement the new initiative; (4) principal support: that support exists for the initiative at supervisory levels; and (5) valence: that the change will be beneficial to personnel. Previous research has demonstrated that quality change communication increases acceptance, openness, and commitment to change (Rafferty, Jimmieson & Armenakis, 2013). Miller et al. (2004) suggests that employees who felt that they had received quality information about the change initiative reported high levels of readiness for change, a proposition that was supported by 168 employees in a national insurance company about to introduce team-based methods of working. Likewise, the failure to provide sufficient information or providing poor-quality information can result in negative aspects of change (Bordia et al., 2004; Rafferty, Jimmieson & Armenakis, 2013). In summary, it is theorized that an effective communication plan with strategic attention to fundamental communication principals will create beliefs that support the organizational change. As a result, it is expected that individuals within the organization will become ready to make the change, motivated to adopt it, and will avoid the resistance that frequent and ongoing changes sometimes trigger (Torppa and Smith, 2011).

A number of other authors have identified factors, such as an organization’s culture, that influence change readiness and the likelihood of successful implementation of change initiatives. Zammuto and O’Connor (1992) conducted a theoretical analysis of the role of organizational culture in the implementation of advanced manufacturing technologies. Their research suggested that flexibility-oriented values determine the likelihood of successful change implementation. In addition, Zammuto and O’Connor (1992) postulate that organizations with “control-oriented cultures and structures” have poor organizational climates, which are characterized by low trust, poor morale, and high-levels of conflict (p. 719). Whereas, organizations that value adaptability
and development embrace change more than do stability-oriented cultures.

In summary, at the organizational level, the vast literature suggests that change readiness will be positively associated with collective beliefs (e.g., efficacy, commitment, and valence). Previous research also suggests that organizational cultures that are characterized by adaptability will be positively associated with positive collective beliefs about change. Additionally, evidence suggests that leading change within an organization requires the use of a diverse set of communication techniques to deliver appropriate messages, solicit feedback, create readiness for change along with a sense of urgency, and motivate individuals to act. Finally, this researcher suggests that the existence and utilization of organizational policies and procedures that deal with the emotions aroused by change will be positively associated with positive collective beliefs about change (Rafferty, Jimmieson & Armenakis, 2013) will contribute to a positive collective evaluative judgment that the organization is ready for change.

**Individual Level of Analysis**

Numerous theoretical studies that will be discussed below, suggest that employee readiness is an important factor for a successful organizational change. If employees do not believe that the organization needs to change or if they are convinced that organization is not capable of changing, then the attempted change effort is likely to fail (Armenakis et al., 1993; Cunningham et al., 2002). Certainly, individuals within the organization have attitudes about change that develop over time, based on prior experience with how the organization manages change. Jones et al. (2005), in their discussion of predictors of change readiness, described the focus on psychological characteristics of the individual as one of the key considerations in readiness. Likewise, Judge et al., (1999) suggest that successful change lies “within the psychological
predispositions of individuals experiencing the change within an organization” (p. 107). Given the definition of change readiness as a willingness to be open to change, if individuals have developed predispositions towards or about change, those may impact readiness for new change efforts.

Prior research has shown that individual attitudes toward organizational change impact the success of change initiatives (Choi and Ruona, 2011); however, the subject hasn’t proceeded with the same level of interest as organizational change readiness. Individual-level concerns (e.g., change specific efficacy and personal benefit of the change) (Holt et al., 2007; Jones et al., 2005), have been described as critical for individuals to be ready for a specific organizational change initiative. Certainly, members of an organization have attitudes and opinions about change that develop over time - a conditioning-based on prior experience. A working premise of this study is that the military healthcare environment may be a significant influence on the willingness of military healthcare professionals to accept and embrace change. The impact of a positive military healthcare environment is consistent with recent empirical studies that have suggested that a combination of contextual and individual factors may influence the individual’s readiness for change (Lines, 2005; Cunningham et al., 2002).

Several studies exist within the organizational change management literature that has investigated individual resistance factors to organizational change (e.g. Armenakis et al., 1993, 1999; Miller et al., 1994; Wanberg and Banas, 2000). Choi and Ruona (2011) in there research of individuals’ readiness for organizational change, suggests that individual attitude toward change has often been conceptualized as resistance to change; however, some researchers posit that individual’s negative reaction (i.e. resistance) may actually serve as the foundation of information regarding the successful implementation of a change initiative. Typically, these
studies have focused on readiness characteristics associated with individual attributes (e.g. openness to change), cognitive processes (e.g. self-efficacy beliefs), and the extent to which employees feel that they have had access to external coping resources to help them to deal with the stressful nature of organizational change (e.g. the provision of timely information and opportunities to be involved in relevant decision-making) (Choi and Ruona, 2001). However, the framework around individual readiness for change suggests that change readiness arises from a combination of personal and organizational characteristics (Madsen, 2003; George & Jones, 2001). Empirical studies have supported this framework (Cunningham et al., 2002; Eby et al., 2000; Leiter & Harvie, 1998), although the variables that have been identified as important have varied.

Choi and Ruona (2001), in a study dealing with individuals’ attitudes toward organizational change, suggest that normative-reeducative strategies (assuming people are rationally self-interested) foster individual readiness for organizational change. According to the studies, Choi and Ruona (2001) suggests such factors as fairness of the change process, organizational justice, involvement in decision making or in the change project, and sharing information about the changes contribute to individuals’ positive reactions to organizational change. Szabla’s (2007) study is also notable in that it showed that normative-reeducative strategies are more effective than the other groups of strategies in eliciting positive cognitive, emotional, and intentional responses to influencing individuals’ attitudes toward organizational change. As discussed above, change recipients’ change self-efficacy and their belief in the benefits of a change are significant components of individual readiness for organizational change (Armenakis et al., 1993; Jansen, 2000). In this respect, normative-reeducative change strategies are expected to be effective in fostering individual readiness for organizational change.
Summary of Change Readiness Factors Identified in the Literature

Table III provides a summary of major studies related to change readiness factors found in the change management literature. As the data demonstrates, a wide variety of factors have been considered as potential predictors of change readiness, with mixed results. However, there appears to be some consistency in the identification of major types of factors that have an impact with a combination of individual and organizational characteristics. What is evident is that there is very little convergence about what change readiness factors truly assist the organization and its individuals in dealing with change-related efforts. The wide variation of factors included is indicative of the lack of common understanding of the predictors that may influence change readiness; much like the challenges faced in finding common ground on defining readiness for change. Therefore, this study proposes a systematic review of the literature and quantitative meta-analysis, in an effort to synthesize the available evidence using an explicit, transparent approach to provide a framework of those factors that have been tied to successful change implementation.

In addition, examination of the factors of change readiness suggests that it is likely that individual and organizational change readiness have distinct antecedents. For example, at the organizational level, affective readiness for change may be influenced by organizational policies and practices that specifically provide opportunities for employees to deal with the emotions generated by change. The idea that different antecedents of change readiness will emerge at different levels of analysis is supported by a study of resistance to change conducted by Oreg (2006). Oreg found unique antecedents and outcomes of affective, cognitive, and behavioral resistance to change at the individual level.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Main Purpose</th>
<th>Readiness Factors</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eby et al., (2000)</td>
<td>To identify individual, workplace, and contextual variables that might impact organizational readiness for change</td>
<td>Trust in management; Perceptions of supervisor support; Perceptions of organizational readiness for change; Feedback; Autonomy; Participation; Goal clarity</td>
<td>Dependent variables were trust, supervisor support, and organizational readiness. All independent variables changed over time—some positively, others negatively.</td>
</tr>
<tr>
<td>Cunningham et al., (2002)</td>
<td>To study factors influencing readiness for change</td>
<td>Family demographics Self-efficacy Active problem-solving approach Active/Passive job Social support Organization/staff relations Readiness for change Participation</td>
<td>Workgroup variables were the best predictors of readiness for change. A perceived need for change led to the development of readiness for change. Increased readiness led to increased participation in the change effort.</td>
</tr>
<tr>
<td>Madsen, Miller et al., (2005)</td>
<td>The relationship between readiness for change and organizational commitment and social relations</td>
<td>Sex Marital status Educational level Children Tenure Identification with organization Involvement Loyalty to organization Social relations Organizational commitment</td>
<td>Attitudes, and perceptions of the workplace may facilitate an environment more conducive to individual readiness for change.</td>
</tr>
<tr>
<td>Weber and Weber (2001)</td>
<td></td>
<td>Trust in Management; Supervisory support for improvement; feedback; autonomy; employee participation; goal clarity; perceptions of organizational readiness for change</td>
<td></td>
</tr>
</tbody>
</table>

In summary, this study proposes a combination of individual, contextual, and organizational factors as potentially influencing readiness for change, which in turn is to impact the success or failure of organizational change efforts within military healthcare. As the literature would suggest a variety of factors affect change readiness with limited evidence
as a precursor to successful change implementation. The review of the change management literature has resulted in the identification of a number of potential change readiness factors both at the individual and organizational levels of analysis. The literature review indicates that employees who display positive psychological traits (e.g., positive self-concept and efficacy) will report more positive beliefs and affective responses to change; therefore, contributing to a positive overall evaluative judgment that an individual is ready for change. At the organizational level, the literature indicates that change will be positively associated with collective beliefs that change is needed and will also increase the likelihood of experiencing positive collective emotions associated with a change event. Previous research also suggests that organizational cultures characterized by acceptance of adaptability will be positively associated with positive collective beliefs about change and positive collective affective responses to change initiatives. Finally, considering the change message that is communicated to the employee by effective leaders is one of the key factors influencing the success of change implementation (Armenakis, Harris and Feild, 1999).

B. Conceptual Framework

This section presents the conceptual framework for this dissertation. The presentation of this framework is followed by a discussion of the research questions, which detail the specific aspects of the conceptual framework that will be investigated. The conceptual model and research questions are motivated by the problem statement presented in the previous chapter, and the above-mentioned “intellectual bins” (Miles & Huberman, 1994, p. 18) of existing theory on change readiness. As Miles and Huberman (1994) have described, the conceptual model (Figure 5) - the visual product that the key factors, concepts, or variables to be studied - is
presented below. The function of this framework is to inform the rest of the proposed study design; moreover, to integrate the prior theory and research that ground (or inform) the proposed research questions and methods to address the research problem.

While the narrative above is helpful in describing the influential nature of some key change readiness beliefs, the contribution of different studies to building a well-grounded framework varies. In order to demonstrate and justify the relationships between the key constructs derived from frameworks proposed by Holt, Armenakis, Feild, and Harris (2007), Weiner (2009), Eby at al. (2000), and Rafferty, Jimmieson, and Armenakis’ (2013), elements of these concepts and their relationship paths are shown in Figure 5 and provide a conceptual framework and the basis of the model used in this research. The framework of what I plan to study, incorporating the existing “combination of perspectives”, will be described next with combined insight as to the relevance of prior theory (Miles and Huberman, 1994, p. 43).

Holt, Armenakis, Feild, and Harris (2007) describe a change-related model that includes the change process, the change content, the change context, and the individual attributes of the employees (introduced in Chapter one). That is to suggest that change efforts are influenced by these four change-related beliefs (i.e., process, content, context, and employees’ individual attributes); in fact, Damonpour (1991) suggested that change success may ultimately be determined by the relationship between these factors. Though this research did not study the relationship between these change-related beliefs specifically, they were used to make conceptual distinctions and organize ideas as described in the conceptual framework. The authors contend that these four beliefs impart a “cognitive and emotional inclination to accept, embrace, and adopt a particular plan to purposefully alter the status quo” (Holt, Armenakis, Feild, and Harris, 2007, p. 235). The subsequent actions provide the foundation for adoptive or
resistive individual behaviors, and these actions exert influence on the state of organizational being. The conceptual framework in Figure 4 depicts the relationship between these four elements and provides a framework (Stevens, 2013, p.347) for categorizing change readiness in the context of the military healthcare setting. This framework is used to guide the conceptual framework proposed in Figure 5.

As mentioned above, readiness is shaped by individual perception and assessment of what is involved. Referred to as the change content, this consists of the change’s characteristics. In particular, this research examines an organization’s successful implementation of childhood blood lead screening standards (described in Chapter 3) as a way to evaluate the proposed model and better understand the relationship between change readiness variables. Identifying the nature in which these factors interact will add to the understanding of employee responses to change readiness and ultimately, aid military healthcare leaders in preparing for change efforts successfully. Second, where content issues involve the specifics of the change initiative, change process issues refer to the actions taken by organizational change agents during the introduction and implementation of the proposed change. A principle area of the study is to investigate the proactive attempts by change agents to influence beliefs, attitudes, intentions, and ultimately the behaviors of a change target (i.e. to generate change readiness) as per the research question posed in the third phase (evaluation) of this study. These have been categorized in the model as “factors” and “readiness” within the internal contextual factors. Third, an aim of this study is to examine the perception of the role of the individual employee as a significant contributor to readiness for change of which is depicted in the model below (e.g. individual attributes). The final change factor, contextual issues, refers to the pre-existing forces in an organization’s external and internal environment. Contextual factors affecting change readiness will be further
examined as an important construct by focusing on variables at the individual, workplace, and organizational levels (as per the research question posed in the previous chapter)

Readiness is a psychological construct that develops as a function of individual characteristics, workplace variables (context), and organizational characteristics (Cunningham et al., 2002; Cochran, Bromley, & Swando, 2002; Barnett & Carroll, 1995). Although the data support this three-factor combination, the specific factors that will influence individual readiness to change will vary depending on the workplace setting, the professionals involved, and the nature of the change (Eby et al., 2000). Eby et al. (2000), to justify the link between organizational context and perceived organizational readiness for change, theorized that employees’ attitude toward change is determined by their perception of organizational readiness for change rather than the readiness itself. Following this reasoning, organizational context may not influence employees’ attitudes toward change directly. Instead, organizational members first interpret the organizational context, evaluate whether the organization can handle the change, and only then may they become ready for change. This line of thought is depicted in the conceptual model and can be backed up by similar theoretical frameworks that have been proposed (Eby et al., 2000; James and Jones; 1974) all of whom have hypothesized that perception of organizational events and processes mediate the relationship between organizational context and individual’s “readiness to act.”

The framework in Figure 5 applies a multilevel framework - at both the individual and organizational levels - as defined by Holt et al. (2007). This relationship is best illustrated by Rafferty, Jimmieson, and Armenakis’ (2013) framework (see Figure 4), which explicitly outlines the antecedents and outcomes of readiness for change. As this framework demonstrates, there is a real need to consider and measure individual and organization
readiness prior to large-scale change implementation in order to develop an accurate understanding of the likelihood of effective change implementation (Rafferty, Jimmieson, and Armenakis, 2013). In the described model, readiness for change is a multi-level, multi-faceted construct.

This framework (Figure 4) suggests that positive job attitudes, including job satisfaction and organizational commitment, are key outcomes of individual change readiness (Rafferty, Jimmieson and Armenakis, 2013). At the group level, they identify change-supportive behavior of the work group and positive work group attitudes as outcomes of group readiness for change. At the organizational level, however, they identify the development of dynamic capabilities concerned with change implementation as potential outcomes resulting from organizational change readiness.

Figure 4. Multilevel Framework of the Antecedents and Consequences of Readiness for Change from Rafferty AE, Jimmieson NL, Armenakis AA, 2013.
A key component of the organization’s ability to successfully implement change appears to be associated with the readiness-level of the organization and its employees (Armenakis & Harris, 2002). If that is true, more fully delineating the factors that increase readiness to change and identifying means of influencing them is paramount to developing and implementing successful change initiatives within military healthcare.
C. **Chapter Summary**

A large amount of literature on readiness for change exists, as identified in the narrative above, although there still appears to be several gaps in the growing body of literature. The majority of reviews presented focus on various types of organizational changes with only a couple of studies focused on large-scale radical and deep transformational changes in healthcare, of which is relevant to the research interest of this study. One of the constraints with reviewing the literature was a lack of consensus on definitions surrounding change readiness. Some researchers have attempted to classify types of change, whether multilevel or multifaceted; however, few studies refer to agreed upon conceptual definitions, which makes it difficult to compare and contrast types of readiness factors associated with change. Additionally, it appears that no research has been conducted in the area of change readiness relative to the military or its healthcare systems.

Proponents of organizational readiness theory also speak to a lack of research that is complex and generalizable in nature, and encourage multiple variables be tested collectively to determine relative interactions (Cole et al., 2006). This appears consistent with this review — many studies were from a single entity, and focused on interactions of independent variables and co-variables to change readiness. Organizational change readiness is often examined at the completion of a change or towards the end of the implementation phase of the change and as a static one-time state. Organizational change readiness proponents are growing in number, and as a result, a variety of research has been conducted during the past decade. More importantly, assessing organizational readiness towards change relevant to factors that influence beliefs seems to be fertile ground for change process researchers.

The literature also provides a limited focus on the perceptions of individual change agents toward change efforts, particularly from a qualitative perspective. It seems unusual that
the vast majority of organizational change research has focused heavily on the perspectives of senior leaders and managers, while the majority of companies have a greater number of frontline employees. It appears that more attention is needed to develop a better understanding of how organizational employees perceive change within their work environments. In Armenakis and Bedeian’s (1999) review of the literature, they reference an increase in qualitative research; however, as evident from this review, limited qualitative work has been done in the area of change readiness. Perhaps, their statements are reflective of change literature relative to context, content and outcomes, whereas this review primarily focused on change readiness factors.
III: STUDY DESIGN, DATA, AND METHODOLOGY

Introduction

This research adopted a mixed-methods research design, involving both qualitative and quantitative methods in the service of addressing the research questions. Because the purpose of the study is to identify the critical success factors of change readiness that can assist military healthcare leaders in leading and implementing change, a mixed-methods research design was selected as it allowed this researcher to provide insights not possible when only qualitative or quantitative data are collected. This mixed-methods approach examines the consistency of findings, such as those obtained through different instruments, which include interviews and surveys. This research applied, combined and triangulated several research methods in the study of the same phenomenon. The overall research design, sources of data, data collection strategies, proposed analysis of the data, and validity considerations will be reviewed.

A. Research Design and Methodology

This mixed-methods project was conducted in three sequential phases. First, the initial phase of research provided a quantitative overview of key change readiness factors tied to programmatic success identified within the published literature. It began by combining both summary and synthesis of the background literature, by systematic review and quantitative meta-analysis, in an effort to synthesize the available evidence using a reproducible and transparent approach. The conceptual framework and literature review in Chapter II provided a narrative on change readiness, and those factors that are important for successful change implementation with an emphasis in healthcare, with a synthesis of that information in a way that informs the research investigation. In addition to a summary and critical analysis of the relevant, available research
and non-research literature, the systematic literature review used explicit and rigorous criteria to identify, critically evaluate and synthesize the literature on change readiness. In addition to the systematic literature review, the quantitative meta-analysis provided a statistical overview of the results of the published change readiness studies. The quantitative meta-analysis pooled the results from different studies so as to estimate the overall effect size; thus, providing for a more evidence-based approach to addressing the subsequent phases of the research design.

In the second phase, a modified e-Delphi method (a form of qualitative research) was conducted in the form of questionnaires to obtain a consensus on those change readiness factors discovered during the systematic literature review and quantitative meta-analysis with practical discussion of those factors most pertinent to the military healthcare system. The modified e-Delphi method allowed panelists to remain anonymous and provided equal opportunity for participation without adverse impacts. The information in this chapter includes an overview and explanation of the modified e-Delphi method used in this study project as well as a detailed description of the instruments and data collection procedures that were used.

In the final phase, qualitative research focused on gaining expert opinion during a programmatic change event through means of semi-structured interviews at a series of Air Force military healthcare facilities regarding their attitude toward a specific change event. This type of empirical investigation involved interviews with key change agents about their change management practices, leadership strategies and the impact (or lack thereof) change readiness on their organizations. The semi-structured interviews allowed for an in-depth exploration and description of a complex but rather commonplace phenomenon. The semi-structured interviews were conversational rather than structured in nature and involved open and non-directive questions which allowed the interviewer to explore (rather than impose predetermined understanding and existing frameworks) which readiness factors are common in successful and
unsuccessful program implementation. Furthermore, phase three provided an opportunity to uncover how readiness factors relate to each other and the possible challenges and barriers that are thought to decrease the level of readiness within a military healthcare organization.

**B. Site and Participant Selection**

The research for the dissertation was conducted in the United States Air Force; specifically, research was carried out within the Air Force Medical Service.

For the modified e-Delphi, participants were recruited through the United States School of Aerospace Medicine, Wright-Patterson Air Force Base, Ohio. This particular setting was selected to allow this researcher to analyze within each healthcare setting, as well as across settings, to explore differences within and between cases with the goal to replicate findings across cases. This researcher sought a voluntary (convenience) sample of active duty and civilian personnel in military healthcare, categorized according to their level of military grades (e.g., Airmen; Non-commissioned Officer; Senior Non-commissioned Officer; Company Grade Officer; Field Grade Officer; and Civilian personnel). **Note:** A Delphi study does not depend on a statistical sample that attempts to be representative of any population. It is a group decision mechanism requiring qualified experts who have understanding of the issues.

For the semi-structured interviews, interview respondents were recruited based on the research foci and content. Maxwell’s (2013) purposeful selection of participants (organizational stakeholders) were recruited at a series of Air Force military treatment facilities selected based on their relationship with the programmatic change event: departments and teams interacting with the households and their families in regards to lead screening and follow-up; and the organizational unit’s relevant medical treatment staff.
C. **Data Collection**

The Data Sources, Data Collection and Analysis for each distinct phase of research are detailed below (Table IV). The use of multiple sources of information were collected in this research study in an effort to improve the validity of research findings and allow for a more thorough understanding of the research topic (Maxwell, 2013).
Table IV. Data Sources and Data Collection Procedures.

<table>
<thead>
<tr>
<th>Study Questions, Data Sources, and Data Collection Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study Question 1:</strong> What factors of change readiness have been tied to successful organizational change?</td>
</tr>
<tr>
<td>Data Sources: Online Databases, Statistical Software</td>
</tr>
<tr>
<td><strong>Study Question 2:</strong> What kind(s) of organizational change readiness supports individuals change readiness?</td>
</tr>
<tr>
<td>Data Sources: Online Databases, Statistical Software</td>
</tr>
<tr>
<td><strong>Study Question 3:</strong> Which leadership strategies will successfully manage needed organizational change?</td>
</tr>
<tr>
<td>Data Sources: Online Databases, Statistical Software</td>
</tr>
<tr>
<td><strong>Study Question 4:</strong> How do military healthcare professionals within the United States Air Force rate their change readiness experiences?</td>
</tr>
<tr>
<td>Data Sources: Military Healthcare Personnel, Qualitative Software Package</td>
</tr>
<tr>
<td><strong>Study Question 5:</strong> Which change readiness factors identified in the systematic literature review and quantitative meta-analysis are most pertinent to preparing for change in military healthcare?</td>
</tr>
<tr>
<td>Data Sources: Military Healthcare Personnel, Qualitative Software Package</td>
</tr>
<tr>
<td><strong>Study Question 6:</strong> How do military healthcare professionals within the United States Air Force describe the change readiness factors that influence their decision making related to preparing for a programmatic change?</td>
</tr>
<tr>
<td>Data Sources: Military Healthcare Personnel, Qualitative Software Package</td>
</tr>
<tr>
<td><strong>Study Question 7:</strong> What is the relationship between these factors that influence individual readiness for change in organizations, focusing on variables at the individual, workplace, and organizational levels?</td>
</tr>
<tr>
<td>Data Sources: Military Healthcare Personnel, Qualitative Software Package</td>
</tr>
</tbody>
</table>
Phase I – Systematic Literature Review and Quantitative Meta-analysis

A systematic review and quantitative meta-analysis of the change management literature was conducted as a means to thoroughly examine the research and literature to date. Systematic reviews are used to answer any number of research questions, and subsequent quantitative meta-analyses can evaluate data disseminated in multiple research studies (Littell, Cocoran & Pillai, 2008). Systematic literature reviews and quantitative meta-analysis often work in tandem, but can also be conducted independently. In fact, the appropriateness of conducting a quantitative meta-analysis is found through the process of systematically evaluating the literature. Systematic reviews and quantitative meta-analyses are a means to summarize vast bodies of literature, provide evidence-based theory, and identify areas in which future research is needed (Crowther et al., 2010). This review summarized the empirical literature and quantitatively obtained the “bottom line” about constructs that are and are not successful in practice (Uman, 2011, p. 57).

Systematic Literature Review. With the increasingly vast amounts of literature published on change readiness, indexed by databases online, it was necessary to use a stepwise-systematic search strategy with specific inclusion and exclusion criteria (see Appendix A for search strategy flowchart). A systematic review of the change management literature was the method for accomplishing this task. Systematic reviews provide a summary and analysis of the published literature through completion of a comprehensive search and systematic selection process.

Chapter II provided a traditional narrative review of thematic domains in the change readiness literature with a historical synthesis of change implementation outcomes; rather, through systematic review and quantitative meta-analysis of the literature, Chapter III provided a unified profile of the empirical literature available in the change readiness literature as an evidenced based approach to inform the subsequent phases of research described within this
chapter. The systemic review aimed to reduce bias with the use of explicit methods to perform a comprehensive literature search and critical appraisal of the individual studies related to factors of change readiness. Furthermore, the systematic review of the literature captured, sorted, and analyzed change management studies to provide a clearer picture of those change readiness factors to be utilized in Phase Two and Phase Three of this research study.

The systematic review and quantitative meta-analysis addressed the following research question(s):

| Q1. What factors of change readiness have been tied to successful organizational change? |
| Q2. What kind(s) of organizational change readiness supports individuals change readiness? |
| Q3. Which leadership strategies will successfully manage needed organizational change? |

In this section, a detailed description of the research strategy, screening process and data collection are provided. Inclusion and exclusion criteria for study selection are described, as well as information on how those criteria were determined. Limitations and delimitations of this systematic review are identified and discussed.

**Search Strategy.** The search strategy for the systematic review contained three overarching steps (Okoli, 2010). First, to capture as many relevant citations as possible, a wide range of medical, environmental and scientific databases were searched to identify primary studies of change readiness. Second, articles were screened for inclusion; the studies that were considered for review and the ones that were eliminated without further examination are described in more detail below. Articles were rated with one of three categories: include, possible, and exclude (as described in Appendix A). A full text analysis was done to further determine if “possible” articles matched the inclusion criteria. During the third step, a quality appraisal was conducted judging which articles are of insufficient quality to be included in the review synthesis (Okuli, 2010). After all the studies were identified, information was
systematically extracted from each study. This information included: author; year of publication; key terms; readiness factors reported in the literature; whether the article was considered meta-analyzable; study sample type; change type (e.g., reorganization, culture change, etc.); organizational context (e.g., Service, Manufacturing, Healthcare, etc.); organizational size; statistical test; and reported readiness for change definition.

The search strategy included a combination of keywords to include the following descriptors: “change readiness,” “readiness for change,” “contributors,” “influence strategies,” “conditions,” “individual,” “organizational,” “factors,” “variables,” “healthcare,” and “military.” These terms, although conceptually distinct from one another, were chosen to identify those researchers that examined change readiness factors in several settings (e.g., healthcare services, military) and at different levels. The search term “change readiness” will be combined with “individual”, “organizational”, “healthcare”, and “military.” A portion of these search terms have been used in another systematic review (see Burris, A. 2008). The terms “change management” and “change implementation” in my list of search terms were not included as they often take on multiple forms; rather, more specific concepts like “readiness for change” and “change readiness” were included to locate qualifying studies.

See Appendix A (example workflow diagram) for illustrations of the search strategy which include the number of articles identified at each step.

**Data Sources.** The systematic review included only published studies, as a way of reducing potential biases introduced by any nonrandom selection of studies, allowing for uniformity in methodology and structure among the studies. Thus, unpublished studies, abstracts, dissertations, theses, book chapters and studies published in nonpeer-reviewed journals were not included. However, based on the lack of available research, abstracts, dissertations and theses were analyzed for methodological approach when conducting the
quantitative meta-analysis. The following databases were used for the search strategy: EBSCOhost, Lit and Dissertation Abstracts (ProQuest), Pubmed, SAGE Journals, Implementation Science, and the Journal of Change Management. Keyword, title and abstract information were used.

**Inclusion Criteria.** The following criteria were used to make sure potentially eligible studies were relevant and appropriate for inclusion: studies that analyzed and evaluated change management; reported a population, context or setting; and were published after 2005. Only peer-reviewed English-language journals and original, empirical research were included. Though many organizational systems (e.g., healthcare delivery) outside the United States are different, studies were not excluded if they were conducted outside the United States.

**Exclusion Criteria.** Studies were eliminated from the bibliography of candidate studies if the titles and abstracts clearly disqualified them. For example, many studies related to readiness for change are centered on stages of change readiness in assessing drinkers’ motivation for change. Therefore, studies were eliminated if they: were not research on change management; not qualitative or quantitative-based studies; and did not include relevant data for future meta-analytic analysis.

**Quantitative Meta-Analytical Method.** In an effort to explore various approaches to obtain a broad as well as in-depth picture of change readiness factors outlined in the change management literature, a quantitative meta-analysis was performed in extension of the systematic review as a component of the research plan. Meta-analysis is a statistical method of averaging results across multiple studies. Thus, the purpose of this meta-analysis was to provide a comprehensive and quantitative summary of change readiness studies. The pooling of results from several studies was accomplished by collecting quantitative data from individual study characteristics and findings that were then converted into a common measure for statistical
analysis. This systematic-quantitative approach provided an estimate of the magnitude of the relationship between change readiness variables weighted by sample size; thus, allowing for more confident statements to be made about the overall effect of factors of change readiness and implementation outcome.

Given the desire among healthcare practitioners to successfully implement change efforts and the need for integration of empirical results within the literature, the meta-analysis, in concert with the systematic review, sought to further clarify the following research questions:

| Q1. What factors of change readiness have been tied to successful organizational change? |
| Q2. What kind(s) of organizational change readiness supports individuals change readiness? |
| Q3. Which leadership strategies will successfully manage needed organizational change? |

Researchers in the field of organizational change management often attempt to determine why change management efforts succeed and/or fail; however, the results of a single change effort in a specific context cannot be easily generalized. Findings from many soundly conducted studies, with validated research methodologies, are necessary to build a reliable base of knowledge. Meta-analysis is a means to establish more generalizable findings across all of these studies; if a finding is confirmed in several different studies, change management practitioners can have more confidence in that knowledge because it sustained several diverse settings, research methods, and participants (Jones and Bartlett, 2007).

First coined by Glass and colleagues (e.g., Glass, 1976; 1977; Glass &; Smith, 1977; McGaw & Glass, 1980; Smith &;Glass, 1977; and Smith, Glass &;Miller, 1980), the term meta-analysis refers to the:

“analysis of analyses…the statistical analysis of a large collection of analysis results from
individual studies for the purpose of integrating the findings. It connotes a rigorous alternative to the casual, narrative discussions of research studies which typify our attempts to make sense of the rapidly expanding research literature” (Glass, 1976, p 3).

Unlike narrative literature reviews that tend to be mainly descriptive in nature, a meta-analysis enables a rigorous comparison to be made rather than a subjective ‘eyeballing’ of the available change readiness literature based on the framing of the researcher (Extension Chapters on Advanced Techniques, 200, p. 534). The subjective conclusion may not accurately reflect the actual strength of the relationship between change readiness factors and implementation outcome. However, a quantitative meta-analysis reduced this possibility by collecting and combining results from different change-related studies by using statistical methods to determine the strength of the observed effects across a range of studies. The result is an integrated review of findings that is more objective, grounded in theory, and exact than a narrative literature review.

**Criticisms of Meta-analysis.** While quantitative meta-analysis has been widely embraced by the research community, it is not without its criticisms and limitations (Borenstein et al., 2009). Several validity threats have been identified in the literature – mixing of different kinds of studies (the apples and oranges theory) in the same analysis, publication bias, and inclusion of poor quality studies (Borenstein et al., 2009; Sharpe, 1997). Therefore, in an effort to create consistent and generalizable information, all the steps are clearly described so that the process is transparent. This study has taken a focused approach to examine a specific area of research and in so doing has minimized the above-mentioned criticisms as a major concern to the greatest extent possible. Also, given that publication bias is a well-known issue for meta-analysis, a funnel plot was created to check for the existence of publication bias; funnel plots are commonly used in systematic reviews and meta-analyses.
Selection of Studies. Studies were evaluated via the systematic literature described above before they were included for meta-analysis. Specifically, studies were eliminated from the meta-analytic review if they (a) were not research on organizational change, (b) were not quantitative studies, (c) did not include relevant data on measures of dependent variables that were not statistically analyzed and tested (the basic numbers needed for calculating effect size e.g., means, SDs, and $r$), or (d) did not indicate a level of change readiness. The articles from the systematic literature review were augmented by Armenakis and Bedeian (1999) which provided 42 articles; the Robertson et al. (1993) and Welborn (2001) meta-analyses yielded 45 and 24 articles, respectively; and an additional 25 obtained from Burris (2008).

Data Analysis. The data presented herein were analyzed using Hedges and Olkin (1985) procedure. The pooled variance (also known as combined, composite, or overall variance) was calculated by taking the mean correlation across studies weighted by sample size. Meta-analysis requires that each observed correlation from a given study be weighted by that study's sample size to provide a weighted mean estimate of the correlation; therefore, more precise estimates from larger trials with more events are given more weight. Confidence intervals were calculated for the pooled difference. The correlation coefficient (effect) takes values between -1 and 1, with 1 or -1 indicating perfect (positive or negative) correlation. Correlations with a confidence interval that included zero are not discussed, because such effects fail to achieve statistical significance. According to Cohen (1988), weak, moderate, and strong relationships correspond to correlations of .10, .30, and .50, respectively. A correlation value close to 0 indicates no association between the readiness factors. In the present study, the correlation coefficients of the significant paths are quite satisfactory.
Data was analyzed using the statistical software SAS® Enterprise Guide®. SAS® Enterprise Guide® proved to be an easy to use interface that allowed for reporting and analysis of the meta-analyzable data.

**Effect Sizes Based on Correlations.** Several studies within the change management literature reported a correlation coefficient \((r)\); thus, as described by Hedges and Olkin (1985) and Borenstein et al. (2009), the correlation coefficient served as the effect size index. The pooled correlation coefficient was then converted to a Fisher’s \(z\) value (not to be confused with the \(z\)-score used with significance tests); the variance depends strongly on the correlation. The transformation from sample correlation \(r\) to Fisher’s \(z\) is given by

\[
z = \frac{1}{2} \log \left[ \frac{1 + r}{1 - r} \right]
\]

The Fisher’s \(z\) score and its variance were used in the analysis, which yielded a summary effect and confidence limits. Then the Fisher’s \(z\) score was converted back to a correlation unit using

\[
r = \frac{e^{2z} - 1}{e^{2z} + 1}
\]

This is shown schematically in Figure 6, and is analogous to the procedure used with odds ratios or risk ratios where all analyses are performed using log transformed values, and then converted back to the original metric.

---

**Figure 6.** Correlations analyzed using Fisher’s \(z\) score as adapted from Borenstein et al. (2009)
Phase II - Modified e-Delphi Technique

A modified version of the classic 1940’s RAND Corporation Delphi technique was used to generate consensus in the second phase of this multi-phased research study. The purpose of the modified e-Delphi technique (relying on an internet-based platform for organizing, controlling and facilitating communications between the researcher and expert panel) was to systematically combine expert opinion and gain consensus of those key antecedents and practices that have been tied to successful organizational change management and their applicability to the U.S. military healthcare system. Compared to traditional survey methods (online, in-person, mail, etc.) where the objective is often ‘mean’ finding and generalizability of results, the Delphi is an iterative process, similar to a series of focus groups, which leads an identified group of experts toward a common goal - consensus (Cole et al., 2012).

The Delphi technique, developed by Norman Dalkey of the Rand Corporation, is a data collection approach that is a qualitative approach designed to structure group opinion (Goodman, 1987). It has been used extensively within the military to gather expert opinions amongst diverse groups. The Delphi technique is distinguished from other group data collection processes (e.g., Nominal Group Technique, Brainstorming, etc.) in three ways: anonymity, interaction with controlled feedback, and statistical group response (Martino, 1983; Goodman, 1987). The primary advantages of employing the Delphi technique for this research project were its adaptability to diverse data collection strategies, decreased peer pressure secondary to anonymity (an important consideration in a military rank-structured environment), and the ease of condensing opinions of many and varied experts into a few precise statements (Goodman, 1987).

Appropriateness of Sampling Design. Quantitative research is used to employ experimental methodology in order to test hypothetical generalizations and measure relationships
between variables (Hoepfl, 1997). A more naturalistic approach, qualitative research involves various methods to better understand and discover a particular phenomena within a context-specific setting (Patton, 2001). Findings in qualitative research are garnered from real-world settings where the items of interest will unfold naturally, without the use of quantitative measures (Golafshani, 2003); qualitative research seeks to highlight and provide a greater understanding and discovery of information or ideas. Because the goal of this research was to discover which change readiness factors that military healthcare personnel find to be most effective in preparing for a change event, a qualitative e-Delphi method approach was appropriate for this study.

A considerable amount of literature has described the procedures involved in doing Delphi research (Fletcher and Marchildon, 2014). However, despite its diverse applications, the underlying purpose for using the Delphi methodology remains unchanged: collection of informed judgment on issues that are largely unexplored, difficult to define, highly context and expertise specific, or future-oriented (Helmer, 1967; Ziglio, 1995). For this research project, the Delphi method was adapted, as not all of the participating stakeholders were able to come together, given the time and resource constraints of this effort. The method described here uses Qualtrics, a web-based survey software, to gather information, provide feedback, and report conclusions. Thus, the Delphi method that was used for this research - the modified e-Delphi technique - engaged expert panelists by means of a web-based tool in an effort to generate consensus regarding change readiness (Gibson, & Miller, 1990; Linstone, & Turoff, 1975). Qualtrics served as the primary communication medium between the researcher and research participants (Donohoe, Stellefson and Tennant; 2012), which offered a more efficient method for capturing panelists responses.

For the second phase (gaining consensus) of this study the overarching research questions were:
Q4. How do military healthcare professionals within the United States Air Force rate their change readiness experiences?

Q5. Which change readiness factors identified in the systematic literature review and quantitative meta-analysis are most pertinent to preparing for change in military healthcare?

Two rounds of questionnaires were administered in order to reach consensus among military healthcare experts on antecedents of change readiness identified in Phase One of the study (see Appendix E and F). Participants were presented with the findings during each questionnaire round providing them with the ability to confirm or revise their previous answers and ensure that participants remained connected to, and involved in, the development of the research. Target participants included active duty personnel in military healthcare, categorized into three groups according to their level of management responsibilities.

**Pilot Test.** The purpose of the pilot test of this study was to improve internal validity of the questionnaire, test and assure viability of the on-line survey instrument prior to distribution, and the method of administration for the survey. The pilot test was comprised of two rounds of surveys administrated between September 15, 2016 and September 20, 2016 to a panel of six expert epidemiologists and biostatisticians. The panel experts were asked to complete the survey online and provide feedback concerning the usability of the survey website, the clarity of the questions, and any difficulties they might have completing the survey tool.

**Informed Consent.** Informed Consent was obtained at the United States School of Aerospace Medicine. An informed consent document was provided on the survey main page highlighting how information received during this study will be protected, stored and discarded. An “I accept” button provided participants with access to the survey. The Delphi panelists were informed in the invitation letter (see Appendix C and Appendix D) that their participation in this
study was entirely voluntary and they were free to withdraw at any time. By responding to the questionnaire, they implicitly consented to participate in the study. The study was anonymous and no personal information was collected. Ethical approval for the study was obtained from the 711 Human Performance Wing Institutional Review Board (protocol number FWR20150102) and the University of Illinois, Chicago (protocol number 2015-1154).

**Data Collection.** The survey was administered using Qualtrics™, an internet-based survey provider endorsed by the University of Illinois, Chicago. This service provider was selected over others on the grounds that little to no training was required and there was no cost or obligation associated with the subscription due to institutional access for the researcher. Once the screening survey was developed, a unique URL or web address was created and included within the e-Delphi invitation. When the potential participant clicked the link, they were directed to the initial survey; the internet-based survey software, Qualtrics™, tracks unique user IP addresses to ensure that each respondent only fills out one survey (for security and experimental control purposes). However, the IP address was not made available to the researcher. The screening survey proved to be simple to design and administer with no technological difficulties reported. From the initial email invite to 452 unique addresses, 45 participants completed Round One of the survey and 35 participants completed Round Two, and a review of the responses revealed a broad rank distribution as well as a range of expertise across the desired expertise spectrum. For both rounds, participants were provided a link to the web-based questionnaire and were allotted one week to complete the questionnaire.

**Data Analysis.** For the purposes of this research study, utilizing the data analysis approach outlined by Verhagen et al. (1998), *consensus* was defined as having over a 75% response rate for each question. Consensus was deemed *moderate* when 60% to 74% of participants agreed on both
the applicability and importance of a change readiness factor. Partial consensus was obtained when at least 60% of participants reached consensus on a question. Absence of consensus was determined when less than 60% of participants agreed for each question. Once the data was organized in Qualtrics™, each response was calculated to assess the percentage of consensus. If a level of consensus was not reached by the end of round two, emerging themes were shared and responses were collected and analyzed.

**Data Management Plan.** Data collected via the modified e-Delphi technique was not linked in any way to any identifying information and/or to subjects’ responses. The respondents were kept anonymous to each other throughout the process. Responses were categorized by Enlisted, Officer, and Civilian category as previously described. To collect anonymous responses, on-line survey tools like Qualtrics provide several survey distribution methods called collectors. Every collector type has different settings that affect the survey-taking experience: all collectors allow the survey creator to collect responses anonymously; and all collection methods permit the ability to turn off the storage of IP address, email address, first name, and last name in survey results. Thus, email addresses were not stored.

**Informed Consent.** All survey responses were voluntary, anonymous, confidential, and unidentifiable. This survey was conducted online; thus, an original subject signature was not obtained. However, electronic informed consent was available to print for participants records upon initiation of the survey. The Informed Consent Document was provided on the survey page highlighting how information received during this study will be protected, stored and discarded (Appendix D and G - Informed Consent Document). Thus, informed Consent was cited on the front page of the online survey and an “I accept” button will then provide participants access into the survey. The proposed example of the online informed consent document is posted at the end of this document in Appendix D and G.
The informed consent form includes the following:

1. A brief description of the purpose and procedure of the research, including the expected duration of the study;
2. A statement of any risks or discomfort associated with participation;
3. A guarantee of anonymity and the confidentiality of records;
4. The identification of the researcher and where to receive information about subjects’ rights or questions about the study;
5. A statement that participation is completely voluntary and can be terminated at any time without penalty;
6. A statement of any benefits or compensation provided to subjects and the number of subjects involved;
7. An offer to provide a summary of the findings.

**Delphi Panel and Recruitment.** Advertising via e-mail at the United States Air Force School of Aerospace Medicine, Wright-Patterson, AFB, Ohio, was accomplished for the purpose of recruiting prospective research subjects. Appendix C provides the on-line recruitment script that asks for volunteers. The recruitment advertisement included the following information: (1) brief description of the study (i.e., purpose); (2) benefits; (3) time commitment; (4) name and address of the investigator; and (5) location of the research and name of the person to contact for further information.

Target participants included a random selection of active duty personnel in military healthcare, categorized according to their level of military grades (e.g., Airmen; Non-commissioned Officer; Senior Non-commissioned Officer; Company Grade Officer; Field Grade Officer; and Civilian personnel). **Note:** A Delphi study does not depend on a statistical sample that attempts to be representative of any population (Delbecq et al., 1975). It is a group decision mechanism requiring qualified experts who have understanding of the issues. Therefore, one of the most critical requirements is the selection of qualified experts. Due to the relatively modest sample
size, results were be reported by Enlisted, and Officer Categories in an effort to minimize the opportunity for individuals to indirectly link results to participants.

The survey questionnaire was web-based and accessed through Qualtrics, which was sent to all participants. One of the advantages of web-based surveys is that participants’ responses were automatically stored in a database and easily transformed into numeric data in Excel® format. An informed consent form (Appendix D) was be posted on the web as an opening page of the survey. Participants clicked on the button below, saying “I agree to complete this survey”, thus expressing their compliance to participate in the modified Delphi study and complete the survey.

**Round One: Rating relevant factors.** The initial questionnaire for round one of the Delphi survey was very simple, since it consists of rating change readiness factors identified in the systematic review and quantitative meta-analysis (see Appendix E for the Round One Questionnaire and Appendix F for Round Two). The first round involved 45 panel members. Although exercising very different levels of authority, from senior military healthcare leaders to front line supervisors, all 45 personnel were defined as change agents whose leadership characteristics and behaviors would influence the success or failure of a change initiative. At the end of this rating phase, this process assures that the factors in the list are the most important, and that the ratings are a valid indicator of the relative importance of the various factors.

Participants were asked to rate the listed change readiness factors only as "Important," "Somewhat important," or "Not important." Because the purpose of the study is largely exploratory, participants were prompted to list additional issues or factors they felt are important to change readiness. At the end, an open-ended section asked participants, "What other characteristics of change readiness might be considered?" In addition, a brief, one-sentence
explanation of each factor, an explanatory glossary was included to define and explain each factor. These explanations served the dual purpose of providing a qualitative empirical basis for answering the above research question(s) and to understand and reconcile the various experts’ factors. Moreover, the explanations helped to classify the factors into categories and provided clarification for the next questionnaire, which validates the consolidated list of change readiness factors.

**Round Two: Validation of categorized list of factors.** The goal of the second (final) phase was to reach a consensus in the rating of the relevant change readiness factors within each panel. In addition to narrowing down the list of change readiness factors, this phase sought to understand the rating of importance of the factors based on the differing perspectives of various rank categories. Certain rank categories (e.g., groups of change experts) might assess readiness in healthcare somewhat differently, and these differences might have important implications for managerial action. Thus, the strategy is to have homogeneous groups decide among themselves which factors are the most important, rather than trying to reconcile significantly different perspectives.

Therefore, a second questionnaire (see Appendix F) was distributed to 35 participants in order to validate the consolidated lists of readiness factors. Panelists were given a summary of the first questionnaire. The second questionnaire asked experts to (a) verify that the results in questionnaire one correctly interpreted their responses; and (b) verify and refine the categorizations of the change readiness factors. According to Schmidt (2005), without this step, there is no basis to claim that a valid, consolidated list has been produced.

Based on information provided by the experts in the first questionnaire, experts were asked to offer a brief explanation (in two or three sentences for each change readiness factor) of the importance of each factor they have listed. These explanations served the dual purpose of
providing a qualitative empirical basis for answering the above research question and help to understand and reconcile the various experts’ factors. Similarly, asking respondents to justify their responses can be valuable to understanding the causal relationships between change readiness factors, an understanding that is necessary to build theory (Schmidt, 2005).

**Phase III – Semi-structured Interview**

The third and final phase of the study was designed to provide some key insights as to whether or not the change readiness factors identified in the previous phases were present during a programmatic change. Thus, research in phase three focused on seeking convergence on the change readiness factors identified in the systematic literature, quantitative meta-analysis and Delphi by conducting semi-structured interviews (see Appendix H) with a sample of organizational change agents at several participating Air Force military treatment facilities regarding their attitude toward a specific programmatic change event – childhood blood lead screening. **Note:** Though childhood blood lead screening is not the focus of this dissertation it provides for an opportunity to critically evaluate a programmatic change event that poses a relevant public health challenge for military personnel and their families as a result of industrial activities unique to military operations; thus, increasing the potential risk for childhood lead exposure for many military families.

Through semi-structured interviews with key informants at several participating Air Force military treatment facilities, the following research questions were addressed:

| Q6. How do military healthcare professionals within the United States Air Force Military Treatment Facility describe the change readiness factors that influence their decision making related to preparing for a programmatic change? |
| Q7. What is the relationship between these factors that influence individual readiness for |
change in organizations, focusing on variables at the individual, workplace, and organizational levels?

Semi-structured interviews, a qualitative method of capturing more detailed and contextual data (Piercy, 2000), were conducted with Air Force military healthcare personnel in order to add to the interpretation of results found by analyzing previously collected systematic literature review, quantitative meta-analysis and Delphi data. Interviews were an important part of this mixed-methods research and were chosen for the current project for the following reasons:

- It obtained the rich individual perspectives (data) of military healthcare personnel that the other methods did not offer.
- Language use by the participants was considered essential in gaining additional insight into their behavior and beliefs within the context of the military healthcare setting.
- It allowed for a more in-depth analysis of the interplay of change readiness factors in promoting successful policy, program, and practice implementation.
- Data generated can be analyzed in various ways to support the other methodologies.

Though this approach presents a more in-depth look into change management practices within military healthcare, producing stronger findings that address the research questions more completely, the semi-structured interviews in this phase of research are not intended to produce generalizable knowledge or be representative of a population. Yet, the findings are intended to produce unifying concepts (Parker and Mobey, 2004) that can contribute to enhancing the credibility of the other research methodologies employed within this study. Conducting interviews at multiple treatment facilities allows for the exploration of differences within and between key informants (change agents) with the goal to gain insight into interviewee’s perceptions (Robson, 2002; Ho; 2006). Further, with the use of non-numerical data, this specific
qualitative approach sought to explore and describe the ‘quality’ and ‘nature’ of how people behave, experience and understand change management related to specific change events (Alshenqeeti, 2014).

**Participant Selection.** As described by Maxwell (2013), participants were purposefully and deliberately selected based on their relationship with the programmatic change event. Military healthcare participants included both junior and senior military personnel that were assigned to an Air Force military treatment facility. Participants had to be involved in the childhood blood lead screening program. As described by Maxwell (2013), purposeful selection of survey participants tried to achieve representativeness of the “players” that are involved with the programmatic change, with the following considered key informants:

<table>
<thead>
<tr>
<th>Table V. Key Informant Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Military Treatment Facility/ Childhood Lead Poisoning and Prevention Program</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

While there are many factors that affect sample size in qualitative studies, researchers generally use “saturation” as a guiding principle during their data collection (e.g. Glaser & Strauss, 1967) - when the collection of new data does not shed any further light on the issue under investigation. Qualitative samples must be large enough to assure that most or all of the perceptions that might be important are uncovered, but at the same time if the sample is too large data becomes repetitive and, eventually, redundant. There is a point of diminishing return to a qualitative sample (Adler and Adler, 2014) - as the study goes on more data does not necessarily lead to more new information. Thus, while many experts agree that saturation is ideal, some researchers have given numerical guidance. For example, Adler and Adler (2014) advise
researchers to sample between 12 and 60 individuals, with 30 being the mean; however, there is quite a lot of variety in what is believed to be the minimum requirement for interviews. Actual sample sizes varied considerably in the qualitative research literature regarding this topic. From this perspective, the answer to the question of ‘how many’ suggest aiming for a sample size of around 30 individuals. This medium size subject pool offers the advantage of “penetrating beyond a very small number of people without imposing the hardship of endless data gathering, especially when faced with time constraints” (Adler and Adler, 2014, p.112).

Contact with key informants was initiated with a personalized email request for a phone interview with a short description of the research purpose and central phenomenon attached. With consent, interviews were then conducted individually over the phone. All interviews followed a semi-structured script (see Appendix H). Subjects were asked to electronically sign the Informed Consent Document (see Appendix H). Note: the only document that contained Personally Identifiable Information (PII) was the Informed Consent Document. The semi-structured interview did not contain any PII as to not link any identifying information with subjects’ responses. All copies of questionnaires were sent to the 711/HPW Institutional Review Board.

Data Collection Procedures. Data was collected via semi-structured interviews. The interviewee or respondent was the primary data for the interview. Interviews included semi-structured questions using an interview guide (see Appendix H) listing some specific topical questions along with additional open-ended questions more directly related to each participant’s role within the military healthcare organization. The semi-structured interviews were intended to be conversational rather than structured in nature and involved open and non-directive questions which allowed the interviewer to more thoroughly explore change management
activities germane to their organization. In addition to interview questions, the semi-structured protocol allowed participants to reflect on professional experiences outside of the singular programmatic change under investigation, which kept participants engaged and made the interview relevant. While the researcher worked to ensure that certain key questions were asked of every person interviewed (to minimize bias), the semi-structured format allowed the researcher to interject with additional questions, as appropriate. Importantly, the flow of the interview was meant to be primarily driven by the participant. However, informants were not expected to move too far beyond the scope defined by the interview guide. The participant was asked to talk openly and freely about whatever he or she views as important regarding change management activities at their healthcare facility.

**Data Analysis.** In order to systematically organize data from the key informant interviews, data analysis utilized a modified version of McCracken’s 5-step process and the qualitative data analysis software package ATLAS.ti. McCraken’s (1988) five-step analytical process. This process (employed in previous studies) involved the following four analytic steps:

1. The first step in the qualitative analysis of the interview data was to read and review each interview transcript twice; the first time, for content understanding; the second time, for identification of useful comments noted as observations.
2. The second step was to enter the survey data into Microsoft Excel® for data management. **Note:** Each interview was linked by key informant identification number to ensure that each record contained the interview data.
3. Qualitative data were then analyzed with a list of a priori concepts (codes) that were developed inductively from the interviews as the analysis proceeded review using ATLAS.ti. By coding the interview transcripts, it allowed for the easier retrieval of meaningful data. This allowed for the data to be more easily analyzed and findings to be clearly presented.
4. Using the qualitative data analysis software, frequency of themes, codes and
responses were recorded.

5. Examine themes from all interviews across groupings to delineate predominant themes contained in the data.

All interviews were entered into ATLAS.ti qualitative analysis software for text coding. As mentioned in step 3 above, codes were generated inductively based on information proved in the interview data. As described by Hennink et al. (2011, p.218), “inductive codes are valuable because they reflect the issues of importance to the participants themselves, which may be different from those anticipated by the researcher, allowing for the data to ‘speak for itself’. For this study, 7 inductive codes were produced in the coding process (see Table XXXIX).

The information from the interviews were then consolidated into an excel Line Listing by question for analysis in ATLAS.ti. Next, themes of text were selected and associated with a code to be used in the software application (ATLAS.ti). The qualitative data analysis software package allowed the user to create a database of codes and memos from transcript data gathered from the interview data and to create various reports summarizing the user created codes (ATLAS.ti GmbH, 2010). ATLAS.ti was particularly beneficial in the process of identifying and making sense of respondent’s points of view and perspectives on change readiness issues. Once data were tagged and coded by theme and analyzed in ATLAS.ti, patterns and themes. With this in mind, the use of computer software in analyzing the data is a modification of but not a replacement for the more tried-and-true methods that qualitative research mentors have utilized in conducting interview analyses using non-computerized methods. After basic themes are identified in the data, the next step is to search for subthemes and consider the relationships between the themes.

The qualitative data was ‘quantitized’ by using the qualitative data analysis software
package was compared. Data was reported as: key findings under each main theme or category that has emerged, using appropriate verbatim quotes to illustrate those findings (the traditional approach) central tendencies and ranges, clusters, and frequencies.

D. Validity and Reliability Considerations

This mixed-methods approach, with its use of multiple data collection methods and analysis techniques, provides for the opportunity to integrate different types of data and methodologies in order to strengthen the validity and reliability of research findings. Specifically, as a sequential mixed methods study, each phase builds on the previous one, allowing for findings to be examined and validated in each phase of the research design – building from the systematic literature review and quantitative meta-analysis, to the Delphi Questionnaire One and validated and confirmed in Delphi Questionnaire Two and finally explored, explained and validated in the semi-structured interviews. The subsequent paragraphs provide some concrete strategies for addressing validity issues within the context of the study and threats to interpretations of the research findings (Maxwell, 2013).

Triangulation requires a variety of methodologies to be used in the collection of data. By using both qualitative and quantitative methodologies, this research counterbalances flaws that may be inherent in a single methodology. For example, this research study began by building a strong theoretical foundation based on quality peer-reviewed databases. The systematic literature review and quantitative meta-analysis are considered more objective than other types of reviews such as traditional reviews because it involves the application of scientific strategies in ways that minimize researcher bias. Utilizing well-established replicable meta-analytic practices, as well as establishing the mean correlation across studies weighted by sample size, improved the
strength of the observed effects and generalizability of findings.

The iterative process of the Delphi method provided the researcher with controlled data and feedback, which is critical for a valid and reliable analysis (Dalkey, 1967). Because the modified Delphi questions incorporated the knowledge and experiences of targeted experts within a particular field of study (Worthen et al., 1997) with evidence supported by the meta-analyzed literature, the results had more validity than if taken via random questionnaires. In addition, change readiness factors that were utilized within the Delphi questionnaire was drawn from those factors identified in the systematic literature review and quantitative meta-analysis. To further enhance the study design, a pilot study was conducted with peer-examination of the survey questions to improve internal validity and reliability of research findings. Consensus achieved by Delphi panelists corroborated with findings from the systematic literature review and quantitative meta-analysis.

The third main type of data to be collected in the mixed method design was the semi-structured interview. To this end, the interviews provided firsthand ‘rich data’ directly from knowledgeable informants (Maxwell, 2013). With purposeful selection of research participants, items were tested in several military healthcare facilities, utilizing well known data collection techniques, so that study reliability can be established. Subsequent studies have used similar data collection instruments and have continued to find good reliability. In order to reduce bias (which is inherent in any type of research), the following methods were proposed to improve the validity and reliability of the qualitative data collection and analysis: uniformity and standardization of the interview process; increasing the size of the sample; and fielding/piloting surveys prior to utilization.

**Institutional Review Board (IRB) Approval**

Approval for this dissertation research was sought from both the 711 Human Performance
Wing, Wright-Patterson AFB Ohio and the University of Illinois at Chicago. All three phases of the research – systematic literature review and quantitative meta-analysis, modified e-Delphi and semi-structured interviews, were reviewed by each institution. Both institutions approved the study under expedited review as human subjects research (Appendices I and J).
IV: RESULTS AND ANALYSIS

The previous Chapters - Chapters I, II, and III - introduced the problem statement, research questions and developed the theoretical framework and methodology for the mixed-methods research study. This chapter includes the results and analysis of this study based on the data collected and analyzed as related to the research questions presented in Chapter I.

Specifically, Chapter IV presents results and analysis from: (1) the systematic review and quantitative meta-analysis; (2) the data results and analysis of the modified e-Delphi study, which used a panel of military healthcare personnel to identify which factors of change readiness contribute to successful change in the U.S. Air Force healthcare system; and (3) the synthesis of the semi-structured interviews.

A. Systematic Literature Review and Meta-Analysis

The systematic literature review identified and synthesized findings of the published readiness for change literature; thus, in review of other similar publications, provides for a more evidence-based, unified profile of the empirical literature (necessary for phase two and three of this dissertation). Specifically, the systematic review attempted to identify the literature on change readiness factors that have been proven to increase the likelihood of successful organizational change events. Thus, identify any strategies used by businesses and/or healthcare agencies during their change events with careful consideration of the application to military healthcare employees undergoing similar change-related events. This chapter describes the results of this systematic literature review and quantitative meta-analysis. The literature selection processes, including initial screening of titles and abstracts are discussed herein. The analysis of the research evidence is then reported with an evidence summary that identifies a sample of the available research on the topic of change readiness factors. This is followed by a synthesis of the literature that is meta-analyzable.
The overall goal of the synthesis was to: (1) identify change readiness factors that are tied to successful organizational change, based on a collection of research and evaluation studies gathered through a structured and replicable search process; (2) identify articles that meet criteria for quantitative meta-analytic techniques; (3) summarize accurately and reliably those change readiness factors to be utilized in phase two and phase three of this research study.

**Literature Search.** Of the 1,951 articles included in the review, 59 (or 3%) offered only conceptual discussions of organizational readiness for change and 14 (24%) considered meta-analyzable (see Appendix A: Search Strategy Flowchart). The 59 articles from the literature review was augmented by Armenakis and Bedeian (1999) review which provided 42 articles; the Burris (2008) and Welborn (2001) meta-analysis yielded 25 and 24 articles, respectively; and Weiner et al. (2008) analysis of 106 peer-reviewed health services journals. Many of the search terms identified in Chapter 3 revealed articles related to change readiness in terms of substance abuse treatment or education. These articles were not considered relevant and were discarded based on a review of the title and abstract alone. The remainder reported some form of empirical research. These included cross-sectional surveys (n=8), multiple-case studies (n=3), single-case studies (n=1), or other forms of qualitative research such as individual interviews (n=2). Fifty-one articles appeared in a health services research journal, broadly defined (e.g., including substance abuse treatment, and medical informatics journals). Thirteen articles focused on healthcare organizations; however, only five articles were related to organizational change. Organizational context included: eleven on business organizations, six on educational organizations, and three focused on government or human service organizations. To keep the review manageable and within the timeframe of this dissertation, the search was limited to articles published between January 2000 and August 2016.

**Data Extraction.** The data was extracted utilizing a modified PRISMA (preferred
reporting items for systematic reviews and meta-analyses) form used to produce a summary table of study characteristics that were considered important for inclusion recorded within Excel spread sheets (see Table VI for an overview of studies included in the systematic review). Appendix A details the search strategy flowchart. This figure shows that 59 (or 3%) articles offered only conceptual discussions of organizational readiness for change and 14 (24%) considered meta-analyzable.

Table VI provides an overview of studies included in the systematic literature review and meta-analysis. Elements for data extraction include: Authors, title, source and year of publication, publication type (e.g. journal article/book chapter); study design; participant characteristics (demographics, sample size); and outcome measures (e.g., correlation coefficient, effect size, mean, SD). The summary data extraction for empirical studies also attempts to capture what the papers were about in terms of the aims of the study, theoretical basis, research design, and contribution. The rationale behind this approach was to identify methodologies employed, and more importantly the concepts on content, context and change event as to assess the application to the military healthcare system.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Organizational Setting</th>
<th>N</th>
<th>Readiness Factors</th>
<th>Study Sample Type</th>
<th>Change Type</th>
<th>Readiness Definition</th>
<th>Outcome Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eby et al., (2000)</td>
<td>Manufacturing</td>
<td>117</td>
<td>Trust in management; Perceptions of supervisor support; Perceptions of organizational readiness for change; Feedback; Autonomy;</td>
<td>Managerial and Non-managerial</td>
<td>Implementation of segmented sales teams</td>
<td>N/A</td>
<td>Likert-type scale; Mean; SD; Regression Analysis</td>
</tr>
<tr>
<td>Cunningham et al., (2002)</td>
<td>Healthcare</td>
<td>880</td>
<td>Family demographics Self-efficacy Active problem-solving approach Active/Passive job Social support</td>
<td>Managerial and Non-managerial</td>
<td>Intent to re-engineer</td>
<td>An individual's perception of the benefits of change the risks of failing to change or the demands of</td>
<td>Mean; SD; Regression</td>
</tr>
<tr>
<td>Madsen, Miller et al., (2005)</td>
<td>Healthcare</td>
<td>758</td>
<td>Sex Marital status Educational level Tenure Identification with organization Involvement Loyalty to organization</td>
<td>Managerial and Non-managerial</td>
<td>Varied</td>
<td>An individual is ready for change when he or she understands, believes, and intends to change because of a perceived need.</td>
<td>MANOVOA; Likert Scale; Frequencies; Mean; SD</td>
</tr>
<tr>
<td>Caldwell et al. (2008)</td>
<td>Healthcare</td>
<td>313</td>
<td>Implementation climate Support for the change event Managerial consensus Team Leadership Capabilities to implement new processes</td>
<td>Managerial</td>
<td>Strategic</td>
<td>N/A</td>
<td>Likert Scale</td>
</tr>
<tr>
<td>McKay et al. (2013)</td>
<td>Governmental</td>
<td>102</td>
<td>Communication Participation Affective Commitment Appropriateness Management Support Change Self-Efficacy Personally Beneficial</td>
<td>Managerial</td>
<td>Organizational Restructuring. Change in Leadership</td>
<td>The cognitive precursor to the behaviors of either resistance to, or support for, a change effort.</td>
<td>Likert Scale</td>
</tr>
<tr>
<td>Study</td>
<td>Industry</td>
<td>Sample Size</td>
<td>Key Variables</td>
<td>Focus</td>
<td>Process Change</td>
<td>Methodology</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------</td>
<td>-------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Susanto et al. (2008)</td>
<td>Manufacturing</td>
<td>153</td>
<td>Perception toward change effort, Vision for change, Mutual trust and respect, Management support, Acceptance</td>
<td>Managerial and Non-managerial</td>
<td>Process Change</td>
<td>N/A</td>
<td>Likert Scale</td>
</tr>
<tr>
<td>Naimatullah et al. (2010)</td>
<td>Manufacturing</td>
<td>566</td>
<td>Supervisor and peer relations, Employee attitudes and behaviors, Relationship between employees, Number of dependents, Age of Employee</td>
<td>Managerial and Non-managerial</td>
<td>Reorganization</td>
<td>An employee’s beliefs, thoughts, and behaviors to accept the needs and capability of an organization</td>
<td>Multiple Regression Analysis; MANOVA; Likert Scale</td>
</tr>
<tr>
<td>Claiborne et al. (2013)</td>
<td>Child Welfare</td>
<td>356</td>
<td>Organizational Climate, Job Satisfaction, Age of Employee, Supervisor goal emphasis</td>
<td>Managerial and Non-managerial</td>
<td>Organization Readiness to Change</td>
<td>N/A</td>
<td>Mean; SD; ANOVA; Spearman Coefficient</td>
</tr>
<tr>
<td>Lipinska-Grobeiny et al. (2012)</td>
<td>Heavy Industry</td>
<td>102</td>
<td>Employee Participation, Degree of Influence</td>
<td>Non-managerial</td>
<td>Lean Management</td>
<td>N/A</td>
<td>Pearson Product-Moment Correlations</td>
</tr>
</tbody>
</table>
Change Readiness Factors Revealed from the Review of Literature. The work in this dissertation focused on what factors of change readiness have been tied to successful organizational change and which leadership strategies will successfully manage organizational change. Focusing on the research questions, twenty one recurring change readiness factors were identified from this dissertation’s systematic review of the literature (presented in Table VII). These twenty one factors described in the organizational literature include: change understanding, appropriateness, change participation, change willingness, change efficacy, principle support, change valence, leadership sponsorship, change communication, organizational culture, implementation climate, capabilities, supervisor and peer relationships, trust in peers, trust in leadership, vision for change, employee job satisfaction, change commitment, employee motivation, flexible policies and locus of control.

What becomes clear in the literature is that there is not much in the way of consensus, with little consistency in organizational context. The readiness factors that are at most consistent within the context of healthcare are employee involvement in the change event (23%), implementation climate (15%), organizational commitment (15%), social relationships (8%) and self-efficacy (15%). The readiness factors that have shown some commonality across different studies and refer specifically to the behaviors of leadership and managerial staff are implementation climate (16%), availability of resources (43%) and organizational commitment (57%). Conversely, non-managerial staff reported employee participation in the decision making (33%), team leadership (44%), change commitment (22%), change efficacy (22%), and personal valence (22%).
Table VII. Change Readiness Factors Identified in the Literature by Frequency (2000 – 2016)

<table>
<thead>
<tr>
<th>Change Readiness Factor</th>
<th>Literature Source</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Understanding</td>
<td>Eby et al. (2000); Soumyaja et al. (2011)</td>
<td>3.4</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>McKay et al. (2013); Holt (2010); Berneth (2004)</td>
<td>5.1</td>
</tr>
<tr>
<td>Change Participation</td>
<td>McKay et al. (2013); Eby et al. (2000); Bouckenooghe et al. (2009); Lipinska-Grobelny (2012); Soumyaja et al. (2011); Choi (2011)</td>
<td>10.2</td>
</tr>
<tr>
<td>Change Willingness</td>
<td>Madsen et al. (2005); Hicks et al. (2011)</td>
<td>3.4</td>
</tr>
<tr>
<td>Change Efficacy</td>
<td>Madsen et al. (2005); McKay et al. (2013); Holt et al. (2010); Susanto et al. (2010); Wise et al. (2000); Shea et al. (2014); Cunningham et al. (2002); Amiot et al., (2006); Fugate et al., (2002); Wanberg &amp; Banas, 2000; Hicks et al., (2011); Zapka et al., (2013); Cunningham et al., 2013; Berneth (2004)</td>
<td>23.7</td>
</tr>
<tr>
<td>Principal Support</td>
<td>Caldwell et al. (2008); McKay et al. (2013); Holt et al. (2010); Susanto et al. (2010); Eby et al. (2000); Bouckenooghe et al. (2009); Berneth (2004)</td>
<td>11.9</td>
</tr>
<tr>
<td>Change Valence</td>
<td>Holt et al. (2010); Kwahk et al. (2008); Bouckenooghe et al. (2009); Chilenski (2014); Hicks et al. (2011); Hui &amp; Lee, (2000); Zapka et al., (2013); Berneth (2004)</td>
<td>13.6</td>
</tr>
<tr>
<td>Leadership Sponsorship</td>
<td>Caldwell et al. (2008); Claiborne et al. (2013); Lyons (2009)</td>
<td>5.1</td>
</tr>
<tr>
<td>Change Communication</td>
<td>Bevan (2011); McKay et al. (2013); Clairborne et al. (2013); Chilenski (2014); Soumyaja et al. (2011); Narine et al. (2003)</td>
<td>10.2</td>
</tr>
<tr>
<td>Organizational Climate</td>
<td>Weiner et al. (2008); Choi (2011)</td>
<td>3.4</td>
</tr>
<tr>
<td>Implementation Climate</td>
<td>Caldwell et al. (2008); Bouckenooghe et al. (2009);</td>
<td>3.4</td>
</tr>
<tr>
<td>Capabilities and Resources</td>
<td>Caldwell et al. (2008); Bevan (2011); Wise et al. (2011); Hicks et al. (2011) Zapka et al. (2013); Maditinos et al. (2014)</td>
<td>10.2</td>
</tr>
<tr>
<td>Supervisor and Peer Relationships</td>
<td>Madsen et al. (2005); Susanto et al. (2010); Naimatullah et al. (2010)</td>
<td>5.1</td>
</tr>
<tr>
<td>Trust in Peers</td>
<td>Susanto et al. (2010); Eby et al. (2000); Soumyaja et al. (2011)</td>
<td>5.1</td>
</tr>
<tr>
<td>Trust in Leadership</td>
<td>Bevan (2011); Susanto et al. (2010); Bouckenooghe et al. (2009); Choi (2011)</td>
<td>6.8</td>
</tr>
<tr>
<td>Vision for Change</td>
<td>Bevan (2011); Susanto et al. (2010)</td>
<td>3.4</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>Clairborne et al. (2013)</td>
<td>1.7</td>
</tr>
<tr>
<td>Change Commitment</td>
<td>McKay et al. (2013); Holt et al. (2010); Kwahk (2008); Shea et al. (2014); Soumyaja et al. (2011); Hicks et al., 2011</td>
<td>10.2</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Employee Motivation</td>
<td>Hicks et al., 2011</td>
<td>1.7</td>
</tr>
<tr>
<td>Flexible Policies</td>
<td>Eby et al. (2000)</td>
<td>1.7</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>Naswall et al., 2005; Chen &amp; Wang, 2007; Cunningham et al., 2013</td>
<td>5.1</td>
</tr>
</tbody>
</table>

**Quantitative Meta-analysis.** The basis for the quantitative meta-analytic review of the change management literature was to establish more generalizable, cumulative and evidence-based findings across all of the studies of those change readiness factors to be utilized in phase two and phase three of this research study (in addition to the narrative provided in Chapter II). This research has sought to understand the factors of change readiness that have been tied to successful organizational change, the influence of these variables on individuals' readiness and their practical significance to the U.S. military healthcare system. Therefore, a quantitative summary of the empirical research through well-established meta-analytic practices (in addition to a traditional narrative review of the literature) serves to capture the extent to which these factors have been identified in the literature.

**Previous meta-analytic reviews.** Data collection for the quantitative meta-analysis began as a modified “umbrella review” (an overview of existing systematic reviews and meta-analysis) by reviewing citations from recent meta-analytic approaches to the change management literature (Hartling et al., 2012). Specifically, Robertson et al. (1993), Colquitt et al. (2000), Welborn (2001), and Burris (2008) demonstrate similar approaches used to gather studies for quantitative meta-analyses within the context of change management. Therefore, by drawing from these published meta-analytic approaches, it was possible to rely and build upon the expertise from validated methods within the field of change management (it is worth noting that published works from both
Welborn and Burris were accomplished within the context of the Air Force).

Robertson (1993) employed a meta-analytic procedure to evaluate the potential validity of a model of planned organizational change assessing work settings, individual behavior, and organizational outcomes. Calculating the effect size ($r$) for each dependent variable within 52 meta-analyzable evaluations of planned change interventions revealed that individual behavior change is positively associated with organizational change outcome. Robertson (1993) calculated the average effect size across the individual behavior variables within each study and then correlated all organizational outcome variables in ten studies ($N = 66$) with the corresponding individual behavior effect size. This produced a significant, positive correlation coefficient of .53 ($p < .001$); thus work setting change and individual behavior change are positively related.

Colquitt et al (2000) meta-analytically summarized the literature on training motivation, its antecedents, and its relationships with training outcomes (e.g., declarative knowledge, skill acquisition, and transfer). Significant “predictors” (p. 678) of training motivation included individual-level characteristics (e.g., locus of control, conscientiousness, age, cognitive ability, self-efficacy, change valence and job involvement). Using Hunter and Schmidt's (1990) procedures, over 100 individual meta-analyses were included with effect size estimates in the form of correlations, along with sample sizes and reliability information for the variables mentioned above. Overall, motivation to learn was positively related to declarative knowledge ($r = .27$) and skill acquisition ($r = .16$). It was also strongly related to reactions ($r = .45$) and transfer ($r = .58$) and also predicted post-training self-efficacy ($r = .18$).

Welborn (2001) merged Robertson’s (1993) and Colquitt’s (2000) methods, conducting a three phased meta-analysis on 24 empirical studies that explored and
identified which organizational factors moderated the relationships between facilitation strategies and organizational change adoption. As identified by Welborn (2001), positive Corrected/Weighted Correlations results were found in the combination of participation coupled with job satisfaction (r=.56), organizational commitment (r=.49), change adoption (r=.40), performance (r=.39) and turnover (r=.19). In the context of military healthcare, these results suggest that employee participation during a change event may increase employee satisfaction, job performance and organizational commitment; therefore, the use of employee participation may be a significant readiness factor as a means to facilitate successful change within military healthcare (Welborn, 2001).

Burris (2008) performed a quantitative review by accumulating results across 25 studies in an effort to: (1) provide a comprehensive and quantitative summary of change readiness studies and (2) update Robertson et al.’s (1993) and Welborn et al.’s (2001) findings to produce a representative and generalizable guide to organizational change readiness. Several antecedents of change readiness expressed as weighted mean values of correlation coefficients were identified. Organizational commitment (r=.29) and self-efficacy (r=.29) were shown to be significant predictors of the change readiness measure.

Table VIII provides a summation of the collected studies, the sample size and reported correlations used for the meta-analysis. Studies were omitted if they did not report a correlation coefficient for a readiness factor which comprised a significant number of scientific studies. A summary of the results of each calculated effect size analysis based upon the information gathered in Table VIII are presented in Table IX - Mean Correlations Weighted by Sample Size.
### Table VIII. Summary of Studies and Reported Correlation Coefficient

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Readiness Factor</th>
<th>K</th>
<th>Reported Correlation Coefficient (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rafferty and Simon (2006); Holt et al. (2007); Claiborne (2013)</td>
<td>300</td>
<td>Change Understanding</td>
<td>3</td>
<td>.25; .53; .47</td>
</tr>
<tr>
<td>McKay et al. (2013); Holt et al. (2007)</td>
<td>366</td>
<td>Appropriateness</td>
<td>2</td>
<td>.94*; -.08</td>
</tr>
<tr>
<td>McKay et al. (2013); Boukenooghe et al. (2009); Madsen et al. (2005)</td>
<td>1851</td>
<td>Change Participation</td>
<td>3</td>
<td>.80; .87*; .51</td>
</tr>
<tr>
<td>McKay et al. (2013); Cunningham et al. (2002); Shea et al. (2014); Holt et al. (2007)</td>
<td>1160</td>
<td>Change Efficacy</td>
<td>4</td>
<td>.82*; .48; .82*; -.04</td>
</tr>
<tr>
<td>Boukenooghe et al. (2009)</td>
<td>1285</td>
<td>Principal Support</td>
<td>1</td>
<td>.78*</td>
</tr>
<tr>
<td>McKay et al. (2013); Holt et al. (2007)</td>
<td>366</td>
<td>Change Valence</td>
<td>2</td>
<td>.66; -.06</td>
</tr>
<tr>
<td>McKay et al. (2013); Boukenooghe et al. (2009); Claiborne et al. (2013); Lyons et al. (2009); Caldwell, Herold and Fedor (2004); Holt et al. (2007)</td>
<td>2684</td>
<td>Leadership Sponsorship/Support</td>
<td>6</td>
<td>.87*; .80*; .50; .79*; .46; -.03</td>
</tr>
<tr>
<td>McKay et al. (2013); Claiborne (2013); Holt et al. (2007)</td>
<td>722</td>
<td>Change Communication</td>
<td>3</td>
<td>.88*; .48; .07</td>
</tr>
<tr>
<td>Rafferty and Simon (2006)</td>
<td>311</td>
<td>Capabilities</td>
<td>1</td>
<td>.52</td>
</tr>
<tr>
<td>Claiborne et al. (2013); Cunningham et al. (2000); Madsen et al. (2005); Shah et al. (2009)</td>
<td>2030</td>
<td>Supervisor and Peer Relationships</td>
<td>4</td>
<td>.33; .08; .18; .48</td>
</tr>
<tr>
<td>Rafferty and Simon (2006)</td>
<td>311</td>
<td>Trust in Peers</td>
<td>1</td>
<td>.81*</td>
</tr>
<tr>
<td>Boukenooghe et al. (2009); Claiborne (2013); Rafferty and Simons (2006); Holt et al. (2007)</td>
<td>2216</td>
<td>Trust in Leadership</td>
<td>4</td>
<td>.79*; .36; .58; .00</td>
</tr>
<tr>
<td>McKay et al. (2013); Madsen et al. (2005); Shea et al. (2014)</td>
<td>706</td>
<td>Change Commitment</td>
<td>3</td>
<td>.93*; .45; .87*</td>
</tr>
<tr>
<td>Holt et al. (2007)</td>
<td>264</td>
<td>Locus of Control</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>McKay et al. (2013)</td>
<td>102; 1285</td>
<td>Readiness for Change</td>
<td>2</td>
<td>.86*</td>
</tr>
<tr>
<td>Madsen et al. (2005)</td>
<td>464</td>
<td>Employee Loyalty</td>
<td>1</td>
<td>.28</td>
</tr>
</tbody>
</table>

*Significant correlations are in bold face type

In order to provide a weighted effect size, the sample size and the reported correlations are used in the analysis. To examine the correlation between these variables, this study used the correlational data collection method to determine if there was a statistical relationship between variables and sets of relative data. The analysis, provided in Table X, resulted in fourteen correlations across fifteen published studies, with weighted effect size and confidence intervals. The value of \( r \) ranges between \((-1)\) and \((+1)\) denoting...
the strength of the association. The correlation is significant as it approaches (+1) or (-1) – either a positive or negative correlation. Because only positive correlations are of interest, the closer to (+1) the more likely the r is significant. If 0 < r < 0.25 the correlation is considered weak. If 0.25 ≤ r < 0.75 the correlation is considered intermediate. If 0.75 ≤ r < 1 the correlations is considered strong. If r = 1 the correlation is considered perfect. If r is Zero, this means there is no association or correlation between the two variables. The p values and the 95% confidence interval were also observed.

Of those correlations, principal support (r=.7801, 95% CI [0.78, 1]) and change commitment (r=0.7506, 95% CI [0.75, 1.0]) were strongly correlated. Further, change participation (r=.73, 95% CI [0.81, 1]), change efficacy (r=.5206, 95% CI [0.50, 0.65]), change understanding (r=.5404, 95% CI [0.49, 0.72]), leadership sponsorship (r=.566, 95% CI [0.57, 0.69]), change communication (r=.4776, 95% CI [0.38, 0.58]), supervisor and peer relationships (r=.27, 95% CI [0.22, 0.33]) and trust in leadership (r=0.432, 95% CI [0.41, 0.52]) as well as several other factors in Table IX reported intermediate correlations, and were statistically significant within a 95% confidence interval with total sample sizes ranging from 300 to 1160.

Overall, N (total sample size) varied from 300 to 2684. The results of this analysis are detailed in Table IX below. It should be noted that there may not be theoretical support for the congruence of these constructs, and that this analysis was conceived as an attempt to view correlations across all of the change readiness literature. All statistical analysis were performed using SAS Enterprise Guide 5.1 (Cary, N.C.). For all analyses, 95% Confidence Intervals were calculated with corresponding p-values (p<0.05) for r.
Table IX. Mean Correlations Weighted by Sample Size

<table>
<thead>
<tr>
<th>Readiness Factor</th>
<th>K</th>
<th>N</th>
<th>Fisher Z-value</th>
<th>r_{Olkin &amp; Pratt}</th>
<th>95% CI</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Understanding</td>
<td>3</td>
<td>300</td>
<td>0.5604</td>
<td>0.5404*</td>
<td>.491 to .718</td>
<td>.0001</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>2</td>
<td>366</td>
<td>0.4024</td>
<td>0.4302</td>
<td>.324 to .595</td>
<td>.0001</td>
</tr>
<tr>
<td>Change Participation</td>
<td>3</td>
<td>1851</td>
<td>0.81</td>
<td>0.7273</td>
<td>.706 to .748</td>
<td>.0001</td>
</tr>
<tr>
<td>Change Efficacy</td>
<td>4</td>
<td>1160</td>
<td>0.4831</td>
<td>0.5206</td>
<td>.501 to .653</td>
<td>.0001</td>
</tr>
<tr>
<td>Principal Support</td>
<td>1</td>
<td>1285</td>
<td>0.78</td>
<td>0.7801</td>
<td>.758 to .800</td>
<td>.0001</td>
</tr>
<tr>
<td>Change Valence</td>
<td>2</td>
<td>366</td>
<td>0.1758</td>
<td>0.3009</td>
<td>.175 to .446</td>
<td>.0001</td>
</tr>
<tr>
<td>Leadership Sponsorship</td>
<td>6</td>
<td>2684</td>
<td>0.6948</td>
<td>0.566</td>
<td>.540 to .591</td>
<td>.0001</td>
</tr>
<tr>
<td>Change Communication</td>
<td>3</td>
<td>722</td>
<td>0.445</td>
<td>0.4776</td>
<td>.382 to .575</td>
<td>.0001</td>
</tr>
<tr>
<td>Capabilities</td>
<td>1</td>
<td>311</td>
<td>0.52</td>
<td>0.5206</td>
<td>.43 to .724</td>
<td>.0001</td>
</tr>
<tr>
<td>Supervisor and Peer Relationships</td>
<td>4</td>
<td>2030</td>
<td>0.2667</td>
<td>0.27</td>
<td>.22 to .334</td>
<td>.0001</td>
</tr>
<tr>
<td>Trust in Peers</td>
<td>1</td>
<td>311</td>
<td>0.334</td>
<td>0.3345</td>
<td>.201 to .495</td>
<td>.0001</td>
</tr>
<tr>
<td>Trust in Leadership</td>
<td>4</td>
<td>2216</td>
<td>0.6494</td>
<td>0.432</td>
<td>.408 to .517</td>
<td>.0001</td>
</tr>
<tr>
<td>Change Commitment</td>
<td>3</td>
<td>706</td>
<td>0.6764</td>
<td>0.7506</td>
<td>.717 to .781</td>
<td>.0001</td>
</tr>
<tr>
<td>Employee Loyalty</td>
<td>1</td>
<td>464</td>
<td>0.28</td>
<td>0.2803</td>
<td>.168 to .408</td>
<td>.0001</td>
</tr>
</tbody>
</table>

K = number of studies; N = total sample size; \( r = \) weighted average correlation

*Denotes results that are significant at \( p < .05 \)

Summary. This section of the dissertation research employed the quantitative methodology outlined by Olkin and Pratt (1985) for analyzing the correlation coefficients, and weighing them based upon the reported sample size. The information described in this section summarized those change readiness factors to be utilized in phase two and phase three of this research study.

Funnel Plot. To test for publication bias, the measure of effect size was plotted versus sample size. In this type of funnel plot, you would expect to see the largest studies plotted near the average, and smaller studies spread evenly on both sides of the average, creating a roughly funnel-shaped distribution. However, in reviewing the funnel plot, it was discovered that the majority of the studies accumulated at the bottom of the graph. This indicates asymmetry and suggests the possibility of publication bias. But, with just 14 studies, the power to detect asymmetry in a funnel plot was low (see Figure 7).
**Modified e-Delphi**

The purpose of this phase of research - the modified e-Delphi technique - was to seek consensus for those factors, leadership practices and strategies that are seen as antecedents for successful organizational change by military healthcare personnel. This section of Chapter 4 will review the data collected in each of the two rounds of the e-Delphi. The web-based modified Delphi method (often referred to as an e-Delphi technique) was used as an expeditious and cost-effective approach to systematically combine expert opinion in order to arrive at an informed group consensus. This research engaged 45 Delphi panel members in Round One and 35 panel members in Round Two, who participated in the web-based survey that was administered through a custom secure website - Qualtrics™. **Note:** A Delphi study does not depend on a statistical sample that attempts to be representative of any population. It is a group decision mechanism requiring qualified experts who have understanding of the issues. Therefore, one of the most critical
requirements is the selection of qualified experts. Due to the relatively modest sample size, results were reported by Civilian, Enlisted, and Officer Categories in an effort to minimize the opportunity for individuals to indirectly link results to participants.

From this research and analysis of the data the researcher was successful in identifying several change readiness factors that were favorably rated by the Delphi panel members attaining consensus by a partial majority as to their importance and applicability for change management within the military healthcare system. Ideally, the process can be continuously iterated until consensus is determined to have been achieved amongst participants (Hsu and Sanford, 2007). However, in the present study, this research was modified to include two rounds with a military healthcare panel on change readiness factors resulting from the literature review and meta-analysis, as described above. From the discovery and ratification of these change readiness practices, a collection of best practices was created to assist military healthcare leaders in improving change readiness as they confront the complexities of change management.

A panel of 45 experienced military healthcare personnel at the United State Air Force School of Aerospace Medicine, Wright-Patterson AFB, OH, responded to two rounds of the web-based Modified Delphi study and the results and analysis are included in this chapter. Of the 452 invited to participate, 45 panels members (9.95%) completed the first round of the Delphi and 35 (7.74%) completed the second round. Consensus was achieved on three change readiness factors. Presentation of these findings are described below and displayed for each round and in final findings for the study. The results and analysis of the modified e-Delphi process presented in this chapter is summarized as follows: (a) pilot testing, (b) initial questionnaire, (c) initial feedback, (d) subsequent questionnaire, (e) subsequent feedback, and (f) analysis (McKenna, 1994).

**Delphi Panel and Recruitment.** The study participants consisted of military
healthcare personnel assigned to and/or on Temporary Duty to the United States Air Force School of Aerospace Medicine, Wright-Patterson AFB, Ohio. Recruitment for the study was advertised on the United States Air Force School of Aerospace Medicine 711 HPW SharePoint site utilizing Appendix C. The advertisement provided a brief outline of the project, its objectives, the expected number of rounds, and anticipated time commitment. In addition to the SharePoint site, an e-mail invitation was distributed to all personnel currently assigned to the United States Air Force School of Aerospace Medicine. The email invitation explained the study, voluntary participation, and expectations for the expert panel.

Initially, only 15 responses were received of which none were negative replies due to lack of interest in participating in the study. Due to the lack of initial participation, a second, more concise recruitment e-mail was sent to encourage participation. An additional 30 individuals agreed to participate in the panel. A reliable list of 45 participants in Round One and 35 in Round Two were then present to complete the study. Given the mission of the organization (center for aerospace education, training, and consultation) and the required experience of the target population to serve in this capacity, the number of available personnel in the Airmen rank category is underrepresented.

**Pilot Study.** The purpose of the pilot test of this study (often referred to as ‘feasibility’ studies) was to improve internal validity of the questionnaire, test and assure viability of the on-line survey instrument prior to distribution, and the method of administration for the survey, including data collection and information management methodology. This pilot test was comprised of two rounds of surveys administrated between September 15, 2016 and September 20, 2016 to a panel of six expert epidemiologists and biostatisticians. The panel experts were asked to complete the survey online and provide feedback concerning the usability of the survey website, the clarity of
the questions, and any difficulties they might have completing the survey tool. The participants in the pilot study were not the same ones used in the main research study.

Despite the fact that the six panelists selected for the pilot study were not in contact with each other regarding the survey, they all agreed that the readiness factors lacked clarity and needed to be defined within the survey. The panelists agreed to the need for a “dictionary of terms” supported by the literature. Panelists also provided feedback regarding the readability and clarity of the questions. In addition, panelists suggested that the overall aesthetics (e.g., color scheme) of the survey could be improved.

**Data Collection.** The survey was administered using Qualtrics™, an internet-based survey provider endorsed by the University of Illinois, Chicago. This service provider was selected over others on the grounds that little to no training was required and there was no cost or obligation associated with the subscription due to institutional access for the researcher. Once the screening survey was developed, a unique URL or web address was created and included within the e-Delphi invitation. When the potential participant clicked the link, they were directed to the initial survey; the internet-based survey software, Qualtrics™, tracks unique user IP addresses to ensure that each respondent only fills out one survey (for security and experimental control purposes). However, the IP address was not made available to the researcher. The screening survey proved to be simple to design and administer with no technological difficulties reported. From the initial email invite to 452 unique addresses, 45 participants completed the survey, and a review of the responses revealed a broad rank distribution as well as a range of expertise across the desired expertise spectrum. For both rounds, participants were provided a link to the web-based questionnaire and were allotted one week to complete the questionnaire.

**Data Analysis.** For the purposes of this research study, utilizing the data analysis
approach outlined by Verhagen et al. (1998), consensus was defined as having over a 75% response rate for each question. Consensus was deemed moderate when 60% to 74% of participants agreed on both the applicability and importance of a change readiness factor. Partial consensus was obtained when at least 60% of participants reached consensus on a question. Absence of consensus was determined when less than 60% of participants agreed for each question. Once the data was organized in Qualtrics™, each response was calculated to assess the percentage of consensus. If a level of consensus was not reached by the end of round two, emerging themes were shared and responses were collected and analyzed.

**Delphi Round One Result and Analysis.** Forty-five panel members were asked to complete a short demographic survey that accompanied the Round One request for declarative statements in response to the research questions. All panel members met the criteria outlined in Chapter 3 for participation in this Modified e-Delphi study. Round One began with an introductory e-mail that gave directions to each e-Delphi panelist concerning Round One activities and the initial Round One survey of 10 questions. The detailed contents of the introductory email are presented in Appendix C. The Round One survey and letter of consent document are presented in Appendix C and D.

The e-Delphi panelists were asked to respond to 10 questions in Round One concerned with identifying those factors, leadership practices and strategies that are seen as antecedents for successful organizational change. Also, the intention of Round One for this e-Delphi study was to gather demographic information on the panel of experts, to introduce the panel to multiple-choice questions regarding change readiness and to begin to gather opinions regarding change planning attributes and processes. The responses to the Round One questions yielded themes that allowed the development of open-ended commentary in Round Two. The data from Round One are presented as counts and response rates (i.e.,
percentages). Demographic data solicited in Round One is displayed in Table X. It should be reiterated that the groups of individuals who were solicited to participate in this research study are military instructors, consultants, researchers and military healthcare personnel on temporary training.

The response rate for the size of the MTF that e-Delphi panel members are currently assigned with respect to the number of personnel are displayed below (Table XI). Of the 41 responses to question number one of the survey, the majority of respondents were not currently assigned to a MTF (n=28, 68.29%). These results are not unexpected as the United States Air Force School of Aerospace Medicine does not function as a traditional MTF. However, many personnel assigned to the School of Aerospace Medicine are career field consultants and researchers, and therefore have had experience working in an MTF, or are on Temporary Duty for training purposes and/or assigned to the Wright-Patterson AFB hospital to maintain currency in medical skillsets. In addition, based on the number of years of Air Force service reported (see Table X below), one can infer that at some point the respondents not currently assigned to an MTF had served within this capacity. The importance of this question was to study possible differences in response characteristics by size of MTF and the association between hospital size and change readiness factors. Further analysis of the question suggests a more appropriate question may have been “what size was the MTF you were last stationed at?” This change was reflected in Round Two of the e-Delphi survey.
**R1 Question1:** What best describes the size of the Military Treatment Facility you are currently assigned to with respect to number of personnel assigned?

Table X. Size of the Military Treatment Facility you are currently assigned

<table>
<thead>
<tr>
<th>Size of the Military Treatment Facility</th>
<th>Frequency</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10</td>
<td>2.44%</td>
<td>1</td>
</tr>
<tr>
<td>10 to 49</td>
<td>2.44%</td>
<td>1</td>
</tr>
<tr>
<td>50 to 99</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>100 to 499</td>
<td>4.88%</td>
<td>2</td>
</tr>
<tr>
<td>500 and Over</td>
<td>21.95%</td>
<td>9</td>
</tr>
<tr>
<td>I am not currently assigned to a Military Treatment Facility</td>
<td>68.29%</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>41</td>
</tr>
</tbody>
</table>

The table below (see Table XI) provides a summary of respondents based on Air Force Specialty Code (AFSC), an alphanumeric code used by the United States Air Force to identify an Air Force Specialty (i.e., occupation). Delphi participant occupational specialties ranged from Public Health Officer (n=3; 7.32%); enlisted Public Health technicians (n=3; 7.32%); Bioenvironmental engineer Officers (n=3; 7.32%); enlisted Bioenvironmental engineers (n=3; 7.32%); Aerospace Medical Service technicians (n=4; 9.76%); Flight Surgeon (n=6; 14.63%); Clinical Nurse (n=3; 7.32%); Neurology (n=1; 8.3%); Laboratory Technician (n=2; 16.7%); and Occupational Medicine (n=1; 8.3%). Other AFSCs not listed (n=12; 29.27%) included: Aerospace and Operational Physiologist; Emergency Services Physician; Biomedical Laboratory; Flight Nurse; and Occupational Medicine. Please see Table XI below for a distribution of e-Delphi panel AFSCs.
RI Question2: Please select your current job expertise (labeled as Air Force Specialty Code or AFSC).

Table XI. Air Force Specialty Code

<table>
<thead>
<tr>
<th>Air Force Specialty Code</th>
<th>Frequency</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B0X1 Bioenvironmental Engineering</td>
<td>7.32%</td>
<td>3</td>
</tr>
<tr>
<td>4E0X1 Public Health</td>
<td>7.32%</td>
<td>3</td>
</tr>
<tr>
<td>4N0X1 Aerospace Medical Service</td>
<td>9.76%</td>
<td>4</td>
</tr>
<tr>
<td>4V0 Optometry/Ophthalmology</td>
<td>2.44%</td>
<td>1</td>
</tr>
<tr>
<td>43EX Bioenvironmental Engineer</td>
<td>7.32%</td>
<td>3</td>
</tr>
<tr>
<td>43H3 Public Health</td>
<td>7.32%</td>
<td>3</td>
</tr>
<tr>
<td>48RX Flight Surgeon</td>
<td>14.63%</td>
<td>6</td>
</tr>
<tr>
<td>46AX Nurse Administrator</td>
<td>2.50%</td>
<td>1</td>
</tr>
<tr>
<td>46FX Flight Nurse</td>
<td>2.50%</td>
<td>1</td>
</tr>
<tr>
<td>46NX Clinical Nurse</td>
<td>7.32%</td>
<td>3</td>
</tr>
<tr>
<td>44F Family Physician</td>
<td>2.50%</td>
<td>1</td>
</tr>
<tr>
<td>Other Not Listed:</td>
<td>30.00%</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>41</td>
</tr>
</tbody>
</table>

Based on results displayed in Table XII, e-Delphi participant’s tended to have at least 10 years of active duty military service. Again, given the characteristics of the sampled population, this researcher anticipated a more senior e-Delphi panel. Overall, total time in service ranged from less than 5 years (n=1; 2.56%), 5 to 9 years (n=3; 7.69%), 10 to 14 years (n=13; 33.33%); 15 to 20 years (n=8, 20.51%); and over 20 years (n=14; 35.90%). Only 39 of the 45 participants responded to the time in service question.
**R1 Question3: How many years of Air Force experience do you have?**

Table XII. Years of military experience

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>2.56%</td>
<td>1</td>
</tr>
<tr>
<td>5-9</td>
<td>7.69%</td>
<td>3</td>
</tr>
<tr>
<td>10-14</td>
<td>33.33%</td>
<td>13</td>
</tr>
<tr>
<td>15-20</td>
<td>20.51%</td>
<td>8</td>
</tr>
<tr>
<td>Over 20 years</td>
<td>35.90%</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>39</td>
</tr>
</tbody>
</table>

Out of 39 respondents presented in Table XIII, 25 (64.10%) identified as Field Grade Officers, corresponding to the ranks of major, lieutenant colonel and colonel. Nine respondents identified as non-commissioned officers, an enlisted member of the military, such as sergeant. Though the Airmen rank category was not represented, there is a representative group from both officer and enlisted rank categories with a range of military experience offering different perspectives of change management in the military healthcare system.

**R1 Question4: What is your rank category?**

Table XIII Delphi Respondent Rank Category

<table>
<thead>
<tr>
<th>Rank Category</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airmen</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Non-commissioned Officer</td>
<td>23.08%</td>
<td>9</td>
</tr>
<tr>
<td>Senior Non-commissioned Officer</td>
<td>7.69%</td>
<td>3</td>
</tr>
<tr>
<td>Company Grade Officer</td>
<td>5.13%</td>
<td>2</td>
</tr>
<tr>
<td>Field Grade Officer</td>
<td>64.10%</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>39</td>
</tr>
</tbody>
</table>
A total of 39 e-Delphi panel members indicated that change understanding (n=24; 61.54%), trust in leadership (n=19; 48.72%), change appropriateness (n=17; 43.59%) and change communication (n=15; 38.46%) were the change readiness factors that are most important as an employee in preparing for an organizational change event. Table XIV shows that panel members reached moderate consensus on change understanding (n=24; 61.54%). Three change readiness factors, namely trust in leadership, change appropriateness and change communication were just under the cutoff for partial consensus (<60%). Interestingly, three out of the four factors with the highest reported frequency listed in Table XIV are associated with understanding the need for change in the form of communication and/or leadership support.

R1 Question: Please select THREE change readiness factors that you feel are most important as an employee in preparing for an organizational change event:

Table XIV: Individual change readiness factors

<table>
<thead>
<tr>
<th>Individual Readiness Factors</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Understanding - You understand the change content, target, goals, and impact.</td>
<td>61.54%</td>
<td>24</td>
</tr>
<tr>
<td>Trust in Leadership - You have confidence in your Leadership abilities and/or knowledge to manage the task.</td>
<td>48.72%</td>
<td>19</td>
</tr>
<tr>
<td>Appropriateness - You understand the need for change within the workplace.</td>
<td>43.59%</td>
<td>17</td>
</tr>
<tr>
<td>Change Communication - You feel that there is effective change communication to members within the organization.</td>
<td>38.46%</td>
<td>15</td>
</tr>
<tr>
<td>Leadership Sponsorship - You believe Leadership has provided clear support/project direction and momentum.</td>
<td>35.90%</td>
<td>13</td>
</tr>
<tr>
<td>Change Efficacy - You feel capable of making the change successful.</td>
<td>20.51%</td>
<td>8</td>
</tr>
<tr>
<td>Job Satisfaction - How content you are with your job.</td>
<td>15.38%</td>
<td>6</td>
</tr>
<tr>
<td>Change Willingness - Your willingness to participate in the progress of the change event.</td>
<td>15.38%</td>
<td>6</td>
</tr>
<tr>
<td>Trust in Peers - You have confidence in peers abilities and/or knowledge to perform a task.</td>
<td>10.26%</td>
<td>4</td>
</tr>
<tr>
<td>Change Valence - You feel the change is personally beneficial.</td>
<td>5.13%</td>
<td>2</td>
</tr>
<tr>
<td>Change Participation - Your degree of participation in the change event.</td>
<td>5.13%</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>39</td>
</tr>
</tbody>
</table>
Out of 37 e-Delphi respondents for question 6, consensus was achieved for one organizational readiness factor - organizational capabilities (75.68%) - as important for an organization to prepare for an organizational change event. Partial consensus was reached on organizational culture (n=25; 67.57%) and vision for change (n=23; 62.16%).

*R1 Question 6: Please select THREE change readiness factors that you feel are most important for an organization to prepare for an organizational change event:*

Table XV: Organizational readiness factors

<table>
<thead>
<tr>
<th>Organizational Readiness Factors</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Capabilities - The organization possesses the capability and resources to implement the change.</td>
<td>75.68%</td>
<td>28</td>
</tr>
<tr>
<td>Organizational Culture - The organization possesses the philosophies, attitudes, beliefs, behaviors and practices to implement the change.</td>
<td>67.57%</td>
<td>25</td>
</tr>
<tr>
<td>Vision for Change - The future framework for the change event has been well defined.</td>
<td>62.16%</td>
<td>23</td>
</tr>
<tr>
<td>Flexible Policies and Procedures - The policies and procedures within your organization are flexible enough to implement the change event.</td>
<td>48.65%</td>
<td>18</td>
</tr>
<tr>
<td>Implementation Climate - The state of the organization (e.g., Climate) before a change event is ideal for the change event.</td>
<td>45.95%</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>37</strong></td>
</tr>
</tbody>
</table>

Question 7 in the first round of the e-Delphi was presented as a 5-point likert scale. Of the 37 e-Delphi respondents, 27 achieved moderate consensus on change understanding (72.97%) as being extremely important in preparing for organizational change, consistent with question 5 above (n=24; 61.54%). Leadership sponsorship (n=24; 64.86%) received partial consensus as a factor in preparing for organizational change; however, in question 5 above it did not receive consensus (n=13; 35.90%). Change communication (n=22; 59.46%) and trust in leadership (n=21; 56.76%) were identified as very important by e-Delphi participants. In addition, trust in peers was rated as very (n=16; 43.24%) to moderately (n=15; 40.54%) important.

*R1 Question 7: Please rate the listed individual change readiness factors identified in the*
literature as "Extremely Important," "Very Important," "Moderately important," "Slightly Important," or "Not at all Important" in preparing for organizational change:

Table XVI: Individual Change Readiness Factors

<table>
<thead>
<tr>
<th>Question</th>
<th>Extremely Important</th>
<th>#</th>
<th>Very Important</th>
<th>#</th>
<th>Moderately Important</th>
<th>#</th>
<th>Slightly Important</th>
<th>#</th>
<th>Not at all Important</th>
<th>#</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Understanding</td>
<td>72.9%</td>
<td>27</td>
<td>21.6%</td>
<td>8</td>
<td>5.4%</td>
<td>2</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>40.5%</td>
<td>15</td>
<td>37.8%</td>
<td>14</td>
<td>18.9%</td>
<td>7</td>
<td>2.7%</td>
<td>1</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Change Participation</td>
<td>24.3%</td>
<td>9</td>
<td>37.8%</td>
<td>14</td>
<td>32.4%</td>
<td>12</td>
<td>2.7%</td>
<td>1</td>
<td>2.7%</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Change Willingness</td>
<td>29.7%</td>
<td>11</td>
<td>37.8%</td>
<td>14</td>
<td>24.3%</td>
<td>9</td>
<td>5.4%</td>
<td>2</td>
<td>2.7%</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Change Efficacy</td>
<td>24.3%</td>
<td>9</td>
<td>48.7%</td>
<td>18</td>
<td>18.9%</td>
<td>7</td>
<td>8.1%</td>
<td>3</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Change Valence</td>
<td>8.1%</td>
<td>3</td>
<td>40.5%</td>
<td>15</td>
<td>35.1%</td>
<td>13</td>
<td>13.5%</td>
<td>5</td>
<td>2.7%</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Leadership Sponsorship</td>
<td>64.9%</td>
<td>24</td>
<td>21.6%</td>
<td>8</td>
<td>10.8%</td>
<td>4</td>
<td>2.7%</td>
<td>1</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Change Communication</td>
<td>59.5%</td>
<td>22</td>
<td>37.8%</td>
<td>14</td>
<td>0.0%</td>
<td>0</td>
<td>2.7%</td>
<td>1</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Trust in Peers</td>
<td>13.5%</td>
<td>5</td>
<td>43.2%</td>
<td>16</td>
<td>40.5%</td>
<td>15</td>
<td>2.7%</td>
<td>1</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Trust in Leadership</td>
<td>56.8%</td>
<td>21</td>
<td>27.0%</td>
<td>10</td>
<td>13.5%</td>
<td>5</td>
<td>0.0%</td>
<td>0</td>
<td>2.7%</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>18.9%</td>
<td>7</td>
<td>32.4%</td>
<td>12</td>
<td>29.7%</td>
<td>11</td>
<td>16.2%</td>
<td>6</td>
<td>2.7%</td>
<td>1</td>
<td>37</td>
</tr>
</tbody>
</table>

Of the 37 respondents who responded to question 8, consensus was not achieved on any of the organizational readiness factors. Organizational culture (n=20; 54.05%) and vision for change (n=19; 51.35%) were rated favorably. When comparing survey responses to question type, for the five-point Likert scale (odd number of points) it appears the participants often avoided the ‘middle ground’ regarding answer choices. The central tendency effect is common in likert-type questions, however, most respondents committed to selecting an answer as ‘extremely important’ or ‘very important’.

R1 Question 8: Please rate the listed organizational change readiness factors identified in the literature as "Extremely Important," "Very Important," "Moderately important," "Slightly Important," or "Not at all Important" in preparing for organizational change.
Table XVII: Organizational Change Readiness Factors

<table>
<thead>
<tr>
<th>Question</th>
<th>Extremely important</th>
<th>#</th>
<th>Very important</th>
<th>#</th>
<th>Moderately important</th>
<th>#</th>
<th>Slightly important</th>
<th>#</th>
<th>Not at all important</th>
<th>#</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Culture</td>
<td>54.0%</td>
<td>20</td>
<td>27.0%</td>
<td>10</td>
<td>13.5%</td>
<td>5</td>
<td>5.4%</td>
<td>2</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Implementation Climate</td>
<td>37.8%</td>
<td>14</td>
<td>37.8%</td>
<td>14</td>
<td>21.6%</td>
<td>8</td>
<td>2.7%</td>
<td>1</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Organizational Capabilities</td>
<td>43.2%</td>
<td>16</td>
<td>35.1%</td>
<td>13</td>
<td>21.6%</td>
<td>8</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Vision for Change</td>
<td>51.4%</td>
<td>19</td>
<td>29.7%</td>
<td>11</td>
<td>13.5%</td>
<td>5</td>
<td>2.7%</td>
<td>1</td>
<td>2.7%</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Flexible Policies and Procedures</td>
<td>37.8%</td>
<td>14</td>
<td>35.1%</td>
<td>13</td>
<td>21.6%</td>
<td>8</td>
<td>5.4%</td>
<td>2</td>
<td>0.0%</td>
<td>0</td>
<td>37</td>
</tr>
</tbody>
</table>

Of the 45 total participants, 19 panel members provided free text comments regarding preparing for organizational change (see Table XVIII). Many of the responses listed below are captured in the change readiness definition provided within the survey.

Table XVIII: Additional Characteristics

| “If personnel are currently already overloaded with tasks, they won't be interested in taking on change implementation unless something else goes away. Ensuring there is enough personnel to do the change and how it will affect the workflow of everyday work” |
| “Level of workload for change participants, i.e. Does the change increase my workload by 25% or lengthen the amount of time accomplishing certain tasks.” |
| “Level of leadership sponsorship is important, i.e. Wing versus unit.” |
| “Communication related to the vision; communication is both providing guidance and listening.” |

When panelists were asked “what other characteristics of change readiness might be considered in preparing for organizational change within the military healthcare setting?” several themes began to emerge. For example, several respondents indicated that “communication” was a key component for preparing an organization for change. In addition, a respondent indicated that communication should be “transparent,
communicating why the change is necessary and how it may have an impact on current programs and procedures”. Similarly, a respondent suggested that the “marketing of the change needs to be thoroughly thought out so both the organization and individuals want to make the changes”. Other panelists indicated the need for leadership sponsorship in preparing for and implementing the change, “level of leadership sponsorship” is most important. Last, having the resources available was an important characteristic. One respondent indicated that it is imperative to “ensure there are enough personnel to accomplish the change” with careful consideration in “how it will affect the workflow of everyday work”.

Last, Table XIX provides a summary of leadership traits that were identified by panel members as important in preparing for organizational change within the workplace. This question sought a connection between leadership styles, traits, or characteristics and preparing for organizational change, add focus to general assertions of leadership traits and styles being ideal in leading a military organization. The focus was to look at the personality and trait of the leader. Three leadership traits reached a moderate level of consensus, which include motivation (70.27%), people-focused (72.97%) and adaptability (72.97%).

R1 Question10: What are the specific leadership traits you feel are important for a leader to possess in preparing for organizational change within your workplace? Select all that apply.

Table XIX. Leadership Traits
### Delphi Round Two Result and Analysis

Of the 452 invited to participate, 35 panel members (7.74%) completed the second and final round of the web-based Delphi questionnaire. For Round Two, the results of the first interview round were summarized and panelists were asked to reassess and comment on some of the emerging perceptions. The purpose of the Round Two survey was to delve more deeply into the results of Round One, where participants were asked to share their views on which change readiness factors promote successful change implementation within a military health care setting. Overall, the goal of Round Two was to gain a consensus among the Delphi panelists as to the most effective leadership traits that lead to the promotion and advancement of women in the United States Air Force. The responses for Round Two were analyzed by assessing the most frequent answers from the Delphi panelists. The three to five most prevalent responses from Round One were used to develop the Round Two survey, which calculated the mean and standard deviation of each response garnered from the Round Two analysis.

**R2 Question 1:** Did you complete Round One of the Modified e-Delphi panel survey?

Table XX. Participants in the Modified e-Delphi Round One

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>People-focused</td>
<td>72.97%</td>
<td>27</td>
</tr>
<tr>
<td>Adaptability</td>
<td>72.97%</td>
<td>27</td>
</tr>
<tr>
<td>Motivation</td>
<td>70.27%</td>
<td>26</td>
</tr>
<tr>
<td>Understanding</td>
<td>45.95%</td>
<td>17</td>
</tr>
<tr>
<td>Forward Thinking</td>
<td>43.24%</td>
<td>16</td>
</tr>
<tr>
<td>Compassion</td>
<td>37.84%</td>
<td>14</td>
</tr>
<tr>
<td>Inclusion</td>
<td>35.14%</td>
<td>13</td>
</tr>
<tr>
<td>Ingenuity</td>
<td>32.43%</td>
<td>12</td>
</tr>
<tr>
<td>Mission-focused</td>
<td>29.73%</td>
<td>11</td>
</tr>
<tr>
<td>Drive</td>
<td>27.03%</td>
<td>10</td>
</tr>
<tr>
<td>Answer</td>
<td>%</td>
<td>Count</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>Yes</td>
<td>28.57%</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>17.14%</td>
<td>6</td>
</tr>
<tr>
<td>I do not remember</td>
<td>54.29%</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>29</td>
</tr>
</tbody>
</table>

As display in Table XX above, 10 panelists recalled participating in Round One of the e-Delphi panel. A total of 19 panelists did not recall participating in the Round One e-Delphi survey. Though, individuals that participated in Round Two did not have to participate in the first round to participate in this Round Two, participation was less than 10% of members assigned to the organization.

**R2 Question2: Are you currently working at a Military Treatment Facility?**

Table XXI. Currently Working in an MTF

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>11.43%</td>
<td>4</td>
</tr>
<tr>
<td>No</td>
<td>88.57%</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>35</td>
</tr>
</tbody>
</table>

Thirty five e-Delphi panelist who completed the survey indicated that they were not currently working at a Military Treatment Facility. Similar responses were identified in Round One of the survey where e-Delphi panelists were asked what size treatment facility they were currently assigned. As mentioned previously for Round One, many personnel assigned to the School of Aerospace Medicine are career field consultants and researchers, and therefore have had extensive experience working in an MTF, or are on Temporary Duty for training purposes and/or assigned to the Wright-Patterson AFB hospital to maintain currency in medical skillsets. Therefore, there are not currently assigned to an
MTF unless to maintain currency for clinical practice.

**R2 Question 3: How many years of Air Force experience do you have?**

Table XXII. Air Force Years of Experience

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 5</td>
<td>2.86%</td>
<td>1</td>
</tr>
<tr>
<td>6 to 10</td>
<td>28.57%</td>
<td>10</td>
</tr>
<tr>
<td>11 to 15</td>
<td>31.43%</td>
<td>11</td>
</tr>
<tr>
<td>16 to 20</td>
<td>17.14%</td>
<td>6</td>
</tr>
<tr>
<td>over 20 years</td>
<td>20.00%</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

The number of years of experience in the Air Force reported by survey respondents ranged from less than 5 years (n=1; 2.86%) to over 20 years (n=7; 20.00%). The majority of respondents reported 6 to 10 (n=10; 28.57%) to 11 to 15 (n=11; 31.43) years of experience.

**R2 Question 4: What is your military classification?**

Table XXIII. Military Classification

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enlisted</td>
<td>51.43%</td>
<td>18</td>
</tr>
<tr>
<td>Officer</td>
<td>48.57%</td>
<td>17</td>
</tr>
<tr>
<td>Civilian</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

Round Two survey respondents were evenly distributed between Enlisted (n=18; 51.43%) and Officer (n=17; 48.57%) ranks.

**R2 Question 4: What is your military rank category?**

Table XXIV. Military Rank Category
Delphi panelists most frequently reported being a Non-Commissioned Officer (n=14; 40.00%) or Field Grade Officer (n=15; 42.86%). The Airmen category was not represented; however, as a consultation and research facility, the number of Airmen assigned to the School of Aerospace Medicine is likely low.

**R2 Question5: Please select your current job expertise (labeled as Air Force Specialty Code or AFSC).**

Table XXV. Air Force Specialty Code

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B0X1 Bioenvironmental Engineering</td>
<td>26.47%</td>
<td>9</td>
</tr>
<tr>
<td>Other not listed</td>
<td>23.53%</td>
<td>8</td>
</tr>
<tr>
<td>4E0X1 Public Health</td>
<td>14.71%</td>
<td>5</td>
</tr>
<tr>
<td>46NX Clinical Nurse</td>
<td>13.79%</td>
<td>4</td>
</tr>
<tr>
<td>48RX Flight Surgeon</td>
<td>10.34%</td>
<td>3</td>
</tr>
<tr>
<td>43EX Bioenvironmental Engineer</td>
<td>3.45%</td>
<td>2</td>
</tr>
<tr>
<td>4N0X1 Aerospace Medical Service</td>
<td>2.94%</td>
<td>1</td>
</tr>
<tr>
<td>4V0 Optometry/Ophthalmology</td>
<td>2.94%</td>
<td>1</td>
</tr>
<tr>
<td>43H3 Public Health</td>
<td>2.94%</td>
<td>1</td>
</tr>
<tr>
<td>46AX Nurse Administrator</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>
Of the 34 e-Delphi participants in Round Two, Bioenvironmental Engineering (n=9; 26.47%) and Public Health (n=5; 14.71%) enlisted were the career fields most represented. However, e-Delphi participant occupational specialties also included Public Health Officers (n=1; 2.94%), flight surgeons (n=3; 10.34%), clinical nurses (n=4; 13.79%), aerospace medical services (n=1; 2.94%), optometry/ophthalmology (n=1; 2.94%) and several other occupations (n=8; 23.53%). These other occupations include cardiopulmonary laboratory technicians (n=1), medical administration (n=1), biomedical laboratory officers (n=3), aerospace medicine specialists (n=1), ophthalmology surgeon (n=1) and laboratory technicians (n=1). A mix of AFSCs provides validity to the research because consensus is not based on the leadership skills that have led to advancement among military personnel within a specific career field.

*R2 Question 6: Are you currently managing anyone?*

Table XXVI. Management Responsibility

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>54.55%</td>
<td>18</td>
</tr>
<tr>
<td>No</td>
<td>45.45%</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>33</td>
</tr>
</tbody>
</table>

Of the e-Delphi panelists that responded to question 6, 18 respondents (54.55%) reported that they are managing someone and 15 (45.45%) reported that they are currently not managing anyone.

*R2 Question 7: If yes, how many personnel do you currently manage?*

Table XXVII. Span of Management Control
Of those individuals that responded ‘yes’ to question 6 above, 11 reported managing less than 5 people (47.83%) and 7 reported managing over 30 personnel (30.43%). This question demonstrates that e-Delphi participants have a wide span of management control.

*R2 Question 8: To what extent would you consider yourself experienced in managing large-scale change in military healthcare?*

Table XXVIII. Experience in Managing Change

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 5</td>
<td>47.83%</td>
<td>11</td>
</tr>
<tr>
<td>5 to 10</td>
<td>13.04%</td>
<td>3</td>
</tr>
<tr>
<td>11 to 20</td>
<td>8.70%</td>
<td>2</td>
</tr>
<tr>
<td>21 to 30</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>over 30 personnel</td>
<td>30.43%</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>23</td>
</tr>
</tbody>
</table>

In gauging the level of self-reported management experience of e-Delphi participants, the majority of respondents indicated that they were moderately (n=9;
26.47\%) to slightly (n=9; 26.47\%) experienced in managing large-scale change in healthcare. Only 7 individuals (20.59\%) identified as being very experienced in managing change in healthcare.

**R2 Question 9:** To what extent would you consider yourself knowledgeable in managing change in military healthcare?

**Table XXIX. Knowledgeable in Managing Change**

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely knowledgeable</td>
<td>5.88%</td>
<td>2</td>
</tr>
<tr>
<td>Very knowledgeable</td>
<td>20.59%</td>
<td>7</td>
</tr>
<tr>
<td>Moderately knowledgeable</td>
<td>35.29%</td>
<td>12</td>
</tr>
<tr>
<td>Slightly knowledgeable</td>
<td>23.53%</td>
<td>8</td>
</tr>
<tr>
<td>Not knowledgeable at all</td>
<td>14.71%</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>34</td>
</tr>
</tbody>
</table>

In assessing self-reported knowledge, e-Delphi respondents indicated that they were very knowledgeable (n=7; 20.59\%), moderately knowledgeable (n=12; 35.29\%), and slightly knowledgeable (n=8; 23.53\%) in managing change in military healthcare. Several respondents indicated that they were not knowledgeable at managing healthcare change (n=5; 14.71\%).

**R2 Question 10:** How often in your current position do you engage in routine change management activities?

**Table XXX. Routine Change Management Activities**
In assessing the amount of time panelists engage in change management activities, e-Delphi respondents indicated that they sometimes (n=14; 41.18%) engage in routine change management activities. Responses also include most of the time (n=8; 23.53%) and about half the time (n=6; 16.65%).

R2 Question 11: What do you think are the greatest barriers to preparing for organizational change within military healthcare? Please select all the barriers to healthcare change that apply from the multiple choice answers below.

Table XXXI. Barriers to Preparing for Organizational Change

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of an effective communication strategy</td>
<td>66.67%</td>
<td>22</td>
</tr>
<tr>
<td>Employee resistance or skepticism</td>
<td>60.61%</td>
<td>20</td>
</tr>
<tr>
<td>Uncertain roles and/or lack of accountability</td>
<td>60.61%</td>
<td>20</td>
</tr>
<tr>
<td>Waning commitment or &quot;Flavor-of-the-Month&quot; Syndrome</td>
<td>54.55%</td>
<td>18</td>
</tr>
<tr>
<td>Organizational complexity</td>
<td>51.52%</td>
<td>17</td>
</tr>
<tr>
<td>Shortage of internal resources to lead change initiatives</td>
<td>48.48%</td>
<td>16</td>
</tr>
<tr>
<td>Lack of employee involvement</td>
<td>36.36%</td>
<td>12</td>
</tr>
<tr>
<td>Lack of consensus</td>
<td>36.36%</td>
<td>12</td>
</tr>
<tr>
<td>Lack of leadership support</td>
<td>36.36%</td>
<td>12</td>
</tr>
</tbody>
</table>
A total of 33 e-Delphi panelists reported the greatest barriers to preparing for organizational change within military healthcare are a lack of an effective communication strategy (n=22; 66.67%), employee resistance or skepticism (n=20; 60.61%) and uncertain roles and/or lack of accountability (n=20; 60.61%). There were no restrictions on the number of responses that panelists could select for Question 11.

**R2 Question12:** A total of 39 e-Delphi panel members indicated that change understanding (n=24; 61.54%), trust in leadership (n=19; 48.72%), change appropriateness (n=17; 43.59%) and change communication (n=15; 38.46%) were the change readiness factors that are most important as an employee in preparing for an organizational change event.

Of the four change readiness factors listed above - change understanding, trust in leadership, change appropriateness and change communication - which one do you feel is most important as an employee in preparing for an organizational change event?

| Table XXXII. Most Important Factor in Preparing for an Organizational Change Event |
|---------------------------------|-----|-----|
| Answer                          | %   | Count |
| Change Understanding - You understand the change content, target, goals and impact. | 38.71% | 12 |
| Trust in Leadership - You have confidence in your Leadership's abilities and/or knowledge to manage the task. | 25.81% | 8 |
| Appropriateness - You understand the need for change within the workplace. | 16.13% | 5 |
| Change Communication - You feel that there is effective change communication to members within the organization. | 19.35% | 6 |
| Total                           | 100% | 31 |

Consistent with findings reported in the e-Delphi Round One, survey respondents indicated that change understanding (n=12; 38.71%) is the most important factor in preparing an organization for a change event. Readiness for change factors included in Round Two also include trust in leadership (n=8; 25.81%), change communication (n=6;
19.35%) and change appropriateness (n=5; 16.13%). However, consensus was not achieved on any of the organizational readiness for Round Two.

**R2 Question 13:** Please rate the listed individual change readiness factors identified in Round One of the e-Delphi study as "Extremely Important," "Very Important," "Moderately important," "Slightly Important," or "Not at all Important" in preparing for organizational change:

Table XXXIII. Rate the Listed Individual Change Readiness Factors

<table>
<thead>
<tr>
<th>Question</th>
<th>Extremely Important</th>
<th>Very important</th>
<th>Moderately important</th>
<th>Slightly important</th>
<th>Not at all important</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Understanding</td>
<td>60.00%</td>
<td>18</td>
<td>33.33%</td>
<td>10</td>
<td>6.67%</td>
<td>2</td>
</tr>
<tr>
<td>Trust in Leadership</td>
<td>63.33%</td>
<td>19</td>
<td>26.67%</td>
<td>8</td>
<td>10.00%</td>
<td>3</td>
</tr>
<tr>
<td>Change Appropriateness</td>
<td>43.33%</td>
<td>13</td>
<td>43.33%</td>
<td>13</td>
<td>10.00%</td>
<td>3</td>
</tr>
<tr>
<td>Change Communication</td>
<td>46.67%</td>
<td>14</td>
<td>43.33%</td>
<td>13</td>
<td>10.00%</td>
<td>3</td>
</tr>
</tbody>
</table>

A total of 33 e-Delphi panelists responded to question 13 – a Likert-type scale.

Change understanding (n=18; 60.00%) and trust in leadership (n=19; 63.33%) were rated as the individual change readiness factors that were ‘extremely important’ in preparing for organizational change. Change appropriateness and change communication were also rated very highly by e-Delphi panelists as extremely important (n=13; 43.33% and n=14; 46.67%) and very important (n=13; 43.33% and n=13; 43.33%). None of the panelists indicated that the change readiness factors were not at all important.

**R2 Question 14:** A total of 37 e-Delphi panel members achieved consensus for one organizational readiness factor - organizational capabilities (75.68%) - as important for an organization to prepare for an organizational change event. Partial consensus was reached on organizational culture (n=25; 67.57%) and vision for change (n=23; 62.16%).

Do you think that organizational capabilities (when an organization possesses the
Table XXXIV. Organizational Capabilities

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>51.61%</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>22.58%</td>
<td>7</td>
</tr>
<tr>
<td>Maybe</td>
<td>25.81%</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>31</td>
</tr>
</tbody>
</table>

The Round One e-Delphi survey provided a level of consensus regarding an organizational readiness factor – organizational capabilities. However, in Round Two, a new panel of e-Delphi participants were asked if they agreed with the findings of Round One. Of the 31 panelists responses to the question posed above, a total of 16 respondents (51.61%) indicated that an organization’s capability (i.e., when an organization possesses the capability and resources to implement the change). Though a level of consensus was not achieve the question did capture a majority of the responses. Though this survey did strive for objectivity, the question may have lead survey respondents into giving a desired answered.

R2 Question 15: If you do not feel that an organization’s capabilities are the most important factor for an organization to prepare for an organizational change event, do you have any examples of other readiness factors?

A total of 23 (76.67%) of e-Delphi panelists did not provide an additional examples of readiness factors related to organizational change. However, 7 e-Delphi respondents indicated that “communication”, “need for change” and “organizational communication” as key organizational readiness factors. Similarly, other panelists mentioned that “change
understanding and preparation are pivotal; also having proper resources to direct the change/retrain personnel”. Another panelists suggested that the “vision/mission statement should be created first in order to have a "path" then capabilities can be factored in to preparing an organization for change”.

*R2 Question16: Please rate the listed organizational change readiness factors identified in Round One of the e-Delphi study as "Extremely Important," "Very Important," "Moderately important," "Slightly Important," or "Not at all Important" in preparing for organizational change:

Table XXXV. Rate Organizational Readiness Factors

<table>
<thead>
<tr>
<th>Question</th>
<th>Extremely Important</th>
<th>Very important</th>
<th>Moderately important</th>
<th>Slightly important</th>
<th>Not at all important</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Capabilities</td>
<td>56.6%</td>
<td>40.0%</td>
<td>3.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>30</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>43.3%</td>
<td>36.6%</td>
<td>20.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>30</td>
</tr>
<tr>
<td>Vision for Change</td>
<td>36.6%</td>
<td>43.3%</td>
<td>20.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>30</td>
</tr>
</tbody>
</table>

When e-Delphi participants were asked to rate the organizational change readiness factors identified in Round One, 17 panelists (56.67%) indicated that organizational capabilities is extremely important, followed by organizational culture (n=13; 43.33%) and vision for change (n=11; 36.67%). In the Likert scale, panelists also indicated that organizational capabilities (n=12; 40.00%), organizational culture (n=11; 36.67%) and vision for change (n=13; 43.33%) were very important readiness factors in preparing for organizational change.

*R2 Question17: Familiarity with the typical terminology used in the field of “change management” is expected – although with different interpretations and orientations (that's part of the focus of this research project) due to the diverse backgrounds of the participants. Please feel free to comment on any aspect of the questionnaire, terminology,
or approach, anywhere within this document (or in a separate email).

Table XXXVI. Questionnaire Comments

<table>
<thead>
<tr>
<th>Familiarity with the typical terminology used in the field of “change management”</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel that one of the questions was a bit leading</td>
</tr>
<tr>
<td>I wasn't familiar with most of the terms. Perhaps explain what &quot;change management&quot; means prior to the survey.</td>
</tr>
<tr>
<td>No comment</td>
</tr>
<tr>
<td>With different interpretations of the same terms, can consensus ever be truly achieved?</td>
</tr>
<tr>
<td>No comments at this time</td>
</tr>
</tbody>
</table>

Panelists were asked whether they felt the terminology within the survey was appropriate. Of the 35 Round Two participants, only 2 panelists indicated that they weren’t familiar with the terminology and could have benefited from greater explanation of the terms used within the survey instrument. Please see Table XXXVI above for free-text comments.

**R2 Question18: What are your comments about the application of the e-Delphi method to address organizational change management in military healthcare?**

Table XXXVII. Delphi Appropriateness

<table>
<thead>
<tr>
<th>Answer</th>
<th>%</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely appropriate</td>
<td>13.33%</td>
<td>4</td>
</tr>
<tr>
<td>Slightly appropriate</td>
<td>30.00%</td>
<td>9</td>
</tr>
<tr>
<td>Neither appropriate nor inappropriate</td>
<td>50.00%</td>
<td>15</td>
</tr>
<tr>
<td>Slightly inappropriate</td>
<td>6.67%</td>
<td>2</td>
</tr>
<tr>
<td>Extremely inappropriate</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>28</td>
</tr>
</tbody>
</table>
Round Two e-Delphi panelists participants were asked whether they felt the e-Delphi was an appropriate tool to address organizational change management in healthcare. The majority of responses indicated that panelists felt that it was neither appropriate nor inappropriate (n=15; 50.00%). Several panelists indicated that the methodology was extremely appropriate (n=4; 13.33%) or slightly appropriate (n=9; 30.00%).

**Participant Consistency.** During the course of the study, there was a decline in participants with each round. Each round of the study began with a one week deadline, with the exception of round one which, was allotted two weeks to include an adjustment period.

**Semi-Structured Interviews.**

This section of the Chapter presents findings from semi-structured interviews completed by telephone with key informants from several military healthcare facilities, which included 19 questions. The interview responses were analyzed with the assistance of a qualitative data analysis software program ATLAS.ti. The findings of the semi-structured interviews presented in this section discuss the salient themes that emerged during the analysis. A purposeful sampling method was used to select participants from various Air Force-based military healthcare organizations. Data were collected through 12 telephone interviews over a 4-week period with military healthcare personnel to explore perspectives of organizational change management activities within their respective healthcare facilities.

**Sample.** Participants were purposefully and deliberately selected based on their relationship with the programmatic change event, yielding 12 willing participants serving in a healthcare management capacity within 8 Air Force military treatment facilities. The sample population was of sufficient size and expertise to inform a purposeful understanding of the research problem and the phenomenon under investigation in this
research study (Creswell, 2007).

Data Collection. The data collection was based on the availability of consenting participants; data were collected through the utilization of semi-structured interviews conducted over a period of 4 weeks. All participants received personal contact, via telephone or e-mail, explaining the purpose of the proposed research study, the criteria for their selection, participant expectations, and written consent permission. Voluntary participation was expected in addition to the participants being informed of all potential risks. Consent was ensured via electronic signature on a CAC-enabled government computer (see Appendix D and G - Informed Consent Document). This systematically ensured that potential subjects were knowingly participating by their own volition, and also provided the IRB office with a means by which to monitor the voluntary participation. Prior to the interview, the respondent were informed of the research goals, processes, benefits, and risks.

The interviews were guided by an interview protocol (see Appendix #) consisting of 19 questions. Interviews lasted approximately 15 to 20 minutes. The telephone interviews asked a series of semi-structured questions focused on location-specific change management practices in an effort to determine whether or not the change readiness factors identified in the previous phases were present during a programmatic change.

The semi-structured interview questionnaire was comprised of nineteen questions. The interview questions were centered on four areas: change belief, organizational efficacy, personal efficacy, principal support and change valence. The results of the semi-structured interviews are presented in three categories: (1) participants experience - questions one, two, three and four; (2) the participants’ belief regarding successful organization change – questions five, six, seven and eight; (3) the participants’ perspective of organizational efficacy - questions nine, ten, eleven and twelve; (4) the participants’
perspective of personal efficacy – questions thirteen and fourteen; principal support – questions fifteen and sixteen; (5) the participants’ perspective on change valence – questions seventeen and eighteen; and (6) a concluding question.

A question-by-question discussion of the semi-structured interviews revealed interesting data.

Q #1. How many years have you worked at your current position?
Q #2. What is your role at your current position:
Q #3. What are your job functions or routine duties at your current position:
Q #4. What is your rank category (e.g., NCO, CGO, FGO, etc.):
Q #4a. What do you believe about the need to lower childhood blood lead screening action threshold to 5 micrograms per deciliter (μg/dL)?

**Demographics (Q1- Q4).** The sample in this study consisted of eight females (66.7% of those interviewed) and four males (33.3% of those interviewed). A total of 30 individuals were solicited to participate in the research study; however, the primary reason stated for nonparticipation was lack of time to devote to the study due to the demands of their jobs. Experience by survey participants ranged from less than one year of military service to over 15 years of service. Survey respondents served in various capacities related to the change event to include, Public Health (n=7), Bioenvironmental Engineering (n=3) and Pediatric Medicine (n=2). Military ranks of participants included, Non-Commissioned Officers (n=3), Company Grade Officers (n=3) and Field Grade Officers (n=6). Many of the survey respondents were serving in a ‘management position’ (n=4) and the majority considered their role within the organization as a ‘leader’ (n=8).

**Change Belief (Q4a-Q4d).** The first question regarding change belief was, “What do you believe about the need to lower childhood blood lead screening action threshold to 5 micrograms per deciliter (μg/dL)? According to respondents, change belief (the need to lower the threshold) played a significant role in preparing for and adopting the change to
lower the thresholds. Most indicated that the change would have likely have occurred even without organizational emphasis on ‘readiness’: “It is a beneficial step towards limiting exposure to potentially toxic levels of lead in children.” Or, “without the precautionary principle, children/populations deserve more specific and stricter screening guidelines to catch potential exposures prior to long term damage.” Many respondents indicated that at their installations lead “is a significant concern” with “active screening at every appointment.” Though the majority of the respondents indicated the belief (or need) to adopt the new standards, none actually indicated how that changed occurred or how their organizations implemented the change. “A respondent indicated that they are often “progressive in their approach to helping populations”; however, many indicated the need to “be in compliance with federal regulations.”

The second question regarding change belief was, “What difficulties do you foresee in adopting the new screening requirements?” One respondent indicated that “time”, “resources” and “organizational buy-in” were clear limitations to fully adopting the new screening requirements; however, another respondent indicated that this was “not a big issue” with “little resistance from key stakeholders (e.g., pediatric clinics; civil engineering; etc.).” Several respondents indicated that the anticipated rise in the number of LBL investigations may require a “compromise in mission requirements in other areas.” Clearly there is a wide range of belief regarding the perceived difficulties in adopting the screening requirements.

The last question for this section was, “What do you consider to be the main contribution to successful organizational change in your facility?” The majority of respondents indicated that organizational leadership was a significant contributor to successful organizational change. One respond indicated that “explaining why and how the change will be implemented at each level of the organization” is important. Several
respondents used phrases like, “leadership buy-in” and “leadership support” as succinct responses to the question. One survey respondent, however, suggested that an organization should be “proactive, anticipating and mitigating those limiting factors to change, with accountability and flexibility at every level of the organization.” Others indicated that (in the context of childhood lead) evidence-based/data-driven requirements is important to addressing organizational change.”

When respondents were asked, “What their organizations response was to the new blood lead screening standards?” many indicated that they merely implemented the standards without any specifics on how their organizations typically respond to these types of events. However, when asked “How did your organization prepare for the change?” about half indicated that there was “no preparation for the new change”. Yet, several indicated that there was at least some communication between the various medical community stakeholders and none to families or other installation partners (e.g., civil engineering, etc.).

**Organizational Efficacy (Q5a-Q5d).** The first question on organizational efficacy was, “What was your organizations response to the new blood lead screening standards?” A majority of respondents indicated that they implemented the childhood blood lead screening standards; however, no respondents provided any information on specifically how their organization accomplished this task. For example, one respondent simply indicated that even though they had “an increase in childhood screening for blood lead” they merely “adopted” the standards. Other respondents indicated working with several governing bodies within the military installation (e.g., Aerospace Medicine Council, Occupational and Environmental Health Working Group). These decision-making groups provided a level of leadership oversight regarding the changes. When asked, “How did your organization prepare for the change?” three respondents indicated that there was no
preparation for the change. Four survey respondents commented on education they provided to the clinical, laboratory and public health entities within the military treatment facility; however, no discussion was provided on education to families and other base agencies. One respondent did indicate that “communication from leadership was provide that change was coming with follow through on preparation by the various responsible parties involved with childhood lead screening.”

Another question was, “What is your organizations response to rapid-complex change, in general?” Interestingly, several survey respondents indicated that there organizations never prepare for change: “Implement it as quickly as possible and deal with issues that arise posthumously.” And, “we just adjust and work out the kinks as we try to maintain standards until the system is built to perform perfectly.” Also, a respondent indicated that sometimes the change being implemented is under-valued. Specifically, “people don’t quite understand complex and rapid change or the value; so when leadership tries best to push-out change it often is under-valued.”

The last question in this section was, “In this situation, can you provide an example of a technique you or your organization used to manage uncertain and changing work environments?” Half of the respondents said that “communication” is important to managing uncertain and changing work environments. Communication should be “timely” and “accurate,” as indicated by one respondent. Several respondents indicated that leadership buy-in was another important technique for managing change. In addition, organizational relationships appeared to be a significant technique for managing change. “Close relationships with organizational stakeholders is key…gain leadership buy-in to effectively manage change,” as cited by one respondent.

**Personal Efficacy (Q6a-6b).** Regarding personal efficacy, the next question was, “What do you believe about your organization’s capability to implement change like the
new childhood blood screening recommendations?” Every survey respondent indicated that there organization was fully capable of implemented change like the programmatic childhood blood lead screening recommendations. However, when asked, “Why do you believe that?” the responses were disparate. Several respondents indicated that they had both the capacity and resources available. However, two respondents indicated that there lack of experience in investigating childhood blood lead may preclude them from efficiently investigating an anticipated increase in volume.

**Principle Support (Q7a-Qb).** The first question in principle support was, “What do you believe about key individuals supporting or not supporting adopting childhood blood screening practices?” Nearly all of the respondents indicated that individuals would be inclined to be supportive because the change was evidence-based, supported by a federal agency and affected a special population. Therefore, the type of change event may drive how changes are prepared for and implemented within the military treatment facility. For example, a respondent indicated that within their organization, “all key organizational stakeholders within the MTF supported the change to lower the threshold values and actively identify at-risk children.” When asked, “Why do you believe that?” One respondent indicated that, “I believe that my unit views the health of children as critical to success.” Others indicated that communicating the “value of the change to leadership” is critical to leadership buy-in and generating support for a change event.

**Change Valence (Q8a-Q8b).** The last series of questions, addressing change valence, was, “What personally motivates you to adopt or not to adopt change within your organization?” Four survey respondents indicated that “if leadership fully describes the benefits and value of the change” they are more inclined to dedicate the necessary time and resources to maximize the change event. Others indicated that a program disruption (based on the change) in current processes would motivate them to adopt or not to adopt change
within their organization. Others indicated that “motivation” provided by leadership and managerial staff aides in successfully adopting and/or implementing change within their organization. When asked, “Why do you believe that?” respondents pointed to personal commitments to fulfilling organizational tasks and programmatic changes.

**Concluding Survey Question (Q9).** In concluding the survey, respondents were asked, “Is there anything else you would like to share regarding preparing for an organizational change event in military healthcare?” One respondent indicated that “complete, accurate and timely communication from top to bottom before the change comes is a huge factor in creating buy in.” And, “depending upon the significance of the change on current practices, it is key to provide sufficient time between the announcement of the change and the time by which it is to be implemented.” Another respondent indicated that “streamlined communication” would better improve change implementation in military healthcare.

**Qualitative Data Analysis Software.** The qualitative data analysis software ATLAS.ti was used in this study to analyze interviews for meaningful text-defined codes, quantify responses, and provide detailed interview descriptions to enhance data analysis and data reporting. All interview files were transcribed into a Word® format and then imported into ATLAS.ti and established as separate primary document files for enhanced data storage and management (which also allowed for easier coding).

**Theme Frequencies.** A formal analysis of word frequencies was conducted by generating a list of all the unique words in Atlas.ti using the Word Cloud function. This was a quick and easy way to look for themes within the interview documents. Respondents were more likely to use words like leadership \( n_{\text{leadership}} = 10 \), communication \( n_{\text{communication}} = 9 \) and resources \( n_{\text{resources}} = 7 \). There were no significant trends in frequency of responses based on gender, position, rank or duration of service. However, this information served as
clues for themes that was used in coding the text. The themes, frequencies and percentages are provided below in Table XXXVIII Note: The responses presented below were ‘binned’ into the thematic terms based on typologies described within this research project. Thus, once the word frequencies were produced they were categorized into the following themes.

Table XXXVIII. Theme Frequencies and Percentages

<table>
<thead>
<tr>
<th>Theme</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Leadership</td>
<td>10</td>
<td>21.7</td>
</tr>
<tr>
<td>Organizational Communication</td>
<td>9</td>
<td>19.6</td>
</tr>
<tr>
<td>Organizational Resources</td>
<td>7</td>
<td>15.2</td>
</tr>
<tr>
<td>Individual Efficacy</td>
<td>6</td>
<td>13.0</td>
</tr>
<tr>
<td>Change Valence</td>
<td>6</td>
<td>13.0</td>
</tr>
<tr>
<td>Mission-focused</td>
<td>5</td>
<td>10.9</td>
</tr>
<tr>
<td>Flexible Policies and Protocols</td>
<td>3</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**Thematic Coding.** Coding procedures within ATLAS.ti allowed for the organizing and sorting of terms and themes among interview documents using an open-coding format; several codes were generated inductively based on emergent information provided from the interview responses. The coding scheme was developed based on the research questions and the purpose of the study:

Q6. How do military healthcare professionals describe the change readiness factors that influence their decision making related to preparing for a programmatic change?

Q7. What is the relationship between these factors that influence individual readiness for change in organizations, focusing on variables at the individual, workplace, and organizational levels?

Coding was done by assigning key words to the text based on passively reviewing the interviews. Thus, all of the textual data (interview transcripts) systematically and was
reviewed to derive each of the core themes that remained constant across the interviews. A detailed network diagram was constructed within Atlas.ti by mapping key interview quotes to key codes (nodes) and arcs relating nodes in an upward or inverted rooted tree leading to the top level node representing the overarching or core theme itself.

Using the conceptual underpinnings as a guide, interview concepts were grouped into seven major themes shown in the following table (Table XXXIX). The information from the respondent’s interviews, supported the major themes. The following emergent codes were developed based on analyzing the interview data and the theme frequencies presented above with excerpts from the interviews.

Table XXXIX. Emergent Themes from Interviews with Military Healthcare Personnel

<table>
<thead>
<tr>
<th>Themes Identified</th>
<th>Interview Excerpts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Code 1: Organizational Leadership</strong></td>
<td>“…leadership buy-in…”</td>
</tr>
<tr>
<td></td>
<td>“…communication from leadership regarding the change…”</td>
</tr>
<tr>
<td></td>
<td>“Leadership support”</td>
</tr>
<tr>
<td></td>
<td>“…leadership fully describes the benefits and value of the change.”</td>
</tr>
<tr>
<td><strong>Code 2: Organizational Communication</strong></td>
<td>“…communication with stakeholders…”</td>
</tr>
<tr>
<td></td>
<td>“…communication from leadership regarding the change…”</td>
</tr>
<tr>
<td></td>
<td>“constant communication”</td>
</tr>
<tr>
<td></td>
<td>“…complete, accurate and timely communication…”</td>
</tr>
<tr>
<td><strong>Code 3: Organizational Resources</strong></td>
<td>“…military treatment facilities have the resources and capabilities to handle rapid change…”</td>
</tr>
<tr>
<td><strong>Code 4: Individual Efficacy</strong></td>
<td>“I believe that my unit views the health of children and facility credentialing as critical to success”</td>
</tr>
<tr>
<td></td>
<td>“avoiding the consequences of failing to adopt”</td>
</tr>
<tr>
<td><strong>Code 5: Change Valence</strong></td>
<td>“…to be progressive in our approach…”</td>
</tr>
<tr>
<td></td>
<td>“…organizational leaders see the value…”</td>
</tr>
</tbody>
</table>
After the interview data were collected, organized, and analyzed using Atlas.ti, several major themes emerged from the participant responses. Specifically, four significant themes, based upon the participant responses to the interview guide questions, emerged to support the research. The significant emergent themes in this study were: (1) organizational leadership, (2) organizational communication; (3) individual efficacy; and (4) change valence.

The theme of organizational leadership emerged within the entire interview document. The pathway to this theme began within the primary coding of search terms using leadership, which detailed a frequency 10 responses. Five of the twelve respondents indicated that leadership buy-in (or sponsorship) was a key component to preparing for an organizational change event. A specific respondent indicated that, “an organization looks to its leaders to be sponsors of change and to demonstrate why change is necessary.” Thus, a lack of effective change sponsorship from senior leaders can be an obstacle to successful change management. Another suggested that, “lack of leadership buy-in can result in slower progress toward results.” Also, “why a change is important from a leader at the top of their organization” is considered important by at least three respondents. While many interview participants said their senior leaders were generally willing to be sponsors of change, many did not fully comment on what that meant, specifically. Certainly, leadership sponsorship regarding a change event is perceived as a contributing factor to successful change management.
Summary. This chapter outlines the results of systematic literature review and quantitative meta-analysis illustrating the relationships between change efficacy, change understanding and organizational capabilities during change initiatives. The Delphi panelists provided very valuable and extensive feedback and refinements on the systematic literature review and quantitative meta-analysis gaining consensus on several factors that can be used by military healthcare organizations to implement organizational changes (change understanding and organizational capabilities). Semi-structured interviews and some previous research suggests that high perceptions of leadership provide some evidence that extends our understanding of military leadership and readiness for change for military healthcare. The next Chapter will provide discussion of the results in light of the study’s research questions, literature review and conceptual framework.
V: DISCUSSION

This Chapter synthesizes and discusses the results in light of the study’s research questions, literature review and conceptual framework. Furthermore, this Chapter will provide an interpretation and explanation of the dissertation results and analysis; discuss the significance of the results in relation to the research questions and how they apply in the context of military healthcare; discuss the relationship with previous research findings and the wider implications; and provide a critical evaluation of the study.

Summary of Key Findings. The purpose of this research was to identify the key antecedents and practices that have been tied to successful organizational change management, the influence of these variables on individuals' readiness, and their practical significance to the U.S. military healthcare system.

What this research found, through systematic review and a quantitative meta-analysis of several pooled research studies, change efficacy, change understanding and organizational capabilities were identified as key factors for change readiness. The e-Delphi panelists indicated that change understanding and organizational capabilities can influence change readiness within an organization. The key informant interviews with key organizational stakeholders, demonstrated a clear preference for leadership support and organizational communication when preparing for and implementing change. These findings suggest, that though there was some converging evidence with the use of multiple sources of data on the antecedents to successful organizational change management germane to military healthcare, there are two broad conclusions that can be drawn from this research study.

First, intangible change readiness factors such as change efficacy, change understanding, and change leadership can influence the creation of change readiness and change implementation. Therefore, by increasing the degree to which military healthcare
employees understand the task demands (Weiner, 2009) through support of their senior military leaders, the personal capabilities and resources they have available to accomplish the task, and the need for the change that is going to be occurring, there is a shared sense that complex change can be accomplished. That is, these organizational readiness-enhancing strategies are all important antecedents of readiness for change within the context of military healthcare. Therefore, military healthcare leaders and change agents can focus on developing and using implementation strategies that incorporate these factors that contribute to an effective change process based on local needs opportunities and constraints of the healthcare organization (Eby et al., 2000; Weiner, 2009).

Second, the effects and relationships between the change readiness factors are multifactorial and most likely interactive. It seems unlikely that there is one best way to achieve change readiness within a military healthcare organization. It seems unlikely that all the above-mentioned factors are equally effective. Yet, the prerequisites to successful organizational change management are likely dependent on a number of contextual factors. Therefore, what works in one context may not work in another. As described below, an important next step is to build upon the considerable progress that has been made within this research project and other change management research by iterative, interactive investigation to consider the contextual factors that affect the planning, implementation and evaluation of organizational change management activities across the military healthcare enterprise.

For the Air Force, these results suggests that the use of these change management strategies has the potential benefit of greater implementation outcomes. Of course, effective change can occur under conditions of low readiness, but this study and the published research indicates that the probability of success is increased when the above-mentioned factors are present.
**General Discussion.** Each data collection method addressed a different aspect of the research whereby the data collected in one phase sequentially contributed to the data collected in the next. The data from the systematic literature review and quantitative meta-analysis quantified the empirical research through well-established meta-analytic practices (in addition to a traditional narrative review of the literature) to capture the extent to which these change readiness factors have been identified in the literature. The Delphi identified several change readiness factors that were favorably rated by panel members attaining consensus by a partial majority as to their importance and applicability for change management within the military healthcare system. The questions asked in the e-Delphi were similar to those asked using the semi-structured interviews. Interviews with military healthcare personnel from various military treatment facilities permitted discussion about change management in military clinics and the approach of upper-management to deal with such issues.

Integration of methodologies and data overlapped each other somewhat, being complimentary at times, contrary at others. This had an effect of balancing each method out giving a richer truer account, increasing the credibility and validity of the research findings. For example, the themes and responses within the semi-structured interviews considered most significant were not as remarkable from the Delphi panel responses. Delphi panelists responses were more in-line with information discovered during the systematic literature review and quantitative meta-analysis. However, meta-analyzed data was used to build the survey tools for the Delphi panels. Perhaps the research methodologies and the way that participants were able to provide information, solicited different responses. Or, perhaps the processes by which the methods (or data) were mixed to investigate the phenomenon were not adequate. Yet, the data achieved by each methodology brought into relationship with each other provides for a more enriching description of change management practices.
across the military healthcare system and a baseline for future research opportunities.

Findings within the systematic literature review and quantitative meta-analysis are broadly in line with articles published on change management (Cunningham et al., 2002; Weiner et al., 2008; Eby et al., 2004). Principal support ($r=0.7801$, 95% CI [0.78, 1]) and change commitment ($r=0.7506$, 95% CI [0.75, 1.0]) were strongly correlated, and were significant within a 95% confidence interval. These findings are consistent with a previous meta-analytic approach by Burris (2008), change commitment was shown to beneficially influence an individual’s readiness to change. A sense of change commitment and change efficacy, in the form of expectancy (efforts will lead to successful accomplishment), is a central belief of most motivation theories (Bandura and Adams, 1977). To be motivated to support a change, individuals must not only feel that the change is appropriate but also that success is most likely possible. Therefore, based on the systematic review and quantitative meta-analysis, that information from the healthcare environment may have a significant impact on individuals’ perceptions of organizational readiness for change. If the proposed change has already been implemented successfully in similar organizations and this information has reached the appropriate individuals, one could conclude that they will see their organization as ready for a successful change implementation.

Other important findings of this study lie within the intermediate findings. Change participation ($r=0.73$, 95% CI [0.81, 1]), change efficacy ($r=0.5206$, 95% CI [0.50, 0.65]), change understanding ($r=0.5404$, 95% CI [0.49, 0.72]), leadership sponsorship ($r=0.566$, 95% CI [0.57, 0.69]), change communication ($r=0.4776$, 95% CI [0.38, 0.58]), supervisor and peer relationships ($r=0.27$, 95% CI [0.22, 0.33]) and trust in leadership ($r=0.432$, 95% CI [0.41, 0.52]) reported intermediate correlations. Though these findings were not strongly correlated they support meta-analytic findings reported by Welborn (2001); whereas, change participation and change communication were identified as key facilitation
strategies for implementing organizational changes. Although these findings are generally compatible with previous research, findings within the systematic literature review and quantitative analysis were not entirely consistent with Welborne (2001), where only participation and communication were identified as significant facilitation strategies based on evaluation of 24 empirical studies. According to his meta-analytic research both participation and communication strategies resulted in a positive impact on job satisfaction, organizational commitment, change adoption and intent to remain.

Of the 452 solicited to participate in the web-based modified Delphi study, 45 panels members (9.95%) completed the first round of the Delphi and 35 (7.74%) completed the second round. Data collected in the systematic literature review and quantitative meta-analysis contributed to the survey design and data collection in this phase of research. The research design in this context in that it gained a consensus among data analysis inductively building from particulars to general themes (Creswell, 2007). Based on these results, this researcher was able to reassess the theoretical observations from the literature and offer propositions on expected relationships between factors in affecting change readiness in the military healthcare system.

The major themes emerging from the rounds of the Delphi study include change understanding and organizational capabilities of which had a perceived influence on change readiness. Findings within the modified e-Delphi are consistent with systematic literature review and quantitative meta-analysis described above. Delphi panelists as indicated that the greatest barriers to preparing for organizational change within military healthcare are a lack of an effective communication strategy (n=22; 66.67%), employee resistance or skepticism (n=20; 60.61%) and uncertain roles and/or lack of accountability (n=20; 60.61%).

Several themes to emerge from my analysis of the semi-structured interviews with
key informants from several participating military healthcare facilities was that key leadership traits such as motivation, communication and support were perceived as integral to effective change management within military healthcare. Findings within the semi-structured interviews are consistent with other researchers such as Caldwell et al. (2008) that described the importance of leadership strategies and change readiness in implementing strategic change in a healthcare system. Lyons (2009) examined the link between change leadership and change readiness using a US military sample. Research has established a definitive connection between leadership and the effectiveness of change initiatives within an organization (Lyons, 2009). Therefore, the interviews and some previous research suggest that when military healthcare organizations have support from military leaders, change implementation is enhanced. However, the specific traits that leaders should exhibit were not addressed within this research and should be considered for few opportunistic studies on change management within this context.

Although these findings are generally compatible with change management researchers there are several areas in which they differ from the previous phases of research with this study. The prominence of the traits identified in the semi-structured interviews were not as transparent in the systematic literature review, quantitative-meta-analysis and Delphi results. There are apparent discordant views about the belief about readiness for change (semi-structured interviews) and what the empiric literature suggests. Military healthcare personnel may not have full knowledge regarding those practices and strategies within the published literature on those factors that facilitate effective readiness for change. This highlights an opportunity for education on how to effectively prepare for and implement change. Future studies should evaluate the association between perceived and objective measures of readiness for change.

**Limitations.** There are several limitations in this study regarding transferability and
generalizability of results that afford some attention.

The purpose of the quantitative meta-analysis was to provide a structured and standardized review of previous research on change readiness, combining the results from various studies on the topic to detect a statistically significant difference in effect size. In fact, the systematic review and meta-analytic methods were an attractive option to summarize the research given its objectivity, transparency and reproducibility of findings. However, similar to a narrative literature review (which is selective in the studies included and subjective in the weighting of the studies included) there are concerns of study heterogeneity, selection bias and publication bias. Of course there are many other forms of bias associated with meta-analytic reviews described by Rothstein, Sutton and Borenstein (2005) - language bias (selective inclusion of studies published in English); availability bias (selective inclusion of studies that are easily accessible to the researcher); familiarity bias (selective inclusion of studies only from one’s own discipline, and outcome bias (selective reporting by the author of a primary study of some outcomes but not others, depending on the direction and statistical significance of the results); however, these forms of bias lead to the same consequence referred to as publication bias (Rothstein, Sutton and Borenstein, 2005) that is addressed below.

In order to minimize publication bias and integrity of results, this study took a focused approach to examine a specific area of research and in so doing has minimized the above-mentioned criticisms as a major concern to the greatest extent possible. First, rules for inclusion and/or exclusion of studies were well-formulated in advance of the search. Therefore, in an effort to create consistent and generalizable information, all the steps were clearly described within this research (using well-established meta-analytic methods) so that the process is transparent. Second, funnel plots were used as a graphical tool to for the investigation of publication bias. Third, related thesis and dissertation work (and other grey
literature publications) were compared to the findings of the quantitative meta-analysis. However, despite these efforts to minimize publication bias, it is likely that published studies will have more ‘positive’ results (larger effect sizes) than unpublished studies. Therefore, if systematic reviews include only published studies, this will result in an inflated impression of the literature (and in meta-analysis, an over-estimation of population effect sizes) (Lipsey & Wilson, 2001). A biased impression of the published literature could potentially lead to inappropriate conclusions being drawn, with potentially serious practical implications within the research and decision-making (Lipsey & Wilson, 2001).

In addition, within the meta-analyzed literature there exists variations in patient characteristics, due either to variations in entrance criteria or just to the populations accessed by the study. However, this provides reassurance that the effect reported is not limited to a narrowly defined population. Studies included for meta-analytic review were reviewed to ensure sufficient homogeneous in terms of participants, statistical analysis in order to provide a meaningful summary. However, reports of studies often failed to provide sufficient information for computing effect size estimates. In some cases confident statements about the correlation coefficients could not be made because the set of studies was not homogeneous and the number of studies was too small.

Qualitative research is often criticized as being biased, small in sample size, subjective and lacking scientific rigor (Anderson, 2010). Therefore, integration of qualitative and quantitative methodologies was a key component of improving the quality and validity of the research findings. However, a number of limitations will be described regarding the qualitative methods. Although the sampling methods may have limited the generalizability of these findings, participants were selected from several different organizations and included a variety of individuals with different positions and in different military healthcare career fields. Throughout the Delphi literature, the criteria for selecting
the appropriate number of Delphi participants is unclear. What constitutes an optimal number of subjects in a Delphi study never reaches a consensus in the literature to achieve stability of results (Hsu and Sandford, 2007). The sample size in this Delphi study was situation specific based on a convenience sample of willing military healthcare personnel purposefully selected to apply their knowledge and experience in change management. Though a Delphi study does not depend on a statistical sample that attempts to be representative of any population, the sampling methods may have limited the generalizability of these findings. However, based on responses from the two-round Delphi panel members, the results yielded from the study appeared to reveal stable and consistent results with consensus achieved on several factors. Similarly, as a result of the small sample size of the semi-structured interviews, results may not be generalizable to other research settings. Though qualitative research often necessitates having smaller sample sizes as a result of more detailed investigation, the characteristics of the participants may not have captured and/or be representative opinions of the all military healthcare personnel.

The wording of a survey question is extremely important. Researchers strive for objectivity in surveys; in designing the survey instrument careful consideration was given in designing questions that do not lead the respondent into giving a desired answer. In addition, research questions were evaluated through a pilot study with a panel of experienced epidemiologists employed in the military healthcare arena. Unfortunately, the question wording (in particular the change management terminology) should have been more readily defined, as described by a few survey respondents. In retrospect, an explanation of change management terms should have been included at the beginning of the Delphi Round as to further explain the change management terms within the survey. For example, terms like “readiness” have very specific connotations in the context of the military. Many investigators have confirmed that slight changes in the way questions are
worded can have a significant impact on how people respond. In addition, the
programmatic change event that was incorporated into the semi-structured interviews was
somewhat outdated; therefore, it was difficult to draw individuals into an event that they
could extrapolate change management practices because of the relevancy. However, the
semi-structured interviews were designed in a way that still allowed exploration in to more
recent change events.

Though the semi-structured telephone interviews were a good alternative to
traditional face-to-face interviews given the wide geographic distribution of participants, it
was difficult to capture nonverbal cues and visual aids which could affect interviewee
response quality. However, despite the challenges in capturing nonverbal cues, the
telephone interviewing was ideally suited for many of the healthcare respondents given the
geographic challenges and to accommodate busy schedules.

**Recommendations for Future Studies.** There are many areas of research that are
imperative for this work to continue moving forward. One avenue for further study would
be research into the specific leadership strategies that facilitate change readiness in a US
military healthcare organization. Research has established a definitive connection between
leadership and the effectiveness of change initiatives within an organization (Lyons, 2009).
The Delphi panelists and interview respondents indicated the significance of *change
leadership* in facilitating organizational change readiness; however, this research did not
distinguish between specific leadership behaviors and traits (e.g., transformational,
transactional, etc.) that may be most positively associated with effective organizational
change readiness. Past research has identified several leadership behaviors as important
elements of organizational effectiveness (as described by Bass, 1990 and Lyons, 2009).
Specifically, Lyons et al. (2009) studied the impact of leadership on change readiness in
the US military. These findings suggested that change leadership from senior leaders and
general leadership behaviors are unique predictors among enlisted personnel (and not immediate supervisors). Therefore, future research may consider focusing on the relationship between senior leaders and subordinates.

Another recommendation would be a study that included a larger group of both military and non-military healthcare personnel to determine if there is a difference in their key leadership traits. This would provide a broader point of view and prompt discussion on the understanding the unique capabilities that US military personnel bring into higher levels of leadership. Furthermore, future studies should explore new settings, investigating the Service cultures and behavioral norms of each branch of the military that may influence or leverage organizational change readiness. Organizational size and type, change type and context could greatly affect the change outcomes on the study.
VI. CONCLUSION

Change readiness has been discussed by several researchers as an antecedent to effective organizational change initiatives (Lyons et al., 2009; Armenakis et al., 1993). When change readiness is incorporated into the change management process, organizational change initiatives have higher probabilities of implementation success (Lyons, 2009; Weiner et al., 2012). Change management researchers are exploring those strategies that have the greatest likelihood of affecting the outcomes of organizational change efforts. By taking advantage of those factors, leadership practices and strategies that are seen as antecedents for successful organizational change, military healthcare leaders may be better able to more fully prepare for and successfully implement change within their organizations. Therefore, future research should continue to examine change readiness during change initiatives and possible approaches to a continuous change readiness approach.

This study provides an initial attempt to understand the antecedents of readiness for change within the US military healthcare system. In systematically and quantitatively summarizing the literature on organizational change readiness, the systematic literature review and quantitative meta-analysis summarize, integrate, and extend the literature on readiness for change. In doing so, this research provides the best evidence of the empirical literature, illustrating the relationships between change efficacy, change understanding and organizational capabilities during change initiatives. The Delphi panelists provided very valuable and extensive feedback and refinements on the systematic literature review and quantitative meta-analysis gaining consensus on several factors that can be used by military healthcare organizations to implement organizational changes (change understanding and organizational capabilities). Semi-structured interviews and some previous research suggest that high perceptions of leadership provide some evidence that extends our
understanding of military leadership and readiness for change for military healthcare. As military healthcare organizations continue to institute rapid-complex change in their efforts to remain competitive and effective, understanding the factors contributing to a successful change process represents an important opportunity for continued research.
APPENDICES

Appendix A: Search Strategy Flowchart

Studies identified through database sources and other sources (n=1,951)

Reviewed Titles and Abstracts of Studies (n=78 “possible articles”)

Excluded (n=1873), did not meet inclusion criteria

Removed Duplicate Studies (n=5)

Full text analysis of “possible” studies (n=73)

Excluded (n=), did not meet inclusion criteria

Final Total (n=59)

Studies included in meta-analysis (n=17)
Appendix B: The Modified Delphi study implementation process

Progress to Delphi Round 2
Review of the returns from Round 1.
Build Questionnaire 2.
Proceed to Round 2.

Delphi Round 2
Sample Size: 35
Objective: To inform the participants of the results from Round 1; reach a consensus in the rating of the relevant change readiness factors within each panel
Reminder sent via e-mail ten days after the second questionnaire was sent

Analysis of the Delphi study results
Analysis of the results in categories of desirability and feasibility
Consideration and analysis of the qualitative feedback, i.e. the comments of the participants
Analysis of the impact of the results of the survey on the proposed change readiness framework
Appendix C: Letter of Selection and Consent to Delphi Panelists

Participant Recruitment Letter/E-mail

Dear colleagues,

My name is Danny Dacev, and I am a doctoral student at the University of Illinois, Chicago Doctor of Public Health, Leadership program. I am currently serving as a Public Health Consultant at the United States Air Force School of Aerospace Medicine at Wright-Patterson, AFB, Ohio. The purpose of this e-mail is to ask you to participate in my dissertation research project.

The primary goal of this project is to examine how change readiness factors promote successful change implementation within a military healthcare setting. A key component of an organization’s ability to successfully implement change appears to be associated with the readiness-level of the organization and its employees. If that is true, more fully delineating the factors that increase readiness to change and identifying means of influencing them is paramount to developing and implementing successful change initiatives within military healthcare. This project seeks to provide a clear and coherent framework of those change readiness factors that have been tied to successful change implementation, such that military healthcare organizations are able to respond to and adapt to change initiatives successfully.

I am seeking change management experts within the military healthcare system to participate in a two-round modified Delphi study to utilize and generate expert consensus and opinions among factors that facilitate change readiness. Participants will rate and provide written responses to questions relevant to the research study.

The modified Delphi study will consist of two rounds of questionnaires. During the two rounds, experts will consist of rating change readiness factors identified in the change management literature. In addition, you will be asked to offer a brief explanation (in two or three sentences for each change readiness factor) of the importance of each factor you have listed. These explanations will serve the dual purpose of providing a qualitative empirical basis for answering the study research question and help to understand and reconcile the various experts’ change readiness factors. Moreover, the explanations will help to classify the factors into categories and will provide clarification in consolidating the factors.

Completion of each questionnaire should take approximately twenty minutes. Participants will receive one week to provide responses in each round.

Participation in this research project is strictly voluntary and can be terminated at any time without penalty. Responses to the questionnaire will be kept confidential and you will not be named in the research findings. Once the project has been completed, the study findings will be shared.

Thank you, in advance, for your consideration in participating in this research study.
Appendix D: Informed Consent

Dear colleagues,

I am a student at the University of Illinois, Chicago working on a Doctorate of Public Health in Leadership. I am conducting a research study entitled Factors Influencing Readiness for Change In a Military Healthcare Environment. I am inviting you to participate in a mixed method research approach using a modified Delphi technique to find consensus among experts on how change readiness factors promote successful change implementation within a military healthcare setting.

The purpose of this informed consent is to clearly outline how your personal security and information received during this study will be protected, stored and discarded. Furthermore, it is to be understood through this consent form that you have no obligation to continue the study once you begin and that this educational cooperation is strictly on a volunteer basis. The research will begin with a stratified selection of military healthcare personnel, change experts from three military installations. I will be communicating beforehand to a predetermined selection of nominators who also will be assisting me through their questionnaire and participation in this research.

The modified Delphi survey will include a mixed-method survey design, whereby participants will receive their questionnaires by e-mail via a google survey. The modified Delphi technique being used is designed to obtain consensus among experts in a mixed-method design and is based on (a) their knowledge of and experience in managing change in the military and (b) experience in implementing change initiatives in healthcare. The primary goal of this case study is to examine how change readiness factors promote successful change implementation within a military healthcare setting. A key component of the organization’s ability to successfully implement change appears to be associated with the readiness-level of the organization and its employees (Armenakis & Harris, 2002). If that is true, more fully delineating the factors that increase readiness to change and identifying means of influencing them is paramount to developing and implementing successful change initiatives within military healthcare. This project seeks to provide a clear and coherent framework of those change readiness factors that have been tied to successful change implementation, such that military healthcare organizations are able to respond to and adapt to change initiatives successfully.

This study will be conducted by me as partial fulfillment of the requirements for receiving my DrPH at the University of Illinois, Chicago under the direction of Dr. Michael Petros, my committee chair.

There will be two rounds of participation with each round taking approximately twenty minutes. The time frame for participation is as follows:

XXXXXX—Round I
XXXXXX—Round II
Your participation will involve answering questions through a modified Delphi method of questionnaires to gain consensus on change readiness factors appropriate to the military healthcare environment. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. The results of the research study may be published, but your name will not be used, and your results will be maintained in confidence.

In round one, participants will be asked to rate the listed change readiness factors only as "Important," "Somewhat important," or "Not important." Because the purpose of the study is largely exploratory, participants will be prompted to list additional issues or factors they feel are important to change readiness. At the end, an open-ended section will ask participants, "What other characteristics of change readiness might be considered?" In addition, a brief, one-sentence explanation of each factor, an explanatory glossary will be included to define and explain each factor. These explanations will serve the dual purpose of providing a qualitative empirical basis for answering the above research question and help to understand and reconcile the various experts’ factors. Moreover, the explanations will help to classify the factors into categories and will provide clarification for the next questionnaire, which consolidates the factors.

In round two, the goal is to reach a consensus in the rating of the relevant change readiness factors within each panel. In addition to narrowing down the list of change readiness factors, this phase seeks to understand the rating of importance of the factors based on the differing perspectives of various participant groups.

A second questionnaire will be distributed to the participants in order to validate the consolidated lists of readiness factors. In addition, experts will be asked to offer a brief explanation (in two or three sentences for each change readiness factor) of the importance of each factor they have listed.

In this research, there are no foreseeable risks to you. Although there may be no direct benefit to you, given the substantial investment committed to change efforts in the military, the development of a stronger knowledge base about readiness for change should strengthen military healthcare organizational efforts to implement change.

If you have any questions concerning the research study, please call me at 571-364-2187.

Using the modified Delphi method is confidential and anonymous and your information will not be shared with others in the group.

Storage of Confidential Research Materials: All original formats (i.e., consent forms, demographic data, matrices, transcripts, and disks) gained from the four Air Force medical treatment facilities will be placed in a sealed envelope, marked with the completion date of the study and with an ending date for storage. A second seal will be placed over the flap of the envelope, signed, and dated by the researcher.
Length of Storage and the Manner of Destruction at the end of the Storage Period: Upon completion of the study, all of the original consent forms, demographic data forms, matrices, transcripts and disks will be destroyed.

Intra-study Confidentiality Agreements: The study will incorporate a modified Delphi technique, which will involve sending questionnaires and soliciting information through a pre-formulated, broad range of problems outlined and given only to those experts who have been invited to participate. Because a modified Delphi technique is a method used to gain consensus anonymously from experts in two rounds, the promise to maintain confidentiality includes implementing ethical procedures and safeguarding the rights of the participants.
Appendix E. Modified Delphi Questionnaire Part 1

Dear ________________,

Thank you very much for agreeing to participate in this research study titled "Factors Influencing Readiness for Change in a Military Healthcare Environment.” Below is the link to round one of the questionnaires. Round one consists of four questions and will be open for responses from now until TIME and DATE.

Instructions:

Please respond to this questionnaire as completely as possible. This questionnaire is part of a doctoral research project, being conducted as a modified Delphi study in two rounds (with feedback to participants after each round). It is designed to: identify generate consensus and collect information on change readiness in the military, and make a detailed list of change readiness factors. Please answer all questions as completely as possible. Feel free to add any additional comments that you feel would add to the understanding of change readiness in the military healthcare system.

Link: http://www.google.com/insights/consumersurveys/home

Please complete the questionnaires before DATE.

For questions, please contact Danny Dacey by email at dcdacey@yahoo.com or my doctoral advisor (Dr. Michael Petros) at mpetro6@uic.edu.

Questions:
General and demographic questions.

What best describes the size of the Medical Treatment Facility you are currently assigned to with respect to number of personnel assigned?

Under 10
10 to 49
50 to 99
100 to 499
500 and over

Please select your current job expertise (labeled as Air Force Specialty Code or AFSC):

4A0X1 Health Services Management
4A1X1 Medical Material Specialist
4A2X1 Biomedical Equip Tech
4B0X1 Bioenvironmental Engineering
4C0X1 Mental Health Service
How many years of Air Force experience do you have:

Less than 5, 5-10, 10-15, 15-20, over 20 years

What is your military classification?

Airmen, Non-commissioned Officer, Senior Non-commissioned Officer, Company Grade Officer, Field Grade Officer, Federal Civilian Employee

Change Readiness Factors.

Select the top three change readiness factors that you feel is most important in preparing for a change event within military health care:

Change Understanding
Appropriateness
Change Participation
Change Willingness
Change Efficacy
Principal Support
Change Valence
Leadership Sponsorship
Change Communication
Organizational Culture
Implementation Climate
Capabilities
Supervisor and Peer Relationships
Trust in Peers
Trust in Leadership
Vision for Change
Job Satisfaction
Motivation
Please rate the listed change readiness factors identified in the literature as "Important," "Somewhat important," or "Not important" to preparing for a change in the military:

Change Understanding
Appropriateness
Change Participation
Change Willingness
Change Efficacy
Principal Support
Change Valence
Leadership Sponsorship
Change Communication
Organizational Culture
Implementation Climate
Capabilities
Supervisor and Peer Relationships
Trust in Peers
Trust in Leadership
Vision for Change
Job Satisfaction
Motivation

What other characteristics of change readiness might be considered in preparing for organizational change in military health care setting?

What other “best practices” would you suggest when confronting and preparing for organizational change within your organization?

What are the specific leadership traits you feel are important for a leader to possess in preparing for organizational change within your workplace?

Ingenuity
Motivation
Compassion
Drive
Ingenuity
Mission-focused
People-focused
Understanding
Inclusion
Forward Thinking
Adaptability
Appendix F. Modified Delphi Questionnaire Part 2

Dear ______________,

Thank you very much for agreeing to participate in this research study titled "Factors Influencing Readiness for Change in a Military Healthcare Environment.” Below is the link to round two of the questionnaires. Round two consists of reaching a consensus on the rating of the relevant change readiness factors that represent all of the participants’ responses to the round one question. This should take thirty minutes or less to complete. Space is provided for any additional comments you may have. Round two will be open for responses from now until DATE and TIME.

Instructions:

Please respond to this questionnaire as completely as possible. This questionnaire is part of a doctoral research project, being conducted as a modified Delphi study in two rounds (with feedback to participants after each round). It is designed to: identify generate consensus and collect information on change readiness in the military, and make a detailed list of change readiness factors. Please answer all questions as completely as possible. Feel free to add any additional comments that you feel would add to the understanding of change readiness in the military healthcare system.

Link: http://www.google.com/insights/consumersurveys/home

Please complete the questionnaires before DATE.

For questions, please contact Danny Dacey by email at dcdacey@yahoo.com or my doctoral advisor (Dr. Michael Petros) at mpetro6@uic.edu.

Questions:

1.) Please select (not rate) at least *** factors on each list that you consider important to change readiness in the military healthcare system.

2.) Please offer a brief explanation (in two or three sentences for each change readiness factor) of the importance of each factor you have listed. These explanations will serve the dual purpose of providing a qualitative empirical basis for answering the study research question and help to understand and reconcile the various factors.
Appendix G. Informed Consent Form

Information and Purpose: The interview, for which you are being asked to participate in, is a part of a research study that is focused on examining how change readiness factors promote successful change implementation within a military healthcare setting. This project seeks to understand that practices that organizational actors engage in to enact, construct and advance readiness for change processes in the context of a change event. Specifically, this interview will focus on the CDC’s ACCLPP recommendations in 2012 that removed the term “level of concern” for BLL >10ug/dL and established a new “reference level” of >5 ug/dL due to evidence supporting the negative health effects of lead exposure at lower levels. Through this change event, this research hopes to provide a clear and coherent framework of those change readiness factors that have been tied to successful change implementation, such that military healthcare organizations are able to respond to and adapt to change initiatives successfully.

Your Participation: Your participation in this study will consist of a semi-structured interview lasting approximately forty five minutes. You will be asked a series of questions about the childhood blood lead screening program. You are not required to answer the questions. You may pass on any question that makes you feel uncomfortable. At any time you may notify the researcher that you would like to stop the interview and your participation in the study. There is no penalty for discontinuing participation.

Benefits and Risks: The benefit of your participation is to contribute to a stronger knowledge base about readiness for change that should strengthen military healthcare organizational efforts to implement changes and, ultimately, improve healthcare outcomes. There are no risks associated with participating in the study.

Confidentiality: The interview will be tape recorded; however, your name will not be recorded on the tape. Your name and identifying information will not be associated with any part of the written report of the research. All of your information and interview responses will be kept confidential. The researcher will not share your individual responses with anyone.

If you have any questions or concerns, please contact the researcher Danny Dacey at dcdacey@yahoo.com.

By signing below I acknowledge that I have read and understand the above information. I am aware that I can discontinue my participation in the study at any time.

Signature of Interviewee________________________ Date________________

Signature of Interviewer________________________ Date________________
[first name of participant], thank you for your participation today. My name is Danny Dacey and I am a graduate student at the University of Illinois, Chicago conducting an interview on the practices that organizational actors engage in to enact, construct and advance readiness for change processes in the context of a change event. This research is in partial fulfillment of the requirements for the degree of Doctorate in Public Health. This interview will take about 45 minutes and will include several questions regarding your experiences in preparing for change events (i.e., change readiness) in the context of a specific organizational change; specifically, the actions your organization engaged in for a specific change - the new ACLPP childhood blood lead screening recommendations for children.

I would like your permission to tape record this interview, so I may accurately document the information you convey. If at any time during the interview you wish to discontinue the use of the recorder or the interview itself, please feel free to let me know. All of your responses are confidential. Your responses will remain confidential and will be used to develop a better understanding of how you view change readiness within your organization and what might influence it.

At this time I would like to remind you of your written consent to participate in this study. I am the responsible investigator, specifying your participation in the research project: Factors Influencing Readiness for Change in a Military Healthcare Environment. You and I have both signed and dated each copy, certifying that we agree to continue this interview. You will receive one copy and I will keep the other under lock and key, separate from your reported responses. Thank you.

Your participation in this interview is completely voluntary. If at any time you need to stop, take a break, please let me know. You may also withdraw your participation at any time without consequence. Do you have any questions or concerns before we begin? Then with your permission we will begin the interview.

Demographic Questions

Q #1. How many years have you worked at__________?
Q #2. What is your role or position at_____________?
Q #3. What are your job functions or duties at__________?

Primary Interview Question - Change Belief

Q #4a. What do you believe about the need to lower childhood blood lead screening action threshold?

Q #4b. Why do you believe that?

Q #4c. What difficulties do you foresee in adopting the new screening requirements?

Q #4d. What do you consider to be the main contribution to successful organizational change in your facility?

Primary Interview Question – Organizational Efficacy

157
Q #5a. What was your organizations response to the new blood lead screening standards?

Q#5b. How did the organization prepare for the change?

Q#5c. What is your organizations response to rapid-complex change, in general?

Q#5d. In this situation, can you provide an example of a technique you or your organization used to manage uncertain and changing work environments?

Primary Interview Question – Personal Efficacy

Q # 6a. What do you believe about your organization’s capability to implement change like the new ACLPP recommendations?

Q #6b. Why do you believe that?

Primary Interview Question - Principal Support

Q #7a. What do you believe about key individuals supporting or not supporting adopting childhood blood screening practices?

Q #7b. Why do you believe that?

Primary Interview Question - Valence

Q #8a. What personally motivates you to adopt or not to adopt change within your organization?

Q #8b. Why do you believe that?

Concluding Interview Question

Q #9. Before we conclude this interview, is there anything else you would like to share?

*** If participant wishes to discontinue study, ask if they would be willing to share why:
MEMORANDUM FOR USAFSAM/PHR (MAJOR DANNY DACEY)

FROM: 711 HPW/IR

SUBJECT: IRB Approval for the Use of Human Volunteers in Research

1. Protocol title: Factors Influencing Readiness for Change in a Military Healthcare Environment
2. Protocol number: FWR20150102H
3. Protocol version: 1.00
4. Risk: Minimal
5. Approval date: 27 August 2015
6. Expiration date: 26 August 2016
7. Scheduled renewal date: 27 July 2016
8. Type of review: Initial – Expedited
9. Assurance Number and Expiration Date: AFRL DoD Assurance 50002 (6 March 2017)
10. CITI Training: Completed

11. The above protocol has been reviewed and approved by the AFRL IRB via expedited review procedures. All requirements, as set by the IRB and its legal counsel, have been fully complied with. The research has been determined to represent minimal risk to participants.

12. The purpose of the study is to examine how change readiness factors promote successful change implementation within a military health care setting and to provide a clear framework of those factors that have been tied to successful change implementation. Specifically, this study has three objectives: (1) evaluate factors associated with readiness for change based on systematic review of the literature and quantitative meta-analysis; (2) utilize a modified Delphi technique to gain consensus on the change readiness factors discovered during the systematic literature review and meta-analysis with practical discussion of those factors most pertinent to the military healthcare system; and (3) evaluate and describe the relationship(s) among factors that influence readiness for change by conducting semi-structured interviews within several military health care facilities addressing a planned change effort.
13. This protocol meets the criteria for expedited review in accordance with 32 CFR 219.110 (b)(1) and U.S. Department of Health and Human Services Office of Human Research Protections category 7: Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

12. HIPAA authorization is not required, because no HIPAA-protected information will be recorded in the execution of this protocol.

13. FDA research regulations do not apply, because no devices are used in this study.

14. This approval applies only to the requirements of 32 CFR 219, DoDI 3216.02 AFI 40-402, and related human research subject regulations. If this project is a survey, attitude or opinion poll, questionnaire or interview, consult AFI 38-501, AF Survey Program, for further guidance. Headquarters AFPC/DPSAS is the final approval authority for conducting attitude and opinion surveys within the Air Force. If the survey, attitude or opinion poll, questionnaire or interview is hosted on a .com server, consult AFI 33-129, Web Management and Effective Use of Internet-based Capabilities, for further guidance.

a. The PI has documented an e-mail conversation with the Air Force Survey Office, which has apparently deferred to the “unit commander” for the phase-1 survey, and the unit commander is Brig Gen Jex, whose signature is affixed below.

b. The PI has agreed to submit the phase-2 survey, which will be based on responses during phase 1, to the IRB for review and approval before implementation of phase 2.

15. With this approval comes the expectation that the Principle Investigator has the funding to fully execute the protocol. Partial protocol funding, particularly with Greater than Minimal Risk studies, should prompt a re-examination of the protocol by both the Principle Investigator and the IRB with specific emphasis on the risk-benefit evaluation.

16. Any serious adverse event, unexpected incidents, or other issues resulting from this study should be reported immediately to the IRB. Amendments to protocols and/or revisions to informed consent documents must have IRB approval prior to implementation. Please retain both hard copy and electronic copy of the final approved protocol and informed consent document.

17. All inquiries and correspondence concerning this protocol should include the protocol number and name of the primary investigator. Please ensure the timely submission of all required progress and final reports and use the templates provided on the AFRL IRB web site http://www.wpafb.af.mil/library/factsheets/factsheet.asp?id=7496.
18. For questions or concerns, please contact the IRB administrator, 2d Lt Alexander Trigo at alex.trigo.2@us.af.mil, DSN 986-5437, or 937-656-5437. All inquiries and correspondence concerning this protocol should include the protocol number and name of the primary investigator.

JOHN M. WIGHTMAN, MD, MA, FACEP
Colonel, USAF, MC, FS
Vice Chair, AFRL IRB

cc:
AFMSA/SGE-C

1st Indorsement to USAFSAM/PHR (MAJOR DANNY DACEY), 27 August 2015, Initial – Expedited, FWR20150102H

MEMORANDUM FOR 711 HPW/IR (MS KIM LONDON)
I have reviewed the protocol records and found them to be complete and accurate.

ALEXANDER M. TRIGO, 2LT, USAF
Lead Administrator, AFRL IRB

2nd Indorsement to USAFSAM/PHR (MAJOR DANNY DACEY), 27 August 2015, Initial – Expedited, FWR20150102H

MEMORANDUM FOR AFMSA/SGE-C
This protocol has been reviewed and approved by the AFRL IRB. I concur with the recommendation of the IRB and approve this research.

TIMOTHY T. JEX
Brigadier General, USAF, MC, CFS
Commander
711th Human Performance Wing

27 AUG 2015
Appendix J: UIC IRB Approval

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1727 West Polk Street
Chicago, Illinois 60612-7227

Approval Notice
Initial Review (Response to Modifications)

March 29, 2016

Danny Dacey, MPH
Public Health
1146 Whittetall Drive
Fairborn, OH 45324
Phone: (571) 364-2186

RE: Protocol # 2016-1154
“Factors Influencing Readiness for Change in a Military Healthcare Environment”

Dear Mr. Dacey:

Your Initial Review application (Response to Modifications) was reviewed and approved by the Expedited review process on March 21, 2016. You may now begin your research.

Please note the following information about your approved research protocol:

Please note that the UIC IRB has accepted your USAF-approved recruitment and consent documents, as noted below, and has determined that they may be used without the UIC approval counter-stamp.

Protocol Approval Period: March 21, 2016 - March 21, 2017
Approved Subject Enrollment #: 150
Additional Determinations for Research Involving Minors: These determinations have not been made for this study since it has not been approved for enrollment of minors.
Performance Sites: UIC, Dept of the Air Force - Air Force Research Laboratory
Sponsor: None
Research Protocol:
a) Dissertation Proposal: 02/12/2015
Recruitment Material:
a) Participant Recruitment Letter/E-mail (USAF approved; accepted by UIC IRB); Version 2; 02/25/2016
Informed Consents:
a) Study Information Sheet Informed Consent Document for Factors Influencing Readiness for Change in a Military Healthcare Environment (USAF approved; accepted by UIC IRB); Version 2; 02/25/2016

Phone: 312-996-1711  http://www.uic.edu/depts/ovcr/OPRS/  FAX: 312-415-2929
b) Informed Consent Document for Factors Influencing Readiness for Change in a Military Healthcare Environment (USAF approved; accepted by UIC IRB); Version 2; 02/25/2016

Your research meets the criteria for expedited review as defined in 45 CFR 46.110(b)(1) under the following specific categories:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.
(7) Research on individual or group characteristics or behavior (including but not limited to research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note the Review History of this submission:

<table>
<thead>
<tr>
<th>Receipt Date</th>
<th>Submission Type</th>
<th>Review Process</th>
<th>Review Date</th>
<th>Review Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/07/2016</td>
<td>Response To Modifications</td>
<td>Expedited</td>
<td>03/21/2016</td>
<td>Approved</td>
</tr>
</tbody>
</table>

Please remember to:

⇒ Use your research protocol number (2015-1154) on any documents or correspondence with the IRB concerning your research protocol.
⇒ Review and comply with all requirements on the OPRS website under:

"UIC Investigator Responsibilities, Protection of Human Research Subjects"
(http://tiger.ee.uic.edu/depts/ovcr/research/protocolreview/irb/policies/0924.pdf)

Please note that the UIC IRB has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact OPRS at (312) 996-1711 or me at (312) 996-2014. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,
Sandra Costello
Assistant Director, IRB #2
Office for the Protection of Research Subjects

Please note that the UIC IRB has accepted your USAF-approved recruitment and consent documents, as noted above, and has determined that they may be used without the UIC approval counter-stamp.

cc: Paul Brandt-Rauf, Public Health, M/C 923
Michael Petros (faculty advisor), Public Health, M/C 923
VII: REFERENCES


REFERENCES (continued)


REFERENCES (continued)

  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4811a1.htm

Centers for Disease Control and Prevention/National Center for Environmental Health. 3
Publications List. [November 1, 2013]; Available from: 4
  http://www.cdc.gov/nceh/lead/publications/

CDC. Preventing lead poisoning in young children. Atlanta, GA: US Department of Health and
Human Services, CDC; 2005.

readiness capabilities in the IS organization: insights from the Bell Atlantic experience”,
MIS Quarterly, Vol. 21 No. 4, pp. 425-455


2011.

motivation: A meta-analytic path analysis of 20 years of research. Journal of Applied

  Knowledge in Society, 1, 104-126.

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

Dalton MA, Sargent JD, and Stukel TA. *Utility of a risk assessment questionnaire in identifying
20 children with lead exposure*. Archives of Pediatrics and Adolescent Medicine, 1996.


Safety/MHS-Review.
REFERENCES (continued)


REFERENCES (continued)


REFERENCES (continued)


REFERENCES (continued)


Danny Dacey, Major
1146 Whitetail Dr., Fairborn, OH 45324 ~ Cell: 571-364-2186 ~ danny.dacey.1@us.af.mil

CAREER OBJECTIVE

Recently named USAF Biomedical Specialist Category III Officer of the Year – FGO for AFMC, seeking to gain Wing-level leadership experience through the 711 HPW Executive Officer position.

PROFESSIONAL EXPERIENCE

United States Air Force, School of Aerospace Medicine, Wright-Patterson AFB, OH 2015–Present
Chief, Public Health Surveillance and Research Branch
- Leads 5 epidemiologists; directs syndromic surveillance; outbreak response to AF installations.

United States Air Force, Craig Joint Theater Hospital, Bagram, Afghanistan 2014-2015
Chief, Public Health
- Led the Public Health mission for Afghanistan’s largest trauma center; aided 45 thousand.

United States Air Force, Medical Support Agency, Falls Church, VA 2013-2014
Public Health Policy Development, Fellowship
- Developed first AF-wide deployment health instruction for 326 thousand Airmen.

United States Air Force, 435th Contingency Response Group, Ramstein, Germany 2010–2013
Chief, Public Health, Global Reach Laydown Team
- Conducted medical threat site assessment for EMEDS in support of NEO in Larnaca, Cyprus.

United States Air Force, 1st Special Operations Wing, Hurlburt Field, FL 2007-2010
Public Health Flight Commander
- Directed military Public Health earthquake relief operations in Port-au-Prince, Haiti.

Awards: USAF Biomedical Specialist Category III FGO of the Year 2015 (AFMC); 711 HPW/AFRL FGO of the Quarter; 435 AGOW CGO of the Quarter; USAF Europe Biomedical Specialist Category III of the Year 2013 (USAFE); AFSOC Public Health Officer of the Year 2008/2009; 1SOMDG Officer of the Year 2008/2009; AFSOC PH Team/Yr 2009; Humanitarian Service Medal; AF Commendation Medal two Oak Leaf Clusters; AF Outstanding Unit Award with Valor; Meritorious Unit Award; NATO Medal; Afghanistan Campaign Medal.

PROFESSIONAL EDUCATION

University of Illinois, Chicago, Illinois
Doctorate of Public Health, Leadership
2011-Present

**Texas A&M University Health Science Center**, College Station, Texas  
*Masters of Public Health in Environmental and Occupational Health*  
2007

**Texas A&M University**, College Station, Texas  
*Bachelor of Science in Biomedical Science*  
2005

**Blinn College**, Brenham, Texas  
*Associate of Science in Biology*  
2002

**AWARDS AND PUBLICATIONS**

*Awards*: AFSOC Public Health officer of the year 2008/2009, Medical Group Officer of the Year 2008/2009, Led 23-mbr flight to AFSOC PH Team/Yr '09, Humanitarian Service Medal; AF Commendation Medal two Oak Leaf Clusters, AF Outstanding Unit Award with Valor, Meritorious Unit Award, NATO Medal, Afghanistan Campaign Medal.


