READY, SET, THINK, GO: THE EFFECT OF CHANGE COMMUNICATION ON ORGANIZATIONAL READINESS FOR CHANGE
A QUANTITATIVE STUDY

by

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ABSTRACT

JOUMANA KHALIL HAIDAR. Ready, Set, Think, Go: The Effect of Change Communication on Organizational Readiness for Change
a Quantitative Study

(Under the direction of DR. REGINALD SILVER)

The concept of organizational readiness has attracted much attention in recent years in the healthcare sector. Interventions that improve readiness are becoming centers for healthcare change scholars and practitioners. As healthcare organizations go through numerous planned and unplanned changes, they must prepare to effectively respond to these changes, not only for their survival but also for the survival and well-being of their patients.

This dissertation emphasizes change communication as an intervention that could increase and maintain organizational readiness throughout the change period, which leads to effective change implementation.

The dissertation overviews various readiness models from the change management and organizational change perspectives; however, it explicitly highlights their relevance to the healthcare context.

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LIST OF ABBREVIATIONS

RDS (Readiness Diagnostic Scale)

RTT (Readiness Thinking Tool)

PHS (Piedmont Health System)

DV (dependent Variable)

IV (independent Variable)

PI (Principal Investigator)

gc (perceived organizational general capacity for change)

ic (perceived innovation-specific capacity)

m (motivation to adopt a change)

MeanGC (Mean of 27 item scores of organizational general capacity)

MeanIC (Mean of 12 item scores of innovation-specific capacity)

MeanM (Mean of 13 item scores of motivation)

CHAPTER 1: INTRODUCTION

1.1 Definitions and Conceptual Model

Defined as "the organizational members' shared resolve to implement a change and shared belief in their collective capability to do so" (Weiner, 2009), organizational readiness for change (readiness) has been mainly featured in health-related psychology and medical research (McKay, Kuntz, Näswall, 2013) and considered by many change scholars as a necessary condition for the effective implementation of an organizational change (Weiner, 2009; Rafferty, Jimmieson, & Armenakis, 2013; Armenakis, Harris, & Mossholder, 1993; Kotter, 1996; Amatayakul, 2005; O'Connor & Fiol, 2006; Weiner, Amick, & Lee, 2008). Following Weiner's seminal work in conceptualizing readiness, Scaccia, J. P., Cook, B. S., Lamont, Wandersman, Castellow, Katz, & Beidas (2015) have proposed three readiness components -- motivation to adopt an innovation, the organizational general capacity to implement an innovation, and the innovation-specific capacity. They define them as follows: (1) Motivation to adopt an innovation is "the perceived incentives and disincentives that contribute to the desirability to use an innovation"; (2) Organizational General Capacity is the "attributes that include organizational culture, infrastructure, and processes specific for the implementation of the innovation"; and (3) Innovation-Specific Capacity is "the human, technical, and fiscal conditions that are important for successfully implementing a particular innovation with quality" (Table 1).

Table 1

Table 1 Readiness components, subcomponents, and definitions

Component	Subcomponent	Definition
General Capacity	Innovativeness	Openness to change in general.
	Resource utilization	Ability to acquire and allocate resources including time, money, effort, and technology.
	Culture	Norms and Values of how we do things at our site.
	Climate	The feeling of being part of this site.
	Leadership	Effectiveness of our leaders at multiple levels.
	Staff capacities	Having enough of the right people to get things done.
Innovation-specific capacity	Innovation-specific knowledge and skills	Sufficient abilities to implement the innovation.
	Supportive climate	Necessary supports, processes, and resources to enable the use of the innovation.
	Program champion	A well-connected person who supports and models the use of the innovation.
	Inter-organizational relationships	Relationships between our site and other organizations that support the use of the innovation.
	Intra-organizational relationships	Relationships within our site that support the use of the innovation.
Motivation	Simplicity	The innovation seems simple to use.
	Priority	Importance of the innovation in relation to other things we do.
	Relative advantage	The innovation seems more useful than what we have done in the past.
	Compatibility	The innovation fits with how we do things.
	Trialability	Degree to which the innovation can be tested and tried out.
	Observability	Ability to see that the innovation is producing outcomes.

Walker, T. J., Brandt, H. M., Wandersman, A., Scaccia, J., Lamont, A., Workman, L., ... & Fernandez, M. E. (2020). Development of a comprehensive measure of organizational readiness (motivation× capacity) for implementation: a study protocol. *Implementation Science Communications*, *1*, 1-11.

Readiness Construct (adopted from Walker et al., 2020)

Moreover, change communication has been considered a significant driver for implementing organizational change (Lewis, 2006). It is a widely recognized fact by practitioners and researchers alike that communication processes are entangled with change processes and play a critical role in eliciting appropriate responses from employees while reducing their stress related to resistance to change (Lewis, 1999; Oreg, Vakola, & Armenakis, 2011).

As healthcare organizations employ numerous strategies to support the implementation of innovations, a change communication intervention could be a cost-effective and fruitful strategy that improves employees' perceptions of readiness, therefore increasing the likelihood for successful implementation and improved healthcare outcomes. This dissertation will build on the

insights of organizational change researchers and present a conceptual model for the relationships between change communication and the perceived determinants of readiness– organizational motivation to adopt the change, innovation-specific capacity, and organizational general capacity. Job type and tenure will be considered as moderators of these relationships (Figure-1). The argument advanced in this dissertation is that the dose of communication (how much information is delivered), adjusted to job type and tenure, modifies perceived readiness' components differently.

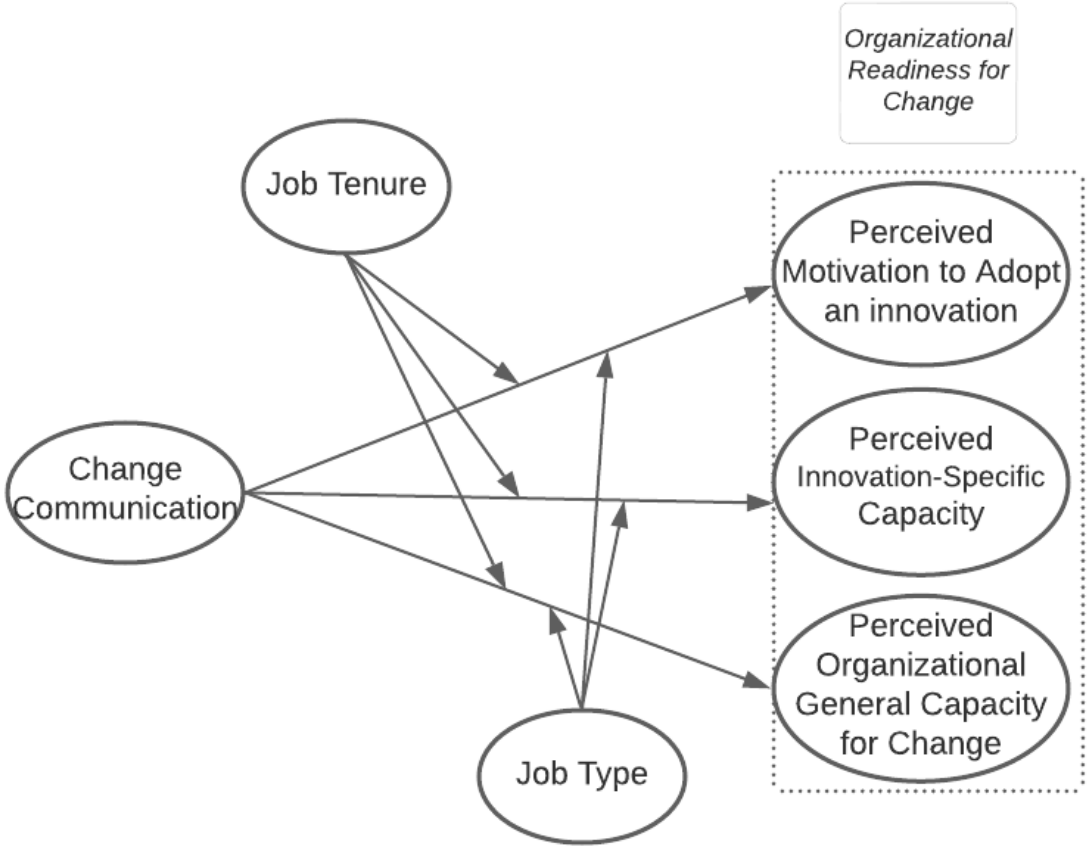


Figure 1

Change Communication and Readiness Conceptual Model

1.2 Statement of the Problem in the Healthcare Context

In healthcare, billions of dollars have been invested into epidemiological research to generate efficacious interventions for critical individuals' and populations' health (IOM, 2001; Health Research Forum, 2002). At the same time, this investment has answered research questions related to "what to do," "where," and "who" -- what healthcare innovations to advance, for which impacted populations, and what geographical area. However, it has not been paralleled with an investment to address questions related to the “how to do” questions – the translation of research into practice and implementation of healthcare innovations (Sanders, Labonte, Baum, & Chopra, 2004; Kilbourne, Neumann, Pincus, Bauer, & Stall, 2007). As indicated by healthcare scholars, this mismatch has led to the slow adoption of healthcare innovations and suboptimal services to patients (Brownson, Colditz, & Proctor, 2017; McGlynn, Asch, Adams, Keesey, Hicks, DeCristofaro, & Kerr, 2003). Brownson et al. (2017) assert that it takes fifteen to twenty years for patients to realize the intended benefits of healthcare innovations fully. The delay between the generation of innovations and their use in practice, along with the documented failure rate (40% to 70%) in changing the organizational processes needed to implement and sustain the innovations, mean wasted precious resources, which, in turn, could lead to limited healthcare services to families and communities (Meany & Pung, 2008). As stated by Greenhalgh, Robert, Macfarlane, & Kyriakidou, 2004, the primary reason for these suboptimal outcomes is that healthcare organizations are not adequately and readily prepared to adopt innovations.

Against this background, readiness has become integral to implementing change across many domains, especially healthcare. In Kotter's (1996) groundbreaking article "Leading Change: Why transformation efforts fail," Kotter contends that extensive implementation

initiatives do not succeed half of the time due to inadequate organizational preparedness. Many change models, which have acknowledged the stage-based nature of change implementation, have highlighted readiness's critical role in the initial phases of the change process (e.g., Lewin's model of change, 1951) (By, 2005).

In healthcare, a focus on readiness has evolved steadily over the past few decades, indicating a heightened interest for researchers and practitioners alike. This interest has led to two key opportunities: (1) to proactively assess an organization's preparedness to carry out a specific change -- planned and internally initiated or unplanned and environmentally imposed; and (2) to design and evaluate the means through which capacity for change can be built and enhanced.

The focus on readiness is essential for community-based healthcare organizations, which, unlike urban-based healthcare organizations, are constrained in resources, including staff and finances. Milligan & Conradson (2006) describe community-based healthcare organizations as mainly non-profit organizations which "employ paid staff and act for public rather than shareholder benefit." Community-based healthcare organizations play a critical role in strengthening health equity (Nathan, Rotem, & Ritchie, 2002), as well as providing basic and essential primary healthcare services to the most disadvantaged populations (Blas, Gilson, Kelly, Labonte, Lapitan, Muntaner, 2008; Jareg & Kaseje, 1998). In addition to providing direct healthcare services, community-based healthcare organizations participate in research that has a defining impact on policy development and public health programs' implementation (Sanders, Labonte, Baum, Chopra, 2004; Oxman, Lewin, Lavis, Fretheim, 2009). This role has been reinforced by the increased research funding, including funding from the National Heart, Lung, and Blood Institute to support this study, for participatory research to address health disparities and inequities and close the gap between research and practice (Cargo & Mercer, 2008).

Planning and implementing lifesaving and life-enhancing innovations in community settings require a deep understanding of the mechanisms that can influence establishing and operationalizing readiness. Given the limited resources of community-based healthcare organizations and their fundamental role in advancing public-health programs and practices, the healthcare research community must generate scientific evidence around the most effective and efficient mechanisms that improve readiness. Further, to identify these mechanisms and provide valuable knowledge to practitioners regarding establishing and improving readiness, readiness will need to be considered more often in the plans and execution of change efforts (Backer, 1995) -- an issue that Weiner et al. (2008) have attributed to the fact that readiness and its critical role in change implementation have been recognized mainly by practitioners (e.g., change agents and managers) and not sufficiently by researchers.

Moreover, researchers have long maintained that *change communication* is critical to the success of change implementation (Axley, 2000). Scholars such as Katz & Kahn (1978), Pettigrew (1987), Nadler & Tushman (1989), and Bandura (1982) have proposed that for change communication to be effective, it should convey the need for the change and describe the necessary capacity to carry it out. As a matter of fact, Armenakis et al. (1993), in their "Creating Readiness for Change" framework, highlight the essential role of communication in effecting change by proposing the "message" to be an essential process for creating readiness for implementation. For example, messages that create a sense of urgency and solicit feedback to develop readiness are some of what change agents emphasize in leading change efforts. Indeed, as indicated by Madsen, Miller, and John (2005), employees who have a strong sense of why the change is needed are more primed for the change.

In summary, both constructs, readiness for change and change communication, are essential for the success of implementation and the sustainability of change outcomes; however, as indicated by Doyle (2000), the relationship between change implementation and organizational learning mechanisms, including change communication, is absent, while studies that empirically examine the relationship between change communication and readiness are scarce (McKay et al., 2013; Eisenberg, Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999) and lack methodological rigor (Podsakoff, Mackenzie, & Podsakoff, 2012; Oreg et al., 2011). This is inconsistent with the widespread acknowledgment of the critical role the two constructs play in change efforts. As such, testing for a link between change communication and readiness is logical.

1.3 Theoretical and Practical Contributions

The dissertation will have both practical and theoretical implications. Theoretically, as indicated, this will be the first study empirically examining the connection between change communication and readiness in healthcare. Examining the effect of change communication in terms of "dose" will open many vistas for change scholars interested in designing interventions to enhance the quality and effectiveness of change implementation, specifically through the manipulation of existing organizational mechanisms, such as organizational communication. Additionally, the dissertation will contribute to both the organizational change literature and the growing readiness literature in the healthcare domain. As questions regarding the quality of evidence produced by change management research remain (Barends, Janssen, Have, & Have, 2013), testing the relationship between change communication and readiness will lead to two possibilities (1) change communication interventions positively influence readiness, which is consistent with existing literature or (2) change communication interventions don't (or negatively) influence readiness, which contradicts what has been conceptually asserted in the literature. In addition to advancing the theoretical underpinnings to the link between change communication and readiness, this dissertation will have practical implications. The results of the proposed study will help those involved in change initiatives to vary their change communication, in terms of dose, to determine a communication approach that is likely to succeed in increasing employees' readiness before initiating change implementation as advised by Holt, Helfrich, Hall, and Weiner (2010), Van de Ven and Poole (1995), Kotter (1995), and Prochaska and DiClemente (1983).

1.4 The Importance of the Study

"People do not benefit from innovations they do not experience" is a widely used statement among researchers concerned with applying scientific evidence to the day-to-day operations in the human services context. As mentioned, significant investment continues to be made in research to generate efficacious interventions to answer research questions related to "what to do" but not to "how to do", which resulted in poor adoption of interventions, wasted resources, and suboptimal services to patients (McGlynn et al., 2003). While Brownson et al. (2017) assert that it takes fifteen to twenty years for patients to realize the intended benefits of healthcare interventions fully, evidence in non-healthcare contexts suggests that there is a delay of eight to fifteen years between the generation of innovations and their integration into practice (Lomas, 1991).

NIH, (2005), Roy-Byrne, Sherbourne, Craske, Stein, Katon, Sulliva, Means-Christianson, Bystritsky (2003), and Bradely, Webster, Baker, Schlesinger, Inouye, Barth, Lapane, Lipson, Stone, Koren (2004) referred to the gap between the intervention and its full implementation as the "research-to-practice gap" , while others referred to it as the "know-do" gap or the "implementation gap" (Fixsen, Naoom, Blasé, Friedman, & Wallace (2005); Greenhalgh et al., 2004).

Researchers have identified mechanisms for closing the implementation gap and succeeding in organizational change. Some have focused on exploring the barriers and facilitators for the dissemination and implementation of research findings (Midgley, 2009; Bauer & Kirchner, 2020; Powell, Beidas, Lewis, Aarons, McMillen, Proctor, & Mandell, 2017) to generate a better understanding of what can be leveraged as well as what can be addressed to facilitate the implementation of research findings. Others have emphasized the development of evidence-based interventions to address implementation barriers (implementation interventions/strategies). For example,

revising roles and responsibilities, enhancing data systems to support managers' decisions, and continuous quality improvement are mechanisms intended to bridge the know-do gap (Onken, Carroll, Shoham, Cuthbert, & Riddle 2014). However, interventions that aim to bring about organizational and behavioral changes in healthcare organizations have not lived up to practitioners' expectations, as their results have shown inconsistencies (Grimshaw, Eccles, Walker, & Thomas, 2002; Davis, O'Brien, Freemantle, Wolf, Mazmanian, & Taylor-Vaisey, 1999; Grol, & Grimshaw, 2003).

Haines, Kuruvilla, & Borchert (2004), and Dodek, Cahill, & Heyland (2010) question the quality of evidence used in developing the implementation interventions and attribute their failure to a lack of both theoretical underpinnings and empirical support for their effectiveness. At the practice level, Fixsen et al. (2005) indicated that a significant driver for successful implementation is individuals' willingness and ability to use the innovations systematically, thoroughly, and consistently. They suggest that research targeting implementation should focus not only on testing processes, such as training, coaching, facilitative administrative, and technical support, but also measuring the extent to which practitioners use the innovation with "fidelity." Therefore, it is apparent that effectively putting innovations into practice is not straightforward and requires the same level of scientific rigor scholars use in designing and developing these innovations (Midgley, 2009). The implementation gap is further exacerbated by two significant determinants -- contextual factors (Pettigrew, Ferlie, & McKee, 1992) and organizational capacities (Dobbins, Ciliska, Cockerill, Barnsley, & DiCenso 2002; Greenhalgh et al., 2004). Pettigrew et al., 1992 indicate that a "receptive context" is needed to achieve successful change. Garner, Smith, Kale, Dickson, Dans, and Salinas (2010) explain that non-healthcare organizations are better positioned to adopt innovations as they enjoy more resources and capabilities. Healthcare

organizations cannot often implement the change, which is mainly due to the high rate of change that healthcare organizations deal with because of many internal and environmental changes, including shifts in regulations (Nilsen, Stahl, Roback, & Caimey, 2013), rising social issues and emerging new models of healthcare workforce (Wagner, 2000; Powell, Waltz, Chinman, Damschroder, Smith, Matthieu, & Kirchner, 2015). Consequently, there is an unrelenting need for healthcare organizations to effectively prepare to bring about change (Herrera, Rada, Kuhn-Barrientos, & Barrios, 2014), as failure in implementation is not only costly but also disheartening for those who are involved in the change process (Schlesinger & Kotter, 1979).

The collective combination of evidence-based implementation interventions, adequate individual, and organizational capacities, and enabling contexts has been considered significant contributor and prerequisite for successful implementation. Moreover, the effectiveness of innovations depends on the effectiveness of implementation, which in turn, depends on many organizational factors and processes, including readiness factors and communication strategies whose levels and quality indicate the likelihood of realizing the desired outcomes (Durlak & Dupre, 2008). Therefore, it is predictable that healthcare scholars- concerned with ensuring the full effect of healthcare innovations- are carefully attending to factors that affect the effectiveness of implementation, including readiness and change communication.

1.5 Research Questions

The following section will provide a background and definitions for the determinants of readiness (motivation to adopt the change, innovation-specific capacity, organizational general capacity), the conceptual model, and the scale for measuring readiness.

A review, by Weiner et al. (2008), of business, sociology, psychology, and health services literature confirm the issues around readiness. Weiner et al. (2008) mark "ambiguousness" and "divergence" in readiness conceptualization and discern between two broad methods for approaching readiness – psychological and structural. They observe that research that takes the psychological approach examines readiness at the individual level and describes it with regard to individuals' attitudes, beliefs, and intentions (Weiner, 2008; Armenakis et al., 1993), whereas the structural approach helps to examine organizational readiness and test employees' joint perceptions of organizational capacities to carry out a change (Garisch, 2016; Weiner et al., 2008; Lehman, Greener, and Simpson, 2002; Bloom, Devers, Wallace, & Wilson, 2000; Stablein, Welebob, Johnson, Metzger, Burgess, & Classen, 2003).

To better understand the two approaches, Weiner (2009) discusses issues related to a one-sided view of readiness when applying the two approaches separately. He considers the complementarity of the two approaches and offers a conceptually and theoretically founded definition of readiness and defines it as the "organizational members' shared resolve to implement a change (change commitment) and shared belief in their collective capability to do so (change efficacy)." The conceptual underpinnings for Weiner's definition of readiness are based on both motivation theory (Fishbein & Ajzen, 1976; Meyer & Herscovitch, 2001) and social cognitive theory (Gist & Mitchell, 1992) and suggests "change valence" and "change efficacy" as the two primary constructs of readiness. Further, Weiner contends that there is an association between "change

commitment" and "change valence", while "change efficacy" includes components related to task demands and the availability of resources.

Since its original publication, Weiner's conceptualization of readiness has served as a baseline theory for many scholars interested in deliberately building organizational readiness for change and improving implementation outcomes. Among those scholars, Sccacia et al. (2015) proposed a heuristic of organizational readiness for change that confirms Weiner's readiness theory and builds upon crucial readiness literature findings. The heuristic $R=MC^2$ -- where R is readiness, M is motivation to adopt a change, and C^2 is the individual and organizational capacities needed for change-- assists practitioners and change agents concerned with successfully managing change in the workplace, formalizing change interventions and improvements processes. In developing their heuristic, Scaccia et al. (2015) defined motivation to foster an innovation based on the work of many scholars, including Armenakis & Harris (2009), Simpson (2002), and Greenhalgh et al. (2004) while they mainly built on the work of Flaspohler, Duffy, Wandersman, Stillman, & Maras (2008) and Weiner (2009) to define both the general organizational capacity and the innovation-specific capacity. In essence, Scaccia et al. (2015) have operationalized readiness and defined its components as follows: (1) Motivation to use an innovation is the "perceived incentives and disincentives that contribute to the desirability to use an innovation ." This definition corresponds to the "shared resolve" readiness construct by Weiner (2009); (2) organizational general capacity is the "perceived attributes that include organizational culture, infrastructure, and organizational processes and are specific for the implementation of the innovation"; and (3) innovation-specific capacity is "the human, technical, and fiscal conditions that are important for successfully implementing a particular innovation with quality." Both capacities, general and innovation-specific, correspond to Weiner's (2009) "change efficacy".

Further, in determining the proper instrument for measuring readiness, Weiner suggested that the instrument should include a section describing the intended change and that the instrument's items should be group-referenced rather than individual-referenced, reflect "change commitment" and "change-efficacy," and be tailored to the specific change.

Walker, Brandt, Wandersman, Scaccia, Lamont, Workman, Dias, Diamond, Craig, and Fernandez (2020) have developed the Readiness Diagnostic Scale (RDS) following both Weiner's four suggested characteristics of the readiness instrument and Scaccia et al.'s organizational readiness heuristic (Appendix A). The RDS has been used to measure readiness components for implementing biomedical, educational, and mental health interventions. Additionally, the RDS has been validated in multiple settings, including healthcare -- specifically federally qualified health centers (FQHC) (Walker et al., 2020; Domlyn, Scott, Livet, Lamont, Watson, Kenworthy, Talford, Yannayon, & Wandersman, 2021). Weiner's theory and Walker et al.'s instrument will support the development of this dissertation.

As indicated, healthcare organizations invest substantially in the development and assessment of innovations to identify "what works" in producing desirable patient outcomes but not enough in studying the effectiveness of these innovations in practice, i.e., in real-life settings. Further, like other sectors, healthcare organizations endure a continuously evolving business environment and employ change interventions such as cost reduction and quality improvement to survive. They also conduct concomitant refinements in organizational processes, such as communication, decision-making, and reward systems, to sustain the change (Havens & Boroughs, 2000; Wolfe, 2001; Brennan, 2000). As such, for the change effort to bear fruit, there need to be design, managerial, and communication resources devoted to the change, which healthcare organizations may not have – making a success of change implementation in healthcare settings

costly and limited (Weiner et al., 2008; Alexander, Ye, Lee, & Weiner, 2006; Ash, Berg, & Coiera, 2004; Blumenthal, Lavendar, Hewson, 1998; Pearson, & Moomaw, 2005; Shortell, Bennett, & Byck, 1998).

Like their colleagues in business, healthcare researchers have considered readiness as both a high-priority topic for change research and a necessary contingency for change implementation (Vaishnavi, Ma Suresh, & Dutta, 2019; Holt et al., 2010; Stablein et al., 2003; Bloom et al., 2000). Many scholars have emphasized the value to attending to the individual, organizational, and environmental factors that drive successful implementation (Greenhalgh et al., 2004; Damschroder, Aaron, Keith, Kirsh, Alexander, 2009; Flaspohler et al., 2008; Wanless & Domitrovich, 2015; and Weiner et al., 2008). These factors are essential in designing interventions that could influence readiness and therefore implementation. Against this background, Smith (2005) suggests that organizations should refrain from presuming change readiness; instead, they should invest in creating it.

To empirically examine the connection between change communication and readiness, I propose to design and proactively apply a theoretically founded change communication intervention to measure its effect on employees' perceptions of readiness for implementing a healthcare innovation, The Severe Hypertension in Pregnancy patient safety bundle (the bundle) (Bernstein, Martin, Barton, Shields, Druzin, Scavone, Frost, Morton, Ruhl, Slager, Tsigas, Jaffer, Menard, 2017), in a community-based healthcare system in North Carolina. The healthcare innovation (the bundle) is a set of practices that guides healthcare providers in systematizing the care administered to pregnant women with severe hypertension during pregnancy and postpartum. Although the goal of the bundle is to enhance patients' outcomes, its focus is on the management of care,

with recommendations that could apply to high- as well as low-resource settings, such as community-based healthcare systems.

The proposed study for this dissertation is a part of a feasibility study whose research activities are supported by the NHLBI. The results of the dissertation study will inform phase II of an extensive study that promotes the use of implementation interventions to enhance the likelihood of the complete integration and use of the bundle and other healthcare innovations in community-based settings. Repeated measures of organizational readiness will reveal the effect of change communication intervention on readiness components. A negative effect on readiness is likely since the change communication intervention includes face-to-face conversations among employees regarding characteristics of the healthcare innovation. This could result in thinking through what is required, individually and organizationally, to integrate the innovation into routine work (i.e., change implementation). Employees impacted by the innovation will have, through a thinking process triggered by conversations, to assess the pros and cons of implementation. Regardless of the direction of results, the opportunity to think through and converse about the change will provide a*n accurate measure* of organizational readiness for change. Hence, the dissertation title is "Ready, Set, Think, Go: The effect of change communication on organizational readiness for change."

The dissertation will answer three primary research questions:

1. Does change communication influence the level of perceived motivation to adopt an innovation? Does change communication influence the level of perceived innovation-specific capacity? Does change communication influence the level of perceived organizational general capacity for change?

2. Does job type (professional, managerial, technical) moderate the relationship between change communication and perceived motivation to adopt an innovation? Does job type moderate the relationship between change communication and perceived innovation-specific capacity? Does job type moderate the relationship between change communication and perceived organizational general capacity?
3. Does job tenure (low, high) moderate the relationship between change communication and perceived motivation to adopt an innovation? Does job tenure moderate the relationship between change communication and perceived innovation-specific capacity? Does job tenure moderate the relationship between change communication and perceived organizational general capacity?

Chapter II provides insights from a literature review related to three areas relevant to this study -- organizational readiness for change, change communication, and change implementation. Critical articles will be closely examined to better understand the relationship between these constructs. Further, chapter II reviews determinants of readiness and describes the methodological approach in selecting the theories that explain the hypothesized relationships between change communication and readiness. Chapter III explains the design and measurements of the change communication intervention, the instrument measuring readiness, the sample size, the research subjects, and the research design. Chapter IV details results from statistical analyses, Chapter V presents findings, and Chapter V provides conclusions and limitations.

CHAPTER 2: REVIEW OF LITERATURE AND HYPOTHESES DEVELOPMENT

2.1 Literature Review

A literature search identified reviews (all types) of individual and organizational readiness literature, mainly in the healthcare context. Databases, PubMed/MEDLINE, CINAHL, PsycINFO, and Google Scholar were searched for publications published from 2005 to 2022. Reviews selected were (a) comprehensive (i.e., not limited to a particular healthcare intervention or theme); (b) peer-reviewed, and (c) written in English. Seminal and critical articles in the non-healthcare context literature, including change management and organizational sciences, have also been identified and manually collected using snowballing and citation search approaches. Additionally, titles and abstracts of articles published in the *implementation science journal* in the same period were reviewed for readiness and implementation and readiness and communication. Finally, the narrative review is divided into four areas --readiness; readiness and implementation; change communication; change communication and implementation. Figure 3 depicts the scope of the dissertation and shows the relationship between readiness, implementation, and change communication as described in the literature.

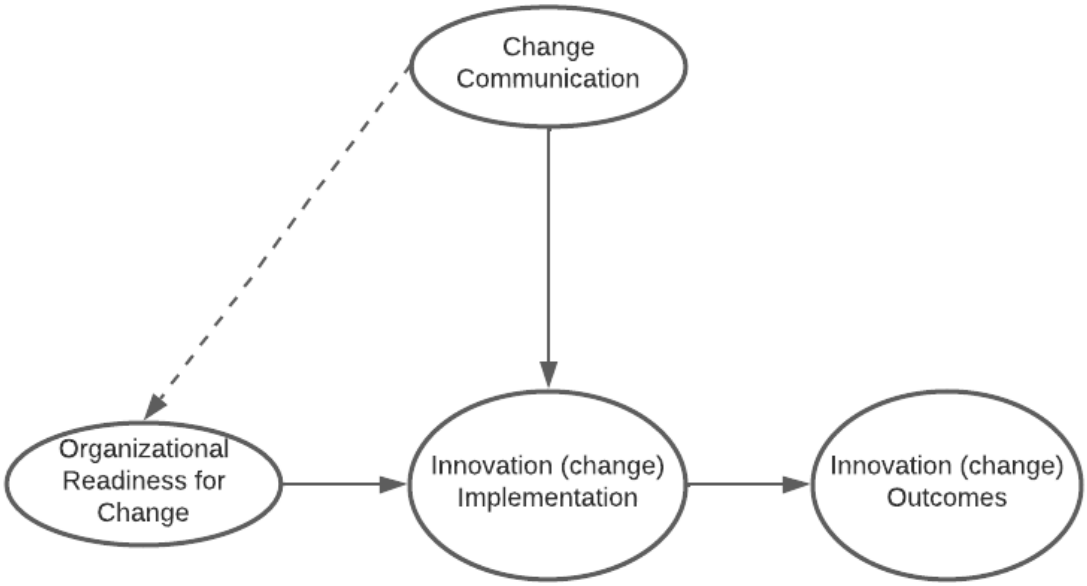


Figure 2

Scope of Literature Review -- Constructs Known (solid arrows) and Suggested (dotted arrow) Relationships

Readiness

Readiness continues to be one of the most exciting concepts in change management literature (Weiner et al., 2008). Scholars and practitioners have appreciated both the theoretical and practical values of readiness in predicting the outcomes of implementation efforts as well as in preparing individuals and organizations to succeed in change implementation (Flaspohler et al., 2008; Scaccia et al., 2015; Greenhalgh et al., 2005; Damschroder et al., 2009). Two foundational perspectives on organizational change continue to be maintained in the organizational change literature (Beer & Noharia, 2000b; Quinn, Kahn, & Mandl, 1994; Choi & Ruona, 2011). Strategic management scholars hold the first perspective, recognizing that change is a process intended to implement strategies planned by an organization's leadership and top management (Child, 1972; Dunphy, 2003; By 2009). The second perspective is held by organizational development scholars who observe that change is about transforming organizational roles, responsibilities, and tasks to develop the organization and human resources (Porras & Robertson, 1992). Both perspectives -- regardless of the type of change they each consider -- assume that organizations are continuously changing (Romero, Rabelo, & Molina, 2013; Burke, 2011; Van de Ven & Poole, 1995; Ford & Ford, 1995; Weick & Quinn, 1999; Tsoukas & Chia, 2002; Burnes, 2004b) and always need to be prepared to initiate, execute, or respond to change effectively (Kotter, 1995, 1996; Schein, 1987, 1999b). However, even with this recognition, organizational scholars continue to provide high estimates regarding the failure of organizations in executing change projects or in supporting the change long enough to realize its intended outcomes (Beer & Nohria, 2000b) – this failure has been termed by many an "implementation failure" (Burke & Biggart, 1997; Beer & Nohria, 2000b; Klein & Sorra, 1996). Further, both perspectives suggest that the implementation process goes through phases, with the first phase corresponding to the "unfreezing" stage, which

is vital to the success of the change effort (Lewin, 1997; Armenakis et al., 1993). As suggested by many, including Lewin, the unfreezing stage is when employees learn about the change and accept it as necessary and feasible (Choi & Ruona, 2011). Moreover, reviews of readiness literature reveal two foci for readiness – micro (individual) (Armenakis et al., 1993; George & Jones, 2001; Greenhalgh et al., 2004; Hall & Hord, 1987; Tetenbaum, 1998) and macro (organizational) (Judge, Thoresen, Pucik, & Welbourne, 1999; Armenakis & Bedeian, 1999). As a result, there are varied definitions of readiness across the literature. Armenakis et al. (1993) explain readiness for change to be the “cognitive state which comprises organizational members' beliefs, attitudes, and intentions" regarding why change is needed and the perceived individual and organizational capacity to carry out the change successfully. Backer (1995) drew two implications from this definition: readiness can be assessed, and based on this assessment, it can be enhanced through interventions that influence individuals' beliefs, attitudes, and intentions. As Weiner et al. (2008) suggest, to create readiness, change agents can engage in activities that "unfreeze" the organization by "changing 'mindset' and creating the motivation to change."

Armenakis et al.'s definition of readiness is the most used and states that individual readiness is the "beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization's capacity to undertake those changes successfully" (Armenakis et al., 1996). This definition emphasizes both the need for change and the implementation capabilities. The implementation is helpful when considering individual readiness. However, the definition could be more helpful when the change goes beyond the individuals' beliefs, attitudes, and intentions and requires modifications in organizational structures and systems. Additionally, Choi and Ruona (2011) conceptualized individual readiness as an alternative to Lewin's resistance to change. They define it as "composed of individuals' belief in the change-specific efficacy,

appropriateness of the change, management support for the change, and personal benefit of the change" (Choi & Ruona, 2011; Holt, Armenakis, Field, & Harris, 2007). Additional definitions for individual readiness include psychological determinants such as employees' attitudes, beliefs, and intentions (Barrett, Haslam, Lee, & Ellis, 2005). Even with the many approaches to readiness, researchers believe that individuals perceive readiness across the exact dimensions (Kozlowski & Klein, 2000). Rafferty et al. (2013) contributed to our understanding of readiness in many ways. First, they drew on the attitude theory to argue that cognitive and affect are essential components of the overall attitude evaluation in constructing readiness. Second, they acknowledge the need for and propose a multilevel framework for readiness which outlines "the antecedents and consequences of individual, group, and organizational change readiness ." Third, they, like many other scholars such as Caldwell, Yi, Fedor, & Herold (2009), and Pettigrew et al. (2001), acknowledge the importance of assessing readiness at all levels and avoid the misstep of assuming only the individual level to reflect the overall organizational readiness (Bouckenooghe, 2010). Weiner et al. (2008) describe readiness as "the extent to which organizational members are psychologically and behaviorally prepared to implement organizational change."

In addition to individual readiness and organizational readiness, Holt, Bremmer, Sutherland, Vliek, Passer, & Smith (2009) have introduced the notion of collective readiness and defined it as "the degree to which those involved are individually and collectively primed, motivated, and technically capable of executing the change." They describe the psychological factors related to consent regarding the change and its value in meeting the needs. In contrast, the structural factors are related to the context for change and the extent to which it is enabling. Scholars such as Griffin (1987) note that individual readiness is also influenced by others' readiness, suggesting an interaction between individual and collective readiness.

The micro and macro approaches to readiness are complementary, as the general understanding is that organizational change is at the heart of individual change (Dievernich, 2015). Empirical research has supported this assumption and demonstrated that higher levels of organizational readiness mean a higher individual commitment to the change during and after implementation (Jones, Jimmieson, & Griffiths, 2005). Further, in the healthcare context, van den Hoed, Backhaus, de Vries, Hamers, & Daniëls (2022) have suggested the concept of *innovation readiness* and encouraged the development of a framework to reinforce future areas of study that could improve the design and integration of innovations in healthcare organizations (van den Hoed et al., 2022).

As discussed, although organizational readiness for change and individual readiness for organizational change are distinct, the link between them is vital. Scholars contend that as individuals assess their readiness, they take into consideration the organizational processes (e.g., change communication) used to facilitate the change and considered critical drivers for its success (Armenakis et al., 1993; Holt et al., 2007; Scaccia et al., 2015; Van den Heuvel, Demerouti, Schreurs, Bakker, & Schaufeli, 2009). Accordingly, readiness is a multifaceted construct. Further, creating readiness for change has been addressed in the literature as a significant driver for achieving change outcomes and suggested critical steps for developing readiness for change. For example, Smith (2006) suggests three critical elements in achieving readiness: "communicating change measures and ensuring participation and involvement."

In summary, despite the increased interest, readiness still needs a standard definition that is conceptually and theoretically based. In his seminal article in 2009, Weiner provides a readiness theory as a baseline for researchers to build on. Based on an extensive literature review that Weiner et al. (2008) have conducted. The review stated that 55% of the articles needed a

conceptual definition; instead, they assumed a reasonable comprehension of readiness. Moreover, as Weiner states readiness is the "organizational members' shared resolve to implement a change (change commitment) and shared belief in their collective capability to do so (change efficacy)" -- is particularly appropriate where joint efforts are needed to effect a change such as in the healthcare context (Weiner, 2009). Walker et al. (2015) have developed a readiness measure that operationalizes Weiner's definition by explicitly indicating the three components of readiness--motivation to adopt the change/innovation, innovation-specific capacity, and organizational general capacity.

Motivation to adopt an innovation

In the adoption and implementation literature, motivation has been analyzed based on multiple perspectives. The persuasive perspective that targets individuals' beliefs and attitudes (Ajzen, 1991), the workplace attributes perspective that views individuals' behavior given social underpinnings for motivation (Karanika-Murray & Michaelides, 2015). This perspective is aligned with the self-determination theory (Deci & Ryan, 2000), which states that "motivation orientation ranges from amotion to extrinsic motivation to intrinsic motivation" and that intrinsic motivation primarily focuses on the quality of the activity itself, while extrinsic motivation focuses on factors external to the activity, such as rewards or promotion. Additionally, motivational theories, such as Maslow's hierarchy of Needs (Maslow, 1954), Motivator-Hygiene (Herzberg, 1974), X and Y (McGregor, 1985), Expectancy (Lawler & Suttle, 1973; Vroom, 1964) have presented a variety of ways to think of motivation, making it difficult to envision an integrated, comprehensive model (Locke & Latham, 2004).

Self-actualization theory, described as a hierarchy of needs, is among the most referenced in the organizational literature (Maslow, 1954). At the basic level, the theory claims that people are motivated by unsatisfied needs and will move up the hierarchy once they satisfy each need. Porter, Bigley, & Steers (2003) provide a practice-oriented definition and state that "motivation is what energizes, directs, and sustains behavior." Along those lines, Reeve (2005) indicates that motivation principles include goals, values, and relatedness. According to the self-determination theory, "motivation orientation ranges from amotion to extrinsic motivation to intrinsic motivation" (Kroth, 2007; Deci & Flaste, 1995; Deci & Ryan, 2002; Vansteenkiste, Lens, Deci, 2006), and intrinsic motivation primarily focuses on the quality of the activity itself, while extrinsic motivation focuses on factors external to the activity, such as rewards or promotion. While these definitions collectively provide an overall understanding of motivation, Kroth (2006) proposes a heuristic for workplace motivation to assist managers concerned with individual performance in determining how best to help employees. Workplace motivation has been conceptualized around goal setting, selection, and pursuit (Kanfer & Chen, 2016). For example, Bandura & Cervone (1986) empirically examine the relationship between self-efficacy and sustaining motivation during goal pursuit. He emphasizes the importance of creating a motivating environment and specifies “caring, understanding, and managing expectations” as some of the major actions for managers to consider. Specifically, "caring" and "understanding" can result in perceived organizational support (POS), and at times of change, they can be used to address employees’ reactions to change (Armenakis & Harris, 2009). Additionally, Kanfer & Chen (2016) indicate that contextual processes, including sensemaking, influence individuals’ engagement and behavior.

Despite this broad understanding of motivation and its applicability to different topics (e.g., goal setting, decision-making, and performance) (Kanfer & Chen, 2016), the role of

motivation research in the context of change has not been well examined (Elstak, Bhatt, van Riel, Pratt, & Berens, 2015). Damschroder et al. (2009) highlight motivation as the force behind the use (implementation) of innovation and link it to the perceptions that employees have regarding the innovation and organizational support for the innovation, while Scaccia et al. (2015) specify the motivation mechanisms that affect outcomes. They focused on the mechanisms that influence motivation, as this will provide managers with information regarding improvement areas. Some of these mechanisms are "organizational support that contributes to the innovation use; collective expectations (Damschroder et al., 2009); perceptions of the attributes of an innovation (Armenakis & Harris, 2009); pressures for change (Hall & Hord, 2011); and emotional responses about the innovation (Rafferty et al., 2013)".

Organizational general capacity and innovation-specific capacity

There are varied definitions of capacity, each providing elements related to organizational ability (Elliott & Mihalic, 2004; Livet & Wandersman, 2005). Heckmann, Steger, & Dowling (2014) provide a comprehensive literature review of organizational change capacity and conclude that organizational change capacity is center to the organization's dynamic capability. As such organizational change capacity integrates approaches to various changes and allows the timely configuration of resources needed to respond to environmental and internal changes. Soparnot (2011) proposes a framework for change capacity with three dimensions – context, process, and learning dimensions. Based on the work of Pettigrew (1985), Soparnot defines change capacity as "the ability of the company to produce solutions (content) that respond to environmental evolution (external context) and or organizational evolution (internal context) and to implement these change processes successfully within the company (process)" (Soparnot, 2011). Nelson and

Winter (1982), Whittington (1988), Wernerfelt (1984), Nadler and Tushman (1994), and Barney (1991) define elements of organizational change capacity that can be summarized in the ability of an organization to generate and select strategies that are appropriate responses to "the environmental (external context) evolution and or organizational (internal context) evolution" (Vallejo Garcia, 2012). These strategies can help organizations adapt to or institutionalize changes in their processes.

In the healthcare change context, Hawe, Noort, King, and Jordens (1997) describe a spectrum of capacities with a clear distinction between different types based on the need. They state that the lowest capacity tier is needed to deliver an innovation. In contrast, the highest capacity tier relates to sustaining innovation outcomes and identifying the need for other innovations.

Flaspohler et al. (2008) proposed a taxonomy to clarify the concept of capacity along three levels – individual, organizational, and community. They explain Hawe et al.'s capacities in two categories. The lowest tier is innovation-specific capacity, and the highest is organizational general capacity. They conceptualize organizational capacities as "the characteristics that an organization needs to function and successfully carry out innovations." Building on Flaspohler et al. (2008) work, Scaccia et al. (2015) define innovation-specific capacity as "the knowledge, skills, and abilities that are required to implement a specific innovation," while they describe organizational general capacity as "the general functioning of an organization, such as its culture or climate."

Readiness and implementation

The link between readiness and implementation has been well described in the literature (Scott, Kenworthy, Godly-Reynolds, Bastien, Scaccia, McMickens, Rachel, Cooper, Wrenn, & Wandersman, 2017; Weiner et al., 2008; Scaccia et al., 2015; Levit et al., 2020). Lewin’s model

suggests that the successful outcome of the unfreezing change is a change in employees' attitudes and a trust that the change is necessary and feasible. The innovation-decision process model (Rogers, 2010) stresses the importance of readiness in changing employees' attitudes towards the innovation to be explicitly implemented in the initial persuasion and knowledge stages of the change process and subsequently in the adoption decision. Additionally, the organizational change literature review of Gustafson, Shvidenko, Sturtevant, & Scheller (2010) and suggestions from an expert panel on determinants promoting attainment (or nonfulfillment) of organizational change have proposed an 18-item survey, seven of which are on readiness. In the information system context, researchers have provided ample evidence to support the link between employees' perceptions and implementation which is measured by the actual use of new information technology (Gattiker & Hlavka, 1991; Davis, 1989; Majchrzak & Klein, 1987).

Although the dissertation does not directly examine implementation, it helps to learn how its determinants may connect to readiness. Literature on the implementation of innovations abounds and cuts across multiple fields – change management; organizational development; and quality improvement -- however, there is very little guidance on implementation determinants (Klein & Sorra, 1996). Unlike innovation adoption studies, the lack of guidance on implementation is due to the need for cross-organizational studies (Nord & Tucker, 1987), which led to the emergence of a significant number of implementation frameworks of different orientations (process, determinants, evaluations) in different domains (health, education, mental health, child development) (Fixsen et al., 2005; Michie, Johnston, Abraham, Lawton, Parker, Walker, 2005; Lomas, 2006). Collectively, these frameworks present vital variables that explain the concept of implementation. Klein and Sorra (1996) have defined implementation as concerning the individual user of an innovation and asserted that implementation is "the process of gaining targeted

organizational members' appropriate and committed use of an innovation." Further, they describe implementation effectiveness as "the consistency and quality of targeted organizational members' use of an innovation" and assert that the alignment of the innovation with the values of the intended users' is critical to the success of implementation. Additionally, the scope of implementation outcomes identified by Klein and Sorra (1996) included resistance, avoidance, compliance, and commitment. In healthcare, implementation is seen as a multilevel process, and outcomes are defined at individual, organizational, and community levels. Rabin, Brownson, Haire-Joshu, Kreuter, & Weaver (2008) put forward a definition of implementation that is "the process of putting to use or integrating innovations within settings," while Proctor et al. (2011) determined eight multilevel implementation outcomes that are distinct from innovation outcomes. These outcomes are "acceptability, adoption, appropriateness, fidelity, feasibility, implementation cost, penetration, and sustainability" (Proctor, Silmere, Raghavan, Hovmand, Aarons, Bunger, Griffey, & Hensley, 2011). Defining implementation (Klein & Sorra, 1996; Rabin et al., 2008) and determining its outcomes (Klein & Sorra, 1996; Proctor et al., 2011) promote better planning for the interventions and strategies to implement them (Becan, Bartkowski, Knight, Wiley, DiClemente, Ducharme, Welsh, 2018). However, in examining 49 frameworks, Moullin, Sabater-Hernandez, Fernandez-Llimos, & Benrimoj (2015) have determined that frameworks that have extensively included the factors influencing implementation were abundant, while predictive and prescriptive frameworks were scarce. Michie et al. (2011) have put forward a helpful framework in this regard and proposed an approach for successful implementation that is consistent with the conceptualization of readiness by Weiner (2009), as well as by other scholars such as Beer & Walton (1987) and Wanberg & Banas (2000). Michie's approach consists of nine strategies designed to meet three requirements and characterized as essential factors for change--capability,

opportunity, and motivation. By including capability and motivation as essential factors for implementation, Michie's work provides the foundation for conceptually connecting readiness to implementation and confirms what has been contended by many organizational and change management researchers (Kotter, 1995; Prochaska & DiClemente, 1982; Van de Ven & Poole, 1995). Readiness building has been connected to many implementation outcomes, specifically acceptability, appropriateness, and feasibility (Kolodny-Goetz, Hamm, Cook, & Wandersman, 2021; Proctor et al., 2011). Thus, it is unsurprising that researchers have considered readiness a fundamental condition or an antecedent for successful implementation.

Organizational change communication

Acceptance of change by organizational staff is one of the primary factors contributing to successful organizational change (Armenakis et al., 1993; Gilmore & Barnett, 1992). Strategies to help employees accept the change are essential to organizations' survival (Leiter & Harvie, 1997). Open and effective communication has been identified as a valuable strategy for promoting change readiness (Sagie & Koslowsky, 1994; Zamanou & Glaser, 1994; Burke & Leiter, 1997). Furthermore, in a healthcare setting, evidence supports a relationship between communication and quality of care (Boyd, Luetje, & Eckert, 1992; Gershenfeld, 1991), so for change associated with quality improvement, communication is an effective strategy.

While there has been tremendous attention to the relationship between communication and organizational change, scholars have been calling for theoretical and empirical support to further advance the field of communication in the change context (Jones, Watson, Gardner, Gallois, 2004; Taylor, Flanagin, Cheney, Seibold, 2001; Lewis & Seibold, 1998). Even though many researchers have asserted that communication is critical to the change process (Daly, Teague, &

Kitchen, 2003; Elving, 2005; Kotter, 1990; Lewis & Seibold, 1998), shortcomings in organizational communication have been cited as a significant explanation of disruptions in change initiatives (Barrett, 2002). Indeed, Lewis & Seibold (1998) have emphasized the importance of a communication perspective when examining change implementation processes. They put forward a strong argument for how implementing planned change can be cast as a communication event. For example, members' involvement in the change process can help increase their commitment to the change, while dissemination of information about the change and communicating the vision and the need for the change are some of the activities supported by scholars in the disciplines of change communication and change management (Lewis, Schmisseur, Stephens, & Weir, 1973). However, Johansson & Heide (2007) warn that this approach needs to be revised as it implies that the implementation issues associated with change initiatives can be addressed with a good communication strategy.

Further, the issue well studied in the literature is the relationship between communication and resistance to change. According to Elving (2005), there are two essential goals for change communication -- the first is to address resistance to change, and the second is to address uncertainty to create readiness for change. Amount and type of internal communication have also been research subjects for many scholars. DiFonzo and Bordia (1998) proposed "loads of," "accurate," and "transparent" information to be essential in establishing trust between management and employees. They suggest that building trust can have a tremendous effect on reducing resistance and uncertainty and therefore increasing readiness. Super & Harkness (2002) bring up an important point on the lack of measurements for effective change communication and asserts that the absence of such measurements has affected the quality of change management and its priority status on the managerial agenda during a change process. Even though change scholars maintain

that communication can affect change outcomes, there must be more clarity in the literature on what makes up a good communication strategy. Timing of the change messages, corresponding the communication strategies to employees' roles, and using the appropriate media to convey the messages are some strategies suggested by Goodman & Truss (2004).

In addition to the tool method described above, Johansson and Heide's review reveals two more approaches to change communication. One of which is considered within the sense-making phenomenon. As a critical component of the change process and associated interactions, communication can generate new understandings and social reality (Berger & Luckmann, 1996). In this reality, Tsoukas & Chia (2002) propose focusing on organizational change processes, including communication. However, this approach has shortcomings, too, as it needs to present specific methods of communication during the change initiative.

Organizational change communication and implementation

Many models, including The Dynamics of Planned Organizational Change, feature behavioral change of individual employees as a necessary part of the change effort and suggest mechanisms, including communication, to help do that (Robertson, Roberts, & Porras, 1993). Indeed, a study conducted by Cinite, Duxbury, and Higgins (2009) suggests "poor communication" as a construct of *perceived unreadiness for change*. Additionally, many scholars have emphasized the important role of communication in driving successful change initiatives (Armenakis & Harris, 2002; DiFonzo & Bordia, 1998; Lewis & Seibold, 1998). For example, Beer, Eisenstat & Spector (1990), Kotter (1996), and Sashkin (1984) have highlighted "participation" as an essential driver for a better change process. Further, change agents have used varied communication strategies to inform employees of the transformation in their tasks, roles, and responsibilities and

to manage resistance to change (Elving, 2005). A facilitative management style, such as coaching, information sharing, and appropriate feedback, is essential for change success. Facilitative management involves workers and supports teams' collaboration to execute change effectively (Denning, 2005). De Ridder (2003) highlights the development of a shared identity, i.e., "community spirit" within the organization, as another essential purpose of change communication. Haslam, Jetten, Postmes, & Haslam (2001), Meyer & Allen (1997), and Goodman and Dean (1982) have all linked resistance to change to communication and indicated that change resistance status is associated with the effectiveness of change effort. In their landmark research on the effect of change communication on change implementation efforts, Lewis & Seibold (1998) have determined the centrality of communication in predicting outcomes of change and proposed "interaction surrounding implementation" as the most critical factor for the success of implementation. They further suggest that strategies, such as training, evaluation, and feedback, can be strengthened if their communication aspect is well planned and executed. However, it is essential to note that empirical findings supporting these assertions are still limited (Frahm & Brown, 2007; Eisenberg et al., 1999; Axley, 2000; Doyle, 2000). This limitation is mainly due to the need to define *effective change* and its outcomes (Elving, 2005). This gap has had implications on the quality and appropriateness of change communication strategies and goals (Doyle, 2000). One implication is the shift of the weight of determining the outcomes and the factors impacting the change effort's success onto managers and practitioners (Robertson, Roberts, & Porras,1993). In healthcare, significant effort has been made in developing and synthesizing implementation frameworks that feature determinants that aid in selecting approaches, including communication strategies, to support effective implementation (Kirchner, Smith, Powell, Waltz, & Proctor

2020). Scholars have determined that the adoption of change and the full and effective use of interventions are indicators of effective implementation (Fixsen et al., 2005; Proctor et al., 2011).

In summary, change communication and readiness have been linked to implementation and change communication and readiness have been conceptually linked; however, the relationship between change communication and readiness has not been well studied and still lacks empirical support (Eisenberg, Andrews, Murphy, & Laine-Timmerman, 1999; Johansson & Heide, 2008; Doyle, 2000).

2.2 Theoretical Approach and Hypotheses

Multiple theories have been considered in determining the nature of the link between the change communication and readiness. Chin & Benne (1976) propose a "rational-empirical" approach to change management, which suggests that individuals are rational and will contribute to a change effort once they are clear on the proposed change and what it entails (Janićijević, 2012). However, as Abdinnour-Helm, Lengnick-Hall, & Lengnick-Hall (2011) state, since employees may not understand the intent of change, it is essential to consider their perceptions of the communicated change. Furthermore, employees' attitudes towards the change will need to be measured over time as it may change when employees experience the innovation more directly. Moreover, the organizational literature does not explain how perceptions and beliefs relate to using innovation. Kuntz and Gomes (2012) assert that sensemaking is the act of employees engaging with conventional and unconventional sources to acquire information for common understanding.

Seligman (2006) also focused on the processes influencing the adoption and use of technologies by using Weick's sensemaking to develop a perspective on adoption. Seligman explains how the Theory of Planned Behavior (Ajzen, 2011) is different in predicting behavior (use or no use) from what Weick suggests through the sensemaking processes. Seligman further explains that Weick asks "why adoption constructs are related" instead of "how are they related." In this sense, Seligman opens the door for potential manipulation of the adoption processes to allow for purposeful improvement in adoption levels. Further, sensemaking models offer multiple definitions, all of which agree that sensemaking evolves due to employees' interactions with the innovation (e.g., through training). In turn, the interaction enhances the sensemaking process and helps the adopter constructs a perception toward the innovation. Sensemaking also

continues to take place well after the initial introduction of an innovation (Prasad, 1993; Louis, 1980).

Additionally, Seligman states that "according to Weick, sensemaking is: (1) grounded in identity construction; (2) retrospective; (3) enactive of sensible environments; (4) social; (5) ongoing; and (6) driven by plausibility rather than accuracy". Social is the characteristic that is most directly linked to change communication as conceptualized in this study. For example, group discussions can generate practical information that participants use to formulate an opinion about the innovation (Fulk, 1993). This conclusion is supported by the literature concerned with social influences and the use of innovation (Karahanna & Straub, 1999; Ajzen & Fishbein, 1991; Agarwal & Prasad, 1999). As such, in addition to using one's perception to determine the subsequent behavior, using group discourse may lead to readiness, or the emergence of resistance to change when the individual feels that her autonomy is threatened by the innovation or her relationships with peers are affected by the innovation. Further, sensemaking is recognized as a process theory concerned with how uncertainty can be structured so that organizational members can act on it --Weick (1995) puts it as "the making of sense." Weick & Quinn (2000) describe sensemaking as one of two approaches to communicating planned change. Indeed, Harris & Sutton (1986) point to the fact that employees use sensemaking to realize the need for the change. Milliken (1987) stresses the need for information to reduce uncertainty and ambiguity during organizational change.

Armenakis & Harris (2002), in their change framework, explain that delivering the message through "active participation, persuasive communication and management of information" will help organizations to create readiness. Moreover, in making the distinction between readiness and resistance to change, Armenakis & Harris (1993) emphasize the analyses conducted by

Bartlem & Locke (1981) of the classic study of Cock & French (1948). The analyses feature an "overlooked" fact related to the "meetings" in which the experimental groups in the Cock & French study participated. Gardner (1977) conducted similar analyses and suggested that these meetings have influenced participants' beliefs, attitudes, and behavior, which resulted in increased readiness for change. Thus, as Luecke (2003) indicates, communication can effectively motivate employees to carry out the change.

Additionally, providing employees feedback has been considered an essential strategy during the change period (Peterson & Hicks, 1996). Feedback can enable employees to make better decisions and prepare them to overcome barriers and identify facilitators to take appropriate action and achieve intended outcomes (Saunders, 1999). In an organizational context, approaches that link motivation to needs (Maslow, 1954; Vroom, 1964) have predicted motivation based on job satisfaction, perceived equity, and organizational commitment (Murigu, 2010). Motivation has also been linked to the ability of a manager or a leader to communicate a common direction and influence employees to work in the same direction (Gilley, Gilley, & McMillan, 2009). As such, management style (Hebda, Vojak, Griffin, & Price, 2007) and skills related to providing a "motivating environment" by communicating effectively, tackling employees' concerns, producing, and prioritizing solutions, managing employees' tasks are essential to motivate employees and prepare them for change (Gilley, Gilley & McMillan, 2009). These findings, along with the additional results from the study of Cock & French, indicate that organizational readiness can be proactively created or improved through communication that can potentially change individuals' beliefs and attitudes (Bandura, 1982; Fishbein & Azjen, 1976). However, Kerber & Buono (2004) agree with Beer & Nohria (2000) that involving people through

"participation" may be a waste of resources despite "good intentions." As a result, two issues are raised, how best to involve employees and how much communication to use.

Since research indicates that, often, employees, including managers, need help understanding the change and its objectives (Olsson, Overtveit & Kammerlind, 2003; Walston & Chadwick, 2003), sensemaking can inform the type of messages needed to support the change. For example, informative and persuasive communication becomes critical when organizational members must understand the rationale for the change fully and clearly (Ulrich, Zenger & Smallwood, 1999). Further, in their concern-based adoption model, Hall & Hord (1987) have underlined awareness and information as both effective vehicles for addressing employees' concerns about a change and major drivers for the success of the change. Katz & Kahn (1978), Pettigrew (1987), Nadler & Tushman (1989), and Bandura (1982, 1986) contend that issues related to strengthening employees' commitment can be addressed with the change message. Messages highlighting the need for change and the capacity needed to carry out the change impact employees' commitment to being part of the change (Armenakis et al., 1993). Kotter (1995) highlights "a lot of" and "credible" communication as a significant contributor to the success of change efforts, while Katzenbach (1995) states that "meaningful" communication is a crucial ingredient for high performance and change management. Neither Kotter nor Katzenbach defines what they mean by "a lot of," "credible," or "meaningful" communication. However, in examining many successful organizational change cases, Barrett (2002) develops The Strategic Employee Communication Model and provides a working definition for meaningful communication. He states that for communication to be meaningful, it must "educate" employees about the vision for the change; "motivate" employees to advocate the change; "encourage" employees to improve performance; "limit" misunderstandings about the change; and "align" employees behind the

goals for the change. In so doing, Barrett moves communication from a passive approach of providing information through traditional channels (emails and company media) to an active approach where advocates for change directly communicate change through well-facilitated and managed meetings.

In addition to The Strategic Employee Communication Model that Barrett (2002) has developed, the design of the change communication intervention for this dissertation will incorporate the principles identified by Kotter and Katzenbach—dose, credibility, and meaningful communication. Specifically, the intervention will represent three elements of Barrett's Model: targeted messages, influential media, and well-positioned staff. *Targeted messages* have been defined as tailored messages that convey meaning and relevance. At the same time, face-to-face communication is the most influential media and should be facilitated by well-positioned staff who understand the change most.

The Methodology and Procedure Chapter III describes what the change communication intervention entails and how it is measured. The following section describes the theoretical approach for readiness and its components as has been conceptualized mainly in the healthcare readiness literature and presents the hypotheses for this study.

Components of readiness have been defined based on multiple literature reviews (Walker et al., 2020; Scaccia et al., 2015; Flaspohler et al., 2008; Wandersman et al., 2008; Weiner et al., 2008; Weiner, 2009). Scholars have determined that the dimensions of organizational readiness are around motivation to adopt a change and the capacities to carry-out the change. Scaccia et al. (2015) define these components as follows: motivation is the "degree to which the organization wants the innovation to happen"; innovation-specific capacity is defined as "what we need to implement the innovation"; and organizational general capacity is defined as "the overall

functioning of the organization" (Scaccia et al., 2015). Specifically, in the changing context, Allen & Meyer (1996) defines *motivation* as "the work of managers to inspire, encourage and impel people to take action." He asserts that for the motivation efforts to be practical, they need to relate the advantages of the change to employees. Moreover, improved communication, motivation, and employee capabilities have been associated with gains in productivity during change efforts (Lawler & Ledford, 1982; Murigu, 2010), while job insecurity is an effect that organizations must address in an organizational change effort (Sverke, Hellgren, & Ohrming, 1997). According to the cognitive-phenomenological model (Lazarus & Folkman, 1984), change-related information can determine employees' stress and coping processes (Amiot et al., 2006; Armenakis & Bedeian, 1999). As indicated by (Klein, 1996), communication should be a two-way process as it is the "heart" of management. Thus, communication, a dominant change activity, can help motivate and build trust (Rajhans, 2009) by managers making sense of the change, encouraging employees to carry it out, and subordinates sharing their concerns about the change and its implications on their workload. Moreover, Postmes, Tanis & De Wit (2001) have indicated that organizational communication is an essential antecedent for employees' commitment. In fact, in their meta-analysis, they disclose that employees reported a more substantial commitment to change when they received from their top management adequate communication about the change.

Healthcare employees are intrinsically motivated by the act of "healing" itself (Unruh, Fottler, 2006; Fottler, 2008). However, according to research findings, more than 50 percent of physicians express signs of exertion (Shanafelt, Hasan, Dyrbye, Sinsky, Satele, Sloan, & West, 2011), while 35 percent of nurses indicate their intention to leave their jobs within a year due to burnout (AMN Healthcare, 2017). Consequently, it has been suggested that healthcare

organizations consider intrinsic motivation's drivers – autonomy, mastery, and purpose (Pink, 2009) – before launching change efforts (Norton, 2018). Considering this, communication can play a significant role in aligning change goals with drivers to motivation. For example, messages emphasizing collaboration and encouraging peer support can affect employees' perceptions of their well-being and psychological safety (Kovner et al., 2007). Accordingly, the following hypothesis is proposed:

H1: Change communication positively influences motivation to adopt a change

As mentioned, organizational scholars have recognized that including communication processes in the change implementation effort is essential (Lewis & Seibold, 1993). Some have empirically supported the significance of the communication function in planned changes (Lewis, 1991; DiFonzo et al.,1994; Smelzer & Zener, 1992), while others have provided theoretical and empirical support for the effect of information in reducing employees' stress and anxiety during change as well as enhancing employees' adaptation to the new situation (Miller & Mongue, 1985). Studies have asserted that information influences self-efficacy (Jimmieson, Terry, Callan, 2004; Prochaska et al., 1997; Armenakis et al., 1993). Self-efficacy is the "individual's belief in his or her capability to execute a course of action needed to meet the demands of a situation" (Bandura,1997). This definition links self-efficacy to the tasks related to a particular situation. Indeed, self-efficacy associated with change is defined as "employees' perceived ability to function well on the job despite the demands of a changing work environment" (Jamieson et al., 2004; Wanberg & Banas, 2000).

Moreover, Lazarus & Folkman (1984) have considered self-efficacy to be a "secondary appraisal" that employees partake in as they experience organizational change, while Cunningham, Woodward, Shannon, MacIntosh, Lendrum, Rosenbloom & Brown (2002) assert that self-efficacy predicts individuals' readiness for and engagement in job and task changes. As such, employees with a low level of change-related efficacy will feel inadequate and disengage from the change management effort, while employees with a high level will feel competent and continue to support the change management effort (Jimmieson et al., 2004).

Amiot et al.'s (2006) research has described that self-efficacy is improved based on effective communication. Terry, Callan, and Sartori's (1996) findings showed that employees observe the change implementation more positively and report high-performance self-efficacy when they perceive effective communication.

H2: Change communication positively influences perceived innovation-specific capacity

Change readiness literature notes that factors related to the clarity around the dependence on the change and employees' collaboration in the change effort are essential for improving readiness (Armenakis et al., 1993; Cawsey & Deszca, 2007). Further, scholars have highlighted the difference between readiness and capacity for change and emphasized the importance of a continuous state of readiness (By, 2007; By, Diefenbach, & Klarner, 2008). Defined as "the ability of an organization to change not just once, but as a normal response to changes in its environment" (Klarner, Probst, & Soparnot, 2008), change capacity reflects two significant capabilities -- continuous learning and the ability to implement change (McNabb & Sepic, 1995).

Based on this definition, and since change capacity is not specific to a particular type of change, one can see change capacity as a part of the organizational general capacity.

Organizational processes, such as communication, capacity building, and decision-making, also play a role in influencing readiness for change. For example, communication intended for "information sharing," "vision and motivation," or "evaluation/feedback" are just a few communication processes that leadership and management use during the change period to affect employees' understanding of what the change entails and the capacity needed to carry it out (Lewis & Seibold, 1998). Therefore, "employees' perception of the impact of leadership, which is a component of the organizational specific capacity, on providing clarity on the vision and instructions on how the change should be managed can enhance employees' trust in the organizational capacity to support this change (Hyde & Paterson, 2002). Moreover, Conlon and Shapiro (2002), Lewis and Seibold (1996), and Richardson and Denton (1996) contend that employees will potentially support a change when leadership and management disclose timely information about the change.

Change communication is even more crucial at times of increased pressure which negatively affects job satisfaction and organizational commitment (Bragger, Rodriguez-Srednicki, Kutcher, Indovino, & Rosner, 2005; Azeem & Akhtar, 2014). Furthermore, the conservation of resources (COR) theory postulates that "people's primary motivation is to build, protect, and foster their resource pools in order to protect the self and the social bonds that support the self" (Hobfoll, 1989). Thus, COR theory is well suited for describing the impact of resource availability on employees' attitude toward change in a context overpowered by high uncertainty (Erkutlu & Chafra, 2019), such as the situation healthcare employees are now facing with COVID-19. By listening to detail regarding the capacities required for effectively implementing a change,

healthcare employees will react to the communication and the change based on perceived resources lost (and gained) due to the organization carrying out the change. Consequently, the following hypothesis is presented:

H3: Change communication positively influences perceived organizational general capacity

Moderators

Two moderating factors are proposed to influence further the relationship between change communication and readiness: occupation and tenure. It is important to note that the following moderation propositions lack solid empirical and conceptual support. Logical inferences supported the development of the hypotheses; however, by empirically examining the relationship between change communication and job type and tenure, this dissertation will contribute an additional understanding of the moderating roles of job type and tenure in the change literature.

Voluntary participation in the change process has been demonstrated by many researchers, including Sashkin (1984) and Kanter (1982), to lead to higher levels of job satisfaction and motivation and an increased ability to acquire new skills. According to Weiman (1987), McClusky's (1990) theory of margin (MIL) proposes that adults with sufficient MIL are more likely to engage in change efforts. MIL refers to load, power, and margin and suggests that adults can act when they feel a decreased (psychological and physiological) load and an increased power (source of energy or resource). McClusky's research connects MIL to participation in change by demonstrating a strong link between the levels of MIL and readiness. In extending the theory of Margin, Hanpachern, Morgan, and Griego (1998) included social relations in the

workplace, job knowledge and skills, and job demands as aspects of MIL and studied the demographic variables (age, gender, education, type of position, and years employed) effects on the relationship between MIL and readiness. Hanpachern's research shows a strong impact of demographic variables on readiness for change. Specifically, employees who worked in managerial positions were readier for the change than others.

However, there is conflicting information regarding the effect of "occupation" on readiness for change. On one hand, Karasek (1997) asserts that active jobs, described as jobs with high decision latitude and psychologically demanding, such as those of physicians and nurses, increase motivation and facilitate behavioral change, while passive jobs, described as jobs with limited opportunity for decision-making, such as those of front desk and administrative support, cause lower self-efficacy and decreased level for readiness. On the other hand, social differentiation theory (Van Maanen & Barley, 1985) argues that when differences such as in roles or hierarchy exist, "psychological boundaries" arise, which affect how and whether readiness can be created equally across all members of the organization. Further, Gadolin (2017) explains the dynamics between healthcare management (nurse managers and administrative staff) and professionals (physicians and nurses with no managerial duty) during a change process (Gadolin, 2017). Gadolin's findings indicate that healthcare professionals maintain a level of autonomy that hinders management from exerting change in healthcare practices. Gadolin contends that physicians are more likely than nurses to react negatively to change. As such, since the target of change is healthcare professionals, and managers communicate the change, this suggests that "occupation" and "position in the organization" can moderate the relationship between communication and readiness. Weiss & Brief (2001) contend that top management

tends to be more ready for change than staff with lower to no managerial duties. Therefore, the following hypotheses:

H4: Higher job types (physicians and nurse managers) positively moderate the relationship between change communication and motivation to adopt a change

H5: Lower job types (nurses and administrative staff) negatively moderate the relationship between change communication and motivation to adopt a change

As organizational change alters work-related behaviors, employees will likely experience uncertainty over changes related to their roles (Shaw, Fields, Thacker, Fisher, 1993). Specific stress is related to role overload, which is characterized by having to acquire new knowledge, skills, and abilities (Callan, 1993). As Milliken (1987) discussed, management must prioritize addressing uncertainty and ameliorating stress around job-related changes. One way to do it is for management to engage in a sense-making process with employees. Moreover, Sutton and Khan (1986) state that information that helps employees to "predict" and better "understand" the change is essential. Management plays a significant role in communicating what barriers may impede the change process and in addressing employees' concerns regarding the change-specific alterations required from their end (Rousseau & Tijoriwala, 1999). Open communications can moderate employees' adjustments and improve job satisfaction (Shaw, Fields, Thacker, & Fisher, 1993), decreasing resistance and increasing readiness. In the healthcare context, a change process is mostly communicated and initiated by nurse managers. Physicians whose jobs can be thought of as having "high decision latitude" and "heavy intellectual demands" have higher self-efficacy and increased ability to cope with the new environment (Karasek, 1979; Hanpachern, 1998).

Therefore, physicians will more likely be ready for the change than nurses or administrative staff. Nurses and administrative staff must adapt to new operational and administrative processes for a change related to a healthcare intervention. Thus, the following hypotheses:

H6: Higher job types (physicians and nurse managers) positively moderate the relationship between change communication and perceived innovation-specific capacity

H7: Lower job types (nurses and administrative staff) negatively moderate the relationship between change communication and perceived innovation-specific capacity

Difficulties in the relationship between healthcare providers and managers have been well documented in the healthcare literature (Klopper-Kes et al., 2014; Davies et al., 2003; Shortell et al., 2005). Specifically, in the context of change, physicians must increasingly work closely with managers to negotiate resources (Klopper-Kes, 2010). Raelin characterizes the difference between the two groups as a 'clash of cultures", including a distinction in the language used (Raelin, 1987; Anderson, 2002), which has had implications on physicians' perceived autonomy and led to their resistance to change implementation (Edwards, 2003). Further, as healthcare services are team-based, the interdependence between healthcare employees suggests that a shared belief in the urgency for the change and perceptions of how the organization operates is needed, especially during the organizational change period. This congruence is likely to take place in similar individuals (Pfeffer, 1983), leading to higher levels of commitment to past actions (Janis, 1972) and vulnerability to and the use of information (Whitney & Smith, 1983). Hence, the following hypotheses:

H8: Higher job types (physicians and nurse managers) positively moderate the relationship between change communication and perceived organizational general capacity

H9: Lower job types (nurses and administrative staff) negatively moderate the relationship between change communication and general organizational capacity

The ultimate effect of a demographic approach on organizational outcomes through its effect on organizational variables and processes has been described by Hambrick & Mason (1984) and Pfeffer (1981). According to their model of "cognitive base" (Hambrick & Mason, 1984), assumptions about the change, alternatives, and consequences of the change influence the decision-making process. Further, researchers have long asserted the role of demographic characteristics in predicting individuals' cognitive abilities (Bolo, Muchemi, & Ogutu, 2011). For example, long tenure has been linked to a "high commitment to the status quo" (Bolo et al., 2011). However, research has shown mixed results regarding tenure and change. As demonstrated by Hanpachern et al. (1998), length of employment is a significant predictor of readiness -- employees who had a tenure of 10 years or more were less ready than employees who had been on the job for less than ten years. Van Dam, Oreg, & Schyns (2008) support a positive link between organizational tenure and resistance to change (i.e., the longer the tenure, the lower the readiness for change) -- the longer employees have been in their jobs, the higher the resistance to adapt to changes that will require them to adjust to new organizational methods of operations (Sagie, Elizur, & Greenbaum, 1985). Therefore, the following hypotheses:

H10: Higher job tenure positively moderates the relationship between change communication and motivation to adopt a change

H11: Low job tenure negatively moderates the relationship between change communication and motivation to adopt a change

Further, Bardwick (1986) contends that unless employees are challenged with new tasks, they experience what he referred to as content plateau, resulting in negative job satisfaction (McCleese & Eby, 2006) and increased job-related stress (McCleese, Eby, Scharlau, & Hoffman, 2007). As such, the longer the job tenure, the less enthusiasm for the current work (Katz & Allen, 1980). Thus, the following hypotheses:

H12: High job tenure positively moderates the relationship between change communication and perceived innovation-specific capacity.

H13: Low job tenure negatively moderates the relationship between change communication and perceived innovation-specific capacity.

Additionally, Kanter (1997) explains that full awareness of organizational processes, such as communication, increases with long tenure. Therefore, employees with longer tenure are more likely to have a sense of the extent to which the organization has the general capacity to support the change effectively. However, it is not clear if the reverse is true for employees with shorter tenure. As such, the following hypothesis:

H14: Job tenure moderates the relationship between change communication and perceived organizational general capacity.

For a list of all hypotheses, see Table 2.

Table 2

Hypotheses

H1:	*Change communication positively influences motivation to adopt a change*
H2:	*Change communication positively influences perceived innovation-specific capacity*
H3:	*Change communication positively influences perceived organizational general capacity*
H4:	*Higher job types (physicians and nurse managers) positively moderate the relationship between change communication and motivation to adopt a change*
H5:	*Lower job types (nurses and administrative staff) negatively moderate the relationship between change communication and motivation to adopt a change*
H6:	*Higher job types (physicians and nurse managers) positively moderate the relationship between change communication and perceived innovation-specific capacity*
H7:	*Lower job types (nurses and administrative staff) negatively moderate the relationship between change communication and innovation-specific capacity*
H8:	*Higher job types (physicians and nurse managers) positively moderate the relationship between change communication and perceived organizational general capacity*
H9:	*Lower job types (nurses and administrative staff) negatively moderate the relationship between change communication and perceived organizational general capacity*
H10:	*High job tenure positively moderates the relationship between change communication and motivation to adopt a change.*
H11:	*Low job tenure negatively moderates the relationship between change communication and motivation to adopt a change*
H12:	*High job tenure positively moderates the relationship between change communication and perceived innovation-specific capacity.*
H13:	*Low job tenure negatively moderates the relationship between change communication and perceived innovation-specific capacity.*
H14:	*Job tenure moderates the relationship between change communication and perceived organizational general capacity.*

CHAPTER 3: METHODOLOGY

This chapter describes the approach for designing the change communication intervention and provides the logic behind selecting the methodology to answer the research questions and test the study's hypotheses. It includes information on variables, measurements, instruments for data collection, subjects, and sample size.

3.1 Variables Measurements

The Independent Variable (change communication intervention)

The attributes identified by Kotter (dose), Katzenbach (credible), and Barrett (meaningful) helped to design and conduct a change communication intervention comprised of three doses of communication: low-dose, medium-dose, and high-dose. Clinics' champions provided the rationale for the change and composed clear change communication messages while considering the staff's job type to assure meaningfulness.

Additionally, to confirm the credibility of the communication, the champions, who understand the need for the healthcare innovation and are knowledgeable of its associated medical practices, delivered the change messages. Providing credible and meaningful change communication messages across the three clinics ensured that the change communication intervention varies based on dose only (Table 3).

Table 3

Sources of Design Elements for the Change Communication Intervention

Kotter, J. P. (1996). Why transformation efforts fail. The Journal of Product Innovation Management, 2(13), 170.	Dose	Three levels of communication
Katzenbach, J. R., Beckett, F., & Dichter, S. (1996). Real change leaders. McKinsey Quarterly, 148-163.	Credible	Delivered by change champions
Barrett, F. J., Thomas, G. F., & Hocevar, S. P. (1995). The central role of discourse in large-scale change: A social construction perspective. The Journal of Applied Behavioral Science, 31(3), 352-372.	Meaningful	Clear and adapted to job types

The Dependent Variable (readiness)

In their assessment, Miake-Lye et al. (2020) reviewed 27 publications with 1370 organizational readiness survey items and indicated that there is inconsistency in measuring readiness. In an earlier meta-analysis focused on the healthcare context, Gagnon (2014) found only a few valid and reliable knowledge translation (implementation) readiness instruments. Given the multitude and quality of instruments, Weiner et al. (2008) advise that selecting among the instruments should not be simply based on the best validation; instead, researchers should base their selection on the instrument's comprehensiveness. Consistent with Holt et al. (2009) guidance and in support of the centrality of motivation and capacity to readiness, Walker et al. (2011) have developed and validated an organizational readiness instrument—the Readiness Diagnostic Scale (RDS) (Appendix A). The RDS measures readiness comprehensively throughout the implementation process to inform the planning and execution of the change efforts.

The RDS consists of 52 survey items divided into three broad components. Each component is measured on an 8-point Likert scale: one represents *strongly disagree*, two *disagree*, three *slightly disagree*, four *neither agree nor disagree*, five *slightly agree*, six *agree*, seven *strongly*

agree, and eight *I don't know*. An eight score indicates the highest level on an item, and a one indicates the lowest level.

According to Walker et al. (2020), the first section measured *motivation* based on the following 13 items: "relative advantage," which refers to the usefulness of the innovation relative to how the conditions the innovation intends to address were handled prior to the change; "compatibility" which refers to the fit of the innovation in the organization; "simplicity" which refers to the level of complexity as perceived by users of the innovation; "priority" which refers to the importance of the innovation given other essential things; "trialability" which refers to the ability to test the innovation; and "observability" which is the ability to realize outcomes. The second section measured the innovation-specific capacity based on the following 12 items: "innovation-specific knowledge and skills," which are the skills needed to use the innovation; "supportive climate," which refers to the resources needed to support the use of the innovation; "champion" which refers to well-positioned individuals to model the use of the innovation; "inter-organizational relationships" which refers to the relationships between different departments or sites that support the use of the innovation; and "intra-organizational relationships" which refers to the relationships within a department or site that supports the use of the innovation. The third section measured the organizational general capacity based on the following 27 items: "innovativeness," which refers to the degree of openness to fostering change; "resource utilization," which refers to the ability to acquire resources; "climate" which refers to community-spirit; "leadership" which refers to the effectiveness of organizational leaders; and "staff capacities" which refers to having staff that deliver (Domlyn et al., 2009).

3.2 Research Design

This study is a pre-post design involving a change communication intervention (IV), which is measured as low-dose, medium-dose, and high-dose; and readiness for change (DV), which is measured using a readiness scale (RDS) as described in the previous section. The survey was administered electronically three times—the first time after information regarding the healthcare innovation was shared in the CEO's email and survey and information sessions regarding the healthcare innovation were conducted. The second time the survey was administered after the face-to-face conversation, and the third time after training and simulation. Repeated measures on readiness (DV) have been collected using the same survey instrument. The change communication intervention has been developed and measured based on the theories used to derive the hypotheses (more on the change communication intervention in the following section). Thus, the validity of the change communication intervention and its effect on each of the readiness variables have been established by the theoretical considerations in the previous chapter. The effectiveness of the change communication intervention was assessed based on the change in the readiness scores after applying the different doses of the change communication. Post-intervention readiness scores were compared to pre-intervention readiness scores to provide evidence of improved (not improved) scores on one or all readiness variables. The following section features the details of the subjects, change communication intervention, and study timeline.

3.3 Subjects, data collection, and sample size

Subjects

The target population is the prenatal staff who work at community-based healthcare in North Carolina—Piedmont Healthcare System (PHS). The prenatal staff belongs to three clinics that agreed to implement the healthcare innovation (the bundle) targeting, managing, and treating high blood pressure to reduce mortality and morbidity in pregnant and postpartum women. The prenatal staff experienced the change communication intervention to improve their readiness for implementing the healthcare innovation. The three clinics' managers provided information regarding the staff composition, the population they serve, and their tenure and job titles. Prenatal staff in all three clinics received information regarding the healthcare innovation via email from the PHS's CEO. As a part of the CEO's email and the first page of the readiness survey -- this level of communication is low-dose and is considered a baseline. Some prenatal staff received additional communication from information sessions conducted by the clinics' champions – this communication level is medium-dose. Other prenatal staff participated in the face-to-face meeting where they shared their thoughts and concerns about the healthcare innovation and discussed its attributes with peers -- this level of communication is high-dose communication. The champions and research team members facilitated the face-to-face meeting using a readiness thinking tool (RTT) (Appendix B), with questions corresponding to and aligned with the RDS. The facilitation using the RTT triggered conversation regarding the potential change in the organization processes and organizational culture that are expected due to the implementation of the healthcare innovation. Table 3 presents measurements of variables.

Table 4

Independent and Dependent Variables and Measurements

Construct	Construct Variables/Description	Measurement
Readiness (DV)	*Motivation to adopt a change	1-8 Likert Scale
	*Perceived innovation-specific capacity	1-8 Likert Scale
	*Perceived organizational general capacity	1-8 Likert Scale
Change communication (IV)	*Email communication from CEO, and information in Readiness survey	Low (coded as 1)
	*Email communication from CEO, and information in Readiness survey + champions information sessions.	Medium (coded as 2)
	*Email communication from CEO, and information in Readiness survey + participation in face-to-face conversation	High (coded as 3)

Data collection

The study's primary objectives were communicated to the leadership of PHS prior to the start of the project. Prenatal staff in all three clinics received an email from the CEO explaining the project, the healthcare innovation, and its potential impact on the health of women and families in the community. The email also mentioned the collaboration with the research institution and its role in ensuring successful implementation of the healthcare innovation. Shortly after the CEO's email, one of the project's Principal Investigators (PIs) emailed the prenatal staff a link to the RDS survey. The PI's email marked the beginning of the study and the exposure of the prenatal staff to the low dose of communication.

The survey was administered three times, with the first and second times being considered for this study.

Time 1: Since not all prenatal staff participated in the information sessions conducted by the champions, this created two levels of change communication: (1) a low-dose communication for those who submitted their surveys for the first time without participating the information sessions, and (2) a medium-dose communication for those who submitted their surveys after participating in the information sessions. Time 2: Prenatal staff submitted their surveys for the second time after participating in the face-to-face communication sessions. Time 3: Prenatal staff submitted their surveys for the second time after participating in training and simulations.

Sample Size

As mentioned before, the sampling frame is the list of names and emails of employees who provided prenatal care. The list was obtained from the healthcare system and represented virtually medical and non-medical roles defined by the health system (medical assistants, nurses, physicians, managers, and technical staff). The convenience sample consisted of 94 employees. Table 5 shows the number of complete responses from all groups. Using Yamane's formula for sample calculation (Yamane, 1967), a confidence level of 95%, and a margin of error of 5%, a response rate of 76% is considered ideal -- the actual response rate was 88%.

Table 5

Complete Survey Responses Per Group (unique cases)

Prenatal staff receiving medium dose communication	Prenatal staff receiving high dose communication
94 employees	
50 complete responses	33 complete responses
88%	

3.4 Validity

Since a quasi-experimental design has a high potential for selection bias, measures limiting the effect of confounding variables, including history-related events to make causal inferences (Hong & Raudenbush, 2005) were taken: 1) the participants were selected from the same settings – prenatal healthcare staff from the Piedmont Health System; 2) the three clinics had similarities regarding size, staff composition, population served, average tenure, and job titles; 3) the first survey was administered shortly after champions and the research team conducted the information sessions; 4) the second survey was administered immediately after the face-to-face conversation that the participants engaged in during one of their monthly staff meetings. As mentioned, the third survey occurred after staff completed their training and simulations. There was a two-week time-lapse between the survey's first and second administration, but no time-lapse between applying the face-to-face conversation and the second administration of the survey; 5) the testing effect does not present a problem for this study since information describing the healthcare innovation in the email and on the first page of the survey are part of the change communication intervention and expected to increase employees' knowledge and awareness of the healthcare innovation; 6) champions presented the healthcare innovation and facilitated the face-to-face conversations regarding the implications on staff time and workflow, using the same messages and instrument (RTT) to solicit staff's feedback; and 7) PHS leadership did not participate in the staff meeting to eliminate the effect of power dynamics and allow staff to share their feelings, thoughts, and concerns freely.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 Statistical Analyses

Three statistical analyses, a Paired *t* Test, a One-Way ANOVA, and a One-Way MANOVA were conducted to detect a difference in readiness amongst employees before and after being exposed to a change communication intervention. The following hypotheses were tested:

H1:	*Change communication positively influences motivation to adopt a change*
H2:	*Change communication positively influences perceived innovation-specific capacity*
H3:	*Change communication positively influences perceived organizational general capacity*

Since the readiness construct has three variables and each variable has multiple items – perceived general capacity (27 items); perceived innovation-specific capacity (12 items); and motivation to adopt a change (13 items), Means for these variables were calculated and new variables were created and used in the statistical tests and analyses (Table 6).

Table 6

Readiness Variables Means

MeanGC	Mean of 27 Organizational General Capacity items
MeanIC	Mean of 12 Innovation-Specific Capacity items
MeanM	Mean of 13 Motivation items

By comparing means of the three variables of readiness for the various levels of change communication, we will be able to conclude whether, and to what extent, communication has affected

the three readiness variables. As mentioned earlier, this study is based on a convenience sample, therefore, data normalization is not expected due to non-randomization and a relatively small sample size. However, descriptive statistics and tests to check data requirements will be conducted to check normalization and variances.

Data collected was organized in two ways:

1. Sample A: comprised of matching cases of prenatal staff who were exposed to both low and high dose of communication and had complete readiness scores.
2. Sample B: comprised of three independent groups. Group 1 is comprised of low-level communication only, Group 2 is comprised of cases medium-dose communication only, and Group 3 is comprised of cases of high-dose communication only. Each case has only one score.

Analysis-1, Paired *t* Test (matching cases with low and high doses of communication)

Sample A is used for this test. Thirty participants -- who received both doses the low and high and had two scores on each of the readiness variables -- were included in this paired *t*-Test. The goal of the paired *t* test is to detect changes in readiness by measuring "the mean difference between matched data points" (Hedberg & Ayers, 2014) using a pretest-posttest design (Lord, 1956; McNemar, 1958). Matching data has been made possible by the database used to manage the RDS data. The software generated a unique study ID for each participant, and matching RDS scores were organized and uploaded onto SPSS. Although unique IDs were generated, privacy for all participants was protected – as the survey responses were exported from the software to Excel format with no identifiers included in the data set. The paired *t*-Test tested the following null and alternative hypotheses (Table 7), for levels low and high communication, associated with the main hypotheses:

Table 7

Paired t Test Null and Alternative Hypotheses

$H_{0meangc}$: $\mu_{meangcpre} = \mu_{meangcpost}$	$H_{ameangc}$: $\mu_{meangcpre} \neq \mu_{meangcpost}$
$H_{0meanic}$: $\mu_{meanicpre} = \mu_{meanicpost}$	$H_{ameanic}$: $\mu_{meanicpre} \neq \mu_{meanicpost}$
H_{0meanm}: $\mu_{meanmpre} = \mu_{meanmpost}$	H_{ameanm}: $\mu_{meanmpre} \neq \mu_{meanmpost}$

Note: gc (perceived general capacity); ic (perceived innovation-specific capacity); and m (motivation to adopt a change).

Descriptive Statistics

The number of valid cases for each variable is thirty (N=30) for this test (Table 8). The maximum value of MeanGC pre intervention is 6.44 which is almost double the minimum value for MeanGC pre intervention which is 3.41. This is like the maximum (6.56) and the minimum (3.04) values MeanGC post intervention. MeanIC and MeanM have similar results -- their maximum values are also almost double their minimum value pre and post intervention.

The values of the means for MeanGC pre (4.9050) and post (4.8067) are very similar, while the value of the mean for MeanIC pre (6.0170) is greater than the value post (4.8067) and the value of the mean for MeanM pre (4.8123) is less than the value post (5.8963).

Table 8

Sample A Descriptive Statistics

		MeanGC_pre	MeanIC_pre	MeanM_pre	MeanGC_post	MeanIC_post	MeanM_post
N	Valid	30	30	30	30	30	30
	Missing	0	0	0	0	0	0
Mean		4.9050	6.0170	4.8123	4.8067	5.7170	5.8963
Median		5.2050	6.0000	4.3800	4.9650	5.5850	6.0000
Std. Deviation		.95101	1.61946	.98215	1.02803	1.14817	.99107
Range		3.03	4.33	3.62	3.52	3.92	3.58
Minimum		3.41	3.67	3.38	3.04	4.00	4.00
Maximum		6.44	8.00	7.00	6.56	7.92	7.58

Testing the assumptions for paired t-tests

The first step for the *t*-Test was to transform the data into differences of means. By doing so, each case had three scores: 1) diffMeanGC which is the difference between MeanGC post exposure and MeanGC pre-exposure; 2) diffMeanIC which is the difference between MeanIC post exposure and MeanIC pre-exposure; and 3) diffMeanM which is the difference between MeanM post exposure and MeanM pre-exposure. The assumptions related to the study design and variables – continuous dependent variable and categorical independent variable with two related groups—were met. Scores of the prenatal staff who have been exposed to both the high and low communication will be compared and tested for statistically significant differences. Differences between MeanGC high (post) and Mean GC low (pre) have been computed and boxplots will be used to detect outliers (Figure 4). Two outliers in MeanIC scores were found; however, since their values were not extreme, they were retained in the analysis.

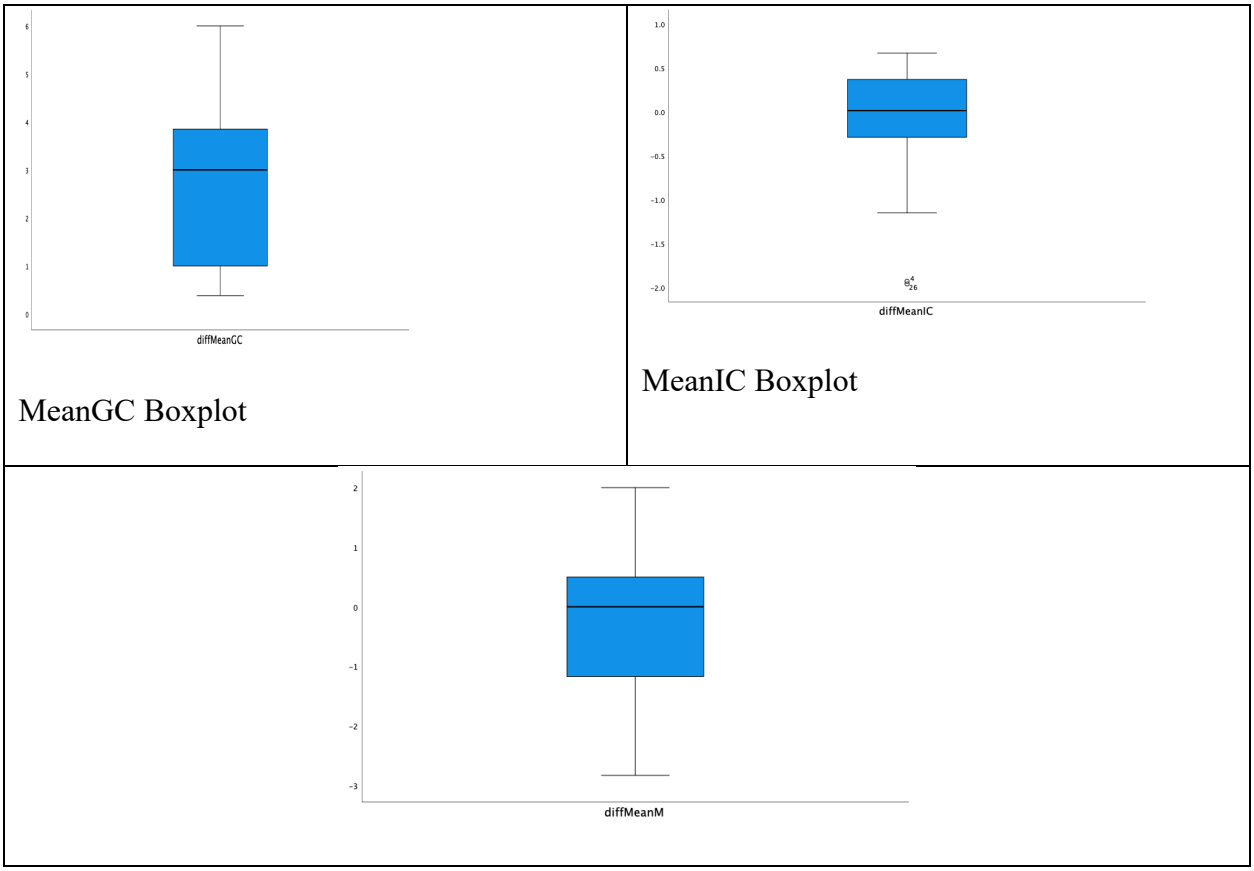


Figure 3

Sample A Paired t-Test Boxplots

A normality check was conducted using the Shapiro-Wilk test of normality (Table 9).

Table 9

Sample A Paired t-Test Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
diffMeanGC	.181	30	.013	.931	30	.054
diffMeanIC	.162	30	.044	.863	30	.001
diffMeanM	.129	30	.200*	.970	30	.551

*. This is a lower bound of the true significance
a. Lilliefors Significance Correction

The p value of diffMeanIC (p = .001) indicates that this variable is not normally distributed, therefore, the null hypothesis will be rejected, which means that the mean scores of innovation-specific capacity pre and post communication intervention are different. However, the p values of diffMeanGC (p = .054) and diffMeanM (p = .551) are greater than .05 indicating that data on these variables are normally distributed.

Results of the paired *t*-Test

Statistics of the paired samples are presented in Table 10 below. Participants had a significantly higher mean in mean of perceived organizational general capacity (4.8123) after being exposed to larger dose of communication. Their mean for the same variable prior to the exposure was 1.8667. The variation in each of the groups pre and post communication intervention is similar (Stds are .98215 and 1.00801). For perceived innovation-specific capacity, the means are close although the mean post (4.8067) is slightly less than the pre mean (4.9050), and the variation in each of the groups are also similar (std. .95101 and 1.02803). Lastly, the mean for motivation to adopt a change post (5.7170) is lower than the mean pre (6.0170) communication intervention, and the variation in each of the groups are different (std. 1.61946 and 5.7170).

Table 10

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	MeanGC_post	4.8123	30	.98215	.17932
	MeanGC-pre	1.8667	30	1.00801	.18404
Pair 2	MeanIC_post	4.8067	30	1.02803	.18769
	MeanIC-pre	4.9050	30	.95101	.17363
Pair 3	MeanM_post	5.7170	30	1.14817	.20963
	MeanM_pre	6.0170	30	1.61946	.29567

The paired Samples Test table (Table 11) presents the mean difference between the variables pre and post communication intervention. The mean difference between post and pre for perceived organizational general capacity is 2.94567 with a standard deviation of 1.51773, a standard error of .27710, and 95% confidence level. The mean difference between post and pre for perceived innovation-specific capacity is -.09833 with a standard deviation of .67388, a standard error of .12303, and 95% confidence level. The mean difference between post and pre for perceived organizational general capacity is -.3000 with a standard deviation of 1.24205, a standard error of .22677, and 95% confidence level.

The mean difference of MeanGC is statistically significant with $p < .001$, while the mean differences for both MeanIC ($p = .431$) and MeanM (.196) are not statistically significant.

Table 11

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	MeanGC_post-MeanGC_pre	2.94567	1.51773	.27710	2.37894	3.51240	10.630	29	<.001	<.001
Pair 2	MeanIC_post-MeanIC_pre	-.09833	.67388	.12303	-.34996	.15330	-.799	29	.215	.431
Pair 3	MeanM_post-MeanM_pre	-.30000	1.24205	.22677	-.76379	.16379	-1.323	29	.098	.196

Additionally, both MeanGC (d = 1.51773) and MeanM (1.24205) have large effects, while MeanIC has a moderate effect (Table12).

Table 12

Paired Samples Effect Sizes

			Standardizer[a]		95% Confidence Interval	
				Point Estimate	Lower	Upper
Pair 1	MeanGC_post-MeanGC_pre	Cohen's d	1.51773	1.941	1.322	2.547
		Hedges' Correction	1.53772	1.916	1.305	2.514
Pair 2	MeanIC_post-MeanIC_pre	Cohen's d	.67388	-.146	-.504	.215
		Hedges' Correction	.68275	-.144	-.498	.212
Pair 3	MeanM_post-MeanM_pre	Cohen's d	1.24205	-.242	-.603	.124
		Hedges' Correction	1.25841	-.238	-.595	.122

a. The denominator used in estimating the effect sizes.
Cohen's d uses the sample standard deviation of the mean difference.
Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

In conclusion, the communication intervention demonstrated a statistically significant increase in employees' perceptions of organizational general capacity for change, therefore, we reject the null hypothesis H_{0gc}: $\mu_{gcpre} = \mu_{gcpost}$. The data supports that there is indeed a significant difference between the pre, and post means for the perceived organizational general capacity variable.

The communication intervention did not elicit a statistically significant increase in employees' perceptions of innovation specific capacity or motivation; therefore, we do not reject the null hypotheses for these two variables: H_{0ic}: $\mu_{icpre} = \mu_{icpost}$ and H_{0m}: $\mu_{mpre} = \mu_{mpost}$

Analysis-2, One-Way ANOVA

Sample B will be used for the One-Way ANOVA (between-subjects) statistical test to determine whether: 1) readiness differed based on change communication levels (low, medium, high); and 2) the relationship between change communication and readiness was moderated by job type or tenure or both. In this sample, participants were split into three groups based on level of exposure to change communication (low, medium, and high) and they had a score recorded on the three dependent variables (i.e., the scores on general capacity, innovation-specific capacity, and motivation). The ANOVA test will investigate if the mean readiness variables score differs between the different groups.

Descriptive Statistics

Descriptive statistics are presented in the tables below (Tables 13, 14, 15, and 16). The total number of participants is 146, with 64 valid cases for the low level, 49 valid cases for the medium level and 33 valid cases for the high level. The maximum value of MeanGC is 7.07 which is almost five times more than the minimum value for MeanGC 1.56. The maximum value of MeanIC is 8 which is 8 times more than the minimum value of Mean IC (1). The maximum value of MeanIC is 7 which is 2.5 times more than the minimum value MeanIC (3).

The values of the means for MeanGC (4.8890), MeanIC (5.5341), and MeanM (4.8201) are similar.

Table 13

One-Way ANOVA Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
MeanGC	146	1.56	7.07	4.8890	1.10076
MeanIC	146	1.00	8.00	5.5341	1.75370
MeanM	146	3.00	7.00	4.8201	1.05039
Valid N (listwise)	146				

Table 14

One-Way ANOVA Frequencies

		Comm		
		1	2	3
Mean GC	> Median	27	28	18
	< = Median	37	21	15
MeanIC	> Median	28	24	21
	< = Median	36	25	12
MeanM	> Median	14	30	28
	< = Median	50	19	5

Table 15

One-Way ANOVA Test Statistics[a]

	MeanGC	MeanIC	MeanM
N	146	146	146
Median	5.0550	5.2500	4.0800
Chi-Square	2.835[b]	3.475[b]	38.730[c]
df	2	2	2
Asymp. Sig.	.242	.176	< .001

a. Grouping Variable: Comm
b. B. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 16.5.
c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 16.3.

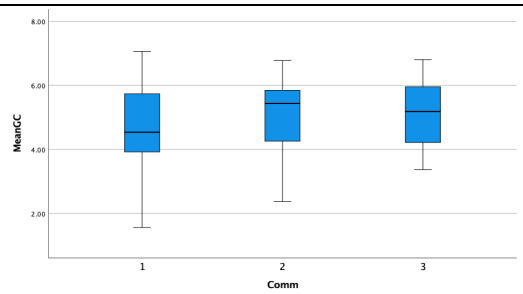
Table 16

One-Way ANOVA Ranks

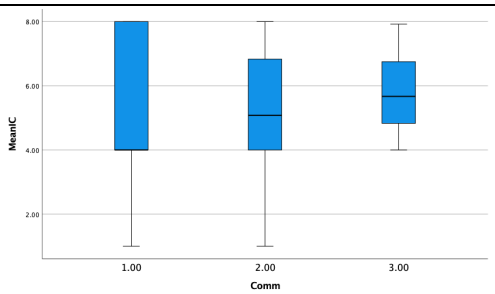
	Comm	N	Mean Rank
MeanGC	1	64	67.08
	2	49	77.97
	3	33	79.32
	Total	146	
MeanIC	1	64	71.91
	2	49	70.02
	3	33	81.76
	Total	146	
MeanM	1	64	56.81
	2	49	79.01
	3	33	97.68
	Total	146	

Testing the assumptions for the ANOVA test

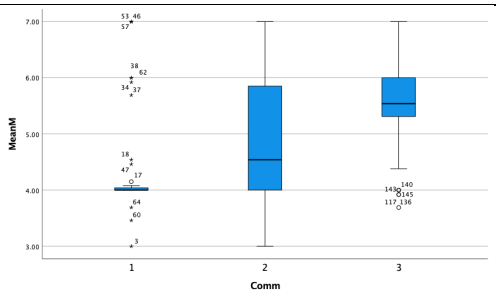
In examining the data requirements for this test, assumptions related to the research design, as well as to the fit of data to the ANOVA model were tested. The first three assumptions -- 1) the dependent variable readiness is measured as a continuous variable; 2) the independent variable is categorical and consists of three categorical independent groups; and 3) the three groups in this test have different participants – have been met. In this next section the descriptive statistics to check the assumptions related to how the data fits the one-way ANOVA model will be presented. Regarding checking for outliers in the low, medium, and high groups in terms of readiness variables, by inspecting boxplots, no outliers in the MeanGC and MeanIC data were found (Figure 5). However, there were 16 outliers for MeanM, so the non-parametric Kruskal-Wallis H test was run (Figure 6).



Mean general-capacity Boxplot



Mean innovation-specific capacity Boxplot



Mean motivation Boxplot

Figure 4

Sample B One-Way ANOVA Boxplots

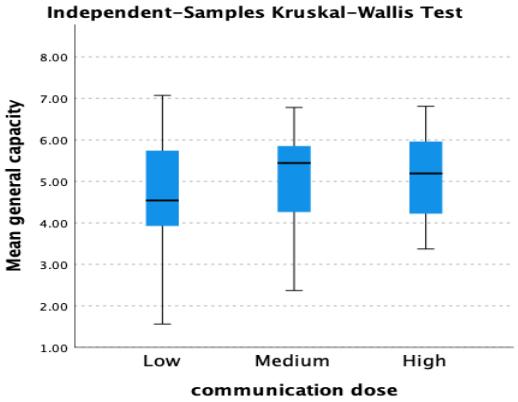


Figure 5

One-Way ANOVA Non-parametric Kruskal-Wallis H Test

Based on visual inspection of Figure 6, the distributions of the means of readiness variables have similar shapes for all levels of change communication, therefore, inferences about the difference in medians between the three communication levels were made based on the Kruskal-Wallis H test (i.e., whether there is a communication effect on median variables of readiness scores). The hypothesis test summary (Table 17) presents the null hypotheses in terms of the distributions of the means of the readiness variables. Based on the p values (.266, .420) we do not reject the null hypotheses for perceived organizational general capacity and perceived innovation specific capacity – their distributions are the same across levels of change communication dose. However, the p value of motivation to adopt a change is <.05, so the result is statistically significant, therefore the null hypothesis is rejected. The data supports that the distribution of Mean motivation across levels of communication was significantly different.

Table 17

One-Way ANOVA Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Mean general capacity is the same across categories of communication dose.	Independent-Samples Kruskal-Wallis Test	.266	Retain the null hypothesis.
2	The distribution of Mean innovation-specific capacity is the same across categories of communication dose.	Independent-Samples Kruskal-Wallis Test	.420	Retain the null hypothesis.
3	The distribution of mean motivation is the same across categories of communication dose.	Independent-Samples Kruskal-Wallis Test	<.001	Reject the null hypothesis.

a. The significance level is .050.
b. Asymptotic significance is displayed

Differences in the means for readiness variables between the three groups were determined using a Kruskal-Wallis Hypothesis test – with the hypothesis for MeanGC is H1, MeanIC is H2, and MeanM is H3. By visually assessing the boxplots, the distributions of scores were similar for all groups. Median readiness scores were not statistically significantly different for perceived organizational general capacity across the three levels of communication H1= 2.649, p = .266. Similarly, the median scores were not statistically significantly different for perceived innovation-specific capacity across the three levels of communication H2= 1.736, p = .420. However, the median scores were statistically significantly different for motivation to adopt a change H3 = 23.607, p <.001. (Tables 18, 19, and 20)

Table 18

Independent-Samples Kruskal-Wallis Test Summary (MeanGC)

Total N	146
Test Statistic	2.649[a,b]
Degree Of Freedom	2
Asymptotic Sig. (2-sided test)	.266

a. The test statistic is adjusted for ties.
b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Table 19

Independent-Samples Kruskal-Wallis Test Summary (MeanIC)

Total N	146
Test Statistic	1.736[a,b]
Degree Of Freedom	2
Asymptotic Sig. (2-sided test)	.420

a. The test statistic is adjusted for ties.
b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Table 20

Independent-Samples Kruskal-Wallis Test Summary (MeanM)

Total N	146
Test Statistic	23.607[a,b]
Degree Of Freedom	2
Asymptotic Sig. (2-sided test)	<.001

a. The test statistic is adjusted for ties.

A post-hoc analysis for three pairwise comparisons was conducted using Dunn's procedure and Bonferroni correction for multiple comparisons (Table 21). The medians of the Low-Medium (p = .011) and Low-High (p = .000) groups are statistically significantly different, whereas the medians of Medium-High groups are not statistically significantly different since the p value is .121 which is greater than .05.

Table 21

Post-hoc Results. Pairwise Comparisons of Communication Dose

Sample 1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Low-Medium	-22.198	7.676	-2.892	.004	.011
Low-High	-40.869	8.667	-4.716	<.001	.000
Medium-High	-18.672	9.107	-2.050	.040	.121

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .050.
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

In summary, the Kruskal-Wallis H test and pairwise comparisons test determined the differences in perceived organizational general capacity scores, perceived innovation-specific scores, and motivation to adopt a change scores between groups that differed in their level of exposure to

change communication -- low (n = 64), medium (n = 49), and high (n = 33). By visually inspecting the boxplot, it was determined that the distributions of the perceived organizational general capacity, perceived innovation-specific capacity, and motivation to change scores were similar for all groups. Median perceived organizational general capacity scores (H1 = 2.649, p = .266), and perceived organizational innovation-specific capacity scores (H2 = 1.736, p = .420) were not statistically significantly different between the different levels of change communication, whereas the median motivation to adopt a change scores (H3 = 23.607, p <.001) were statistically significantly different between the different levels of change communication.

As a next step, a post hoc analysis was conducted using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons was conducted and pairwise comparisons were performed. The results showed statistically significant differences in median readiness variables scores between the low dose and medium dose groups (adjusted p value = .011), as well as between the low dose and high dose groups (adjusted p value = .000), but not between the medium dose and high dose groups (adjusted p value = .121).

Checking the normality of the readiness variables for low, medium, and high groups using the Shapiro-Wilk test (Table 22). The p values of MeanGC (p = .267 level 1, p = .171 level 3) and MeanIC (p = .110 level 3) are greater than .05, indicating that data for MeanGC (levels 1,3) and MeanIC (level 3) are normally distributed. However, p values for MeanGC (p = .006 level 2), MeanIC (p <.001 level 1; p = .002 level 2), and MeanM at all levels (p <.001 level 1; p <.001 level 2; p = .019 level 3) are less than .05, indicating that data for Mean GC (level 2), MeanIC (levels 1, 2), and MeanM (levels 1,2,3) are not normally distributed.

Table 22

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Comm	Statistic	df	Sig.	Statistic	df	Sig.
Mean GC	1	.098	64	.200*	.977	64	.267
	2	.167	49	.002	.930	49	.006
	3	.101	33	.200*	.954	33	.171
MeanIC	1	.300	64	< .001	.775	64	< .001
	2	.162	49	.003	.917	49	.002
	3	.146	33	.070	.947	33	.110
MeanM	1	.417	64	< .001	.571	64	< .001
	2	.204	49	< .001	.880	49	< .001
	3	.180	33	.008	.920	33	.019

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

To deal with violation of normality, data of all the dependent variables at all levels were transformed three times (inverse, Log10, 1-inverse) and tests of normality were run for each transformation, however, results were like the ones discussed so far.

Results of the ANOVA test

A one-way ANOVA was conducted to determine if readiness for change is different for groups that differ on the level of exposure to the change communication intervention (i.e., participants received different doses of change communication). Participants were classified into three groups: low (n = 64), medium (n = 49), and high (n = 33). Data is presented as mean +/- standard deviation in Table 21. There was an increase in MeanGC score from 4.7178 +/- 1.13357 in the low group to 4.9979 +/- 1.10848 in the group receiving a medium dose of change communication (an increase that is not statistically significant p = .38). There was an increase in Mean GC score from 4.7178 +/- 1.13357 in the low group to 5.0670 +/- 1.00486 in the group receiving a high dose of change communication (an increase that is not statistically significant p = .301).

There was a decrease in the MeanIC score from 5.5258 +/- 2.10865 in the low group to 5.3994 +/- 1.60032 in the group receiving a medium dose of change communication (a decrease that is not statistically significant p = .924). There was an increase in MeanIC score from 5.5258 +/- 2.10865 in the low group to 5.7503 +/- 1.12432 in the group receiving a high dose of change communication (an increase that is not statistically significant p = .823). There was an increase in MeanM score from 4.4386 +/-1.03247 in the low group to 4.8712 +/- .95472 in the group receiving a medium dose of change communication (an increase that is statistically significant p = .054). There was an increase in MeanM score from 4.4386 +/-1.03247 in the low group to 5.4842 +/- .88516 in the group receiving a high dose of change communication (Tables 23 and 24).

Table 23

One-Way ANOVA Descriptives

						95% Confidence Interval for Mean			
		N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
MeanGC	Low	64	4.7178	1.13357	.14170	4.4347	5.0010	1.56	7.07
	Medium	49	4.9929	1.10848	.15835	4.6745	5.3113	2.37	6.78
	High	33	5.0670	1.00486	.17492	4.7107	5.4233	3.37	6.81
	Total	146	4.8890	1.10076	.09110	4.7090	5.0691	1.56	7.07
MeanIC	Low	64	5.5258	2.10865	.26358	4.9991	6.0525	1.00	8.00
	Medium	49	5.3994	1.60032	.22862	4.9397	5.8591	1.00	8.00
	High	33	5.7503	1.12432	.19572	5.3516	6.1490	4.00	7.92
	Total	146	5.5341	1.75370	.14514	5.2473	5.8210	1.00	8.00
MeanM	Low	64	4.4386	1.03247	.12906	4.1807	4.6965	3.00	7.00
	Medium	49	4.8712	.95472	.13639	4.5970	5.1455	3.00	7.00
	High	33	5.4842	.88516	.15409	5.1704	5.7981	3.69	7.00
	Total	146	4.8201	1.05039	.08693	4.6483	4.9920	3.00	7.00

Table 24

Multiple Comparisons

Tukey HSD

						95% Confidence Interval for Mean	
Dependent Variable	(I) Comm	(J) Comm	Mean Differ-ence (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
MeanGC	Low	medium	-.27504	.20833	.386	-.7685	.2184
		high	-.34916	.23520	.301	-.9062	.2079
	Medium	low	.27504	.20833	.386	-.2184	.7685
		high	-.07411	.24715	.952	-.6595	.5112
	High	low	.34916	.23520	.301	-.2079	.9062
		medium	.07411	.24715	.952	-.5112	.6595
MeanIC	Low	medium	.12639	.33430	.924	-.6653	.9181
		high	-.22452	.37742	.823	-1.1184	.6693
	Medium	low	-.12639	.33430	.924	-.9181	.6653
		high	-.35092	.39658	.651	-1.2902	.5883
	High	low	.22452	.37742	.823	-.6693	1.1184
		medium	.35092	.39658	.651	-.5883	1.2902
MeanM	Low	medium	-.43263	.18511	.054	-.8710	-.0058
		high	-1.04565*	.20898	<.001	-1.5406	-.5507
	Medium	low	.43263	.18511	.054	-.0058	.8710
		high	-.61302*	.21960	.016	-1.1331	-.0929
	High	low	1.04565*	.20898	<.001	.5507	1.5406
		medium	.61302*	.21960	.016	.0929	1.1331

*. The mean difference is significant at the 0.05 level.

Analysis-3, One-Way MANOVA

A one-Way MANOVA was conducted using sample B.

Descriptive Statistics

Sample B Descriptives (Table 25).

The number of valid cases for MeanGC, MeanIC, and MeanM variables at the low-dose level is sixty-four (N=64), MeanGC, MeanIC, and MeanM variables at the medium-dose level is forty-nice (N=49), MeanGC, MeanIC, and MeanM variables at the high-dose level is thirty-three (N=33) (Table 23). The value of MeanGC is 5.0670 at the high-dose level which is greater than

the values of MeanGC at the medium-dose level (4.9929) and MeanGC at the low-dose level (4.7178) levels. The value of MeanIC is 5.7503 at the high-dose level which is greater than the values of MeanIC at the medium-dose level (5.3994) and MeanIC at the low-dose level (5.5258). levels. The value of MeanM is 5.4842 at the high-dose level which is greater than the values of MeanM at the medium-dose level (4.8712) and MeanM at the low-dose level (4.4386).

Table 25

Sample B Descriptive Statistics

	Comm	Mean	Std. Deviation	N
MeanGC	low	4.7178	1.13357	64
	medium	4.9929	1.10848	49
	high	5.0670	1.00486	33
	Total	4.8890	1.10076	146
MeanIC	low	5.5258	2.10865	64
	medium	5.3994	1.60032	49
	high	5.7503	1.12432	33
	Total	5.5341	1.75370	146
MeanM	low	4.4386	1.03247	64
	medium	4.8712	.95472	49
	High	5.4842	.88516	33
	Total	4.8201	1.05039	146

Testing the assumptions for the MANOVA test

Assumptions that are specific to the MANOVA analysis will be tested next starting with collinearity (Table 24). The Pearson correlation between MeanGC and MeanIC is .076 (p = .363), which indicates a correlation that is not statistically significantly weak between the two, and the two variables will be considered suitable for a MANOVA analysis. However, the Pearson correlation between MeanGC and MeanM is .169 (p = .042), which indicates that the correlation is statistically significantly weak, and the two variables can be used in a MANOVA test. Finally,

the Pearson correlation between MeanIC and MeanM is .433 (p <.001) which is a statistically significantly moderate correlation, indicating that the two variables are suitable for a MANOVA analysis.

Table 26

Correlations

		MeanGC	MeanIC	MeanM
MeanGC	Pearson Correlation	1	.076	.169*
	Sig. (2-tailed)		.363	.042
	N	146	146	146
MeanIC	Pearson Correlation	.076	1	.433**
	Sig. (2-tailed)	.363		< .001
	N	146	146	146
MeanM	Pearson Correlation	.169*	.433**	1
	Sig. (2-tailed)	.042	< .001	
	N	146	146	146

*. Correlation is significant at the 0.05 level (2-tailed)
**. Correlation is significant at the 0.01 level (2-tailed)

Given that there is no collinearity between the dependent variables, the assumption of linearity is tested next. There appears to be a linear relationship between MeanIC and MeanM and between MeanM and MeanGC. However, linearity is not clear between MeanGC and MeanIC. Regression procedure was run next. The Mahalanobis distance values indicate that since the largest number (10.47664) is less than the critical value for three dependent variables (16.27), it can be concluded that there are no multivariate outliers. The last step is to carry out the one-way MANOVA, including a Levene's test which will be used to verify that the variances across different levels of communication are equal. The results are presented in tables 27 and 28. The test of homogeneity of variance-covariance is violated since the p value is <.001 (Table 27).

Table 27

Box's Test of Equality of Covariance Matrices[a]

Box's M	43.702
F	3.521
df1	12
df2	55061.601
Sig.	<.001

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.
a. Design: Intercept + Comm

Further, Levene's Test of Equality of Error Variances (Table 28) determined whether the variances between group combinations for the dependent variable are equal. The p values for Mean GC (p = .865, .903, .903) are greater than .05, which indicates that there is equal variance, and the assumption of homogeneity has not been violated.

Table 28

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
MeanGC	Based on Mean	.145	2	143	.865
	Based on Median	.102	2	143	.903
	Based on Median and with adjusted df	.102	2	133.071	.903
	Based on trimmed mean	.126	2	143	.882
MeanIC	Based on Mean	23.390	2	143	< .001
	Based on Median	4.373	2	143	.014
	Based on Median and with adjusted df	4.373	2	88.171	.015
	Based on trimmed mean	24.555	2	143	< .001
MeanM	Based on Mean	1.030	2	143	.360
	Based on Median	2.652	2	143	.074
	Based on Median and with adjusted df	2.652	2	109.763	.075
	Based on trimmed mean	1.183	2	143	.309

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design: Intercept + Comm

Results of the main one-way MANOVA:

Main One-Way MANOVA: In evaluating the results from the main one-way MANOVA (Table 29), Wilks' Lambda multivariate statistic will be used since the samples are unequal in size. The levels of communication on the combined dependent variable readiness were statistically significantly different F (6, 282) = 4.880, p <.001.

Table 29

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillal's Trace	.975	1842.109[b]	3.000	141.000	< .001	.975
	Wilks' Lambda	.025	1842.109[b]	3.000	141.000	< .001	.975
	Hotelling's Trace	39.194	1842.109[b]	3.000	141.000	< .001	.975
	Roy's Largest Root	39.194	1842.109[b]	3.000	141.000	< .001	.975
Comm	Pillal's Trace	.180	4.693	6.000	284.000	< .001	.090
	Wilks' Lambda	.821	4.880[b]	6.000	282.000	< .001	.094
	Hotelling's Trace	.217	5.064	6.000	280.000	< .001	.098
	Roy's Largest Root	.210	9.960[c]	3.000	142.000	< .001	.174

a. Design: Intercept + Comm
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Results of the moderator analysis:

To test the hypotheses related to the moderation effects of Tenure and Job-type on the relationship between change communication and readiness variables, moderator analyses were conducted.

1. Effects of Job_Type on MeanIC and MeanGC: The effects of Job_Type on Mean IC and Mean GC were not calculated since Communication and Job_Type (Tables 30 & 31) had no significant impact on Mean IC and Mean GC.

Table 30

Coefficients Job_Type (MeanIC)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	5.009	.868		5.770	<.001		
	Job_Type	-.152	.175	-.097	-.866	.389	.993	1.007
	Comm	.328	.323	.113	1.015	.313	.993	1.007
a. Dependent Variable: MeanIC								

Table 31

Coefficients Job_Type (MeanGC)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4.374	.639		6.842	<.001		
	Job_Type	.108	.238	.050	.455	.651	.993	1.007
	Comm	.229	.129	.197	1.779	.079	.993	1.007
a. Dependent Variable: MeanGC								

2. Effects of Job_Tenure on MeanIC and MeanGC: The effects of Job_Tenure on Mean IC and Mean GC were not calculated since Communication and Job_Tenure (Tables 32 & 33) had no significant impact on Mean IC and Mean GC.

Table 32

Coefficients Job_Tenure (MeanIC)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4.469	.843		5.298	<.001		
	Job_Tenure	.336	.323	.116	1.039	.302	.996	1.004
	Comm	.159	.203	.087	.783	.436	.996	1.004
a. Dependent Variable: MeanIC								

Table 33

Coefficients Job_Tenure (MeanGC)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	5.000	.631		7.925	<.001		
	Job_Tenure	.084	.242	.039	.728	.728	.996	1.004
	Comm	-.107	.152	-.080	.481	.481	.996	1.004
a. Dependent Variable: MeanGC								

3.Effect of Job-Type on MeanM was run next since communication had significant impact on MeanM as indicated in Table 34.

Table 34

Coefficients Job_Type (MeanM)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4.007	.557		7.187	<.001		

	Job_Type	.587	.208	.298	2.825	.006	.993	1.007
	Comm	-.176	.112	-.166	-1.568	.121	.993	1.007
a. Dependent Variable: MeanM								

4.Effect of Job-Tenure on MeanM was run next since communication had significant impact on MeanM as indicated in Table 35.

Table 35

Coefficients Job_Tenure (MeanM)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.487	.547		6.373	<.001		
	Job_Tenure	.603	.210	.306	2.875	.005	.996	1.004
	Comm	.110	.132	.089	.835	.406	.996	1.004
a. Dependent Variable: MeanM								

In the Model summary (Table 36), in model 2 row, the change in R^2 is zero indicating that there is no change due to the interaction term INTjobtype and that the no effect is not statistically significant since p = .872 is greater than .05.

Table 36

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.415[a]	.172	.160	.96384	.172	14.740	2	142	< .001
2	.415[b]	.172	.154	.96716	.000	.026	1	141	.872

a. Predictors: (Constant), job_type, Comm
b. Predictors: (Constant), job_type, Comm, INTjobtype
c. Dependent Variable: MeanM

Further, using the coefficient values from the Coefficients table (Table 37), the regression equation could be reported as follows:

MeanM = 4.274 + (0.489 * Communication) + (-0.184 * Job_type) + (0.014 * INTjobtype).

Table 37

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.276	.263		16.260	< .001	3.756	4.796		
	Comm	.488	.102	.366	4.772	< .001	.286	.690	.990	1.010
	Job_type	-.185	.087	-.162	-2.112	.036	-.358	-.012	.990	1.010
2	(Constant)	4.274	.264		16.173	< .001	3.752	4.796		
	Comm	.489	.103	.367	4.757	< .001	.286	.692	.987	1.013
	Job_type	-.184	.088	-.161	-2.087	.039	-.358	-.010	.985	1.015
	INTjobtype	.014	.085	.012	.161	.872	-.155	.183	.992	1.008

a. Dependent Variable: MeanM

Effect of Tenure was run second, and the results are presented in Table 38. In the Model summary, in model 2 row, the change in R^2 is .002 indicating that there is no change due to the interaction term INTtenure and that the no effect is not statistically significant since p = .566 which is greater than .05.

Table 38

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.397[a]	.158	.146	.97073	.158	13.387	2	143	< .001
2	.400[b]	.160	.142	.97301	.002	.330	1	142	.566

a. Predictors: (Constant), Tenure, Comm
b. Predictors: (Constant), Tenure, Comm, INTtenure
c. Dependent Variable: MeanM

CHAPTER 5: CONCLUSIONS, LIMITATIONS, AND FUTURE RESEARCH

5.1 Conclusions

Growing interest in the organizational readiness for change concept in the healthcare context has generated increased attention to what improves readiness levels before the initiation of and throughout the change process. Although developing standard interventions to improve readiness has just started to take off in healthcare research, there is a strong agreement among organizational researchers that change communication plays a significant role in increasing levels of readiness. For researchers, this interest introduced an opportunity to: 1) remove the ambiguity surrounding the readiness concept by providing a clear standard common definition; 2) further theorize about readiness to identify factors that could influence its level; and 3) develop valid and reliable measurements for readiness. However, a significant gap exists between researchers and practitioners regarding their interests and understanding of readiness. For example, practitioners' limited knowledge of readiness restricts their ability to systematically use organizational processes to create a readiness state at a level that can foster a smooth and effective change effort.

Because of this shared interest between researchers and practitioners, the theoretical development of readiness while keeping an eye on its practical application can help formulate research questions relevant to practice. As such, research translation and intervention design, based on readiness factors, will improve organizations' ability to manage change effectively – thus contributing to bridging the gap between research and practice.

Ample research emphasized the critical role of communication in initiating and conducting change efforts. Organizational researchers have been calling for theoretical and empirical

support to further advance the field of communication in the changing context (Lewis & Seibold, 1998). This emphasis on change communication is to understand what organizational characteristics increase the potential for success in the conduct of change efforts (i.e., the implementation of innovations). Change communication research has focused mainly on two aspects: 1) the critical role of the change message in relaying the "need for" and "urgency" of the change, and 2) the role change communication plays in shaping attitudes and behaviors before the initiation and during the management of the change efforts. Indeed, the organizational change literature highlighted steps for tailoring strategies to communicate the change to employees to ensure a clear message and a shared understanding of what the change entails. This second emphasis boosted interest in the potential role that change communication can play in improving readiness and enhancing the organizational conditions for a successful change.

Even though many researchers have asserted the critical role communication plays in effecting change, some have connected to the failure of change efforts (Barrett 2002). Perhaps the disruption is related to the amount of communication (high or low) that employees receive before and during the change effort. For communication to play a constructive role, a baseline of how much communication is good communication will need to be established.

This dissertation acknowledges the importance of using internal organizational processes to improve employees' readiness for change, especially in healthcare. The dissertation takes a specific interest in "change communication" for three reasons: 1) even though scholars have long maintained that change communication is essential for change success, empirical testing for this relationship has been very limited (Eisenberg, Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999; Doyle, McEntee, & McNamara, 2012; McKay et al., 2013); 2) perhaps this limitation is due to the lack of valid and reliable measurements of change communication. The organizational

change literature suggested a significant load of communication to be used during change implementation without specifying what would be an excellent baseline to start with; and 3) the fact that an overload of information may have the opposite effect on employees' readiness. Klerings, Weinhandl, and Thaler (2015) warn of a situation in which information overload, in a healthcare context, could hinder the adoption of evidence-based practice. Moreover, Rafferty and Jimmieson (2010) uncovered a negative association between information regarding change and work quality. Communicating about the change may provide employees ample opportunities to think through the transition and all its attributes, including its impact on their workload and the organizational environment. Although this may lead to lower readiness levels, readiness scores could give managers a "true" score of how well-prepared the organization is for the change. For example, organizational researchers such as French (1999) have supported the positive contribution of employees' *participation* -- through involvement in decision-making – in organizational change efforts. However, as the concept of participation became theoretically sound and experienced further in practice, organizational researchers have become cautious regarding its effect since employees are not always interested in making decisions regarding the change.

The literature reviewed in this dissertation has led to two significant elements that affected the development of the change communication intervention. First, Although Kotter indicates that "a lot of" communication is good (Kotter, 1996), he did not provide further clarity around this. A lot of communication means using multiple sources for communicating the change, the same source providing various messages, or multiple sources providing numerous messages. For this dissertation, "a lot of" communication is interpreted as delivering communication differently and in varied doses. Second, the literature has made it clear that there is variation and inconsistencies in the readiness measurements. However, given the community-based and

practice orientation of the study, the decision was to adopt a measurement scale that would provide insights to managers in determining a course of action needed to ensure readiness is prevalent at the initiation and throughout the phases of change. Further, selecting a measurement based on a heuristic approach to readiness construction helps to overcome the complexity surrounding the concept of readiness and improves its practice application.

5.2 Limitations and Future Research

Many scholars have emphasized research limitations that are inherent to the healthcare context. Healthcare-related research is often cross-sectional and does not always involve an experimental group or has an accurate sample size (Pye, Taylor, Clay-Williams, Braithwaite, 2016). As stated by Toyoshima, Yonee, Maegaki, Yamamoto, Shimojima, Maruyama, & Kawano, (2009), "each healthcare setting into which innovations are introduced represents its own organizational milieu," and by Ramanujam & Rousseau (2006b), a better understanding of the organizational processes is fundamental for healthcare change research scholars. Mayo, Myers, and Sutcliffe (2019) emphasized this reality in their review. They state that research in organizational science journals stresses broad generalizability, while research in healthcare journals highlights contextualized problems. Although boundary conditions are over-emphasized in healthcare research, the healthcare context provides a unique opportunity for organizational researchers interested in generalizable theories to explore contingencies and effects of contextual factors (Schippers et al., 2015). Indeed, healthcare scholars highlight differences related to change leadership and the fact that multiple actors across the health system are involved in initiating and adopting change in healthcare.

This dissertation has several limitations consistent with the typical limitations in healthcare organizational research. First, concerning internal validity: (1) data collection occurred when healthcare staff were still experiencing exhaustion and stress from the COVID-19 pandemic. Their responses may not reflect their accurate perceptions of readiness; (2) the constructive approach to designing the change communication relied on interpreting the theories associating change communication with readiness factors due to the lack of existing effective change communication interventions. Future research must focus on the inductive approach and use

qualitative research to inform a better design of the change communication; (3) while the study tested the change communication intervention based on the amount of communication (dose), the change communication was carried out differently at different levels. As a result, the type of communication -- informative (information sessions), exchange (face-to-face discussions) -- presented a confounding variable that may have affected the results. Future research must focus on designing similar change communication across different doses to test for the effectiveness of the amount of communication; (4) the change communication intervention was measured as polychotomous. Future research should focus on designing communication interventions that are measured continuously to allow for more robust analytical analyses and, therefore, valid findings.

Second, concerning external validity: (1) sampling and response biases are present in this study, as prenatal staff who chose to attend the information session or participate in the face-to-face discussions experienced medium-dose and high-dose communication. Future research should focus on designing the change communication intervention in a way that allows for randomly exposing participants to the medium and high doses of communication; (2) this dissertation excludes the perspectives of the organization's leaders and explores the views of healthcare staff only. Future research should focus on leadership factors that influence readiness, such as leadership engagement and support; (3) as stated in Chapter IV, the empirical results did not present a significant variation in the findings across the levels of change communication. This result could be due to the small sample size and the fact that the participants came from the same organization. Future research should use a larger sample size from a broader sampling frame that includes different healthcare systems.

Change managers will need to exert additional effort to harmonize leaders' understanding and level of adoption (Battilana and Casciaro, 2010). As such, researchers will need a large sample size with participants from different system levels to provide, at a minimum, meaningful, if not significant, findings. Further, Green and Glasgow (2006) warned that due to the complexity of the healthcare context, "the evidence-based health practice literature seems to have lost focus on external validity."

Since only one healthcare innovation and one organization were involved in this study, the findings are subject to the usual caveats of generalization in healthcare settings. However, the study still offers some interesting results. First, although this study does not test for the effectiveness of types of communication, discussions and thought sharing in face-to-face meetings have proven to be more effective in improving employees' perceptions of readiness overall. Through conversations and thought sharing, employees can better understand how their peers, with varied job types, feel about the change and perceive the effect on their day-to-day job and access to resources. Face-to-face conversation provides a social setting for conducting sensitive discussions, which may affect employees' well-being severely. Listening to and acquiring information from peers will help to improve employees' decisions regarding the change (Rousseau, 2020).

Second, the change in readiness levels, based on the variation in change communication dose, was not uniform across readiness variables. The increased communication improved employees' perceptions of the organizational general capacity for change. However, there was no consistent improvement in employees' perceptions of innovation-specific capacity or motivation. One possible explanation for these inconsistent findings is that the measures of innovation-specific capacity and motivation tap into one descriptor, individuals' job type, which means that these individuals come from the same background. As mentioned in the literature review,

individuals with administrative or technical experience may score differently on their motivation level and knowledge regarding healthcare innovation than healthcare professionals (physicians and nurses). However, this explanation may not be valid for two reasons:1) the sample composition according to job type is relatively balanced. This balance has been maintained even after splitting the sample and organizing it in two different ways for different analysis purposes, and 2) the MANOVA analysis showed no effect of job type on moderating the relationship between communication and readiness. This last relationship will need to be studied further since the relationship between receiving information regarding change and job type has been conceptually associated in the healthcare context. Other possible explanations of the inconsistencies in the study findings could be related to the design and delivery of the change communication intervention. Although the change messages and mode of delivery were consistent, different groups implemented the change communication intervention in the three clinics, which may have led to confusion regarding the implications of the healthcare innovation. These groups -- managers, champions, and external researchers -- have different interests in the change effort. Therefore, aligning other interests is essential for the change to succeed. Change managers must invest time and resources in adjusting stakeholders' interests, especially when their perspective is needed.

Further, change scholars have studied job tenure in the context of resistance and found a strong association between job tenure and resistance to change. As a result, a relationship between readiness for change and job tenure is possible. However, the relationship between change communication and job tenure has not been studied well in the literature. The MANOVA analysis in this study showed no effect of job tenure in moderating the relationship between change communication and readiness.

5.3 Implications for Managers

Although further exploration is required, a potential managerial implication of this study is that change communication needs to be seen by managers as a possible contributor to readiness and the success of the implementation of healthcare innovations. Managerial attention must focus on the amount of change communication needed to support change efforts. Although the study did not show a moderate effect of job type or tenure, further exploring these constructs in the context of readiness for change would help managers tailor their change messages to employees based on their roles and tenure in the organization.

A key idea generated in the change management literature is adapting the communication to employees engaged in the change. Based on their structure, organizations share information using several communication processes such as monthly newsletters, staff meetings, CEO's or manager's emails, and blogs. These processes can effectively communicate the change and reduce ambiguity and confusion.

It is essential, though, for a manager to determine whether she can rely on existing organizational communication processes to deliver a change message. The change's complexity and the quality of existing communication processes can influence managers' decisions. To improve readiness for a change, assessing the quality of their routine communication and the effectiveness of these processes in delivering interpretable messages to different employees is essential. As indicated, although this study did not emphasize the type of communication, it was clear that communicating through discussions and thought sharing could be even more effective in providing higher measures for the readiness for change. Through conversations and thought sharing, employees can better understand how their peers, with varied job types, feel about the change and perceive its effect on their day-to-day job and access to resources. Since employees can think

through the change in a social setting by listening to and acquiring information from their peers, their decision will improve (Rousseau, 2020).

5.4 Implications for Researchers

There is an opportunity for researchers to highlight the factors in change communication that are most likely to affect readiness in practice. The dose factor is one of these factors; however, establishing a baseline for how to go by initiating and measuring change communication in practice is very much needed. Moreover, a potential line of research would be related to the interaction between the dose and type of communication. This study did not distinguish between the types of communication within the change communication intervention. While the low dose was related to the unidirectional and written communication received by email and in the survey, the medium and high doses were associated with face-to-face discussions. Additionally, the interaction between the timing and type of communication could be a factor in driving readiness. Questions, such as "how best to communicate the initiation of the change -- by email or by conducting in-person conversations", and "how often managers should communicate to maintain readiness throughout the change effort" , can be beneficial to management in conducting change effort.

Research has not verified the theoretical or practical value of change communication concerning organizational readiness for change.

This dissertation made conceptual and managerial contributions to this area of research. As part of a grant funded by the NHLBI, the dissertation study provides insights into the research-related issues to inform the large-scale trial in phase II. This dissertation will also guide implementation (and readiness) related studies conducted in a participatory approach in community-based settings. Before testing the healthcare innovation (funded by the NHLBI) in a more significant, more rigorous, and expensive research design, this dissertation will recommend the required refinements related to the creation of the communication intervention and the measurements of the communication change intervention to positively increase the impact on the

implementation of the healthcare innovation. The feasibility study can also identify issues around the research methods for a better design and use of measurements in the larger trial, especially in settings where resources are constrained, and health systems are not attuned to healthcare research.

In summary, a change communication intervention has been developed and applied to test the assumptions underlying the link between change communication and readiness. A significant outcome achieved because of this dissertation is that with differentiation of change communication dose comes readiness variations. While the study shows that some readiness components might improve with increased change in communication, other components might decrease or show no significant change. Scholars must further explore the relationship between change communication and organizational readiness for change.

Organizational change literature suggests, ironically, that for change to succeed, managers must effectively and continuously communicate change-related messages to employees involved in or impacted by the change. These insights are more likely to be maintained if researchers do not shift their efforts to focus more on the type and amount of communicated messages related to change. The challenge is to find the sweet spot that can have a positive outcome on readiness for change.

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APPENDIX A

Readiness Diagnostic Scale©

Purpose of the Survey

The University of North Carolina at Chapel Hill (UNC), in partnership with Piedmont Health Services (PHS) and community groups, is conducting a research project funded by the National Heart, Lung, and Blood Institute (NHLBI). The project will test implementation strategies, including *Readiness*, for implementing the Severe Hypertension Safety Bundle for pregnant and postpartum women in the outpatient setting. For Phase I of this project, selected and adapted elements related to the Bundle will be implemented, with the goals of accurate blood pressure measurements, recognition of severe hypertension in pregnant and postpartum women, and prompt, appropriate management.

Choosing Whether to Participate in the Survey

This survey asks questions about your clinic's readiness to implement the Bundle with quality, as well as questions about how your clinic generally functions day-to-day. Completing the survey is totally voluntary and you may withdraw from participating in this survey – or any future survey for this project – at any time. Whether you complete the survey or not, neither your employment status as a staff member in the Piedmont Health System nor your relationship to UNC, will be affected in any way. Your individual responses will not be shared with any PHS staff member or with anyone else other than the study investigators. Further, your PHS staff supervisors will not know whether you completed the survey.

Your answers to the survey will be helpful in determining the appropriate training, consultation, and other implementation support needed for implementation of the Bundle. The surveys will also be used to assess readiness over time and to correlate readiness and system-level performance, as measured by simulation, in putting these protocols into place. The resulting findings may not only be helpful to PHS clinics that implement the protocols, but also be generalizable to other outpatient facilities.

If you agree to complete the survey and are a staff member in the Moncure, Prospect Hill, or Siler City clinics, you will be asked to fill out the survey at three different intervals to assess whether your clinic's readiness to implement these new clinical protocols changes over time. If you agree to participate and are a staff member of the Burlington, Carrboro, Chapel Hill, Charles Drew, and Scott clinics, you will be asked to fill out a survey, one time only. Completing the survey will take about 20 minutes.

While there is always a small possibility of breach of confidentiality in research, every effort will be made to protect your identity as a study participant. Specifically, any reports or publications of this study or its results will not include any information that can identify you personally. Further, any information that could potentially identify you, such as your

email address will be stored separately from your responses and on a secured server that only approved study personnel can access. Once the investigators have completed data collection, your email address will be permanently removed from the data set. In addition, any potentially identifying information, such as your clinic or your role in the clinic, will be available only to the research staff and analyzed in an aggregate manner that cannot identify you. There are no right or wrong answers. Please be candid in your responses. The results will be combined and summarized at the aggregate level into a report and shared back with you and members of your organization.

Other Information Regarding the Survey

This research is covered by a Certificate of Confidentiality. With this Certificate, the researchers may not disclose or use information, documents or biospecimens that may identify you in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings in the United States, for example, if there is a court subpoena, unless you have consented for this use.

The Certificate cannot be used to refuse a request for information from personnel of a federal or state agency that is sponsoring the study for auditing or evaluation purposes or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA).

The Certificate of Confidentiality will not be used to prevent disclosure as required by federal, state, or local law, such as mandatory reporting requirements for child abuse or neglect, disabled adult abuse or neglect, communicable diseases, injuries caused by suspected criminal violence, cancer diagnosis or benign brain or central nervous system tumors or other mandatory reporting requirement under applicable law. The Certificate of Confidentiality will not be used if disclosure is for other scientific research, as allowed by federal regulations protecting research subjects or for any purpose you have consented to in this informed consent document.

You should understand that a Certificate of Confidentiality does not prevent you from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information.

If you have any questions about this research, please contact the Investigator named at the top of this form by calling 919-966-1601 or emailing kate_menard@med.unc.edu. If you have questions or concerns about your rights as a research subject, you may contact the UNC Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

Demographics:

1. In which clinic do you work? (if you work in multiple clinics, indicate the one in which you spend most of your time)

2. How long have you worked in this clinic?

a. < 2 years
b. 2-5 years
c. > 5 years

3. Which of the following roles and responsibilities do you have in the clinic? Indicate all that apply

   a. Patient care coordinator
   b. Medical assistant
   c. Provider
   d. Lead provider
   e. Nurse
   f. Nurse manager
   g. Nutrition
   h. Lactation support
   i. Behavioral Health specialist
   j. Pharmacy
   k. Pharmacy manager
   l. Care manager
   m. Center manager
   n. Site director
   o. Training manager
   p. Other (Please specify)

4. For the second time that the RDS is administered only:
   a. Have you taken part in the Key Informant Interviews?
   b. Did you participate in the Readiness Thinking Tool group session?

<u>The Survey</u>

The questions below ask about motivation and capacity for implementing the Bundle in your clinic and about your clinic's day-to-day functioning. If you work in more than one clinic, please provide responses relevant to the clinic in which you spend most of your time. For each item, indicate how much you agree or disagree with the statement. Please indicate your responses with an X in the appropriate level. If an answer doesn't apply, check [Don't Know]

Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Don't Know

Part I: General Capacity For Your Clinic

Statement	Strongly Disagree	Disa-gree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Don't Know
1) Leadership at our clinic sets appropriate and manageable expecta-tions of staff work.								
2) We feel positively about our work.								
3) Leadership at our clinic listens to different per-spectives.								
4) People who work in our clinic feel valued.								
5) Turnover is not a prob-lem at our clinic.								
6) We know our organiza-tion's vision.								
7) We have a strong sense of identification with our organization.								
8) Our organization has a common purpose.								
9) We put in extra effort to make sure our organiza-tion succeeds.								
10) Morale is positive in our clinic.								
11) The way we are struc-tured makes it possible to do things well.								
12) We work well in a collab-orative way across teams.								
13) We regularly take time to consider ways to im-prove how we do things.								
14) Leadership at our clinic rewards creativity and innovation.								
15) When we experience a problem at our clinic, we make a serious effort to find a new way of doing things.								
16) We are strategic in how we approach change.								
17) Overall, our organization adapts well to change.								
18) We have the ability to access diverse sources of revenue.								
19) There is a clear process by which we prioritize and distribute resources.								
20) We have effective lead-ership in our clinic.								

21) Our leadership has effective project management processes.								
22) Our leadership appreciates team efforts.								
23) Our leadership carries on through the challenges of implementing our projects.								
24) Our leadership consistently uses appropriate evidence to inform decisions made at our clinic.								
25) Staffing levels are sufficient to accomplish our day-to-day tasks.								
26) People who work at our clinic have sufficient knowledge to carry out our day-to-day tasks.								
27) Our leadership has a comprehensive plan to address workforce turnover that includes recruitment and retention.								

Part II: Innovation-Specific Capacity For the Bundle

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Don't Know
28) An influential person in our site strongly promotes using the Bundle.								
29) At least one person we work with clearly communicates the needs and benefits of using the Bundle.								
30) There is a system in place to monitor how the Bundle will be implemented.								
31) Leadership at our clinic has sufficient knowledge and understanding around what is involved in the Bundle.								
32) Leadership at our clinic consistently demonstrates support for the implementation of the Bundle.								
33) We have ways to promote sustained use of the Bundle.								
34) We communicate well with other clinics who are implementing the								

Bundle.								
35) Our organization does a good job communicating about the Bundle to external stakeholders.								
36) We obtain necessary support from other organizations to help us implement the Bundle.								
37) We coordinate well with each other when working to implement the Bundle.								
38) We have the knowledge needed to implement the Bundle in our clinic.								
39) We have the skills needed to provide the Bundle services in our clinic.								

Part III: Motivation for the Bundle

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree	Don't Know
40) We see how the Bundle has advantages for maternal safety.								
41) The Bundle is better than other hypertension protocols we have used before at our clinic.								
42) The Bundle fits well with other initiatives at our organization.								
43) The Bundle is timely given the current needs of our providers.								
44) The Bundle is timely given the current needs of clients.								
45) The Bundle fits well with the culture and values of our organization.								
46) We can see how using the O-HTN Bundle helps meet the goals of our organization.								
47) It's easy to understand the components of the Bundle.								
48) It's simple to implement the O-HTN Bundle.								

49)	We are able to practice using the Bundle before full-scale implementation with clients.								
50)	We will be able to see some short-term results of the Bundle soon after using it with clients.								
51)	Using the Bundle is one of our organization's top three priorities.								
52)	Our clinic emphasizes that implementing the Bundle is very important.								

APENDIX B

This tool can help you think about your organization's readiness to implement a program, policy, practice, or process. While reflecting on the subcomponents below, think about the current level of readiness your organization has for this innovation (implementing the "Bundle"). Determine your level of agreement with each subcomponent's statement for your organization. Discuss with your implementation team the rationale and reasoning behind your determination and then check the column that best indicates your current level of agreement.

Motivation	Degree to which an organization wants the innovation to happen.	Disagree	Partially Agree	Strongly Agree	Unsure
Relative Advantage	This innovation seems better than what we are currently doing.				
Compatibility	This innovation fits with how we do things.				
Simplicity	This innovation seems simple to use.				
Ability to Pilot	This innovation can be tested and experimented with.				
Observability	We have the ability to see that this innovation is leading to outcomes.				
Priority	This innovation has a high level of importance compared to other things we do.				
Innovation-specific Capacity	What is needed to make this particular innovation happen.				
Innovation-specific Knowledge & Skills	We have sufficient abilities to do the innovation.				
Champion	There is a well-connected person who supports and models this innovation.				
Supportive Climate	We have the necessary supports, processes, and resources to enable this innovation.				
Inter-organizational Relationships	We have the necessary relationships between organizations that support this innovation.				
Intra-organizational Relationships	We have the necessary relationships within organization that support this innovation.				
General Capacity	The organization's overall functioning.				
Culture	We have clear norms and values of how we do things here.				
Climate	People have a strong sense/feeling of being part of this organization.				
Innovativeness	Our organization is open to change in general.				

Resource Utilization	Our organization has the ability to acquire and allocate resources including time, money, effort, and technology.				
Leadership	Our organization has effective leaders.				
Internal Operations	Our organization has effective communication and team-work.				
Staff Capacities	Our organization has enough of the right people to get things done.				
Process Capacities	Our organization has the ability to plan, implement, and evaluate.				

Which subcomponent(s) of readiness did you rate as "disagree"? Which did you rate as "strongly agree"? What evidence is there to support your ratings? Who needs to be at the table to build your team's level of readiness? Where do you have differences in opinion with your colleagues? What sort of support or coaching would be needed to further build your readiness in these subcomponents?