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Training Program Effectiveness in Building Workforce Agility and Resilience

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Walden University
2018

Abstract

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MBA, Webster University, 2006

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Organizational Psychology

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Abstract

Decades of qualitative case studies suggest that organizations must be able to deal with change effectively to compete and survive. Many researchers have linked higher workforce levels of agility and resilience to organizations' abilities to deal with change more successfully; however, there is a scarcity of empirical research addressing the efficacy of agility and resilience development in the workplace. The purpose of this study was to quantitatively examine the development of workforce resilience and agility, as measured by FIT for Change assessment. The theory of planned behavior was the study's theoretical framework, theorizing that changing attitudes and beliefs about change through a learning program might lead to more positive behaviors in response to change. The primary research question was whether a significant difference exists between individual agility and resilience levels before and after a learning intervention in the target population (N = 612) of associates employed by a large healthcare organization who participated in the learning intervention. Due to the abnormal distribution of the data and failed assumption of homogeneity of the regression slopes, Wilcoxon Signed Rank Test was used in lieu of ANCOVA. The results indicated that Agility scores increased on the second test (p = .000). Resilience scores did not change significantly on the second test (p = .913). This study is significant to healthcare organizations undergoing change and may result in organizations investing in development of agility and resilience of their workforce. Developing agility and resilience in people facilitates social change by creating communities that do not just survive but adapt in an optimistic way and find opportunities benefiting the society even during the most adverse changes.

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Dedication

This work is dedicated to my family, for your unwavering support and encouragement along the way. To my parents, Tatsiana and Alexandr Taran, thank you for instilling love for learning in me since early childhood. Thank you for your help and sacrifices in making my dreams come true. I owe my academic and professional success to you. Even though we live on the opposite sides of the world, I always feel your love as if you are very close. I am blessed to have you as my parents. To my husband, Paul Melnikov, thank you for your patience and for allowing me to commit myself to my never-ending academic pursuits. Thank you for your genuine interest in my work, for believing in me, and for always supporting my dreams. I am grateful for my life with you. To my beautiful and kind daughter, Amelia: you are amazing and fill me with energy and inspiration every single day. I am so very proud of the child you are, and the person you are becoming. To my happy and loving son, Viktor: your smile brightens every day of my life, reminding me of the possibilities and just how loved I am. Continue bringing joy to the people around you, the world needs your positivity and happiness to become a better place. To my sister, Julia: thank you for being my best friend and the best big sister I could ever wish for. Our laughs and long conversations touch my heart and carry me through the tough times. Thank you for keeping me in your prayers. To my nephew and godson, Alex: you are an incredibly resilient and intelligent boy, and I have learned so much from having you in my life. You are an inspiration to me because you taught me that God is amazing and miracles do happen. Finally, a heartfelt thank you to all my family and friends for supporting me in getting this paper across the finish line.

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Chapter 1: Introduction to the Study

Introduction

In this study, I explored development of workforce agility and resilience in a healthcare organizational setting by introducing a learning intervention. Employee agility and resilience contribute to organization's ability to change and thrive (Glinska, Carr, & Halliday, 2012). Organizational change can be stressful for employees, and agility and resilience skills may positively contribute to workplace stress reduction, resulting in positive social change (Campbell, 2014). There is limited research on agility and resilience development programs and their effectiveness, and the current study will expand the knowledge on the subject.

This chapter includes the background, problem statement, and the study purpose. It also includes the research questions and hypotheses, theoretical framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, and significance of the study.

Background

Development of employee agility and resilience is important for organizations because an agile and resilient workforce facilitates organizational change by being flexible and innovative (Muduli, 2013). Organizational change has become a constant, rather than an episodic occurrence, and organizations must adapt to change to maintain competitive advantage (Wee and Taylor, 2018). Because change can be challenging for employees (Campbell, 2014), change management models emerged to help employees and organizations with the transition process (Brisson-Banks, 2010). Brisson-Banks

(2010) examined change and transition models by conducting a literature review and comparing various traditional change management models used to manage change in organizations. The models under analysis were by Lewin (1947), Beckhard (1987), Thurley (1979), Bridges (1991), and Kotter (1996). Brisson-Banks's findings stated that businesses have to be effective in managing change to survive and be successful in the current corporate environment. The author also found that all change management models use similar methods for managing change, yet there is no universally applicable model. Models could be modified or blended to achieve the best outcome in a particular context.

Traditional change models may not be sufficient to manage organizational change in the current business environment (Wolf, 2011). Wolf (2011) stated that the nature of organizational change moved from episodic to constant, necessitating new ways of managing change, and that traditional models of managing change may not be sufficient. Wolf (2011) set to identify a common framework by which organizations can be successful with change. The study setting was a large hospital system, and Wolf (2011) identified 12 top performing facilities in the system by reviewing performance data. The study included identification of drivers of success by performing site visits, over 150 individual interviews, 64 focus groups with over 800 employees, and 2000 surveys, and studied the drivers of their success. The results led to identification of seven factors for successful management of organizational change, including organizational agility. Muduli (2013) performed a literature review and also concluded that organizations with high levels of agility have workforces that are innovative, fast to adapt to change, and

flexible. Muduli (2013) discussed attributes of the agile workforce, which include adaptive, flexible, developmental, speed, collaborative, competent, and informative. Research findings by Glinska et al. (2012) and Qin and Nembhard (2010) are consistent with findings by Wolf (2011), that workforce agility and resilience are key components of effective organizational change management. The researchers concluded that building workforce agility and resilience is an effective supplemental strategy in managing organizational change.

Qin and Nembhard (2010) attempted to answer the question of how organizations might develop workforce agility. The researchers evaluated and categorized the literature on workforce agility, developed an agility characterization framework, and summarized attributes of agility. The authors also reviewed methods for developing workforce agility and concluded that training might be one of the methods for workforce agility development. Research by Muduli (2013) supports the conclusion that workforce agility may be developed by training. Muduli (2013) presented various actions that can promote workforce agility, which included training, compensation, empowerment, team work, and information systems.

Similar to the agility research by Qin & Nembhard (2010) and Muduli (2013), Britt, Shen, Sinclair, Grossman, and Klieger (2016) looked to discover effective ways to develop workforce resilience. The researchers reviewed various definitions of workforce resilience, methods used to examine resilience, and found that while training might be one of the methods for resilience development, there was a gap in measuring the effect of resilience development programs, specifically the effect of learning programs on

behavior. The authors analyzed the following programs: Psychological First Aid (PFA) by Everly and Flynn, HardiTraining by Khoshaba and Maddi, Psychological Capital training (PsychCap) developed by Luthans and colleagues, Comprehensive Soldier Fitness (CSF) developed by the U.S. Army, and Critical Incident Stress Management (CISM) by Mitchell and Everly. Britt et al. (2016) reviewed available evidence of the above programs' effectiveness, which consisted of participants' self-reports that did not include assessing impact of the learning program on behavior. The authors concluded that while there is evidence of effectiveness of these programs, the variety of definitions for resilience and the self-report nature of the existing measurement instruments make it challenging to assess effectiveness of resilience development programs.

There is limited research on the effectiveness of resilience and agility development programs (Muduli, 2013). Additional studies are needed to improve understanding of how learning interventions may help build agile and resilient workforce. It is important to understand the effectiveness of agility and resilience development programs because the impact to organizations can be significant (Vanhove et al., 2015). Vanhove et al. (2015) conducted a meta-analysis using 42 samples across 37 studies to evaluate effectiveness of resilience development implemented in organizational (i.e., occupational, as opposed to child development) settings across various industries and found that regardless of the significance of the effect on the individual, the utility to the organization is substantial because even a small difference in individual agility level would add up to a collectively significant impact for the organization.

Problem Statement

An organization's success or failure in the current environment depends on the organization's ability to change (Brisson-Banks, 2010). Change is challenging for employees, regardless of whether the organization is changing because it wants to, or because the environment necessitates the change (Campbell, 2014).

An agile workforce is flexible, innovative, views change as positive, proactively identifies the need for change, and initiates and effectively deals with change (Muduli, 2013). Agility and resilience at the individual employee level create a collective organizational change capability, which can be proactively measured and developed in employees (Muduli, 2013). Organizations that invest in building these change capabilities in employees may benefit from being able to successfully and proactively drive organizational change (Muduli, 2013). Agility creates a requirement for flexibility, taking advantage of change opportunities, and speed of change adoption. Resilience allows employees to react to these requirements in a positive way that does not negatively influence the employees (McCann, Selsky, & Lee, 2009).

In addition to improved organizational ability to deal with organizational change, organizations also benefit from reduction of stress and trauma by having an agile and resilient workforce. Pfeffer and Zenios (2016) estimated that at least 120,000 demises and to 5% and 8% of healthcare expenses in the United States annually result from workplace stress. Stress and trauma studies have identified resilience as the main differentiator between those who do not "bounce-back" and those who do, and even come out of

challenging situations stronger than before (Reivich, Seligman, & McBride, 2011; Seligman, 2011; Coutu, 2002).

One way in which organizations attempt to develop workforce agility and resilience is by introducing agility and resilience learning programs. However, there is limited research on the effectiveness of these programs (Muduli, 2013). Britt, Shen, Sinclair, Grossman, and Klieger (2016) discovered a gap in measuring the effect of resilience development programs. The researchers found that most existing training effectiveness measures consist of self-reports that do not focus on the effect of learning programs on behavior. In addition to difficulty measuring the effectiveness of the programs overall, the researchers also brought up the question of effectiveness of these programs by method (one on one coaching, classroom, and virtual). They discovered that one-on-one coaching was most effective, classroom was next in effectiveness, and virtual delivery methods were least effective of the three. However, the researchers recommended further studies to validate and continue developing understanding of effectiveness of agility and resilience training delivery methods.

Purpose of the Study

I intended this study to improve understanding whether workforce agility and resilience can be developed by introducing a learning program. My goal was to evaluate effectiveness of a learning intervention on agility and resilience levels in individuals within the healthcare industry. I used quantitative method to analyze archival data. The learning intervention was the independent variable, and the agility and resilience scores were the dependent variables.

Research Questions and Hypotheses

My goal was to answer four research questions (RQs) and test their corresponding hypotheses:

Research Question 1 (RQ1): Quantitative: Based on posttest scores from FIT for Change self-assessment, is there a significant difference of the resilience levels between the intervention and the control groups?

Null Hypothesis ($H_0$1): Resilience levels, as measured by posttest scores of the FIT for Change self-assessment, will not be significantly different between the intervention and the control groups.

Alternative Hypothesis (H_a1): Resilience levels, as measured by posttest scores of the FIT for Change self-assessment, will be significantly different between the intervention and the control groups.

Research Question 2 (RQ2): Quantitative: Based on posttest scores from FIT for Change self-assessment, is there a significant difference of the agility levels between the intervention and the control groups?

Null Hypothesis ($H_0$2): Agility levels, as measured by posttest scores of the FIT for Change self-assessment, will not be significantly different between the intervention and the control groups.

Alternative Hypothesis (H_a2): Agility levels, as measured by posttest scores of the FIT for Change self-assessment, will be significantly different between the intervention and the control groups.

Research Question 3 (RQ3): Quantitative: Based on scores from FIT for Change self-assessment, is there a significant difference between individual resilience levels before and after a learning intervention?

Null Hypothesis ($H_0$3): Resilience levels, as measured by FIT for Change self-assessment, will not be significantly higher after a learning intervention.

Alternative Hypothesis (H_a3): Resilience levels, as measured by FIT for Change self-assessment, will be significantly higher after a learning intervention.

Research Question 4 (RQ4): Quantitative: Based on scores from FIT for Change self-assessment, is there a significant difference between individual agility levels before and after a learning intervention?

Null Hypothesis ($H_0$4): Agility levels, as measured by FIT for Change self-assessment, will not be significantly higher after a learning intervention.

Alternative Hypothesis (H_a4): Agility levels, as measured by FIT for Change self-assessment, will be significantly higher after a learning intervention.

Theoretical Framework for the Study

The theoretical base for this study was theory of planned behavior (TPB; 1975), which is an enhanced model based on Fishbein and Ajzen's (1967) theory of reasoned action (Fishbein & Ajzen, 2010). TPB explains the relationship between attitudes, behavioral intentions, control, and human action (Ajzen, 2011). The key proposition of the theory is that attitudes and beliefs are associated with behavioral choices and perceived evaluation of the situation (Ortner, Briner, & Marjanovic, 2017). In the context of this study, belief that change is negative may lead to maladaptive strategies and change

resistant behaviors. On the contrary, belief that change in general is positive or in some way beneficial may lead to use of healthy coping and adaptive strategies, and improved outcome. These positive coping and adaptive strategies are associated with resilience and agility (Kim-Cohen & Turkewitz, 2012; Secades, Molinero, Salguero, Barquin, de la Vega, & Marquez, 2016; Colville, Dalia, Brierley, Abbas, Morgan, & Perkins-Porras, 2015).

According to Steinmetz, Knappstein, Ajzen, Schmidt, and Kabst (2016), TPB has been used in a variety of domains as a useful framework for designing behavior change interventions and to explain how these interventions are expected to affect behavior. Straatmann, Kohnke, Hattrup, and Mueller (2016) applied TPB in the diagnostic assessment of organization change processes by using the framework as the foundation for change surveys to understand employee reactions to change. Structural equation modeling demonstrated that the model was appropriate for evaluation of the change processes and people's reactions and behaviors in response to change. Straatmann, Nolte, and Seggewiss (2018) performed a study of psychological processes that link organizational commitment and intentions to support change, using TPB as the research framework. The researchers found that mindsets about change, subjective norms, and perceived behavioral regulation regarding the change affect employees' reactions toward change. The researchers suggested using TPB to create conditions to favorably position change to create change-supportive behaviors. Bergquist and Westerberg (2014) suggested that TPB can be leveraged to enable execution of quality improvement programs by exposing the attitudes, beliefs, and intentions toward improvement

programs. The researchers had developed and validated a TPB based survey instrument, concluding that TPB may be useful for guiding quality improvement programs.

I used the TPB in this study to understand the effectiveness of developing agility and resilience through a learning intervention. The learning intervention used by the organization participating in this study is aimed at changing attitudes about change, personal control, and reactions during time of change. The program challenges the participants to explore their typical reactions to change and to assess whether they choose to believe change is negative or positive in general. The program creates awareness that change is at least the norm, and that there is usually a positive aspect to every change. According to the TPB, if participants change their beliefs and attitudes about change, their behaviors will also change. TPB was an appropriate basis for the research predictions because the study empirically investigated whether the learning intervention that aims to change beliefs and attitudes about organizational change and to provide positive coping techniques would lead to different behavioral outcomes.

Nature of the Study

I analyzed archival data to examine the effectiveness of a learning intervention aimed at increasing agility and resilience levels in Healthcare Co. The results of research can be generalized to healthcare organizations that are undergoing or plan to undergo organizational change. Results would apply to employees of other workplaces in the healthcare industry because workforce agility and resilience have been generally correlated with organizational effectiveness with change, regardless of sector or industry. For example, research by Muduli (2013) includes description of the connection between

workforce agility and resilience and organizational effectiveness with change. To increase confidence in generalizability, the study would need to be conducted again, using the same program in a different organization in healthcare industry.

The learning intervention was the independent variable, and the agility and resilience scores were the dependent variables. The relationship that I examined was whether introduction of the independent variable, i.e. a learning intervention, improved the dependent variables, i.e. agility and resilience levels, thus answering the question whether learning programs develop workforce agility and resilience. The learning intervention was the agility and resilience training course conducted in person or virtually with the Healthcare Co. employees.

The program included an experience applying a framework and a set of easy-to-use tools that are meant to evoke a more agile and resilient response during change. The framework includes three steps:

1. Feel,
2. Innovate,
3. Take action.

In the Feel phase, participants explore common emotional reactions to change, including an explanation of brain functioning during times of change. Participants explored their emotional reactions to a recent change in their lives. In the Innovate phase, participants learned about choosing their reaction to change and explore areas of control and influence, as opposed to areas that are outside of their control. Participants designed a response to a change they are currently going through. In the Take Action phase,

participants learned about the importance of acting on their change plan and common barriers to action. Participants committed to action they would take in the next 90 days following the program.

The FIT for Change self-assessment was a component of the agility and resilience training program and was a prerequisite to the class for all participants of the program with the objective to provide a baseline of agility and resilience levels to the program participants. The program included linkages to the assessment, so that the participants could connect the concepts of agility, resilience, and their behavior.

I conducted a study before and after the intervention by performing analysis of archival data for a control and an intervention population. The control population did not participate in the learning intervention. The intervention population attended a learning program. Both populations had similar characteristics.

A quantitative approach allowed comparison of pre- and post-learning intervention agility and resilience levels using the FIT for Change assessment instrument developed by Healthcare Co. The questions were behavior-based. The participants of the study (both the intervention group and the control group) completed the FIT for Change self-assessment, answering the questions about themselves.

The participants ranked whether they were likely or not likely to act in a particular way in various situations on a 5-point Likert scale. The output of the assessment included measures of agility and resilience levels. The participants took the assessment before the learning program and re-took the self-assessment approximately 3 months or longer after the training to see if the scores changed. I analyzed data measuring individual agility and

resilience levels in both, control and intervention populations, before and after the learning intervention.

The study design was as follows:

Intervention Group:

1. FIT for Change test data (before the learning intervention)
2. FIT for Change re-test data (after the learning intervention)

Control Group:

1. FIT for Change test data
2. FIT for Change re-test data

The program administrator had maintained confidentiality of the assessment results. The organization identified employees who had participated in the assessment and/or training by using the organization's Learning Center database. The organization provided participant information to the vendor for re-assessment administration. The vendor's role was to re-administer the assessment to the participants. The vendor collected the data and provided a data file via secure mail to the organization. I obtained the data file and performed analysis of the primary data to answer the RQs. I stored the data on a password protected laptop hard drive with a back-up on a removable data storage device. I kept the laptop and the removable storage device in a locked cabinet. Only I had access to the cabinet key. I used the data exclusively for the purpose of this research and did not distribute the data to any other individual for any other purpose. No personal information or individual responses was shared in the research paper, only aggregated analysis results.

I planned to conduct an ANCOVA test for study participants' scores on the FIT for Change assessment to analyze the data from assessments administered to the intervention and control groups. I planned to control for baseline scores across both conditions. The pre-intervention scores were planned to serve as the covariate in the analysis. A significant *F*-ratio would have indicated that the treatment variance was significantly greater than error variance in the model, which would suggest that the independent variable has an effect on the dependent variable. However, due to data limitations, I conducted an alternative Wilcoxon Signed Rank test.

Definitions

The following definitions served as foundational terms for this study:

Agility: A mindset with focus on innovation and added value for the benefit of the customers (Denning, 2016).

Enterprise or Organizational agility: The ability to anticipate change in the environment and to quickly react to change by configuring resources, information, capabilities and processes (Yang and Liu, 2012).

Resilience: Positive adaptation to a stressful event, and/or positive changes or growth following a stressful experience (Britt et al., 2016).

Workforce agility: collective level of agility in an organization (Muduli, 2013).

Workforce resilience: collective level of resilience in an organization (Muduli, 2013).

Assumptions

The program administrators gathered data using an online survey composed in English. I assumed that the participants answered the survey questions honestly and candidly. The current situation and environment (e.g. undergoing a significant organizational or personal change) could influence how participants responded to the survey. I assumed that the participants' responses were not influenced by the desire to get higher scores when re-taking the assessment. I also assumed that the data would be normally distributed. I had examined normality and symmetry of distribution before conducting the analysis.

Scope and Delimitations

Organizational systems include three main components: people, processes, and systems. I limited the study scope to developing agility and resilience in workforce, i.e. the people component of the system. While there are various ways to develop organizational agility and resilience, the focus on people not only contributes to developing the organization agility and resilience, but also to making a positive impact on people's lives by providing them with valuable skills to deal with any adverse event, including in their personal lives.

The populations included in the study consisted of the Healthcare Co. employees, including people leaders and individual contributors. I excluded executive leadership population from the study because the learning intervention was developed to target mid-level leaders and individual contributors.

I performed study in a large company in healthcare sector. The results of research can be generalized to healthcare organizations that are undergoing or plan to undergo organizational change. Results would apply to employees of other workplaces in healthcare industry because workforce agility and resilience have been generally correlated with organizational effectiveness with change, regardless of sector or industry (Muduli, 2013). To increase confidence in generalizability, the study would need to be conducted again, using the same program in a different organization in healthcare industry. The validity of the study outside of the organization under analysis or the healthcare sector could be limited and future research would need to be conducted to confirm generalizability.

Limitations

The data collected for this study were from the participants' self- assessment of their behaviors and beliefs. The self-assessments were subjective and reflective of the participants' feelings on the particular date when the survey was taken. While complete anonymity was guaranteed in the original invitation to participate in the assessment and re-assessment, some responses may have been influenced by the belief that anonymity would not be maintained. A potential limitation of data quality using archival data for analysis may exist, because I did not have control in the setup of the data files. I mitigated this limitation by performing a data quality assessment. There was also a risk that the existing archival data may not fit in the research objective or framework due to any changes in assessment measurement units or items assessed. I evaluated any assessment changes implemented over time that may affect the study.

Significance

This research has filled a gap in understanding if learning interventions are effective in developing individual agility and resilience in the workplace and will focus on behavior change after a learning intervention. Currently, there is limited research on building agility and resilience in business organizations, and on the effect of learning interventions for organizational change capability building, especially whether learning programs change behavior in response to change. This study is of value to businesses in volatile environments with constant disruptions and change because organizations that build agility and resilience in employees may be better positioned for managing rapid change. In addition, companies with change-adaptive capabilities have a competitive advantage. This study also provided practical insights on how to build organizational agility and resilience in the workplace. Organizations will benefit from this study's insights about a resilience and agility development learning intervention that is aimed at helping employees change their beliefs and attitudes toward change, leading to behavior change. This study also created an improved understanding of the role of one's current resilience and agility self-awareness in developing individual resilience and agility over time.

Summary

Agility and resilience have received steady interest in research over the past 10 years. There is a high number of peer-reviewed journal articles and popular literature on the subject. While there is a lot of literature on agility and resilience, the question about developing agility and resilience in workforce remains largely unanswered. This chapter

included a discussion about the importance of this study and introduced the research problem. The chapter also included what the study addressed, which was developing workforce agility and resilience through a learning intervention and assessing its effectiveness. Chapter 2 includes the literature review, containing a search strategy and review of constructs and relationships between them.

Chapter 2: Literature Review

Introduction

An organization's change capability determines its competitive advantage, and ultimately its success or failure (Brisson-Banks, 2010). Change can be difficult for employees, and it often produces a negative emotional response and results in resistant and non-productive behavior (Campbell, 2014). Agility and resilience skills help employees deal with change more effectively and positively (Muduli, 2013; Reivich, Seligman, & McBride, 2011; Seligman, 2011; Coutu, 2002). Organizations can help employees develop agility and resilience by introducing agility and resilience learning programs.

In this study, I explored the relationship between agility and resilience levels in employees and the learning intervention. This chapter includes information about peer-reviewed theories and research on agility, resilience, and their development in the organizational setting in healthcare industry. The major sections of the chapter include the literature search strategy, theoretical foundation, literature review of key variables, and summary and conclusions.

Literature Search Strategy

Library databases and search used in the study

I conducted a computerized peer-reviewed literature search of the PsychARTICLES, Emeraldinsight, Thoreau Multi-Database Search. To identify additional published and unpublished materials, I also searched Google Scholar, ProQuest Dissertations & Theses Global, and Amazon Books.

Key Search terms

I conducted the search using terms agil* (agility and agile), resilien* (resilience, resilient, and resiliency), grit, beliefs, values, attitudes, emotions, behavior, workforce, workplace, training, learning, intervention, change (individual change, personal change, organizational change, change management).

Scope of Literature Review

The search included articles between 2012 and 2018. Book search included books published between 2002 and 2018. Types of literature and sources searched included seminal and peer-reviewed literature.

Theoretical Foundation

Theory Background

I began with the theoretical framework of human behavior designed to integrate the several factors and processes that are likely to influence behavior in face of organizational change. The name of the theory is theory of planned behavior (TPB). The theory was evolved by Fishbein and Ajzen in 1975, and it was based on the original theory of reasoned action (TRA). The developers of the TRA claim that beliefs, attitudes, and intentions influence human behavior. In the context of change, an individual's beliefs, attitude, and intentions toward change would result in a behavior that is influenced by these factors (Fishbein & Ajzen, 1975). TPB authors added a component of actual behavioral control, which is an important factor to consider when analyzing response to change because control over the behavior or perceived behavioral control

moderates the effect of intention on behavior (Steinmetz, Davidov, & Schmidt, 2011). The model can be visually presented as follows:

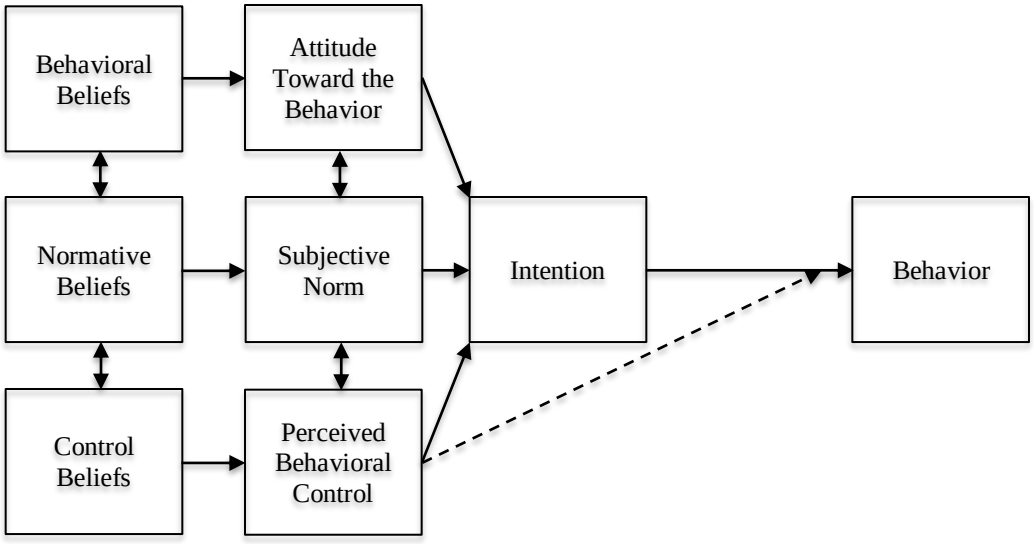

Figure 1. TPB diagram (Fishbein & Ajzen, 1975).

A limitation of the theory is that it states that human beings are reasonable and logical processors and that behavior is not affected by emotion. Neuroscience findings have indicated that there is a possibility of an emotional response toward change because the brain is wired to recognize perceived differences between the expected and the actual outcomes, which may generate a response of anger or fear (Kristjansson, 2016). Sport psychology studies found that emotional response (both positively and negatively toned) predicts performance success (Hagtvet & Hanin, 2007).

Application Hypotheses and Assumptions

The key hypothesis regarding the application of the TPB in context of developing agility and resilience is that TPB will explain the mechanisms by which the intervention is expected to change behavior. A learning intervention aimed at building agility and

resilience, and therefore change behavior in the face of change, would need to change attitudes, beliefs, and intentions.

Previous Similar Application of Theory

Studies from a variety of behavioral domains have used TPB to design behavior interventions and to explain their effects on behavior change (Steinmetz, Knappstein, Ajzen, Schmidt, & Kabst, 2016). The theory's ability to predict behaviors based on beliefs and attitudes is supported by several metastudies (Haus, Steinmetz, Isidor, & Kabst, 2013; Overstreet, Cegielski, & Hall, 2013). Several studies of the process of organizational change applied TPB as the framework to understand employee reactions to change (Straatmann et. al., 2018; Bergquist & Westerberg, 2014). Several studies used TPB to explain the mechanisms behind behavior change resulting from behavior change interventions (Kothe & Mullan, 2014; Yardley, Miller, Schlotz, & Little, 2011).

Theory Selection Rationale

TPB explains how individual's beliefs, attitude, intentions, and perceived behavioral control influence behavior (Fishbein & Ajzen, 1975). I used TPB to examine individual's beliefs, attitude, intentions and perceived behavioral control as they relate to change, and how they influence reactions to change (i.e. behaviors). The goal of the learning intervention was to change individuals' beliefs, attitude, intentions and perception of their behavioral regulation, with the goal of changing reactions to change from negative to positive (i.e. accept change rather than resist it).

Literature Review Related to Key Variables.

Organizational Change

An organization's ability to change determines whether it is successful and able to compete (Brisson-Banks, 2010). Change can create challenges for employees, including stress and anxiety (Campbell, 2014). Grunberg, Moore, Greenberg, and Sikora (2008) performed a longitudinal study of change effects on employees. They found that change created anxiety, uncertainty, and negative attitudes toward work and the organization. As time progressed, employees became more supportive of the change and began viewing work as more challenging and satisfying, and the organization as more supportive. Some attitudes never returned to the initial levels and commitment to work declined overall.

Change management methodologies evolved to assist organizations with implementing the human side of change, which includes new mindsets, adjusted behaviors, adoption and utilization of the product of change (Brisson-Banks, 2010). For example, Kurt Lewin's stage theory and force field analysis work in 1940s was one of the first change management methodologies (Schein, 1996). William Bridges introduced the three-phase individual transitions process, designed to explain how individuals process change, from letting go of the old ways to accepting new beginning (Bridges, 1991). Kotter (1996) also developed a popular change management model, which has been adopted by many business organizations (Brisson-Banks, 2010). These models treat organizational change as incremental episodes, and the process of change management as a series of sequential pre-planned steps.

Wolf (2011) stated that organizational change does not happen in an incremental fashion any more, and the models for planned change may not be sufficient for today's turbulent business environment. In addition to using these organizational change models, organizations must develop agility because agile organizations are able to take advantage of external and internal opportunities and more effectively deal with environmental threats (Glinska, Carr, & Halliday, 2012; Qin & Nembhard, 2010).

An organization with an agile workforce might not need to rely on the traditional change management approaches as heavily, because an agile workforce is more open to change and is able to deal with change more effectively (Muduli, 2013). Agility and resilience at individual employee level create a collective organizational change capability, which can be proactively developed and measured in employees (Muduli, 2013). Organizations that invest in building these change capabilities in employees may benefit from being able to successfully deal with organizational change (Muduli, 2013).

Resilience

Construct Definition. Meredith (2011) performed a literature review and discovered over 100 definitions of resilience. The definitions varied based on emphasis of either basic abilities of an individual, ability to adapt to adverse events, or positive growth following a stressful event. Britt et al. (2016) analyzed various definitions of resilience and concluded that a key theme across various definitions was that an individual must show signs of positive adaptation to a stressful event, and/or show positive changes or growth following a stressful experience. Fletcher and Sarkar (2013) agree that hardship and positive adaptation must be present for resilience to be

demonstrated. Adversity can be viewed as any difficulty experienced that leads to trauma or misfortune. Adversity encountered by most people is typically modest disruptions that are part of daily life, while for some people adversity may be in the range of being traumatic.

The American Psychological Association (2014) defined resilience as "the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress" (para. 4). Southwick, Bonanno, Masten, Panter-Brick, and Yehuda (2014) argued that while this definition is helpful, it does not fully reflect the complex nature of resilience. The researchers chaired an expert panel discussion on the topic of resilience at the 29th Annual International Society for Traumatic Stress in 2013. Their findings include a conclusion that resilience is not a competence or a binary trait (i.e. either present or absent), but rather a dynamic and interactive process that may vary in various aspects of someone's life (e.g. personal and professional). Kim-Cohen and Turkewitz (2012) agreed and stated that resilience can be viewed as a continuum, because the presence of adversity stimulates resilience, changing resilience over time.

The term *grit* has been used in literature to describe resilience-related characteristics, such as staying the course despite of disappointment, continuing to invest effort in face of adversity, and unsuccessful attempts to manage the adverse situation (Duckworth, Peterson, Matthews, & Kelly, 2007). Duckworth et al. (2007) found that grit is correlated with high achievement and is an achievement differentiator for individuals with equally high intellect levels. The Grit Scale developed by Duckworth et al. (2007) is

focused on constancy of interest and persistence of effort, rather than the resilience-related psychological processes and techniques to deal with adversity.

Earlier research lists three main factors as predictors of resilience: individual characteristics (i.e. temperament and IQ), family environment and quality of parenting, and social environment outside of immediate family (Kim-Cohen & Turkewitz, 2012). More recent research added another resilience predictor, which is a set of well-established coping strategies (Kim-Cohen & Turkewitz, 2012).

Secades et al. (2016) analyzed the relationship between resilience and adaptive strategies in competitive sports. The results of the study suggested that adaptive coping strategies were associated with resilient characteristics of athletes. Colville et al. (2015) examined associations between resilience and coping strategies in pediatric intensive care staff. Similar to the findings by Secades et al. (2016), resilience was associated with presence of coping strategies. The researchers identified key coping strategies that predicted resilience: looking for positives and debriefing experiences. Other coping strategies reported by the staff included ignoring stress, keeping busy, and exercising to cope with increased levels of stress. Keeping busy was corelated with higher burn out rates, and ignoring stress and using exercise to cope were corelated with clinical levels of post-traumatic stress symptoms (Colville et al., 2015).

Waugh, Thompson, and Gotlib (2011) discussed resilience in context of emotional flexibility, which is defined by the ability to be flexible under changing emotional conditions. Their study demonstrated that resilience was associated with the ability to be flexible with emotional and physical responses in changing environment.

The construct of resilience is dynamic, multidimensional, and multilevel, yet the individual level has been the focus of majority of resilience research in the field of psychology (Shaw, McLean, Taylor, Swartout, & Querna, 2016). Wyche, Pfefferbaum, Pfefferbaum, Norris, Wisnieski, and Younger (2011) assessed resilience in professional teams that first responded to Hurricane Katrina. These teams took part in developing a strong sense of community, which contributed to their improved resilience and ability to take appropriate actions to improve their ability to provide services to survivors. Resilient activities included a shared purpose, values, and identity; trust and mutual support; skill building; role flexibility; active problem solving; and others. System-level resilience remains to be studied further in organizations.

Resilience during organizational change. Organizational change is often stressful for employees and can be viewed as an adverse event (Fugate, M., Prussia, G., & Kinicki, 2012; Chauvin et al., 2014). Threat appraisal process plays a key role in how employees react to change. Change that is being perceived as a threat will be experienced as stressful, and change that is perceived positively will not appear stressful. Reactions to change are individual and depend on the appraisal process of each individual (Fugate et al. 2012). The researchers also discovered that change self-efficacy, and perception of control of the changes and positive outlook toward changes, are signs of a person's positive orientation toward change.

Various stages of organizational change may be experienced as more or less stressful for employees. Smollan (2015) performed a study that found that the transition phase caused the most stress because it produced insecurities about job stability, it was

associated with less information sharing, and less support. Also, stress increased after the change was implemented, because employees experience additional demands while having fewer resources. Chauvin et al. (2014) discovered that psychological demands, ambiguity of the role after the change, problems with communication and lack of leader's support were the main reasons behind the psychological stress during and after organizational change.

Organizations that build resilience are able to continuously respond to significant disruptive change in a productive manner and turn challenges into opportunities (Witmer & Mellinger, 2016). The researchers performed a qualitative study of two nonprofit organizations in healthcare industry and discovered that key themes to organizational resilience included commitment to the common purpose, innovation, engagement with community, servant and transformational leadership style, positivity, and financial transparency. The researchers concluded that by proactively including these qualities in the organizational dynamic could contribute to development of organizational resilience.

Resilience is a means of handling and enabling organizational change (Shin, Taylor, & Seo, 2012; Sharma, & Bhargava, 2016). Shin and Taylor (2016) found that psychological resilience of employees is correlated with commitment to the change, positive emotional response to change and behaviors that enable and support the change. The researchers also discovered that greater levels of employee resilience were negatively related to worker turnover during times of organizational change.

Organizational Agility

Construct Definition. Sun Zi, 6th century B. C. military strategist, discovered the

importance of agility in his analysis of military methods and discussed the importance of flexible strategies and tactics as an advantage over having more strength and more troops than the opponent party (Mair, 2008). The term *agility* was first used in analysis of fighter aircraft performance in the early 1950's (Richards, 1996). Air Force strategists developed the term *agility* to describe the speed of maneuver state change, which was different from maneuverability (i.e. maximum turn rate) because agility described the ability of the aircraft to abruptly change direction and quickly reach the same level of maneuverability after having been going in the opposite direction. Agile aircrafts were deemed combat superior and were harder targets than the aircrafts with just good maneuverability specifications (Richards, 1996). Pilots of the less agile yet more maneuverable aircrafts became frustrated and disoriented, which was reflected in a poor performance and created additional opportunities for the pilots of agile aircrafts (Richards, 1996).

Concept of agility entered the business environment in the manufacturing field. The primary focus of agility in business environment is the customer (as opposed to trying to defeat the opponent), because a business loses when a customer buys a competitor's product or service (Richards, 1996). Hormozi (2001) discussed the entrance of the concept of agility in manufacturing organizations in 1991, when a manufacturing group detected the accelerating rate of change and the inability of conventional manufacturing organizations to adapt to changing conditions and to take advantage of opportunities, causing the long-term failure of these organizations.

Craft, mass, and lean production concepts preceded the agile manufacturing. Craft

manufacturing included completion of individual products which differed from each other on a one-by-one basis, and it was prevalent in Europe. Mass manufacturing was producing similar products with little variation at a high speed (i.e. assembly line) and was dominant in the USA. Lean production was mastered in Japan and focused on eliminating waste with the goal of decreasing manufacturing costs. In agile manufacturing, the focus is on high quality, defect free product or service that is customized to the exact needs of the customer with minimal lead time (Hormozi, 2001). Agility in manufacturing is characterized by quick decision making and the ability to reconfigure operations, processes, and relationships rapidly in anticipation or reaction to an opportunity.

Agile manufacturing introduced the component of human condition, laying the groundwork for the concept of agile workforce (Hormozi, 2001). Communication, sensitivity to customer demands, high level of skills, and ability to provide excellent customer service are several attributes of the agile workforce.

Denning (2016) defined agility as a mindset, rather than a management methodology, organizational structure, system or process. When these methodologies and structures get implemented without the agile mindset, they rarely succeed. Agile mindset characteristics include focus on innovation and added value for the benefit of the customers, using full potential of the employees by practicing enabling leadership (as opposed to controlling management), operating in autonomous teams and networks where work is coordinated in iterative and customer-focused manner, daily practices of transparency and continuous improvement, conversational and open (as opposed to

hierarchical) communication across the organization, and egalitarian and open work environment (Denning, 2016). Denning (2016) concluded that it is impossible to formalize agility, and the most successful organizations have a different way of thinking and understanding the world, which results in different practices. They are "being" agile, rather than "doing" agile. Transition to an agile mindset takes time, especially for mature organizations with well-established traditional management practices. Organizations that are successful in their transitions to an agile mindset share best practices between departments (often starting with a single team in the organization), perform research, and recruit new hires with an agile mindset to accelerate the transition (Denning, 2016). Yang and Liu (2012) defined enterprise agility as the capability to anticipate change in the environment and to rapidly react to change by arranging resources, knowledge, capabilities and processes.

Agility and organizational change. Improved organizational agility expands the organization's ability to react effectively and proactively to unanticipated environmental shifts (Appelbaum et al., 2017). The customer's role has changed from being a receiver of a transaction, product or service to being in a position to improve these products and services (Yang and Liu, 2012**).** It is not sufficient for an organization to produce the products and services they think will appeal to the customers anymore. The ability to sense unexpected changes, to be attuned to customers' expectations and to adjust internal capabilities, structures, and products ahead of competitors is critical for maintaining a competitive advantage (Yang and Liu, 2012**)**. Appelbaum et al. (2017) found that organizations used to compete on economies of scale, which were achieved through

control and hierarchies. The competitive environment has shifted and economies of scale alone are not sufficient and must be balanced with strategic agility because the opportunities are short lived.

Rapid change and high levels of uncertainty require organizations to be able to respond quickly and effectively. This ability is defined as workplace agility and is achieved through the recognition that change is normal and should be integrated in the work, a clear understanding of the work, and recognition that work should continuously evolve and improve over time (Joroff et al., 2003). High level of agility enables organizations to change quickly with minimal resistance and conflict. Situational awareness, a key characteristic of an agile workplace, allows the workers to see how their work fits in the larger system, strengthens the workers' focus on what they are doing, what is possible, and how their work, as well as the connection to the larger system can be improved. Situational awareness allows workers to pick up on the environmental changes and quickly find ways to adapt their work to the change while the work is going on (Joroff et al., 2003). Agile organizations learn to incorporate micro improvements into the system. Micro improvements add over time and may result in significant transformations, while enabling the continuous improvement mindset and abilities of the workers (Joroff et al., 2003). Rehearsing change is another characteristic of agility, which allows continuous experimentation and refinement of the change, while simultaneously increasing workers' buy in of the change, as opposed to the traditional change pilots, which are often used to evaluate the effectiveness and deem a change as success or failure (Joroff et al., 2003).

Organizational agility components. Appelbaum, Calla, Desautels, and Hasan (2017a) explored the notion of agility and described a framework of agility-enabling competencies. Organizational agility is comprised of multiple interdependent components, including an agile strategy (commitment to agility, including new flexible and cross-functional network organizational structures and management practices), processes, linkages, and people (Appelbaum et al., 2017a).

Appelbaum, Calla, Desautels, and Hasan (2017b) also noted agile leadership as another important enabler of organizational agility. In addition to the ability to manage, leaders should be able to decisively and quickly reassemble complex networks of relationships and networks to create a capability to take advantage of fleeting opportunities (Appelbaum et al. 2017b). A leadership dynamic where people build safe relationships for exploration of unusual ideas, tensions, and emotions contribute to the level of agility in organizations. Leaders that are comfortable with de-centralized decision making and exploration develop positive environment for agility.

Workforce agility. Since people are one of the key contributors to organizational agility (Appelbaum et al., 2017a), developing workforce agility can be a key contributor for developing agility in the organization. Qin and Nembhard (2015) stated that workforce with agile characteristics is a vital component of the broader organizational agility system and it benefits organizations operating in highly unpredictable environments. Agile workforce is characterized by the ability to foresee change, respond to change proactively, and to quickly recover from change. Other characteristics include the ability to collaborate cross-functionally and to be flexible. Qin and Nembhard (2015)

have categorized workforce agility attributes from the domain of operations management research into five main categories: 1. responsiveness (positive attitude and reaction to unexpected change, ability to sense change and being prepared for change), 2. Quickness (shorter transition and recovery time, and faster delivery and problem solving), 3. Competence (high workforce cost-effectiveness and capability), 4. Adaptability (labor variety, flexible work conditions and adaptive behaviors), 5. Cooperativeness (positive attitude toward collaboration, cooperative behavior, and effective and efficient collaboration).

Joroff, Porter, Feinberg, and Kukla (2003) state that to create organizational agility, people need to start seeing their work in the new way. This new view includes seeing not only the traditional ones of the function a worker is performing, but includes the interfaces with the other functions that comprise the end to end process, and the larger system. All workers should be willing to challenge traditional views of work and the organization, as well as be able to experiment, generating learnings that are integrated into the system. Agility can only be achieved when workforce embraces intelligent risk-taking, acknowledges that learning from educated failures is valuable, and engages in the reasonable severance of unbeneficial undertakings and non-value-added work (Leavy, 2014).

Beliefs, attitudes, intentions, and emotions.

Fishbein and Ajzen (1975) stated that beliefs, attitudes, and intentions impact people's behavior. According to the findings of neuroscience, as well as IZOF theory, emotions also have a significant part in behavior and outcomes (Hagtvet & Hanin, 2007).

Beliefs. Beliefs refer to the lenses from which people see the world. Beliefs influence what people see or not see, as well as the action from what is perceived. According to Fishbein and Ajzen (1975), there are three main type of beliefs: behavioral, normative, and control. Behavioral beliefs link the behavior to expected outcomes, i.e. a belief that a behavior has a certain probability to result in a particular outcome, in combination with the value of the outcome, will produce the behavior (Fishbein & Ajzen, 1975). Normative beliefs are derived from the perceived expectations the important people have in person's life. Normative beliefs and the motivation to conform with them determine a person's subjective norms, which influence the behavior (Fishbein & Ajzen, 1975). Control beliefs reflect the view of aspects that may enable or deter the behavior, and, in combination with how the individual perceives their control over these factors, determine the overall perceived behavioral control (Fishbein & Ajzen, 1975).

Naressi, Girardon-Perlini, Pacheco van der Sand, Beuter, and Costa da Rosa (2013) conducted a study of resilience in leukemia patients. The researchers found that patients who had certain beliefs about diagnosis, treatment, and healing were more likely to take actions that led to positive disease outcomes. For example, patients who believed that the disease will not destroy them, that treatment can be effective, and that they can fight the illness, were more likely to seek a more aggressive treatment, follow up with their medical team to explore various options, and had better survival outcomes compared to those that did not. Belief in a positive outcome contributed to increased self-esteem and reinforced the hope and awareness of personal power in patients.

Emotion regulation beliefs are associated with the individual choices to regulate emotions, as well as the perceived well-being (Ortner, Briner, & Marjanovic, 2017). Belief that negative emotions about a particular situation can be elevated may lead to higher emotional affect, use of coping and adaptive strategies, and improved outcome, which are associated with resilience and agility. Religious beliefs also have been demonstrated to effect resiliency (Javanmard, 2013). Religious beliefs in Javanmard's study (2013) included a belief that a person should participate in their environment actively and constructively. This belief was associated with positive behaviors and higher levels of resilience.

Beliefs of people who interact with those involved in adversity may significantly contribute to how an individual chooses to cope with the adverse event. Naressi et al. (2013) found that family's reaction to the diagnosis and the meaning the sick person attributed to their reaction may influence his/her beliefs and actions. The family's reaction may become either a source of support and stimulation for action that is more likely to lead to a more positive outcome, or become a source of hope loss and inaction or destructive behavior.

Changed beliefs have been associated with changed behavior. Booth-Butterfield and Reger (2004) conducted a study that found that by changing consumers' belief about consumption of milk (i.e. consumption of 1% or non-fat milk as being an effective strategy for reduction of saturated fat in their diets and achieving better health outcomes) led to increased sales and consumption of 1% and non-fat milk.

Attitudes. Fishbein and Ajzen (1975) discuss three main types of attitudes:

appraisal of the behavior and beliefs about the behavior, personal norms, and perceived behavioral regulation. Attitude toward a behavior is the level at which the behavior is valued positively or negatively, conditional upon the evaluation of the outcome. Subjective norm is the perception of social influence to either participate or not participate in a behavior. Perceive behavioral control is the perception of the individual's ability to execute a certain behavior. People hold beliefs regarding the elements that may either enable or hinder the behavior, as well as their perceived power over these factors, influencing the behavior.

Intention. Fishbein and Ajzen (1975) stated that intention indicates an individual's inclination to engage in a certain action. Also, the intention is an immediate precursor to the action. The intention is determined by the pre-disposition concerning the behavior, personal norms, and the perception of the behavioral control.

Emotions. Numerous studies in the field of sport psychology illuminated the importance of emotions in human performance. The individual zones of optimal functioning (IZOF) model determined the connection between pleasant and unpleasant emotions and positive and unsuccessful athlete performances (Hagtvet & Hanin, 2007). According to the IZOF model, emotional experiences include situational experiences, i.e. emotional states, constant repetitions of experiences, and meta experiences. Emotional content is characterized as pleasure or displeasure and either ideal, effective, destructive.

As determined on the review of effects of organizational change on individuals, change may cause anxiety and stress. Ruiz, Raglin, and Hanin (2017) performed a review of literature on IZOF model and summarized the conclusion that some athletes may

tolerated and require an optimal level of anxiety for best functioning. The IZOF model indicates that emotions are developed from person's appraisal of achieving outcomes, that repetitive activities may result in development of emotional patterns, and that the emotions and performance interact. The researchers also concluded that the balance of emotions for optimal performance is highly individual. Robazza, Pellizzari, and Hanin (2004) performed a study to identify emotions that characterize successful and unsuccessful performance. The researchers had identified a pattern of optimal pleasant and unpleasant emotions for successful performance levels, and could not categorize failure or sub-optimal performance with a unique emotional profile. Athletes tended to identify emotions in the optimal performance zone as facilitative–pleasant, and emotions in the dysfunctional performance zone as debilitative–unpleasant. (Robazza, Pellizzari, Bertollo, & Hanin, 2008).

Woodcock, Cumming, Duda, and Sharp (2012) concluded that an intervention aimed at emotional self-regulation may be effective for improving performance. The intervention under analysis included such elements as zone identification, review of current emotion regulation techniques, introduction to imagery, goal setting, refining self-talk, and review of emotion regulation process.

Developing workforce agility and resilience in organizational setting

The theory of planned behavior (TPB) states that the attitude, personal norms, and perceived behavioral regulation determine intention. Also, according to the learnings from applying the IZOF model, emotional regulation development results in the improved performance levels. Learning interventions targeting these variables may

contribute to developing a more agile and resilient response during and after change.

Qin and Nembhard (2015) reviewed various ways to develop organizational agility, including staffing (selection and capacity/capability adjustment), training, coordination, collaboration (collaborative, multi-functional, and dynamic teams), incentive (skill/performance and team performance-based pay, feedback, recognition), and empowerment/involvement (decentralized decision making). Qin and Nembhard (2015) stated that training is one of the most commonly used mechanisms for developing agility, and it has the potential to improve the ability of the workforce to positively deal with significant organizational change, making training an agility development mechanism. Haneberg (2011) discussed the feasibility of agility development becoming a component of every training program. Challenging participants to re-think their original approach, provide opportunities to safely question each other, having participants consider how they might respond to achieve several different outcomes, and offering opportunities to openly discuss the stressful feelings people experience when they have to be adaptable, as well as how to deal with those feelings. Haneberg (2011) also discussed the need to offer several stand-alone learning experiences for leaders, covering such topics as what is agility and why it is important, how to create an agile workforce, agile managerial practices, how to develop a flexible team, modeling agility for employees. For all employees, topics should include what agility is and why it is important, how to incorporate agile practices and tools into daily work, and how to build team excellence (Haneberg, 2011).

Resilience training programs described in literature mention various components for developing resilience. Three common elements that emerged among several programs are developing a belief that problems are common and are not catastrophes; understanding of personal scope of control and influence in an adverse situation; as well as positive attitude toward change (Tenhula, Nezu, Nezu, Stewart, Miller, Steele, & Karlin, 2014; Papazoglou & Andersen, 2014; Carr, Bradley, Ogle, Eonta, Pyle, & Santiago, 2013; Alavi, Wahab, Muhamad, & Shirani, 2014). A belief that adverse events are not catastrophes means evaluating the situation relationally and relative to the magnitude of other adverse events in one's life. This belief leads to a less exaggerated view of adverse situations and a non-exaggerated emotional response. Understanding personal scope of control and influence means an evaluation of what is within the person's control or influence relative to the adverse event, and what is out of scope of control or influence. Focusing on parts of the adverse situation that are within the scope of control or influence leads to a focused and productive action. Acknowledging items out of scope of control or influence allows not spending time or energy on those items. Positive attitude toward change means a belief that change is typically for the best and leads to growth, even though it may be challenging. Tenhula et al. (2014) also mentioned development of problem-solving skills and techniques when coping with adverse events as a resilience building strategy. Papazoglou and Andersen (2014) discuss trust, social support, relaxation, journaling as important resilience development techniques.

Measuring workforce agility and resilience

Agility has been described and measured in a variety of contexts:

- Physical or motor ability, i.e. ability to control a body location and alter direction rapidly without losing balance, speed, or balance (Kutlu, Yapici, & Yilmaz, 2017; Spasic, Krolo, Zenic, Delextrat, & Sekulic, 2015; Raya, Gailey, Gaunaurd, Jayne, Campbell, Gagne, & Tucker, 2013);
- Agility of organizational processes, such as software development (Shahabuddin & Yalla, 2017), and manufacturing (Soltan & Mostafa, 2015);
- Technology performance (Mohamed & Mohamed, 2015);
- Business intelligence (Baars & Hutter, 2015);
- Relationships between business entities, such as supply chain agility (Mehdi & Nizaroyani, 2016; Singh, Samuel, & Sharma, 2017);
- Personal agility, i.e. a mindset with focus on innovation and added value for the benefit of the customers (Denning, 2016).

The agility measures and instruments discussed below include validated and published instruments that measure personal agility in the workplace environment. Qin and Nembhard (2015) performed an analysis of characteristics and measurements for workforce agility in the Operations Management field. The researchers have mapped these attributes and metrics to existing literature and it is evident that research to date, including the existing measures and instruments, has been focused on various narrow and incremental aspects of a larger topic of agility. There is a need to bring these attributes together to fully understand agility (Qin & Nembhard, 2015).

De Meuse (2017), describes individual agility in the workplace as learning agility, which is described as a person's ability to learn from experience, to be curious, to remain calm under pressure, treating others constructively, to achieve results under difficult circumstances, and to inspire others. The author described three agility instruments: viaEDGE™, TALENTx7®, and Burke Learning Agility Inventory™ (BLAI). viaEDGE™ assessment includes five components around agility: people, change, mental, results, and self-awareness. These factors were deemed critical for leadership success by the developers of the instrument. TALENTx7® assessment measures these five dimensions as well, and also includes feedback responsiveness and environmental mindfulness dimensions. BLAI™ measures an individual's ability to learn and adjust as the situation changes. This assessment, while based on the same model as the first two, conceptualizes the factors differently. For example, the speed and information gathering are defined with greater precision and are measured as two separate dimensions by the BLAI™.

Erande and Verma (2008), discuss the Comprehensive Agility Measurement Tool (CAMT). This tool was developed to measure the overall organizational agility on a scale of one to five, where one is the least agile, and five is highly agile. The instrument measures ten enablers of agility. Only one out of the nine elements is concerned with personal agility – Human Resources. This component is defined as the width and depth of employee skills and knowledge, which are measured by the number of training programs completed and the percentage of employee attrition. This component does not measure the typical agility attributes, such as innovation, flexibility, and openness to change.

Workplace Resilience Inventory (WRI) measures resourcefulness, experimentation, problem solving, team effectiveness, and confident sense making (Mallak & Yildiz, 2016). Another resilience scale is CD-RISC assessment which measures 25 dimensions such as personal capability, growing from adverse experiences, and trusting one's instincts, and is used in psychiatric setting wit PTSD patients (Connor & Davidson, 2003). Dispositional Resilience Scale (DRS) is another measure of resilience, which is defined as a personality style of psychological hardiness. This scale differentiates how individuals perform under stress based on their control of life, desire to overcome challenges, and commitment toward life, and has been used primarily with military survivors (Bartone, Ursano, Wright, Ingraham, Ong, Bergeman, & Wallace, 2006). Resilience Scale (RS) also defines resilience as a personality trait which consists of a well-adjusted outlook on life, having a strong personal purpose, capability to persevere despite obstacles, feeling comfortable with one's life, and self-reliance. This scale is used with geriatric population (Wagnild, Young, & Wagnild, 2003). The Resilience Scale for Adults (RSA) measures personal competence, family unity, and collective competence. This scale is used with mental health outpatient population (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003). The Team Resilience scale measures enabling social structure, approaches (such as flexibility and learning orientation), social capital (includes such items as trust and shared language), and perceived collective efficacy (Sharma & Sharma, 2016).

All of the scales described above define agility and resilience differently, as appropriate for the population for which the instruments were developed. Also, there is

no instrument that measures both, agility and resilience. Research shows that both, agility and resilience are beneficial for organizations undergoing change.

FIT for Change assessment is the instrument I used in this study. It includes definitions of agility and resilience that are appropriate for a workplace. The instrument measures both, agility and resilience at individual level and can help organizations build organizational agility and resilience and manage organizational change (Braun, Hayes, Demuth, & Taran, 2017). Results are available on individual level and can provide awareness, as well as help employees identify development opportunities to help prepare each employee to deal with uncertainty more effectively and become comfortable with initiating change for the benefit of the organization.

Summary and Conclusions

This chapter addressed the constructs of agility and resilience, their origins, components, and relationship with beliefs, attitudes, intentions, and emotions. The chapter included a discussion about the value of agility and resilience to organizations, especially during times of change. The chapter also examined various ways to develop workforce agility and resilience in an organizational setting.

Organization's ability to initiate and deal with change determines its ability to compete and survive. Agile and resilient workforce is a key component of organizational agility and resilience. Change is often experienced by people as an adverse event, causing a negative emotional response and resistant behavior. Organizations can build agility and resilience in workforce by helping employees change their beliefs and attitudes about

adverse events (including change), and by providing workers with skills to process what is happening and develop positive response mechanisms.

There is limited research describing such programs and their effectiveness in the workplace. The present study will extend knowledge in the discipline by offering a comprehensive overview of the program components and a measurement of the program's effectiveness. The findings can be used in further research to generalize to other industries and types of organizations. Agility and resilience scales could be used to measure the effectiveness of the programs. Agility and resilience scales were reviewed. It was found that the only scale that measures both, agility and resilience, is FIT for Change assessment.

Chapter 3 describes the statistical approach to determine the effectiveness of a learning intervention targeted at developing workforce agility and resilience. The chapter identifies and describes the instrument used to measure significant relationships. Chapter 4 describes the analysis results used to determine the effectiveness of the learning intervention of developing workforce agility and resilience. Chapter 5 presents an overview of the interpretation of the results of the present study, implications the findings have for social change, and suggestions for future research.

Chapter 3: Research Method

Introduction

In this study, I focused on evaluating effectiveness of a learning intervention on agility and resilience levels in individuals within the healthcare industry. Organizations need to be able to initiate change and deal with change effectively to maintain competitive advantage and to thrive. Agility and resilience have been linked to organizational effectiveness during time of change and other adverse events. Having an agile and resilient workforce is a key component to creating an agile and resilient organization.

The major sections of the chapter include study setting, research design and approach. I also discuss the role of the researcher, methodology, RQs and hypotheses, threats to validity, ethical considerations, and summary.

Study Setting

The healthcare industry has been undergoing transformation since the Affordable Care Act, a comprehensive reform law enacted in March 2010. This study took place at a large healthcare organization with over 51,000 employees. The scope of the organization is health insurance and healthcare services, which include care delivery. The organization's workforce is diverse, primarily permanent and employed full time. Employees are organized by segment and work in teams. Team size ranges vary depending on the function or scope and magnitude of project. All employees, excluding the executive leadership, are the target population of this study.

Research Design and Approach

I employed a quantitative design in this study and used archival data collected via survey methodology. The learning intervention was the independent variable, and the agility and resilience scores were the dependent variables. The study included a control and an intervention group. The control group did not participate in the learning intervention. The intervention group participated in the learning intervention. The relationship that was examined is whether introduction of the independent variable (i.e., a learning intervention), would improve the dependent variables (i.e. agility and resilience levels), thus answering the question whether learning programs develop workforce agility and resilience. I conducted an analysis of variance for study participants' scores on the FIT for Change assessment administered to the intervention and control groups. I used this research design to establish whether a relationship exists between participating in a learning intervention and agility and resilience levels, thus answering the RQs and advancing the knowledge in the discipline. The time constraints of this research included the timing of the pretest and posttest to ensure that they are sufficiently proximal yet somewhat distal to the intervention. I mitigated this constraint by evaluating the timing between the pre- and posttests and the learning intervention. There was a resource constraint, as there must be sufficient number of employees having participated in the learning intervention and the assessment for the research to be meaningful. The constraint was to be mitigated by marketing the program and offering the assessment to more employees to gather additional data, which was not needed. This research design selection was appropriate for advancement of the discipline because it addressed the

knowledge gap identified, which is measuring the effectiveness of the learning program, with focus on behavior outcomes, rather than on the satisfaction with the training program.

I selected the FIT for Change program as the intervention for this study. The program is aimed at helping participants change their beliefs, attitudes, and intentions when dealing with change (and other adverse events), resulting in a different behavior when dealing with the adverse events or change. This approach is aligned with the theoretical foundation used in this study (TPB).

Role of the Researcher

My role in the study was as an observer. I work as an organization effectiveness lead for the organization where she is conducting the study. I have no supervisory relationships with the participants. I participated in the development of the FIT for Change program and the assessment. The potential bias is the outcome reporting bias in favor of the positive results of the analysis, which can manifest in selective outcome reporting. I managed this bias by clearly reporting all the test results and evaluating my interpretation and language for any bias in favor of the effectiveness of the program. This bias was reduced by the fact that the organization is interested in monetizing the program, and objective research findings provided valuable data on true effectiveness of the program and areas of opportunity before putting it on the market. Accuracy of my findings was therefore linked to her performance appraisal and financial incentives. There was also a potential conflict of interest, because I am employed by the company that developed and is using the program and the assessment. The organization leadership is

using the program internally with associates only, and the program does not generate revenue. There was no expectation from leadership or anyone else in the organization for the results of this analysis to be in favor of the effectiveness of the program.

Methodology

Participant Selection Logic

The target population was the Healthcare Co. employees (people leaders and individual contributors) who have taken or signed up to take the FIT for Change program, and/or taken the FIT for Change assessment. The population size in this study was 2,512. I used archival data and stratified sampling strategy for study analysis. I divided the population into strata by identifying whether subject participated in the program and assessment, or just took the assessment. I split units of analysis into the appropriate strata. The sampling frame exclusion criteria was duplicate entries (i.e. exclude the duplicate occurrence of associates who have taken the FIT for Change course and/or assessment more than once) and entries that did not clearly indicate whether the subject participated in the program (i.e. was signed up but there is no record of actual participation). Another exclusion criterion was participants in executive leadership roles, as the program and the assessment were not designed for this audience. I calculated the appropriate minimal sample size at 102, for a desired statistical power level of .80, effect size of .42, and a *p*-value of .05. I used G*Power 3.1 software to determine the appropriate sample size. I selected power value of .80 (80%) because it is the generally accepted level for finding a significant effect 80% of the time. I determined effect size of .42 by analyzing effect sizes found in previous research of work setting or organizational interventions by other

researchers (Lipsey & Wilson, 1993). The mean and median effect sizes of the 12 studies analyzed were .42. Sample size mean was *N*=48, and the median sample size was *N*=34. I used *p*-value of .05 because it provided an opportunity to detect the effects which were substantial enough to be of scientific interest.

Participants from the population took an opportunity to complete the assessment for the second time to evaluate their developmental progress. For this study, I calculated a minimum sample size of 102 participants (51 for the intervention group and 51 for the control group), and used the full available data set consisting of 612 records. I identified participants through the Learning Management System, which contains enrollment and participation records for the FIT for Change program, and the external vendor's data repository, which contains scores for FIT for Change assessment. I did not contact the participants because I used archival data for this study.

Instrumentation and Operationalization of Constructs

I used the data gathered by administering FIT for Change self-assessment instrument to conduct the analysis for this study. The assessment was developed and validated by Healthcare Co. and was published in the journal of Industrial and Organizational Psychology in 2017 (Braun, Hayes, DeMuth, & Taran, 2017). Published reliability and validity values include exploratory factor analysis. The model accounted for 63.0% of the overall variance. Each scale's internal reliability was estimated at above .70. The authors performed confirmatory factor analysis to corroborate results of the original model. The analysis showed that 59.1 percent of the total variance was accounted. The researchers calculated each scale's internal reliability at above .71.

Researchers performed criterion validity and findings indicated that sub-scales related to other measures and were consistent with other empirical research and theory. The instrument was appropriate to the current study because it was validated in the healthcare workplace and is used to assess agility and resilience of the workforce, which was sufficient to answer the questions under analysis. The instrument has been used previously on the population identified for this study.

Intervention Study

I used FIT for Change program as a manipulation intervention. The program was developed by Healthcare Co. in 2016. The objective of the program is to increase resilience and agility levels in people leaders and individual contributors employed by Healthcare Co. to improve their ability to deal with change, as well as their ability to help other associates of the organization with their individual transitions through change. Healthcare Co. had sponsored intervention studies before this study was initiated.

Researchers operationally defined *agility* as a mindset with focus on innovation and added value for the benefit of the customers (Denning, 2016). Authors defined *resilience* as positive adaptation to a stressful event, and/or positive changes or growth following a stressful experience (Britt et al., 2016). The FIT for Change learning program exists to increase agility and resilience levels in individuals, therefore I expected the administration of the program to alter agility and resilience variables. The 4-hour program is delivered in person or virtually and consists of three components: Feel, Innovate, and Take Action. Participants learn about emotional response to change, how their beliefs and attitudes influence their emotional responses, and practice using

techniques to quickly assess their emotional reaction to change and develop a plan for dealing with change in a healthy and positive way. I was involved in the development and deployment of the program across the enterprise.

The variables the program is meant to influence are measured by FIT for Change self-assessment. The variable score is computed by adding the response scores to the questions that encompass that variable and calculating an average. Percentile scores are also available. Percentile scores are calculated by comparing the individual scores for each variable to scores of the baseline population. Program participants receive percentile scores only in their personal reports. The scores represent a self-perceived level of agility and resilience.

Description of *Agility* as an example item follows. Participants are given the following instructions:

The following are phrases describing people's behavior, thoughts and feelings. Please use the rating scale below to indicate how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be. Describe yourself honestly, knowing that your responses will be kept confidential. Please read each statement carefully, and then select the response that best fits you. (Braun, Hayes, DeMuth, & Taran, 2017).

Participants respond using a response scale consisting of five points. The scale ranges from *Very Inaccurate* to *Very Accurate*. The responses are added and an average is calculated. Percentile score is calculated by comparing the average score to the scores in the baseline data set.

Questions that encompass agility:

- "At work, I continuously spend time thinking about how we can do things differently". (Braun, Hayes, DeMuth, & Taran, 2017).
- "I am always thinking about what we need to do differently to meet upcoming change." (Braun, Hayes, DeMuth, & Taran, 2017).
- "I push others/my team to continuously make changes based on what is happing in Healthcare Co." (Braun, Hayes, DeMuth, & Taran, 2017).
- "In the last month, I have proposed a change about our work to my leader." (Braun, Hayes, DeMuth, & Taran, 2017).
- "I continuously work to understand what is going on in other areas to see if I need to make changes in what I'm doing." (Braun, Hayes, DeMuth, & Taran, 2017)."

Procedures for Recruitment, Participation, and Data Collection

I used existing archival data for this study. This study was an analysis of primary data that was collected for organizational needs, which included continuous improvement of the learning program and as a reinforcement with program participants. The organization collected the data under the existing data gathering procedures. I did not require recording any names or other identifiers of individuals for this study. The organization's data gatekeeper signed the data use agreement and released the data to me for research. The organization has sponsored and conducted the learning intervention that was used in this study. In the main study, participants of the FIT for Change program and/or the assessment re-took the assessment to re-assess and obtain the information on

how agility and resilience levels change over time and with increased self-awareness. The program administrator downloaded data from the Learning Center of Healthcare Co. and from the external vendor which administers the assessment. The data contained information that could be linked to individuals. Data excludes direct identifiers, such as names. Participants exited the main study by receiving their FIT for Change assessment personal reports. No follow-up procedures had been established. The intervention was the FIT for Change learning program, which had been administered by Healthcare Co. It was administered to people leaders and individual participants employed by Healthcare Co.

Data Analysis Plan

I used SPSS software for analyses. I screened data for completeness (whether participant took part in the FIT for Change program or not) and eliminated records missing this data element from the data set. Exclusion criteria was cases with more than 20% of missing data.

Research Questions and Hypotheses

The study was aimed at answering four RQs and testing their corresponding hypotheses:

RQ1: Quantitative: Based on posttest scores from FIT for Change self-assessment, is there a significant difference of the resilience levels between the intervention and the control groups?

$H_0$1: Resilience levels, as measured by posttest scores of the FIT for Change self-assessment, will not be significantly different between the intervention and the control groups.

H_a1: Resilience levels, as measured by posttest scores of the FIT for Change self-assessment, will be significantly different between the intervention and the control groups.

RQ2: Quantitative: Based on posttest scores from FIT for Change self-assessment, is there a significant difference of the agility levels between the intervention and the control groups?

H_02: Agility levels, as measured by posttest scores of the FIT for Change self-assessment, will not be significantly different between the intervention and the control groups.

H_a2: Agility levels, as measured by posttest scores of the FIT for Change self-assessment, will be significantly different between the intervention and the control groups.

RQ3: Quantitative: Based on scores from FIT for Change self-assessment, is there a significant difference between individual resilience levels before and after a learning intervention?

H_03: Resilience levels, as measured by FIT for Change self-assessment, will not be significantly higher after a learning intervention.

H_a3: Resilience levels, as measured by FIT for Change self-assessment, will be significantly higher after a learning intervention.

RQ4: Quantitative: Based on scores from FIT for Change self-assessment, is there a significant difference between individual agility levels before and after a learning intervention?

$H_0$4: Agility levels, as measured by FIT for Change self-assessment, will not be significantly higher after a learning intervention.

H_a4: Agility levels, as measured by FIT for Change self-assessment, will be significantly higher after a learning intervention.

I cleaned data prior to analysis by screening and removing data that did not fit into the specified inclusion criteria. I removed data for the participants from the executive leadership team and data missing over 20% of the elements from the data set. Pre-analytic procedures included matching data from the Learning Management system and the data from the vendor to identify participants that had participated in the intervention (to be included in the intervention group) and those that had not participated in the intervention (to be included in the control group).

I planned to use ANCOVA statistical test to test the hypotheses. The pre-test scores were to serve as the covariate in the analysis. The inclusion of pre-test scores as a covariate would answer the question whether the means of the post-test scores, after being adjusted for scores from the pre-test, differ between the intervention and control groups. The results were interpreted by analyzing variance. A significant F-ratio would indicate that the treatment variance is significantly greater than error variance in the model, which suggests that the independent variable has an effect on the dependent variable. I used an alternate Wilcoxon Signed Rank test in lieu of ANCOVA because of the failed data assumptions, which I discuss in detail in Chapter 4.

Threats to Validity

I conducted the study in the healthcare workplace environment, and the findings of the study may be generalized to organizations in the healthcare sector. There is a threat to external validity when generalizing the findings to other industries. I mitigated this threat by suggesting additional research before generalizing the findings to other companies, especially in other industries.

Assessment design may pose a threat to internal validity. The first assessment (pre-intervention and control group) may sensitize participants' performance on the re-assessment (post intervention and control group). The results of the re-assessment may be due to the first assessment, and not due to the intervention. I mitigated this threat by using the two-group design. Because both groups took two assessments, the difference between groups is not due to testing design.

Ethical Considerations

Healthcare Co. agreed to provide access to data for purposes of this research. Institutional IRB permission was granted. IRB permission number is 08-10-18-0131800.

I used archival data in this study and therefore, there were no ethical concerns or issues associated with data collection and intervention process. Data were identifiable at individual level by the participant ID attached to each record. Data were confidential and I handled the data accordingly. Data protection included storing data on a password secured laptop used by researcher only and in a locked cabinet. Only I had access to the data, and I will destroy the data five years after completing the study. Since this was an employer-sponsored intervention and test, there may be an ethical concern of employee

consent. In the original data collection, the employer had invited the participants to re-take the assessment on a voluntary basis, with the goal of enhanced learning for the participants, as well as research purposes for the employer. There was no adverse action against employees that had elected not to re-take the assessment.

Other ethical issues include performing the study in researcher's own work environment. I am not in a supervisory or position of power to anyone whose data were being used for the study, or anyone involved in data collection. Potential conflict of interest is another ethical issue because I participated in the development of the FIT for Change program and might be biased toward positive FIT for Change program performance. I mitigated this concern by research design that included a control group, and by using my awareness of this risk to report findings and interpret the results in an unbiased manner. The employer may potentially be looking to monetize the program in the future, once it's determined that the outcomes are positive and may be replicated with other organizations. The organization is motivated in determining the true effectiveness of the program to be able to use the learning to either improve the program, or to set appropriate expectations with the organizations potentially interested in paying for it. Taking the original assessment and the re-assessment was completely voluntary and was not forced in any way. There were no negative consequences for not taking the original or the re-assessment for the employees. There are no current plans or organizations identified to target with this program.

Summary

Chapter 3 described the study research design to achieve its purpose and goals in answering the RQs posed in Chapter 1. This chapter included an introduction; summary of the research purpose, hypotheses and RQs; descriptions of the research design, setting, sample and the participant data selection process. I described the instrument, including its validity, reliability, and appropriateness for use in this study. I explained data collection and analysis processes, as well as a process for protecting participants' anonymity and data confidentiality.

I obtained answers to the RQs with data collected using a valid and reliable FIT for Change assessment instrument. I used the assessment to determine the level of resilience and agility of participants before and after participating in the FIT for Change learning intervention. The sample comprised archival data for 612 Healthcare Co. employees.

I examined in this study the effects of the learning intervention on individual levels of agility and resilience. The learning intervention was the independent variable, and the agility and resilience scores were the dependent variables. I planned to use ANCOVA test to determine the effect of the independent variable (learning intervention) on the dependent variables (agility and resilience levels).

Chapter 4 will provide description of data collection, including actual participation rates. It will also cover intervention fidelity, results and evidence of trustworthiness. Chapter 5 will include an overview of the study, interpretation of the

results, recommendations for practice and future research, and implications for social change.

Chapter 4: Results

Introduction

The purpose of this study was to improve the understanding of whether workforce agility and resilience can be developed by introducing a learning program. The goal was to evaluate effectiveness of a learning intervention on agility and resilience levels in individuals within the healthcare industry. My goal was to answer four RQs and test their corresponding hypotheses. RQ 1 was focused on the impact of participation in the learning intervention on resilience levels between the control and the intervention groups. RQ 2 was focused on the impact of participation in the learning intervention on agility levels between the control and the intervention groups. RQ 3 was focused on the impact of the learning intervention on the individual resilience levels before and after the intervention. RQ 4 explored the impact of the learning intervention on the individual agility levels before and after the intervention.

Chapter 4 includes description of study results. This chapter outlines data collection, intervention fidelity, results, evidence of trustworthiness, and summary.

Data Collection

I used archival data in this study. My data collection process did not deviate from the original plan proposed in Chapter 3. I collected the data from the administrator of the FIT for Change program at one time in September of 2018. The organization originally generated FIT for Change assessment scores between February of 2016 and July of 2018. The data did not include demographic characteristics because demographic data elements were irrelevant for the RQs of this study, nor were they collected during the original data

collection process. Because I used the scores from the total population, excluding one record with missing data, the sample of the population can be considered representative and proportional to the total population.

Intervention Fidelity

A description of the FIT for Change intervention was provided in the previous sections. I participated in the implementation of the FIT for Change program and was the lead facilitator of the program. I can attest to the fidelity of its implementation and facilitation. The FIT for Change program facilitators conducted all FIT for Change program activities as originally planned.

Results

Before conducting the analysis, I screened and cleaned the data. I excluded one record with missing data and data for employees who took the assessment more than twice (i.e., excluded data for 28 employees who have taken the FIT for Change assessment 3 times and for 2 associates who took the assessment 4 times). The final cleaned data set contained records for 612 employees. The minimum sample calculated was 102. I imported all 612 records in SPSS and included them in the analysis to make the data set more robust.

Descriptive statistics

I conducted descriptive statistics on the agility and resilience scores before and after participating in the FIT for Change intervention program for the intervention group, and on the first and second agility and resilience assessment scores for the control group. As demonstrated in Table 1, mean agility pre-scores for intervention and control groups

varied between 3.95 (*SD* = 0.64) and 3.84 (*SD* = .68). Post scores varied between 4.03 (*SD* = .57) and 4.08 (*SD* = .65) for the intervention and control groups. Resilience prescores for intervention and control groups varied between 4.22 (*SD* = .50) and 4.16 (*SD* = .52), respectively. Postscores varied between 4.22 (*SD* = .53) and 4.27 (*SD* = .57) for the intervention and control groups.

Table 1

Agility and Resilience Scores for the Intervention and Control Groups

	Intervention			Control		
Scores	*n*	*M*	*SD*	*n*	*M*	*SD*
			Agility			
Pre	363	3.95	.64	249	3.84	.68
Post	363	4.03	.57	249	4.08	.65
			Resilience			
Pre	363	4.22	.50	249	4.16	.52
Post	363	4.22	.53	249	4.27	.57

Statistical assumptions

I verified six assumptions of the ANCOVA. The first assumption for ANCOVA was that the intervention and control group scores were independent of each other. For this research, each participant's FIT for Change agility and resilience scores were included either in the control or the intervention group, and no participant's data were included in both groups. The first assumption for ANCOVA was met in this study.

The second assumption for ANCOVA was that the scores of the dependent variables were normally distributed. I used the Kolmogorov-Smirnoff and the Shapiro-Wilk tests of normality. As demonstrated in Table 2, results of both tests for all variables indicated that the scores of the dependent variables are distributed abnormally, therefore the second assumption for ANCOVA was not met.

Table 2

Analysis of Dependent Variables Normality

	Intervention		Control	
Scores	*Kolmogorov-Smirnov*	*Shapiro-Wilk*	*Kolmogorov-Smirnov*	*Shapiro-Wilk*
		p		
Agility Pre	.000	.000	.000	.000
Agility Post	.000	.000	.000	.000
Resilience Pre	.000	.000	.000	.000
Resilience Post	.000	.000	.000	.000

The third assumption for ANCOVA is homogeneity of variance for dependent variables. I used Levene's Test of Equality of Error Variances and ANOVA to test this assumption. The results of the ANOVA and the Levene's tests indicated that the variances are homogeneous between the agility and resilience; the scores are displayed in Table 3 and 4, respectively. The third assumption for ANCOVA was met for this study.

Table 3

ANOVA Analysis of Homogeneity of Variance Between Subjects

Scores	*df*	*F*	*p*
Agility Pre	1	3.88	.49
Agility Post	1	.33	.86
Resilience Pre	1	2.35	.13
Resilience Post	1	1.07	.31

Table 4

Levene's Analysis of Homogeneity of Variance

Score	*p*
Agility Pre	.30
Agility Post	.06
Resilience Pre	.76
Resilience Post	.18

The fourth assumption for ANCOVA was that there was a linear relationship between the dependent variable and the covariate. To test this assumption, I generated scatterplots to visually examine the relationships. Visual examination of the scatterplot with the agility and resilience scores determined that there was a linear relationship between the dependent variable and the covariate. Therefore, the fourth assumption for

ANCOVA was met for this study. Scatterplots for agility and resilience are presented in Figure 2 and Figure 3, respectively.

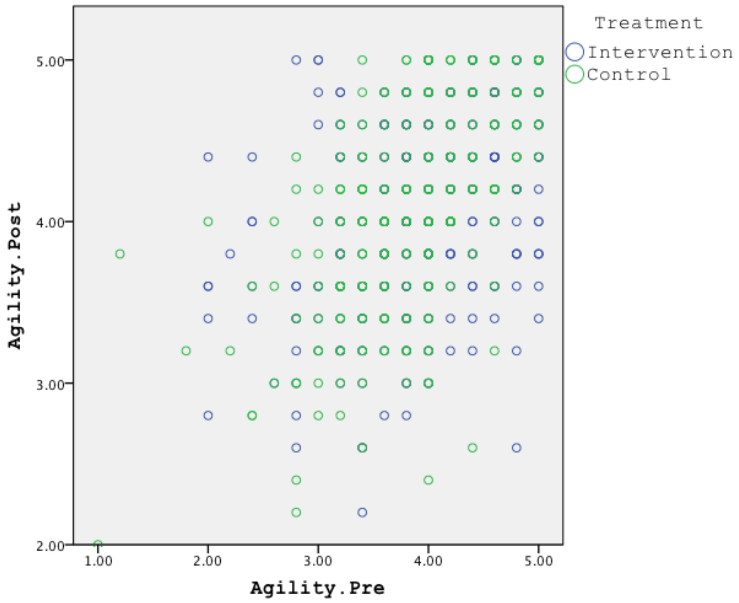

Figure 2. Scatterplot comparing the dependent variable, Agility post scores and the covariate, Agility pre-test scores, for the intervention and control groups.

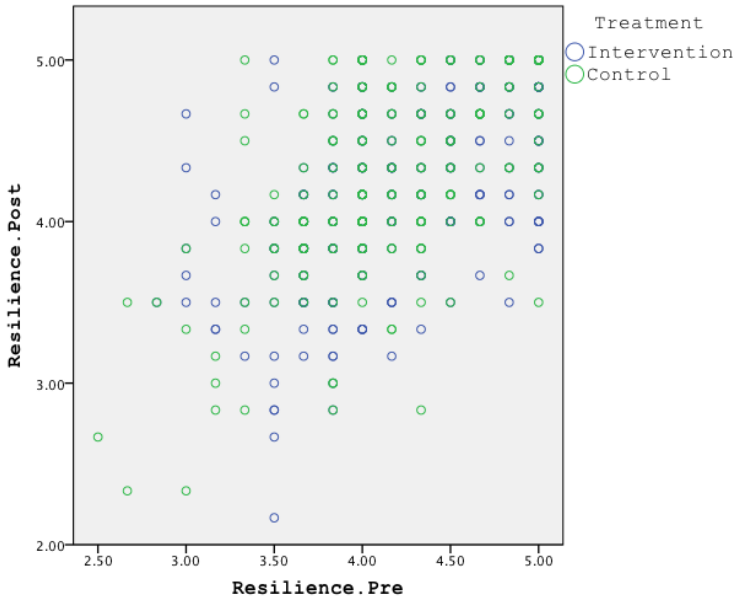

Figure 3. Scatterplot comparing the dependent variable, Resilience post scores and the covariate, Resilience pre-test scores, for the intervention and control groups.

The fifth assumption for ANCOVA was that the covariance and treatment effect were independent. I conducted two independent samples t-tests to test this assumption, using the Agility pre-test scores and Resilience pre-test scores as the dependent variable. Results of *t*-test for Agility pre-test scores were marginally nonsignificant, $t(610) = 1.97$, $p = .05$. Because the results were marginal, I also conducted a Levene's Test for Equality of Variances. The results of the test were nonsignificant, $p = .29$. Results of t test for Resilience pre-test scores were nonsignificant, $t(610) = 1.53$, $p = .13$. These results for both variables indicate that the covariate and treatment effect are independent of each other. Therefore, the fifth assumption for ANCOVA was met for this study.

The sixth assumption for ANCOVA was homogeneity of the regression slopes for treatment and control groups. I conducted a univariate ANOVA to test this assumption, with pre-test x treatment as an interaction term. For the Agility variable, the results were

statistically significant, $F(2, 610) = 99.22$, $p = .000$. For the Resilience variable, the results were statistically significant, $F(2, 610) = 31.38$, $p = .000$. I also ran the Levene's Test of Equality of Error Variances for both variables. For agility, the results were statistically significant, $F(1, 610) = 0.12$, $p = .73$. For Resilience, the results were statistically significant as well $F(1, 610) = 0.20$, $p = .66$. These results indicated that the sixth assumption was not met for this study.

Because the first and the sixth assumptions for ANCOVA were not met, there was a risk that using ANCOVA may lead to erroneous conclusions. I considered an alternative option to transform the data to achieve a normal distribution and proceed with the ANCOVA analysis. However, research suggested that the results of statistical analysis using transformed data are often not representative of the original data pre-transformation (Feng et al., 2014). In addition, the violation of the regression slopes homogeneity may indicate aptitude-treatment interactions, where pre-intervention scores may reflect individual aptitude, making the use of ANCOVA inappropriate because the results would lead to erroneous conclusions (Johnson, 2016). Based on these findings, I sought a different approach and proceeded with using an alternate test that is recommended for use in lieu of ANCOVA in situations with failed ANCOVA assumptions, the Wilcoxon Signed Rank Test.

Statistical analysis findings

The Wilcoxon Signed Rank Test does not compare agility and resilience levels between the control and the intervention group. Therefore, I split the data and conducted

these tests separately for the intervention and the control groups to determine whether there are differences, and therefore address RQ1 and RQ2.

The results of the Wilcoxon Signed Rank Test for the Agility variable indicated that the Agility scores increased on the second test and the increase is statistically significant (p = .000) in Agility levels for both, the control and the intervention groups, as demonstrated in Table 5.

Table 5

Wilcoxon Signed Rank Test of Pre and Post-test Agility Scores

Scores	Intervention	Control
	M	
Agility pre-test	3.95	3.85
Agility post-test	4.09	4.08

I calculated the effect size using the z and N values from the Wilcoxon test and determined that the effect size on Agility for the intervention group was low (r = .1) and medium for the control group (r = .3)

As demonstrated in Table 6, the results of the Wilcoxon Signed Rank Test for the Resilience variable indicated that the Resilience scores decreased on the second test for the intervention group, and the decrease is statistically insignificant (p = .913). For the control group, Resilience scores increased, and the increase is statistically significant (p = .000).

Table 6

Wilcoxon Signed Rank Test of Pre and Post-test Resilience Scores

Scores	Intervention	Control
	M	
Resilience pre-test	4.22	4.16
Resilience post-test	4.09	4.27

Effect size calculations using the z and N values from the Wilcoxon test and demonstrated that the effect size on Resilience for the intervention group was low ($r = 0$) and low to medium for the control group ($r = .2$).

Summary

Wilcoxon Signed Rank Test results demonstrated that there was no statistically significant difference in pre and post Resilience scores among the intervention group, but there was a statistically significant difference for the control group. Therefore, I rejected the null hypothesis for RQ 1. Interpretation of Wilcoxon Signed Rank Test results indicated that participants of the FIT for Change program demonstrated a difference in Agility scores between the control and the intervention group. Based on these findings, I rejected the null hypothesis for RQ 2. There was no statistically significant change in the Resilience scores for the intervention group before and after the program. Therefore, I accepted the null hypothesis for RQ 3. In contrast, for the intervention group, Wilcoxon Signed Rank Test results showed that participants of the FIT for Change program

demonstrated higher Agility scores after the program. Based on these findings, I rejected the null hypothesis for RQ 4. I discuss the results further in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to improve understanding of whether workforce agility and resilience can be developed by introducing a learning program. The goal was to evaluate effectiveness of a learning intervention on agility and resilience levels in individuals within the healthcare industry.

Wilcoxon Signed Rank Test results demonstrated that there was no statistically significant difference in pre and post Resilience scores among the intervention group, but there was a statistically significant difference for the control group. Therefore, I rejected the null hypothesis for RQ 1. Interpretation of Wilcoxon Signed Rank Test results indicated that participants of the FIT for Change program demonstrated a difference in Agility scores between the control and the intervention group. Based on these findings, I rejected the null hypothesis for RQ 2. There was no statistically significant change in the Resilience scores for the intervention group before and after the program. Therefore, I accepted the null hypothesis for RQ 3. In contrast, for the intervention group, Wilcoxon Signed Rank Test results showed that participants of the FIT for Change program demonstrated higher Agility scores after the program. Based on these findings, I rejected the null hypothesis for RQ 4.

Interpretation of the Findings

The findings corroborate and extend the knowledge in the discipline because they provide empirical evidence of efficacy of learning intervention in workplace on resilience and agility levels. Agility levels in the intervention group increased from $M = 3.95$, (pre-

test) to $M = 4.09$, $p = .000$ (post-test), indicating that overall the intervention had a significant positive effect on agility. These findings were consistent with the current research and the TPB theoretical framework, which indicates that learning programs are one of the ways to develop agility in workforce (Qin & Nembhard, 2010; Muduli, 2013).

An interesting observation emerged that the control group scores, where the pre- and posttest scores for Agility increased (pre-test scores $M = 3.85$, $p = .000$, post-test scores $M = 4.08$, $p = .000$), and test scores for Resilience showed an increase ($M = 4.16$, $p = .000$). These findings pose a question about the role of self-awareness in development of agility and resilience. Administering the assessment to the participants may have created enough self-awareness to promote development of agility and resilience on one's own. This question is consistent with the conclusion made by De Meuse (2017) that self-awareness is a key component to developing agility. It is also possible that the participants wanted to see improved scores and answered questions in favor of improved results.

Resilience scores did not change with statistical significance after participating in the program among the intervention group (pre-test $M = 4.22$, $p = .000$; post-test $M = 4.09$, $p = .913$). Because the FIT for Change program addresses both agility and resilience, it could be possible that the participants focused on the agility component more because it seemed more relevant to them. It is also possible that I did not find a significant difference because this research was limited to analysis of scores regardless of other factors, such as sex, age, and role in the company. Further research would be needed to understand if certain demographic contingents are more sensitive to the

development of resilience through a learning intervention than others. There is a question of whether the program participants had enough support in and outside of the workplace to practice the techniques they learned in the program.

Limitations of the Study

The data collected for this study were from the participants' self- assessment of their behaviors and beliefs. The self-assessments were subjective and reflective of their feelings on the particular date when the survey was taken. While complete anonymity was guaranteed in the original invitation to participate in the assessment and re-assessment, some responses may have been influenced by the belief that anonymity may not be maintained. A potential limitation of data quality using archival data for analysis may exist, since I did not have control in the setup of the data files. This risk was mitigated by performing a data quality assessment.

Data failed two of the six assumptions for ANCOVA analysis (normal distribution and homogeneity of slopes), and I had to perform an alternate test in lieu of ANCOVA. This limited the understanding of the differences between the control and intervention groups.

The results of this study can be generalized to healthcare organizations that are undergoing or plan to undergo organizational change. Results would apply to employees of other workplaces in healthcare industry because workforce agility and resilience have been generally correlated with organizational effectiveness with change, regardless of sector or industry (Muduli, 2013). To increase confidence in generalizability, the study

would need to be conducted again, using the same program in a different organization in healthcare industry.

Recommendations

The results of the study support the current research that learning interventions develop agility levels in the workforce but failed to demonstrate improvement in resilience levels. Because both control groups (agility and resilience) showed a significant improvement in their agility and resilience levels, I recommend conducting a future study to evaluate the role of self-awareness on agility and resilience development. The question to study would be if people develop agility and resilience level after taking the self-assessment. The FIT for Change self-assessment contains in depth definitions of agility and resilience and also provides suggested action steps for self-improvement. Self-assessment results might be sufficient for participants to develop their agility and resilience independently. Administering a self-assessment might be a more cost-effective and efficient way to developing agility and resilience, as compared with implementing a learning intervention. A self-assessment could be implemented quicker and easier in organizations, as self- assessment could be fully automated, does not require facilitation resources, and takes about 10–15 minutes to complete.

There is a question whether I failed to find significant improvement in resilience levels because demographic factors were not included in the analysis. Further study could be helpful to understand whether considering additional variables would provide valuable insight on the types of participants that would benefit from the learning intervention the most. Also, I question whether the improvement was not achieved because there was no

support and/or reinforcement to implement the techniques the participants learned in the program. Identifying and studying the support needed post program participation and the reinforcement mechanisms to improve the results could be valuable to future research.

The main limitation of the study was the inability to use ANCOVA due to data restrictions. The data failed two assumptions for ANCOVA and the next logical step was to use the recommended alternate test. I recommend conducting an explorative study with a log-transformed normalized data set to determine if the ANCOVA would support the findings of the current study.

Finally, a study comparing the actual behavior in the workplace pre- and post-intervention would be valuable to understand the impact of the interventions on behavior and business results. A study of observed behavior and whether the actual behavior changes after an intervention would be a more useful indicator of the effectiveness of the program, as compared to research based on self-reported assessment data.

Implications

This study is significant to healthcare organizations undergoing change and will result in organizations investing in development of agility and resilience of their workforce. Developing agility and resilience in people facilitates social change by creating communities that do not just survive, but adapt in an optimistic way and find opportunities benefiting the society even during the most adverse changes. In practice, organizations should continue to invest in agility and resilience development for their employees because an agile and resilient workforce is more change ready.

Conclusion

Development of agility and resilience is an important subject because it is significant to organizations' success and people's well-being. Not only is an agile and resilient workforce beneficial to organizations, but it also creates stronger and thriving communities. This study demonstrated that it is possible to improve agility and resilience by creating self-awareness and administering learning interventions to employees. While benefits of developing agility and resilience are obvious, there are still questions to be studied further, including the role of self-awareness and readiness in development of agility and resilience.

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