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Acceptance of Change: Exploring the Relationship Among Psychometric Constructs and Employee Resistance

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ACCEPTANCE OF CHANGE: EXPLORING THE RELATIONSHIP AMONG PSYCHOMETRIC CONSTRUCTS AND EMPLOYEE RESISTANCE

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Presented to
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By
Brian Dunican

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ACCEPTANCE OF CHANGE: EXPLORING THE RELATIONSHIP AMONG PSYCHOMETRIC CONSTRUCTS AND EMPLOYEE RESISTANCE

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“What is necessary to change a person is to change his awareness of himself.”

... Abraham Maslow

First and foremost, this body of work is dedicated to my lovely lady, Teresa, who selflessly provided unwavering support throughout each step of this journey.

Your patience, encouragement, faith, and love have made this possible.

You have been by my side throughout my entire educational career. Thank you for being my best friend, confidant, wife, and an amazing mother and role model for our lovely children—

Kayla, Maya, and

Briya.

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“The need for change bulldozed a road down the center of my mind”

-- Maya Angelou

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Change is inevitable and can influence numerous events inside and outside an organization. The contrasting attitudes of acceptance and resistance to change are an increasingly interesting topic in today’s global, ever-changing, and competitive environment. Discovering the behavioral origins of employees’ reactions to change is an integral part of understanding the way in which individual mindset may play a role in coping with organizational change and resistance. This body of knowledge may give organizations insight for creating a competitive advantage over their counterparts.

Conceivably, it can be argued that some researchers view change as a process of gradual adaptation that is largely influenced by people in organizations who react to internal and external pressures, while others view it as an emergent event due to environmental selections (Demers, 2007). Through both concepts, successful navigation through change events relies on the manner in which humans respond to these events.

The current study employed a descriptive, non-experimental, correlational design to examine individuals’ self-rating of their level of mindfulness, tolerance of ambiguity, and resistance to change in four industries located in Kentucky. The quantitative study sought to identify the strengths of the relationship of the chosen variables using validated instruments – Langer’s (Pirson, Langer, Bodner, & Zilcha-Mano, 2012) Langer Mindfulness Scale (LMS14), Budner’s (1962) Tolerance of Ambiguity Scale (TOA), and Oreg’s (2003) Resistance to Change Scale (RTC). Regression models were utilized to
evaluate multivariate relationships among the variables. Based on the findings in the current study, the results indicated that no differences lie between group comparisons of organizational or demographic factors when examining the relationship among the elements of mindfulness, tolerance of ambiguity, and resistance to change. Bivariate correlations yielded both strong positive and negative relationships among the three scales assessed by salary (exempt and non-exempt) employees located across different industries ($p < .01$).
CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Nothing stays the same; part of the human condition involves adjusting to change. Yet, human resistance to change is both intense and natural. Perhaps examples of this resistance occur in employees’ personal lives or arise as they approach new ideas or changes at work. Through a myriad of changes, characterized by global demands, unpredictable environments, mergers, downsizing, the onset of technological advances, and operational developments, managing change and resistance has become a way of life for many organizations (Judge, Thoresen, Pucik, & Welbourne, 1999). Organizations must depend on capable leadership to guide them through these unprecedented times. The evolution of change requires employees at all levels to embrace new techniques of working by promoting different mindsets (Kets de Vries, Ramo, & Korotov, 2009). Gondo, Patterson, and Palacios (2013) suggested that some organizations fail to adapt to change and prepare their leadership and employees for a more uncertain future. Yet, their study summarized that successful change involves support of formulated strategies and the facilitation of change recipients being mindful during change efforts.

In the face of intense global competition, groundbreaking technological development, rising raw material costs, and the consolidation of customers’ expectations, it is critical for organizations to have the dexterity to accept new changes and adapt to survive (Gondo et al., 2013; Jacobs, 2005). Discovering the behavioral origins of employee reactions to change is an integral part of understanding the recipe for flexibility, longevity, and organizational success. Researchers have separately alluded to
varying degrees of social psychological constructs—particularly elements of mindfulness and tolerance of ambiguity—and their influence on individuals’ attitudes toward change and resistance (Banning, 2003; Langer, 1993).

**Background**

Organizations have faced extraordinary changes; therefore, it is imperative that businesses adapt to these changes through knowledgeable and capable individuals and, thus, retain a competitive edge (Conner, 1992). Leaders around the world must possess the skills and cognitive experience to manage varying degrees of uncertainty and balance the levels of tolerance within their organizations (Lane & Klenke, 2004). This notion is reinforced by Topping (2002) in that change implies uncertainty, and uncertainty can drive individuals to feel afraid; uncomfortable; threatened; anxious; and, as a result, resistant to change. On the contrary, acknowledging uncertainty can lead to the exploration for clarity and challenges of the status quo (Geller, 2002). A rapidly growing amount of literature is available on mindfulness, which insinuates the way in which this construct could aid in navigating through areas of uncertainty (Brown & Ryan, 2004; Lane & Klenke, 2004; Langer, 1993; Weinstein, Brown, & Ryan, 2009).

Brown and Ryan’s (2004) multifaceted definition of mindfulness recognized it as, “a phenomenon with functional import for outcomes as diverse as physical health, psychological well-being, work and sports performance, and relationships” (p. 242). Strengthening the idea of overcoming uncertainty through mindfulness, Carson and Langer (2006) stated, “Actively thinking about paradoxes increase one’s ability to tolerate ambiguity and decreases the anxiety associated with uncertainty. Increased tolerance of ambiguity is another hallmark of mindfulness” (pp. 40-41). Weinstein et al.,
(2009) also contended that increased mindfulness in individuals promoted greater attention and awareness in situations (organizational change, for example) that are perceived as stressful or threatening.

By its nature, change in organizations is inherently stressful, causing increased anxiety among employees. This environment of uncertainty can threaten the balance of control, often distracting organizations from obtaining the stability needed to survive and adapt to change. It is possible that a greater perception of an organization’s atmosphere and an increased openness to new ideas decrease resistance to change. Although previous research (e.g., Geller, 2002; Oreg, 2003) has correlated psychometric constructs to resistance, more research is needed to explore the influence of individuals’ perceptions of psychological constructs on behaviors during change and times of uncertainty.

**Resistance to Change**

The literature presents an enduring consensus on the premise that it is human nature to resist change and elements related to the process of change (Coch & French, 1948; Conner, 1992; Oreg, 2003; O’Toole, 1995; Zander, 1950). This notion of natural resistance is supported by Kotter (1995), as he described change as the force of shifting conditions within the human communities. Contested by Dent and Goldberg (1999), the phrase *resistance to change* should be reevaluated under a more conventional definition. Although the researchers supported the belief that resistance is natural, their views have challenged the idea of the way in which individuals resist change. Blindly supporting the belief that one can resist change may be counterproductive and may direct the focus of organizations away from the actual issues. The idea of contradicting this belief opens the possibilities that inefficiencies in the process of change and its impact on individuals
should be acknowledged and explored (Mabin, Forgeson, & Green, 2001). As a whole, regardless of the process, resistance to change is driven at the individual level and is leveraged by organizations to foster change (Conner, 1992; Judson, 1991).

Employees of organizations may withdraw from the fear of ideas they do not fully understand or act rebellious toward seemingly unclear decisions made by management without proper cause. Ideally, change within organizations should be straightforward, clear, and concise prior to implementation. More often, this is not the case for individuals who implement the groundwork or for those who are being impacted by the change (Judson, 1991). Alternately, studies have demonstrated that some employees with a higher tolerance of ambiguity are more susceptible to change and may even thrive within this environment (Oreg, 2003). As a whole, organizations have struggled with implementing new ideas, changing their culture, and reacting to market demands; nevertheless, many are willing to change to remain competitive.

Dent and Goldberg (1999) found that, at the individual level, resistance to change can arise from those whose jobs are directly impacted and can cause a rippling effect through the organization. Fundamentally, individuals are creatures of habit and are annoyed by pressures in organizations that force employees to choose a different behavior or accept a reward system that may not seem beneficial. However, they are willing to change their behaviors when their beliefs of the benefits of the change outweigh the benefits in their current environment (Armenakis & Bedeian, 1999). In other words, attitude toward the change affects one’s willingness to consider and even implement the change.
Attitudes and Change

Some change efforts within organizations are successful; some are not. Kotter (1995) monitored approximately 100 companies over a decade to observe the fundamental changes made in fluctuating business environments. The research included examples of successes, examples of failures, and illustrations of companies that remained stagnant as they suffered through misguided steps. Outlined by Kotter (1995), successful changes within companies encompassed eight steps: (a) creating a sense of urgency; (b) forming a guiding coalition; (c) creating a compelling vision; (d) communicating the vision for buy-in; (e) empowering and acting on the vision; (f) creating quick wins; (g) increasing credibility through small wins; and (h) linking success to new approaches. In an earlier approach, Judson (1991) proposed five steps to enhance the process of change by engaging employees’ active participation through (a) analyzing and planning the change; (b) communicating the plan for change; (c) gaining buy-in and acceptance; (d) changing the status quo to the desired state; and (e) institutionalizing the new state of change. Through these steps, the common link described for successful changes involved employees’ comprehension of the change and their personal adaptation to the new way of thinking and working.

Iverson (1996) supported the concept that organizational change could be easier when employees have higher personal commitments through healthy professional relationships, positive employee morale, job satisfaction, and positive recognition. Moreover, employees who have a solid desire to perform well and are willing to embrace new challenges, even in the absence of clarity, also understand the importance of change within organizations. Furthermore, Gärtner (2013) reinforced the concept that
employees’ attitudes and perceived flexibility toward change were influenced through a subset of mindfulness. Although it is not a new term, mindfulness supports the concepts attributed to attention, awareness, engagement, and being comfortable with new ideas that may impact areas within an individual’s control (Langer, 1993). The rationale for this study brings together the theories of mindfulness, tolerance of ambiguity, and resistance to change.

**The Problem Defined**

With the continuous expansion of globalization and the rising unpredictability of consumer demands, economic pressures, and technological advancements, organizations have been required to change to remain competitive. Change is inevitable. The organizations that master agility and are adaptive to the ever-changing environment will possess the recipe to emerge triumphant over their competitors. In reality, every organization must change; yet, the process is not always smooth or effective. Hypothetically, within the organizational structure, there are individuals who visualize the change, others who develop and organize the change, and those who implement and perform the change (Isabella, 1990). At times, roles of individuals may overlap due to the size of the organization and the responsibilities entailed within each role. Directly or indirectly, everyone throughout the organization is impacted by the change; perhaps some individuals are able to cope with change better than others. A study of the related factors of mindfulness and tolerance of ambiguity may lead to insights about individuals’ resistance to change.

**Defining the Problem of Resistance**
In the current study, resistance to change refers to adverse human forces that impact the processes of change. Kotter (1995) emphasized that organizational resistance is often helped along through the mismanagement of change and by ignoring its impact on the processes. Maurer (2009) suggested that resistance will happen, often due to failures from previous change implementations. Lewin (1947), one of the most influential early researchers of change, realized that change was not an event, but rather, a living process. He conceptualized the process of change through a model composed of three steps: unfreezing, change, and refreezing. His initial step introduces the idea of resistance; individuals must give up something before accepting something new. Though simple, his ideas have been expanded upon by numerous researchers and have been developed into various theories of change. Zander, a close colleague of Lewin, defined resistance to change as “behavior which is intended to protect an individual from the effects of real or imagined change” (as cited by Dent & Goldberg, 1999, p. 34).

Mabin et al. (2001) found that seemingly rebellious employees manifest their fears of change due to uncertainty. In addition, perceived resistance may be disguised through the camouflage of untimely surprises, past resentment, additional job duties, or the exposure of personal vulnerabilities. In isolated cases, changes within the organization may cause a true threat to safety, quality, cost, or the company’s reputation. Ignoring the symptoms of resistance within the change process could have disastrous results. Judson (1991) agreed that resistance to change is not the fundamental problem, but a symptom hiding basic underlying circumstances. He also developed a continuum of reactions to change ranging from indifference (no resistance) to active, even aggressive resistance.
Research has validated the importance of evaluating the reactions and the attitudes of individuals toward organizational change and their desire to succeed (Judge et al., 1999; Oreg, 2006). Developed and validated by Oreg (2003), the *Resistance to Change* scale has been widely used and accepted by academic works to measure an individual’s disposition toward resistance to change. Furthermore, Oreg outlined four subscales as an exploratory analysis to categorize an individual’s reaction to resist change: (a) routine seeking, (b) emotional reaction to impose change, (c) cognitive rigidity, and (d) short-term focus. Supportive research (cited in Oreg, 2003) has found the factors of openness to change, tolerance of ambiguity, and risk aversion as predictors for managers coping with the stress of change within their organizations. An exhaustive amount of research has been conducted on the broad topic of resistance to change, yet little is known on the relationship of how the psychological constructs of mindfulness and tolerance of ambiguity influence resistance to change within organizations.

**Mindfulness**

Mindfulness is a concept in educational psychology that has been primarily defined by Dr. Ellen Langer, a social psychology professor at Harvard University. Langer (1993) defined mindfulness as “an open, creative, probabilistic state of mind in which the individual might be led to finding differences among things thought similar and similarities among things thought different” (p. 44). Langer (1997) further explained three characteristics of mindfulness: “(a) continuous creation of new categories, (b) openness to new information, and (c) having an implicit awareness of more than one perspective” (p. 4). *The Mindfulness Scale*, validated by Pirson et al. (2012), operationalizes the construct and identifies the four subscales of *novelty-seeking,*
engagement, novelty-producing, and flexibility to explain the broad psychometric construct. Brown and Ryan (2003) defined mindfulness as, “a quality of consciousness that is characterized by clarity and vividness of current experience and thus stands in contrast to the mindless” (p. 823). Different from Langer’s definition that evaluates dispositional differences in reflective consciousness behavioral routines over time, Ryan and Brown focused on the presence or absence of attention to and the awareness of events occurring in the present moment. For the purpose of the current study, the ideas of mindfulness will be presented through the literature of Langer.

Furthermore, mindfulness is believed to play an important role in disengaging individuals from automatic thoughts, habits, and unhealthy behavior patterns and may contribute to well-being and happiness in a direct way (Brown & Ryan, 2003). Goltz and Hietapelto (2002) hypothesized that resistance to change is influenced by the intensity and quantity of consequences outside an individual’s control. Still, little is known about the relationship between elements of mindfulness and its influence over change and resistance to change.

Tolerance of Ambiguity

The process of conforming to change or an innovation (change/innovation will be used interchangeably within this writing) may seem difficult for individuals within organizations, yet examples exist in which individuals adapt very easily and seem to flourish within this environment. It appears that openness to and acceptance of change is an individualistic preference and is not shared by the general population. Judge et al. (1999) explained that organizational change has been predominately conducted at a middle range or macro level, rather than at the micro individual level. Their research
ascertained seven personality characteristics used by employees when coping with organizational change: (a) internal locus of control, (b) self-efficacy, (c) self-esteem, (d) positive affectivity, (e) openness to experience, (f) tolerance for ambiguity, and (g) risk aversion. A combination of the traits reflected positive job satisfaction and organizational commitment. For the purpose of the current study, the focus will be primarily on the tolerance of ambiguity from this list and elements related to mindfulness in relationship to resistance to change.

Tolerance of ambiguity describes an individual’s behavior in unclear or insecure situations and how one reacts to the lack of clarity or uncertainty (Banning, 2003). Developed by Frenkel-Brunswik (1948), tolerance of ambiguity has gained attention from researchers over the past 60 years. Frenkel-Brunswik was one of the first to present a comprehensive analysis of ambiguity and was influenced by earlier works of Germany psychologist Erich Jaensch. Frenkel-Brunswik described tolerance of ambiguity as an “emotional and perceptual personality variable” (cited in Furnham & Ribchester, 1995, p. 180).

Budner (1962) later defined tolerance for ambiguity as “the tendency to perceive ambiguous situations as desirable” and intolerance for ambiguity as “the tendency to perceive ambiguous situations as sources of threat” (p. 29). Budner developed the Tolerance of Ambiguity Scale to further interpret the complex concept of ambiguity and individuals’ responses to it. Through the development of the Tolerance of Ambiguity Scale, three subscales (i.e., novelty, complexity, insolubility) emerged to provide insight into the more abstract larger construct.
A decade later, Norton (1975) defined tolerance of ambiguity as the degree to which an individual is cognitively willing to tolerate uncertainty, vagueness, or nebulous information and is able to act upon the knowledge. Changes in organizations are not always clear, even for the leaders who are implementing the change. Through the vagueness of change, innovative organizations deliberately take actions to avoid misinterpretations and to improve the process (Limerick, Passfield, & Cunnington, 1994).

“As organizational structures become less hierarchical and more fluid and amorphous, tolerance for ambiguity and uncertainty is likely to emerge as a quality that differentiates effective from ineffective leaders,” according to Lane and Klenke (as cited in Ehrlich, Meindl, & Viellieu, 1990, p. 69). As organizations are naturally subject to uncertainties, the concept of increasing employees’ abilities to deal with ambiguous situations may lead to more success or important gains in knowledge about organizations. Further research is needed to explore the relationship between tolerance of ambiguity and individuals’ reactions to change within organizations.

**Purpose of the Study**

The current study brings together the issues described under the previous heading, specifically to explore the relationship between psychometric constructs regarding change and resistance to change. Thus, the purpose of the current study narrows the focus of the constructs to individual responses in industrial or manufacturing organizations.

The topic of organizational change is an extremely broad field of study, encompassing several branches of research. The current study addresses both the practical and theoretical significance that relate to individuals’ responses to change in
organizations. While researchers, industry associates, and consulting firms have focused significant attention on resistance to change, it is unclear if having higher degrees of mindfulness and tolerance of ambiguity influences individuals’ perceptions of change in organizations. Although Lane and Klenke (2004) conducted research involving tolerance of ambiguity and mindfulness along with three other constructs—(a) spirituality, (b) creativity, and (c) aesthetic judgment—to determine the influences of uncertainty in leadership, more research is needed to understand the correlation to resistance to change. More support for this need will be included in the Review of Literature of this text.

Employees resist change at all levels of the organization. Although some individuals openly accept change, many do not. The purpose of the current study is to examine the way in which the factors of mindfulness and tolerance of ambiguity specifically relate to resistance to change within organizations. Determining the varying degrees of each psychometric construct on resistance, along with their combination toward resistance to change, may reveal common areas of opportunity related to organizational change. The following general research question is offered: How are the psychometric constructs of mindfulness and tolerance for ambiguity related to resistance to change within organizations?

**Empirical Research Questions**

Organizations are faced with the challenges of changing and responding to current and future trends at an unprecedented rate in today’s global environment (Burke, 2014). Twenty-five years ago, Offermann and Gowing (1990) found that American organizations alone had spent over a record 210 billion dollars to prepare leaders to thrive in organizational change. In addition to money, an immeasurable amount of time and
energy have been dedicated to nurturing leadership and key individuals to navigate others through this complex but important process. Nonetheless, the blueprint is far from perfect. The readiness of individuals within the organization to plan and implement proactive measures, may determine the organization’s competitiveness. The current study examines the factors of mindfulness and tolerance of ambiguity and how they relate to individuals’ perceptions of resistance to change. The specific research questions are the following:

1) How do demographic factors of the respondents and the organizational factors under which they work relate to the psychometric scales of Mindfulness and Tolerance of Ambiguity and their influence on Resistance to Change?

2) After controlling for demographic factors, how does psychometric mindset (Sub-constructs of Mindfulness and Tolerance of Ambiguity) influence individual Resistance to Change:
   a) Routine seeking?
   b) Emotional reaction?
   c) Short-term focus?
   d) Cognitive rigidity?

3) What is the degree of relationship among these measures of Mindfulness and Tolerance of Ambiguity?
The following model characterizes the current study:

![Logic model](image)

Figure 1. Logic model for hypothesized relationships among Psychometric Constructs, Demographic Controls, and Degree of Resistance to Change.

**Significance of the Study**

The current study has both practical and theoretical significance that relates to individuals’ responses to change in organizations. By exploring the interrelated relationships among elements of mindfulness and tolerance of ambiguity with their connection to change and resistance, the current study contributes to the knowledge base of how individuals respond to change within organizations and why. First, researchers (e.g., Judge et al., 1999) supported the exploration of further understandings of
organizational change from the individual’s perspective.

Second, the combination of exploring the relationship among mindfulness, tolerance of ambiguity, and resistance to change is relatively new. Although previous studies (e.g., Oreg, 2003) have correlated other psychological constructs such as self-esteem, positive affectivity, locus of control, and generalized self-efficacy to resistance to change, limited studies have conducted evaluations of those used in the current study. Further, to this researcher’s knowledge, no study has evaluated the specific combination of the psychometric constructs that are addressed in the current study and elements of resistance to change.

Third, the current study has practical significance, as it relates to the way in which individuals may respond to change in organizations. As described by Jacobs (2005), surviving in a world filled with organizational uncertainty and change requires that companies foster the strategic flexibility to navigate through turmoil and create stability. The distraction of internal change and responding to external factors can literally destroy an organization. The keys to success within organizations are the individuals with foresight who challenge uncertainty and ambiguity by learning to be flexible and to see change as an opportunity. Overall, organizations may benefit from understanding the way in which individuals, particularly their leadership, respond to change through the correlation of these psychometric constructs and their relationship to resistance to change.

**Highlights of the Methodology**

When considering the measurement of the perceptions of resistance to change within organizations, various methods have been utilized to illustrate relationships among different constructs (Oreg, 2003; Oreg, Vakola, & Armenakis, 2011). In the current
quantitative, non-experimental study, data were collected from three validated instruments – Langer’s (Bodner & Langer, 2001) Langer Mindfulness Scale (LMS), Budner’s (1962) Tolerance of Ambiguity Scale (TOA), and Oreg’s (2003) Resistance to Change (RTC) scale. Regression models will be used to assess the univariate relationships among the constructs. Additionally, descriptive statistics will be used to include the mean, median, mode, standard deviation, and other selected variables.

A multiple linear regression analysis will determine the relationship between factors of mindfulness and tolerance of ambiguity and their influence of resistance to change. Bivariate correlations will be used to compute the psychometric scores from each instrument and resistance to change ratings to test the significance of the relationships between each subscale. Overall, statistical analyses will be conducted in multiple phases to investigate the relationship between the individual psychometric traits and resistance for salary exempt and non-exempt employees in industrial sites located in Kentucky.

For the purpose of maintaining confidentiality and anonymity, no information on the electronic survey will be traceable to the identity of any respondent to the researcher. Furthermore, participants will be notified in writing prior to publishing the results. The communication will emphasize that the results will be presented in the aggregate form for the purpose of research. Instructions will clearly indicate that individual responses to the research questions will not be shared with either the participants, the organization of the participants, or any institution affiliated with the research. Individual survey responses and registration information will be kept within strict confidence, and the researcher will abide by the rules and regulations granted by the Institutional Review Board (IRB).
Limitations of the Study

Research inherently contains limitations. The current study is no exception. The following issues represent specific limitations of the current study. First, the nature of measuring psychometrics is subjective. Since psychometrics studies measure the way in which individuals think and act (Norton, 1975), influences of the organization’s environment could affect individuals’ responses to questions. Additionally, external variables at the time of data collection not related to the study itself can skew the responses and influence the outcomes.

Other views of limitation rest on the generalizability of the results, which may be limited for the following reasons: (a) the unit of analysis is at the individual level, (b) data were collected from a limited number of operations within the state of Kentucky through convenience sampling, and (c) individual biases that may be introduced at the time of testing.

The unit of analysis for data collection rests at the individual level, rather than the group level, due to the accessibility of the employees. Although the survey collection method allows for comparison with larger groups, it limits the opportunity to explore issues in depth; therefore, assumptions are made for individuals in similar groups. Next, the data collected represents limited industries in the state of Kentucky, restricting the number of participants and the ability to generalize outcomes to other industries different than those outlined in the current study. Last, respondents’ values, interests, and beliefs regarding the online self-administered surveys may introduce biases unknown by the researcher. As a consequence of these limitations and the collection of data during one point in time, the results are generalizable only to the groups or populations that are
similar to those in the current study.

**Definition of Terms**

The following section defines the central terms, constructs, and variables that are utilized in the current study. The outlined descriptions are intended to clarify the conceptualization of each term and, if applicable, measurement of the variables.

**Mindfulness**

*Mindfulness*, a term conceptualized by Langer (1997), serves as one of the psychometric constructs that will be explored in the current study. Langer (1993) defined mindfulness as “an open, creative, probabilistic state of mind in which the individual might be led to finding differences among things thought similar and similarities among things thought different” (p. 44). Mindfulness will be measured through the Langer Mindfulness Scale (LMS14) (Pirson et al., 2012), a revised version of an earlier 21-item instrument. The 14-item scale measures three domains of mindfulness thinking: novelty seeking, novelty producing, and flexibility.

**Psychometrics**

Psychometrics is defined as the science of psychological measurement. It is the measurement of psychological variables, such as intelligence, aptitude, and mental measurements (Psychometrics, 2014). In the current study, the psychometric constructs that were explored refer to the elements of mindfulness and tolerance of ambiguity.

**Resistance to Change**

In the current study, resistance to change is examined as a dispositional factor among individuals toward general change within organizational settings. At an individual level, Zander (1950) defined resistance to change as “behavior which is
intended to protect an individual from the effects of real or imagined change” (p. 10).

**Tolerance of Ambiguity**

Tolerance of ambiguity was first explored by Frenkel-Brunswik (1948) and gained attention from Budner (1962), who later developed the *(In)Tolerance of Ambiguity Scale* that includes three subscales: novelty, complexity, and insolubility. Budner defined tolerance for ambiguity as “the tendency to perceive ambiguous situations as desirable” and intolerance for ambiguity as “the tendency to perceive ambiguous situations as sources of threat” (p. 29).

**Summary**

The current study will combine the impact of two psychometric constructs, *Mindfulness* and *Tolerance of Ambiguity*, measuring their influence on resistance to change. At the individual level, both theoretical and practical advances exist for understanding the relationship between the defined psychometric constructs and their influence on change and resistance to change within organizations. As external environmental forces influence the internal changes within organizations, the ability of individuals who effectively foster change may have an advantage over others who ineffectively do so, and, as a result, remain stagnant and inflexible. The current study may contribute more evidence to this growing body of knowledge for professionals and academia.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

As discussed in Chapter I, the purpose of the current non-experimental quantitative study is to narrow the focus of change and resistance to the individual responses of two psychometric constructs (*mindfulness* and *tolerance of ambiguity*) and to understand the strength of their relationships. For the purpose of the current study, change will be viewed in the context of gradual adaptation in reaction to internal and external pressures at the individual level. Literature shows consensus on the concept that employees’ attitudes and perceived flexibility toward change can be influenced through cognitive recognition and mindset (Gärtner, 2013). Discovering the behavioral origins of employees’ reactions to change is an integral part of understanding the role of mindset in coping with organizational change and resistance. Maslow’s (1987) theories on the hierarchy of human needs may influence individuals’ views of change events and their reactions to accept or resist change. The hierarchy includes five stages of individual needs: (a) physiological, (b) safety, (c) social, (d) esteem, and (e) self-actualization. According to the model, Maslow suggested that one must satisfy the basic needs at the lower level before proceeding to higher levels of attainment. Greenberg and Baron (2008) hypothesized that the second level of hierarchy (safety) could relate to an individual’s physical or psychological environment in which attainment is achieved when one feels secure and the environment is no longer threatening. Arguably, a changing environment, planned or unplanned, could be perceived as threatening and potentially cause actions for resistance. Maslow proposed that, when individuals are under stress, their
tendencies are to move to the lower levels of the hierarchy. With support from others and satisfying the needs of the present level, they are able to move to higher ones. This theory relates to the human condition during change and supports the psychological elements related to individuals’ perceptions of changes, internal and external pressures, and controllable and non-controllable factors within their environments. This chapter reviews the relevant literature and provides a theoretical framework for the current study. The theory of organizational change, measurements of psychometric constructs, evaluations of resistance to change, and models of acceptance to change are discussed, along with empirical studies to support each focus area.

**Theory of Organizational Change**

Change is inevitable and can influence numerous events both inside and outside an organization. “Change, one type of event, is an empirical observation of difference in form, quality, or state over time in an organizational entity. The entity may be an individual’s job, a work group, an organizational strategy, a program, a product, or the overall organization” (Van de Ven & Poole, 1995, p. 512). Organizational theory literature relates to the continuity and stabilization process of change and is evident through the survival of organizations. Theories of organizational change literature exist, although not in abundance (Burke, 2014). Kezar (2001) asserts “Model and theory are not necessarily interchangeable words, although many scholars used them as such. In fact, theory suggests abstract contemplation or insight, whereas model connotes a set of plans or procedures” (p. 26). The challenge of explaining, predicting, and controlling the process of organizational change is often elusive and rarely follows the same script (Burke, 2014). Perhaps the theory of organizational change can be better understood by
acknowledging the concept of change and the way in which it has been applied within organizations.

Conceivably, it can be argued that some researchers view change as a process of gradual adaptation that is largely influenced by individuals in organizations who react to internal and external environmental pressures (Demers, 2007). Another school of thought challenges these views, defining change as an emergent event due to environmental selections (as cited in Demers, 2007; Child & Kieser, 1981; Hrebinia & Joyce, 1985). The growing debate remains unresolved regarding whether organizations can deliberately change to adapt to their environment and whether environmental forces are the primary determinants for which organizations will survive. Prevalent theories of organizational change concentrate on the manner by which change occurs over time and are based on life-cycle or developmental models. The ideas behind these theories postulated that, as an organization grows, certain structural transformations should evolve, creating the effects of constructive or undesirable change (Child & Kieser, 1981; Greiner, 1972; Kimberly & Miles, 1980). Table 1 highlights the primary concepts that differentiate the ideas of the Life-Cycle Model and the Evolutionary Model. While some of the various factors overlap, distinct differences can be seen between the models.

Theories and models have been studied (Demers, 2007), challenged, and contrasted by researchers for comprehension and clarity; yet, despite the differences, the common core idea is that organizations must change to survive. The key differences lie in the notion that the Evolutionary Model does not accentuate human involvement as the primary reason for change and leaves the process to chance and the external environment. The Life-Cycle Model focuses on human intervention as an over-arching approach to
organizational change due to the emphasis on the individual’s influence over change and the outlined sequence of steps or stages of development.

Table 1

*Comparison of Life-Cycle and Evolutionary Models*

<table>
<thead>
<tr>
<th></th>
<th>Life-Cycle Model</th>
<th>Evolutionary Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why change occurs</td>
<td>Leaders guiding individual’s natural growth</td>
<td>External environment</td>
</tr>
<tr>
<td>Process of change</td>
<td>Natural progression: results of training and motivation; altering habits and identity</td>
<td>Adaptation; slow; gradual; non-intentional</td>
</tr>
<tr>
<td>Outcomes of change</td>
<td>New organizational identity</td>
<td>New structures and process; first order</td>
</tr>
<tr>
<td>Key metaphor</td>
<td>Teacher</td>
<td>Self-producing organism</td>
</tr>
<tr>
<td>Examples</td>
<td>Developmental models; organizational decline; social psychology of change</td>
<td>Resource dependency; strategic choice; population ecology</td>
</tr>
<tr>
<td>Criticisms</td>
<td>Little empirical proof; deterministic character</td>
<td>Lack of human emphasis; deterministic quality</td>
</tr>
<tr>
<td>Benefits</td>
<td>Change related to phases; temporal aspect; focus on individuals throughout the organization</td>
<td>Environmental emphasis; systems approach</td>
</tr>
</tbody>
</table>


**Historical Background**

The Life-Cycle Model in the literature has been compared to a living organism in which all parts have an existing function with the intention of surviving. First defined by Boulding (1950), the concept of organizational life cycles suggested three stages to
include birth, youth, and maturity-decline (Ionescu & Negrușa, 2007). Other researchers
(Van de Ven & Poole, 1995) have illustrated the Life-Cycle Model to include similar
stages containing start-up, growth, harvest, and terminate and, at times, restart. In one
description, Gardner (1965) interpreted:

Like people and plants, organizations have a life cycle. They have a green and
supple youth, a time of flourishing strength, and a gnarled old age. But
organizations differ from people and plants in that their cycle isn’t even
approximately predictable. An organization may go from youth to old age in two
or three decades, or it may last for centuries. More important, it may go through a
period of stagnation and then revive. (p. 20)

Freeman, Carrol, and Hannan (1983) debated that some organizations may not
grow old to endure the entire life cycle before they decline or die. Typically, the goals of
the organization are relatively the same—be profitable, grow, and survive. At the
creation of this Life-Cycle approach, it was identified that many organizations failed after
a year and a half, while others never reached their sixth year of operation (Ionescu &
Negrușa, 2007). Lippitt and Schmidt (1967) outlined, from a historical perspective, that
entrepreneurs would begin an organization and, upon producing profits, would shift
toward growth and survival. The birth stage of an organization would be crafted by a
new idea, product, or service. After a sustainable profit, the youth stage would present
newcomers represented by internal family members, new management, or partners to
change the organization’s objective to growth. The final stage of maturity-decline is
represented by loss of profit and deterioration in growth for reasons such as market loss,
competition, new technologies, or slow reactions to customers’ expectations.
In earlier years, other stages of change emerged. Lewin (1951) conceptualized the 3-Step Model, which included unfreezing, change, and freezing, and laid the groundwork for theories of change in organizations and a variety of other applications. The first stage of change involves preparing the organization to understand and accept the change. Lewin professed that motivation for change must be present before change will occur. The second stage occurs when changes are implemented and influenced by the organization. The final stage alludes to refreezing the process for evaluation and sustainability. Though simple, this model of change reflects the notion that change is a journey and not merely a replication of simple steps.

The Life-Cycle Model has gained popularity over the past 40 years from organizational theorists due to its metaphoric explanation that could be applied to many facets of an organization (Demers, 2007). The approach of explaining organizational development and change as occurring through a sequence of stages that include birth, adolescence, maturity, old age, and is at times followed by death, has appealed to a wide audience beyond researchers and theorists. “According to the Life-Cycle theory, development is a cumulative process, with each preceding stage leading the way to the next one in a movement toward increasing organizational complexity and specialization” (Demer, 2007, p. 17).

Lippitt and Schmidt (1967) expounded upon the Life-Cycle Model by defining concerns within each stage of development. The six critical concerns are aligned with the development stages in Table 2 to include the following: (a) to create a new organization, (b) to survive as a viable system, (c) to gain stability, (d) to gain reputation and develop pride, (e) to achieve uniqueness and adaptability, and (f) to contribute to society. As it is
reflected in the 21st century, Lippitt and Schmidt believed that organizations are born, yet their chances of survival depend upon limitless unknowns.

Table 2

*Stages of Organizational Development with Critical Concerns*

<table>
<thead>
<tr>
<th>Developmental Stage</th>
<th>Critical Concern</th>
<th>Key Issues</th>
<th>Consequences if concern is not met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>To create a new organization</td>
<td>What to risk</td>
<td>Frustration and inaction</td>
</tr>
<tr>
<td></td>
<td>To survive as a viable system</td>
<td>What to sacrifice</td>
<td>Death of organization Subsidy by “faith” capital</td>
</tr>
<tr>
<td>Youth</td>
<td>To gain stability</td>
<td>How to organize</td>
<td>Reactive, crisis-dominated organization. Opportunistic rather than self-directing attitudes</td>
</tr>
<tr>
<td></td>
<td>To gain reputation and develop pride</td>
<td>How to review and evaluate</td>
<td>Difficulty in attracting talents. Inappropriate, overly aggressive, and distorted image building</td>
</tr>
<tr>
<td>Maturity/Decline</td>
<td>To achieve uniqueness and adaptability</td>
<td>Whether and how to change</td>
<td>Unnecessarily defensive or diffusion of energy. Low creativity</td>
</tr>
<tr>
<td></td>
<td>To contribute to society</td>
<td>Whether and how to share</td>
<td>Possible lack of public respect and appreciation. Bankruptcy or profit loss</td>
</tr>
</tbody>
</table>

*Note.* Adapted from Lippitt and Schmidt (1967, p. 103).

Organizational change theories and models in recent years have reflected many approaches. The ideas of the Life-Cycle Model gained traction in the 1970s through the 1980s and were used during the technological revolution to explain the continuum of entrepreneurial-like successes and failures in new ventures and organizations (Borman, Ilgen, & Klimoski, 2003). Summarized by Greiner (1972), the life-cycle of an
organization is consistent with experiencing evolutionary and revolutionary periods, with some occurring more rapidly than others. The framework of organizational change has reported evidence of multilevel influence of innovations, breakthroughs, new technologies driven by the need to grow, to gain profits, and to survive. Several theories and concepts have referred to organizational change as a living entity that is influenced by individuals, the environment, internal and external forces, and the need for survival (Downs, 1967; Greiner, 1972; Katz & Kahn, 1978; Lippit & Schmidt, 1967). Ideally, the steps for the Life-Cycle concepts would be replicated.

The literature supports several conceptual models, as evidence, through empirical studies for this ideology. Proclaimed by Quinn and Cameron (1983), nine distinct models of organizational life cycles represent different stages of organizational development. In the literature, the nine Life-Cycle models are characterized by the following:

- Downs (1967): Motivation for Growth
- Lippitt and Schmidt (1967): Critical Managerial Concerns
- Scott (1971): Strategy and Structure
- Greiner (1972): Problems Leading to Evolution and Revolution
- Torbert (1974): Mentality of Members
- Lyden (1975): Functional Problems
- Katz and Kahn (1978): Organizational Structure
- Adizes (1979): Major Organizational Activities
- Kimberly (1979): Internal Social Control, Structure of Work, and Environmental Relations (pp. 35-37)
The organizational change phenomenon can be gauged in expressions of its relevant effects related to the practices of change within organizations. The practice of change and the theories often are not aligned due to overlapping concepts and the unique nature of the change process (Quinn & Cameron, 1983).

**Empirical Research Supporting Change in Organizations**

Throughout the literature, limited empirical evidence supports the notion that one theory is more superior to another. Offered by Quinn and Cameron (1983), a summary model was developed for internal comparisons that integrated the nine Life-Cycle models to reveal a framework of criteria effectiveness into four models. The models included *rational goal, open systems, human relations, and internal processes*. The rational goal model highlighted the effects of control and external focus on planning, goal setting, productivity, and efficiency. The open systems model emphasized the effects of flexibility and external focus on maintaining flexibility, readiness, growth, acquisitions, and external support. The human relations model related the effects of internal focus and flexibility to maintain cohesion, morale, value, and development among employees. The internal process model accentuated the effects of control and internal focus to sustain information management, stability, and equilibrium.

In conjunction with Quinn and Cameron’s (1983) research, a separate two-stage multivariate study was conducted by Quinn and Rohrbaugh (1983) that highlighted the criteria used by organizational theorists and researchers to evaluate the effectiveness and performance of organizations. The design of the replicated exploratory study permitted two separate groups of organizational theorists and researchers to gauge the effectiveness
of organizations through three valued dimensions control—flexibility, internal-external, and mean-ends.

Related to the aforementioned study, Campbell (1977) developed a list of 30 principles of effectiveness and used effectiveness as a construct, rather than a concept in relation to organizations. The central research question was: “How do individual theorist and researchers actually think about the construct of effectiveness?” The first stage of the study allowed the participants to reduce and organize the list of effectiveness criteria to represent only singular constructs related to performance evaluation of organizations. The second stage asked the participants to evaluate the remaining criteria through systematic comparisons and eliminations to compile an index of several chosen measures. Of the 30 original criteria for effectiveness, 17 remained and were employed through a multidimensional scaling of analysis for a final product to define effectiveness. Thus, the emergence of the theoretical framework to define organizational effectiveness was developed to support the four quadrants of the Life-Cycle models—rational goal, open systems, human relations, and internal processes.

Quinn and Cameron (1983) conducted a three-year longitudinal study of a developmental center in New York State Department of Mental Hygiene to compare the four organizational Life-Cycle models to the criteria of effectiveness. The research approach for gathering data included interviews, observations, and content analysis methodologies. The growing operation of 800 employees served a six-county area in upstate New York and was led by a director described as a charismatic leader who was well known for his published works. The center was composed of several self-directed, autonomous teams that specialized in multiple disciplines of mental health, counseling,
pediatrics, psychology, and healthcare. The methodology of the study hypothesized how organizational change would relate to the prescribed four Life-Cycle models—rational goal, open systems, human relations, and internal processes—over four distinct stages of (a) entrepreneurial, (b) collective, (c) formulation and control, and (d) elaboration and structure. As the organization matured and progressed through its life cycle, the research evaluated the different criteria of effectiveness over the set number of years. Within the conclusion of the study, evidence suggested that changes in the primary criteria of organizational effectiveness followed a predicted pattern outlined over the four distinct stages. According to the research, the single case study did not provide enough conclusive evidence to generalize the results to other organizations different from the center outlined in the study. As organizations change, the degree to which each Life-Cycle model shifts at each stage of an organization’s journey would depend on a plethora of internal and external variables (Quinn & Cameron, 1983; Quinn & Rohrbaugh, 1983).

These results were reaffirmed by another longitudinal study conducted by Miller and Friesen (1984), who explored the life cycle of organizations at the corporate level. The study defined the five common life cycle stages as birth, growth, maturity, revival, and decline. Different from previously described Life-Cycle models, the additional concept of revival was defined as a phase of diversification and expansion within the scope of a particular market. At this level, strategies for adopting unique structures were devised to cope with unpredictable market demands and changes by using established systems for planning and control. The premise of this study hypothesized three central themes: (a) as a firm grows and changes, the complexity increases; (b) organizational complexity leads to complex organizational structure, decision making, and information
processing; and last (c) as the organization changes, it alternates between phases to establish and renew its competencies. The three central themes proposed four broad categories of hypotheses in relation to strategy, structure, decision-making methods, and organizational situation. Over a 20-year span, the researchers identified and evaluated the histories of organizations and categorized them into one of the five Life-Cycle stages (birth, growth, maturity, revival, and decline) using the four broad categories. In turn, the purpose of the study was to identify whether the four broad categories—strategies, structures, contexts, and decision-making styles—were established for organizations in each of the stages and to perceive anticipated differences. The study revealed whether an organization progressed naturally through life cycle changes, established significant patterns, or established inconclusive evidence of either state (Miller & Friesen, 1984).

The reputable study was conducted through a review of the histories from 36 corporations over a 20-year span of time. The contents were established from corporate annual reports, books, articles, and verified by executives and top officials. The chosen firms had experienced several phases of the corporate life cycle, which prompted little acknowledgement to corporations that failed. Despite the limited selection, the samples of organizations were well known, large, resourceful, and well established. The array of industries included airline, auto, banking, chemical, food, technology, and manufacturing, which represented companies such as General Motors, H. J. Heinz, Du Pont, Xerox, Unilever, United Airlines, Volkswagenwerk, IBM, and International Paper.

The scoring for the companies’ histories occurred in three stages. The first stage involved dividing the histories according to crucial organizational transitions that may have involved changes in the environment, structure, strategy, or leadership. According
to Miller and Friesen (1980), the length of time averaged six years, while the short interval was 18 months; 20 years was the longest. The second stage required assigning scores to 54 variables of organizational situations that represented each of the five phases of the organizational life cycle. Participants rated the defined periods based on a 7-point scale ranging from “0 to 7.” The higher ratings represented whether variables that were in question displayed great intensity compared to other periods. The inter-rater reliability was tested through an examination of 50 periods of 26 organizations rated through double-blind assessments. The tasks averaged 0.86 for the Spearman coefficients, and only 3% of the cases differed by 2 points among raters on the 7-point scale (1980). The third stage employed the evaluation of product market strategies using the same 7-point scale. The process involved assigning 161 score profiles to the five phases of the Life-Cycle Model (birth, growth, maturity, revival, and decline).

Maintained through the results, one-way analyses of variance (ANOVA) were conducted to test for significant correlations across the five life cycle phases. The results presented the following: (a) 12 periods of birth; (b) 61 periods of growth; (c) 45 periods of maturity; (d) 27 periods of revival; and (e) 16 periods of decline. The findings from the ANOVA demonstrated significant differences between phases. At each of the five phases, the four broad categories—strategy, situation, structure, and decision-making style—were unique and described differently. Overall, the findings did support the three central themes that were hypothesized. The life cycle of longer-term organizations represented a predictable progression through the model, and data collected on the 54 variables reflected significant differences from one phase to another. Conceptually, all organizations experience cycles and phases; however, as a limitation, the study under
evaluation reflected the results of well-established firms that experienced the entire life cycle.

**Measuring Psychological Constructs**

The evaluation of hypothesized relationships of abstract psychological constructs can be defined through observable variables or well-defined, self-testing mechanisms. Expressed by Creswell (2012), the first step in testing is to specify the variables being observed or measured through self-testing. With respect to the current non-experimental study, both mindfulness and tolerance of ambiguity will be measured through self-administered surveys. Affirmed by previous research, these types of criterion variables have been measured through assessing the degree of a particular construct by asking participants to recall their feelings at prescribed moments, agreeing or disagreeing with prearranged statements, or remembering certain words under specific conditions.

Scientific advances often have developed innovative ways in which to capture the measurement of theoretical constructs. Many studies (Brown & Ryan, 2003; Furnham & Ribchester, 1995; Haigh, Moore, Kashdan, & Fresco, 2011; Herman, Stevens, Bird, Mendenhall, & Oddou, 2010; Pirson et al., 2012) have used self-reporting to obtain psychological measurements. The essential characteristic of the self-report measurement is that it relies on the participant to reflect and respond to whether statements are true or replicate certain experiences. Cognitive researchers have designed personality tests, attitude scales, and survey instruments to ask participants to honestly report on their internal states or events in their personal or professional lives. These types of assessments are used to obtain convergent measurements of inferred mental events and to predict participants’ responses in similar future events (Creswell, 2012).
Measurement of the construct can involve the assignment of numbers, words, or labels to reflect intensity or amount describing the construct of interest (Khalid, Abdullah, & Kumar, 2012; Zikmund, 2000). Operational definitions can define constructs in terms of procedures used to measure the type of construct. Psychological measurements can be either numerical or categorical by design. Numerical variables can be described as those that measure variables through the magnitude of numbers assigned to a specific situation. In a related example, higher scores on a test of openness could indicate a greater sense of flexibility, whereas recalling words in a particular order could indicate memory capacity. The degree of mindfulness and tolerance of ambiguity will be measured through the Likert scales arranging the level of intensity.

**Defining Mindfulness**

The interest in the construct of mindfulness has grown exponentially over the past decade in organizations, research studies, clinical applications, and as a coping mechanism across a variety of disciplines including leadership, religion, mediation, yoga, psychotherapy, and healthcare (Brown & Ryan, 2003; Lane & Klenke, 2004; Langer, 2005). Due to the nature of experience, some researchers and practitioners would emphasize that mindfulness cannot be adequately described with words (Gunaratana, 2002; Kabat-Zinn, 1990). Supporters of mindfulness practice suggest that the difficulty in defining the construct lies in the idea that not everything that humans learn can be transcribed, seen, or articulated verbally. Some phenomena must be experienced in order to be learned or understood (Kabat-Zinn, 2003). Thus, copious interpretations of mindfulness exist that relate to a common theme—it is a cognitive way of thinking and being engaged with a particular moment of time. The concept of mindfulness has been
referenced over 2,500 years ago and can be defined as a means of being aware of awareness (Kabat-Zinn, 1990).

Although mindfulness origins are deeply rooted in Buddhist practices, the term was conceptualized through Western influences of Kabat-Zinn (1994), who offered the definition of mindfulness:

Paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally. This kind of attention nurtures greater awareness, clarity, and acceptance of present-moment reality. It wakes us up to the fact that our lives unfold only in moments. If we are not fully present for many of those moments, we may not only miss what is most valuable in our lives but also fail to realize the richness and the depth of our possibilities for growth and transformation. (p. 4)

Noted as the central Western founder of the mindfulness concept, Kabat-Zinn (1994) set the foundation for further research. Langer (1989, 1997) offered a multifaceted definition of mindfulness to include (a) the continuous creation of new categories, (b) openness to new information, and (c) an implicit awareness of more than one perspective. Contrasted with mindfulness, mindlessness is characterized as being preoccupied with old ideas or categories and autopilot on emotions and reactions to situations. Langer (1989) expressed that those who are mindful are focused on the process rather than the outcome of the situation or event. Similar to the practices of Buddhism, the process concentrates on the here and now. Langer affirmed that, within organizations, employees who have a higher degree of mindfulness are flexible, less stressed, and more open to change. The elements of change are viewed as opportunities that will harvest creativity, innovation, and new energy (Langer, 2005). For the purpose
of the current study, Langer’s definition for mindfulness will act as the central description for the construct.

**Measuring Elements of Mindfulness**

It should be noted that Langer’s (1989) theory of mindfulness incorporates four distinct subscales that include *novelty producing, novelty seeking, engagement, and flexibility*. Langer’s view of mindfulness postulates the creation of new categories and openness to new information from a variety of perspectives. The distinctions between the four subscales of mindfulness are defined as follows (Langer, 2004; Pirson et al., 2012):

- **Novelty producing** – having the capacity to construct new meanings or experiences
- **Novelty seeking** – having an open and curious orientation to one’s environment
- **Engagement** – being aware of changes that take place in the environment
- **Flexibility** – having the tendency to view experiences from multiple perspectives

Although these categories have been useful in defining mindfulness, some of the terms are not generalized to all disciplines; yet, for the purpose of the current study, they will be used to define mindfulness within industrial settings. Consistent with the fundamental mindfulness concept, Langer, along with other researchers, conducted various experimental non-clinical studies to validate the heighten levels of mindfulness (Djikic, Langer, & Fulton-Stapleton, 2008; Langer, 2000, 2005). The concept has reached across research in multiple disciplines to include education, communication, leadership, and judgment.

Burgoon, Berger, and Waldron (2000) considered Langer’s work as a foundation for exploring the process of interpersonal communication in the workplace, managing
interpersonal conflict, heightening awareness during the interview process, and training employees to resolve problems. The essence of their work supported the notion that mindfulness/mindlessness play a vital role through communication. The study revealed that greater levels of mindfulness communication occurred during positive feedback interactions between supervisors and subordinates. Within the same study, supervisors displayed mindlessness communication during negative or constructive feedback performance sessions. Burgoon et al. (2000) defined mindfulness as being inquisitive and information-seeking during interview sessions. Candidates who displayed a greater level of mindfulness were more successful in acquiring positions, as opposed to other candidates. The chosen employees also exhibited greater expectations and realistic views of the work environment.

**Developing the Langer Mindfulness Scale**

Bodner and Langer (2001) examined the effects of the *Mindfulness/Mindlessness Scale* (MMS), also termed the *Langer Mindfulness Scale* (LMS), to test internal validity and effectiveness. The self-report questionnaire was originally designed with 21 questions covering four subscales (*novelty seeking, novelty producing, engagement, and flexibility*). Administered to 809 undergraduate and community participants, the Cronbach’s alpha of the study represented the construct’s single factor at .85. The LMS demonstrated construct validity and correlated positively through evaluating multiple perspectives, the liberal thinking style, openness to experience, general cognitive ability, and the need for cognition. In contrast, the LMS presented a negative correlation with the need for structure. Haigh et al. (2011) highlighted the Cronbach’s alphas for the subscales as novelty producing ($\alpha = .83$), novelty seeking ($\alpha = .74$), engagement ($\alpha =$
.63), and flexibility ($\alpha = .54$). The LMS scale was tested further to involve five large independent samples from 3,104 individuals ranging from ages 19 to 73. The overall results proposed that two of the originally suggested factors, engagement and flexibility, revealed low levels of reliability. Through further analyses of evaluating Eigenvalues greater than or equal to 1, Pirson et al. (2012) confirmed that three factors represented 55% to 58% of the average variance for 17 of the 21 items.

Pirson et al. (2012) reconstructed the LMS into a 14-item measurement of socio-cognitive mindfulness as the revised *Langer Mindfulness Scale* (LMS14). The coefficient alpha across a single factor ranged from .83 to .9. The study highlighted the following results for the remaining three factors: (a) novelty-seeking ($\alpha = .75-.86$); (b) novelty-producing ($\alpha = .71-.90$); and (c) engagement ($\alpha = .65-.80$). According to Haigh et al. (2011), the intention of the studies was to provide psychometric validation for the developed instrument. Pirson et al. (2012) proclaimed, “relevant outcomes we tested can be assessed using the LMS14. Mindfulness treatments may lead organizations to become more creative, learn more effectively, and make better decisions for all stakeholders” (p. 41).

**Empirical Research for Mindfulness**

Empirical studies have explored the construct of mindfulness over the past few decades; nevertheless, the conceptual definition has been continuously revised across numerous disciplines. Since the 1970s, clinical psychology and psychiatry have developed numerous therapeutic applications based on the concept of mindfulness to abate and control a variety of psychological conditions. Kabat-Zinn (1982, 1990) developed and popularized his Mindfulness-Based Stress Reduction (MBSR) program as
an intervention for treating patients who suffered from chronic pain, stress-related problems, psychiatric disorders, and psychosomatic disorders. The MBSR is an 8 to 10 week program providing treatment to groups ranging from 10 to 40 participants. Grossman, Niemann, Schmidt, and Walach (2004) found 64 empirical studies that were related to Kabat-Zinn’s MBSR practices; however, only 20 reports met their criteria, which included quality statistical analyses. The collections of studies yielded similar results in both uncontrolled and controlled groups, suggesting that MBSR may have helped a variety of individuals manage their clinical and nonclinical problems. The effect sizes were approximately 0.5 (\( P < .0001 \)). Other empirical studies (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003) targeted the means by which to measure mindfulness in a more quantitative and scientific approach. Brown and Ryan (2003) developed the Mindfulness Attention Awareness Scale (MAAS) using a 6-point Likert scale to assess individual differences in the state of mindfulness over time. Baer et al. (2004) developed the Kentucky Inventory of Mindfulness Skills (KIMS) as a self-reporting inventory to test the psychometric characteristics of mindfulness through four factors – observation, describing, act with awareness, and accept without judgment. Six studies were initially conducted to test the KIMS’s characteristics with other constructs such as: personality, emotional intelligence, experiential avoidance, life satisfaction, and impression management. Three studies explored the content validity and test-retest reliability, and three examined the relationships with other constructs utilizing the scores of student and clinical participants. In total, the overall results indicated that the instrument could be used as a tool that researchers and clinicians could use to explore mindfulness applications. Black (2010) indicated that the myth of mindfulness being related to only
religious beliefs has been dispelled over the years. Currently, the concept of mindfulness has been widely accepted as an inherent quality of the human consciousness. It is important to note that mindfulness measured through the capacity of an experience of awareness in the present moment has been empirically tested independent of spiritual, religious, or cultural beliefs.

Langer’s (1993) mindfulness construct has been applied to a wide variety of treatment models and interventions. In a study that tested whether mindfulness could increase interpersonal synchronicity between paired groups, the LMS14 was utilized to determine the participant’s individual degree of mindfulness (Haas & Langer, 2014). Haas and Langer (2014) hypothesized whether mindfulness would improve the interpersonal dynamics of dyads through increased awareness of social cues, distinction making, awareness of variability and context, coordination and productive interaction, and differentiation of interpersonal appeal and attractions.

The method of the study evaluated 90 participants and considered 22 pairs in the mindfulness treatment group and 23 pairs remaining in the control group. Prior to being placed in groups, the participants were administered the LMS14, along with the *Mini International Personality Item Pool* (Mini-IPIP) to assess the level of mindfulness and their personality traits. Additionally, the participants were video-recorded and provided with a finger pulse oximeter to monitor their heart rates. The participants were prompted to notice 10 different items about their partner within a 15-minute conversation and were instructed to return to the meeting room after completion. Upon return, without the knowledge of the participants, synchronization was determined by the closeness of time that the pair would sit simultaneously.
The results revealed a significant relationship of enjoyment in initial conversation between the pairs in the mindfulness treatment group \((r = .39, p < .01)\); and the LMS14 (LMS > or = to 76) also was favorable. The study also discovered that enjoyment increased with age in the mindfulness treatment group \((r = .34, p < .05)\). Over the course of the experiment, both groups displayed similar decreases in heart rate. Additionally, the mindfulness treatment group exhibited stronger synchronization, as displayed when the pairs returned to the meeting room. Haas and Langer (2014) made a point to state, “Under conditions where there is sufficient time and space to make choices, mindfulness may facilitate improved decision-making about how and when to be in sync with others” (p. 32). The results of the study indicated the prospective power of mindfulness to aid in interpersonal harmonization and synchronicity between individuals in paired groups. The researchers believed that the mindfulness groups were equipped to be better aligned, which could be generalized to other areas within group activities. The mindfulness concept is a multifaceted construct that relates to a number of disciplines outside its Buddhist meditation origin.

**Defining Tolerance of Ambiguity**

The concept of tolerance of ambiguity has been applied to the field of organizational behavior by theorists and researchers for several decades (Frenkel-Brunswik, 1948; Budner, 1962; Herman et al., 2010; Rizzo, House, & Lirtzman, 1970; Rydell, 1966). Many studies of tolerance of ambiguity to date have reported on correlations between ambiguity tolerance and the way in which one copes with uncertainty, diffusion of belief systems, complexity, and psychological constructs. Such correlations have reported on samples of ambiguity tolerances and the correlation to
openness and well-being (e.g., Bardi, Guerra, Sharadeh, & Ramdeny, 2009; Carter & Hall, 2008), leadership and performance (e.g., Caligiuri & Tarique, 2012; Herman et al., 2010; Lal & Hassel, 1998; Teoh & Foo, 1997); negative perceptions or feelings (e.g., Buhr & Dugas, 2006; Litman, 2010); and mindfulness (e.g., Le, Haller, Langer, & Courvoisier, 2012). Frenkel-Brunswik (1949) determined that ambiguity tolerance generalizes to the entire emotional and cognitive functioning of an individual and affects belief systems, cognitive functioning, interpersonal and social functioning, problem-solving abilities, and attitude systems. Budner (1962) defined the construct as “the tendency to perceive ambiguous situations as desirable” and intolerance of ambiguity as “the tendency to perceive ambiguous situations as sources of threat” (p. 29). He later offered an explanation regarding ambiguous situations as “one which cannot be adequately structured or categorized by the individual because of the lack of sufficient cues” (p. 30). Ambiguous situations were divided into three categories: (a) a completely new situation in which there are no familiar cues; (b) a complex situation in which there are a great number of cues to be taken into account; and (c) a contradictory situation in which different elements or cues suggest different structures. These definitions in summary suggested three subscales for tolerance of ambiguity, characterized by novelty, complexity, or insolubility. Budner found the reliability of the scale to be $\alpha = .49$, using Cronbach’s alpha.

**Measuring Tolerance of Ambiguity**

Since the construct for tolerance of ambiguity has been explored for over 50 years, the development of eight published self-report measures has been found throughout the literature and represented in Table 3 (Furnham & Marks, 2013).
Budner’s (1962) *Tolerance of Ambiguity Scale* was one of the first instruments designed to measure tolerance of ambiguity in the field. Budner’s scale was constructed with 16 items and each item was theorized to indicate a perceived threat, specifically phenomenological submission or denial or operational submission or denial (Furnham & Marks, 2013). The scale was shown to be free from social desirability response propensities and acquiescence. The validation of the scale involved 17 different populations in which the test correlation was rated good at $r = .85$. One of the noted discussion points of Budner’s test theorized four key elements that humans use to approach ambiguity and adapt to new situations. The first basic element outlined in the research postulated that each individual possesses a hierarchy of values and goals on
what he or she wishes to obtain or avoid. Varying degrees of intensity exist to which an individual is conscious or unconscious for prioritizing these goals or values. Together, these beliefs may influence the direction of an individual’s behavior when approached with ambiguous situations or uncertainty (Furnham & Marks, 2013).

Budner (1962) outlined the second element as the adaptation process undertaken by individuals when encountering ambiguous situations. Many are limited by the nature of their mindset, education, perceived resources, health, skillsets, and influences within their environment. The adaptation process is unique to individuals and their beliefs. The third element relates to the individual’s conception of reality and is defined by the nature of the situation the individual is facing, the steps that must be taken to contend with the situation, and the individual’s perception of self-image and how he or she is viewed by others when faced with ambiguity.

Budner argued:

It is part of the hierarchy of values, that ambiguity is a goal which individuals seek to gain or avoid, or to which they are indifferent. While his degree of tolerance—intolerance of ambiguity may affect the individual’s adjustive capacity, it is not directly a lever for manipulating the environment. (p. 48)

Tolerance for ambiguity has been compared with other constructs such as openness, uncertainty, stress, avoidance, and discomfort in research and correlational studies. Although different factors are measured, a common theme defines tolerance of ambiguity, which lies around the origin of an individual’s approach to the unknown. For the purpose of the current study, Budner’s definition for tolerance of ambiguity will be referenced as the foundation for this construct.
Empirical Research for Tolerance of Ambiguity

Rydell (1966), noted as one of the earlier researchers to conduct an empirical investigation of tolerance of ambiguity, revealed that the construct positively correlated with the willingness of individuals to change their opinions and cope with new experiences. The foundation of the research remained rooted in understanding the relationship between tolerance for ambiguity and work-related stress and anxiety (Vijayabanu & Karunanidhi, 2013). Keenan and McBain (1979) employed Budner’s (1962) scale, along with other instruments, to explore ambiguity, conflict, overload, and psychological strain among middle managers. Within the study, 90 middle managers were evaluated as they coped with insufficient information and incompatible demands above and beyond their job duties. The combination of stress, lack of information, and demanding circumstances led to a measurable amount of anxiety and role ambiguity.

Rizzo et al. (1970) developed a 5-point scale to measure the degree of role ambiguity and role conflict. The authors found a significantly stronger relationship between role ambiguity and dissatisfaction among managers with Type A personality traits, as opposed to other personality types. At the same time, Type A personality types displayed a stronger relationship between ambiguity and tension at work than managers with Type B personality traits. Keenan and McBain (1979) indicated that the predictions for role ambiguity and intolerance of ambiguity were upheld according to their hypothesis. In a separate study, Keenan (1978) explored the effects of tolerance of ambiguity with levels of anxiety in candidates prior to job interviews. Administered to 105 graduate candidates during recruitment interviews at Heriot-Watt University, Budner’s scale gauged the level of ambiguity tolerance and found that intolerance of
ambiguity was positively associated with level of anxiety prior to interviewing. In regard to the success of the candidates, *intolerance* of ambiguity was negatively correlated. Keenan emphasized that ambiguity would be more evident in inexperienced candidates, relating novelty to higher levels of ambiguity.

In a more recent study, Herman et al. (2010) found that elements of global leadership effectiveness, global mindset, multinational teamwork, and their relationships between tolerance of ambiguity seemed critically important for leaders to embrace due to increased globalization. Highlighted in the Herman et al. (2010) study, 2,351 participants from various levels of global experience represented 69 different nationalities and participated in self-reporting through the newly revised instrument. More specifically, the authors called attention to five new items added to Budner’s (1962) original scale for further clarity of tolerance of ambiguity. The added items are as follows:

- I avoid settings where people don’t share my values
- I can enjoy being with people whose values are very different from mine
- I like to surround myself with things that are familiar to me
- I can be comfortable with nearly all kinds of people
- If given a choice, I will usually visit a foreign country rather than vacation at home. (p. 63)

Herman et al. (2010) argued that the original scale’s average internal consistency \((\alpha = .49)\) presented weak reliability analysis, yet the instrument has been widely used regardless of its criticism. Other researchers (Judge et al., 1999; McLain, 1993; Norton, 1975) have presented measures of tolerance of ambiguity to improve weak internal consistencies, yet repeated research has found inconsistencies across the assessment of
the construct. The study found global leadership, expatriate adjustment, and leadership performance suggested that tolerance of ambiguity positively related to performance in global work environments and in cross-cultural settings. Comparable to Budner’s original scale’s internal consistency ($\alpha = .49$), the new scale revealed a weak overall measurement ($\alpha = .58$). The new items of scale related to (a) valuing diversity in others, (b) change, (c) challenging perspectives, and (d) unfamiliarity. With the refined measures, the coefficient for the new 12-item scale was improved ($\alpha = .73$).

**Resistance to Change**

**Defining Resistance to Change**

Prevailing views of resistance to change often are dominated by negative interpretations offering resistances as irrational and dysfunctional reactions conducted by the recipients of change. Over the years the subject of resistance to change has been subjected to ridicule and heavy scrutiny by researchers, consultants, and change agents throughout a variety of organizations and academia. Early researchers such as Coch and French (1948) viewed resistance to change as an obstacle of contention during the process of changes within organizations. One of their studies, conducted in a sewing factory, revealed that employees retaliated against change through acts of aggression, controlling restrictions of throughput, high turnover rates, increased complaints, and reports of dissatisfaction with management. In line with earlier studies, the use of the term *resistance to change* gained popularity beginning in the 1950s following Lewin’s (1947, 1951) works related to field theory and social sciences. Resistance to change is commonly accredited to the unfreezing stage of Lewin’s (1951) change model (Armenakis & Bedeian, 1999). Naturally portrayed as a negative barrier to change,
resistance to change is frequently defined using Lewin’s physical science-related terminology as a restraining force to maintain the current state of equilibrium (Dent & Goldberg, 1999). Since that time, resistance to change has been widely acknowledged and associated with the process of change, organizational development, and change theories and models.

Other scholars have conceptualized resistance to change as an emotional reaction rather than a behavioral response. As an example, Argyris and Schon (1978) suggested resistance in terms of defensive routines and frustration during the process of change. Kanter (1985) supported this notion, describing feelings of uncertainty and loss of control for individuals facing change. In other terms of defining resistance, Lawrence (1954) used an analogy to compare resistance to change as pain within the human body that is used as a signal to communicate that something is wrong:

The resistance, like the pain, does not tell what is wrong, but only that something is wrong. And it makes no more sense to try to overcome such resistance than it does to take a pain killer without diagnosing the bodily ailment. (p. 56)

This analogy highlighted the parallels between resistance and overcoming it through a practicable solution.

Piderit (2000) approached resistance to change through the lens of a multidimensional concept, encompassing ideas from the following:

- Coch and French (1948) – undesirable behaviors in response to change
- Argyris and Schon (1978) – emotional frustration and anxiety through defense mechanisms
• Armenakis, Harris, and Mossholder (1993) – cognitive response through thought patterns of unwillingness, unsuspecting, or being unprepared for the process of change

Adopting all three concepts, Piderit (2000) offered an attitudinal model of resistance to change by incorporating three factors: (a) emotional (affective), (b) intentional (behavioral), and (c) cognitive. Building on the expansion of this approach, researchers and theorists have considered that individuals respond to change through multidimensional perspectives, as opposed to a one-dimensional reaction (Armenakis & Bedeian, 1999; Armenakis et al., 1993; Dent & Goldberg, 1999; Oreg, 2003).

Rather than supporting the attitudinal model advocated by Piderit (2000), Oreg’s (2003) model of resistance to change takes on a dispositional approach emphasized at the individual level. Consistent with the findings of the dispositional approach, Judge et al. (1999) used this concept to provide a means to understanding the responses from managers during organizational changes. Results supported further evidence that many behaviors and attitudes of individuals are grounded on dispositional ideologies. Along similar lines, Dent and Goldberg (1999) challenged Lewin’s (1951) idea that resistance to change relates to a phenomenon influenced by forces existing within a system, rather than a phenomenon that exists through human behaviors. In the current study, the question under discussion relates to the responses of employees regarding change at the individual level through the administration of Oreg’s (2003) Resistance to Change instrument.

**Measuring Individual Responses to Resistance to Change**

Given that the measurement for resistance to change has been exhausted over the
years through research and development, the topic of resistance bears a unique
subjectivity component that is interpreted through individual cases (Oreg, 2003). The
perception of resistance may present a different perspective for the change agent, as
opposed to the recipients of change. Emphasized by Schlesinger (1982), resistance is a
process that leads humans to react through interpretation, cognition, affect, and actions.
On logical grounds, measuring resistance should take into account the way in which
humans function holistically, while experiencing emotions, thinking, perceiving, and
reacting simultaneously to any given situation.

**Four Factors of Resistance to Change Scale**

Taking the human emotional aspect into consideration, Oreg (2003) measured the
concept of resistance to change with the intention of capturing affective, cognitive, and
behavioral components. Oreg’s findings offered support to the claim that four factors of
resistance to change are measured to include *routine seeking, emotional reaction, short-
term thinking, and cognitive rigidity*. Routine seeking emphasizes that individuals have
varying degrees of dependencies for routines. While it is often necessary in organizations
for individuals to adhere to routines, the introduction of change may cause individuals to
oppose the idea. Oreg described this factor to include an individual’s reluctance to
relinquish old habits while having preference for low levels of stimulation.

The second factor relates to the emotional reaction imposed by the process of
change, which includes lack of psychological resilience and reluctance to lose control
over one’s actions. The views taken by Conner (1992) maintained that, when individuals
feel threatened that their control has been removed or taken away, they will focus their
energy on rebalancing order, to ultimately regain a sense of control. Resistance is viewed
as the actions of individuals to establish or regain control.

The third factor of resistance to change held by Oreg (2003) is cognitive rigidity. He offered that “Dogmatic individuals are characterized by rigidity and closed-mindedness and therefore might be less willing and able to adjust to new situations” (p. 681). Cognitive rigidity is seen as cognitive resistance during process of the change. Individuals who display this disposition have difficulty changing their minds with ease.

The last factor involves short-term thinking, which captures an individual’s opposing view or reactions to change as an irrational component, regardless of the long-term benefits that may be provided through the change. The overall scale reflects a relatively high reliability coefficient alpha (\( \alpha = .92 \)). The data gathered in the Oreg (2003) study originally validated the instrument to standardize the regression weights, in which four factors loaded significantly. The four unique subscale alpha factors were routine seeking (\( \alpha = .86 \)), emotional reaction (\( \alpha = .86 \)), short-term thinking (\( \alpha = .71 \)), and cognitive rigidity (\( \alpha = .68 \)).

**Concept of Resistance**

The current study draws on the research conducted by Dent and Goldberg (1999) upholding the concept that individuals do not resist change; rather, they resist the loss of control, structure, perceived benefits, or perceptible factors that occur due to the process of change. The phenomenon of resistance has been recognized by many researchers as the natural tendency to gravitate toward familiarity, as opposed to accepting or agreeing to something unfamiliar. Sufficient research demonstrates that resistance to change depends on both situational (Coch & French, 1948; Lewin, 1951) and dispositional factors (Judge et al., 1999; Oreg, 2003, 2006); yet, a rapid expansion of literature
supports how behaviors portray a significant role in resistance (Dent & Goldberg, 1999; Oreg et al., 2011). Delineating and defining the theories that represent the manifestation of resistance is vital to understanding the construct.

Dent and Goldberg (1999) and other researchers (Dent & Powley, 2002; Piderit, 2000) share an important premise that resistance against tangible psychosocial factors are closely related to Lewin’s (1938) original psychosocial understanding of resistance. According to Feather (1982), Lewin’s concept of valence within the Force Field Theory relates to successes and failures corresponding to levels of performances. In early studies (e.g., Lewin 1936, 1938), valence was aligned with the concept of psychological forces that represented the human psychic locomotion. Later, valence was distinguished from psychological forces representing the psychological distance bearing the strength and direction of the force. On the grounds of psychosocial organization resistance, Dent and Goldberg (1999) insisted that the complexity of resistance can be overwhelming when explored through a single variable; yet, one aspect of the concept can be understood when resistance is isolated to factors related to psychological losses.

The aforementioned discussion supporting the theoretical framework relates to the views of Dent and Goldberg’s (1999) assessment of how scholars have transitioned their views of resistance from a natural force to an imposed obstacle generated by the employee. This line of thinking stimulated recommendations to organizations to communicate effectively, share the vision, plan change accordingly, and explore the path of least resistance to facilitate change. Contrary to predominant findings of employees resisting change, further research (Spreitzer & Quinn, 1996) revealed that senior executives resisted change while, employees were eager to comply. To challenge the
notion of the aforementioned, Dent and Goldberg studied a subset of management
textbooks that argued that employees should be managed, convinced, or manipulated to
accept change (Aldag & Stearns, 1991; Griffin, 1993; Schermerhorn, 1989). As a
rebuttal to this point, Kreitner (1992) affirmed that successful management could predict
and neutralize resistance to change by exploring three fears of employees (Dubrin &
Ireland, 1993): (a) fear of negative outcomes, (b) fear of the unknown, and (c) fear of the
flaws seen in the management’s plan. On these grounds, Dent and Goldberg (1999)
expressed that individuals may not resist change but fear the loss of status, pay, comfort,
or position, which is different from resistance.

Key Empirical Studies

Numerous studies have alluded to resistance to change; some have focused on the
individuals (e.g., Bovey & Hede, 2001; Coghlan, 1993; Ford, Ford, & McNamara, 2002),
while others have explored organizations (e.g., Armbruster, Bikfalvi, Kinkel, & Lay,
2008; Coch & French, 1948; Greenwood & Hinings, 1996; Lawrence, 1954; Stanley,
the past empirical research reveals that resistance to change has been conceptualized in
three ways: as a cognitive state, as an emotion, as a behavioral intention” (p. 316). As an
emotion, some studies have revealed that employees who display negative perceptions
toward organizational change may have an overall negative outlook on change, thus
perpetuating resistance (Armenakis et al., 1993; Stanley et al., 2005). Extreme measures
of resistance to organizational change have been displayed in other studies through
sabotage, slowdowns, and strikes (Armenakis et al., 1993). The studies that have been
selected aid in the focus on the elements related to the instruments selected in the current
study and are viewed as motivators for resistance. Universally, resistance to change has been recognized to have a significant impact on the outcomes of organizational change, yet individuals within the organization are perceived to be the major blockage or impediment (Mabin et al., 2001). Based on the literature concerning the analysis of change, empirical studies have identified a wide range of factors—namely, organizational, managerial, behavioral, and individual—that promote or impede resistance in organizations.

Kübler-Ross’s (1969) view toward factors of resistance rested on the assumption that individuals experience five stages of grief. Similar to the emotions that terminally ill patients experience when informed of their illness, individuals experience change through a similar continuum: (a) shock and denial, (b) anger, (c) bargaining, (d) depression, and (e) acceptance and integration. It is hypothesized that each individual moves through all of the stages, yet some never move past the first stage of shock and denial. Levinson (1976) denoted that change needs to be mourned, whether it is resisted or embraced. He believed the following (as cited in Burke, 2014, p. 109):

Most organizational change flounders because the experience of loss is not taken into account. When the threats of loss are so severe as to increase people’s sense of helplessness, their ability to master themselves and their environments decreases. To undertake successful organizational change, an executive must anticipate and provide means of working through that loss. (p. 83)

Prominent in the literature, Oreg et al. (2011) conducted a 60-year review of quantitative empirical studies of change recipients and their reactions to organizational change. The main theoretical premise behind the study was to isolate a model to reflect
(a) explicit reactions to change that represent tridimensional attitudes, (b) reaction antecedents that comprise pre-change antecedents, and (c) change consequences. The data reflected more than 600 articles published between 1948 and 2007, in which 79 articles met criteria for being quantitative and reflecting organizational change. A large percentage of the studies highlighted characteristics of the recipients of change, which included personality traits (Cunningham, et al., 2002; Judge et al., 1999).

Piderit’s (2000) views are based upon past studies and offered, “A review of empirical research reveals three different emphases in conceptualizations of resistance: as a cognitive state, as an emotional state, and as a behavior. Although the conceptualizations overlap somewhat, they diverge in important ways” (p. 785). Above all, Piderit emphasized that one should find a way to converge the knowledge and understandings of employees’ responses to proposed organizational changes to abate resistance.

The conceptualization of resistance to change borne out of the research conducted by Oreg (2006) proposed personality and organizational context as situational antecedents to influence resistance. Indicated by Lewin (1951) in previous literature, human reactions can contain potential sources of resistance through the individual and the individual’s environment. Oreg’s study portrayed that personality is composed of an individual’s disposition to resistance to change to include a tri-dimensional conceptualization: affective, behavioral, and cognitive. Organizational context related to several elements emphasizing two main categories, perceived outcomes of change factors—power and prestige, job security, and intrinsic rewards—and the change process factors—trust in management, information, and social influence. In turn, the work-
related outcomes of job satisfaction, intention to quit, and continuance commitment were evaluated to explore the relationships among the multifaceted variables.

Oreg’s (2006) subsequent method of evaluation involved surveys of approximately 800 employees and 17 semi-structured interviews within the defense industry. Two scales, Oreg’s Resistance to Change and Change Attitude Scale, were used to explore employees’ reflections of change. The Change Attitude Scale was developed during the study to capture the tri-dimensional attitude of change (affective, behavioral, and cognitive.)

The results yielded further evidence supporting previous research (Oreg, 2003) that resistance to change indicated a stronger relationship with the affective factor and a weaker relationship with the behavioral factor, yet both were significant. Oreg (2006) proposed, “Some employees are more likely to experience negative emotions and more likely to act against organizational changes because of their dispositional inclination” (p. 92). The stronger relationships related to job security and affective reaction to change, as well as threats to power and prestige with cognitive behavior. According to the study, the behavioral factor was not significant with any of the outcome factors.

Van Dam et al. (2008) conducted a subsequent study to examine the psychological processes related to employee experiences during planned organizational change. The researchers explored the means by which the characteristics of daily work interconnected with elements of the change process. Additionally, a 5-point Likert scale was used to gauge the relationship of the following variables: (a) leader-member exchange (LMX), (b) perceived development climate, (c) change process characteristics, (d) openness to job changes, (e) role breadth self-efficacy, (f) trust in management, and
(g) resistance to change. The control variables included age, gender, educational level, and tenure. The LMX model of leadership focuses on a healthy two-way relationship between supervisors and subordinates. The model promotes value-added performances and optimistic employment experiences through positive influences of subordinates (Deluga, 1998). The setting of the study was a large house corporation located in the Netherlands, which involved the administration of 500 questionnaires. Van Dam et al. (2008) received a response rate of 47% with the following demographics: 54% male, 46% female, mean tenure 10.9 years (SD = 9.1), 70.2% with a bachelor degree or higher, and a variety of positions held within the organization. To test the relationship between the key variables, structural equation modeling (SEM) and regression analyses were used. The results indicated that organizational tenure was significantly and positively related to resistance to change. Van Dam et al. (2008) suggested, “…employees who are more satisfied with their current work situation and those who perceive less job alternatives will be less positive towards changing their situation and therefore exhibit greater resistance to organizational change” (p. 328). More tenure results in a greater investment in employee work situations (i.e., retirement programs, job knowledge, and skill sets); and organizational change may be viewed as a threat (Rusbult & Farrell, 1983). Openness to change was significant and negatively associated with resistance to change. Employees who exhibited greater degrees of openness to job changes were more favorable toward organizational changes. LMX and perceived development climate were related to resistance to change; however, the relationships were predicated on the quality of the change process, information, participation, and trust in management.
Acceptance of Change

Models of Acceptance to Change

The literature provides many models of change implementation (e.g., Armenakis, Bernerth, & Walker, 2007; Jick, 1991; Judge et al., 1999; Judson, 1991; Kotter, 1995), yet a large percentage have roots related to Lewin’s (1951) conceptualization of change, the 3-Step Model: unfreezing, change, and refreezing, as shown in Figure 2. In stage 1, unfreezing, Lewin did not assume that this step would be easy, nor could it be generalized and applied to all changes. This stage could present difficulty, while being emotionally charged. Judson (1991), Kotter (1995), and Jick (1991) alluded to the first step by recognizing the need for change while developing a shared goal and direction. Their method of unfreezing the change related to changing individuals’ behavior regarding the change event. Stage 2, change, implies taking the necessary steps to account for all forces (positive and negative) at work, while developing new behaviors, attitudes, and values surrounding implemented change. In common with Lewin, Kotter (1995) focused on creating a shared buy-in and empowering individuals to take action. Judson (1991) used a broad term, implement change, which encompasses gaining acceptance of new behaviors and changing from status quo to a desired state. The last stage, refreezing, crystalizes the adaptation of a new event by reinforcing new behaviors and clearly communicating the benefits of the change. To sustain change, Judson (1991) discussed institutionalizing the new approaches by publicizing the small wins and highlighting the connection between the change event and the organizational success. After the acceptance of change, sustainment of change can be argued as the most challenging task Armenakis et al., 1999; Kotter, 1995; Lewin, 1947). Without reinforcing the change and
ensuring that the desired stage remains, individuals would have a tendency to revert back to doing what is comfortable for them.

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*Figure 2.* Comparison of three models of change to the foundation of Lewin’s (1951) 3-Step Model for change (as cited in Egan & Fjermestad, 2005).
Through models of organizational change, Armenakis and Bedeian (1999) posited that change takes form through systems or structural approaches, yet the overall success relies on abilities and motivation of individuals. As a whole, much of the organizational literature emphasizes the importance of employee participation throughout the change process (Conner, 1992; Judge et al., 1999; Judson, 1991; Oreg, 2003, 2006; Spreitzer & Quinn, 1996). Changing human behaviors requires patience, direction, and coaching to convince groups or individuals to accept change; nevertheless, the struggles to implement the required internal changes have directed more attention toward change at the organizational or macro level, rather than the individual level (Judge et al., 1999; Oreg, 2003; Wanberg & Banas, 2000).

**Empirical Research**

To bring about acceptance, models of change attempt to guide leaders, change agents, and managers through the process and phases of organizational change (Jick, 1991; Judson, 1991; Kotter, 1995; Lewin, 1951). Research on adoption and innovations (Rogers, 2003) provided ample support of the way in which groups and individuals accept change through varying degrees and at different rates. Regardless of the benefit related to change, acceptance depends upon the perception of the change recipient and the impact on the individual, group, environment, beliefs, or control. Much of Rogers’ (2003) research is accredited to the manner in which acceptance of change is represented through five categories: innovators, early adopters, early majority, late majority, and laggards. The innovators and early adopters thrive on change, while the late majority and laggards generally are skeptical and acquiesce to change as a last resort. Acceptance of innovation is not an automatic occurrence. Rogers maintained that some characteristics
of the innovation may facilitate its own adoption, while others are dependent on promotions through influential role models, the ability to test the new innovation, the complexity of the change, and the element of time.

In general, employees may be suspicious about unfamiliarity that change may require; yet, studies (Parish, Cadwallader & Busch, 2008; Caldwell, Herold, & Fedor, 2004; Judge et al., 1999) have focused on the degree of employee commitment during organizational change initiatives and employees’ reactions. Parish et al. (2008) conducted a quantitative study that surveyed 593 employees in the transportation service department on a university campus. The researchers correlated the relationships among employees and managers, job motivation, and role autonomy with acceptance and varying degrees of commitment to change. The results of the study attempted to highlight the reason that employees are committed to and accepting of change. One of the three commitment components—affective commitment to change—had a significant affect on the outcome variables related to change. Parish et al. reflected that motivations underlying employee acceptance of organizational change are important to understand; therefore, organizations could leverage the knowledge to bring about successful change.

Iverson (1996) conducted a quantitative study to test a model for predicting acceptance of organizational change within large public hospitals. The study hypothesized whether employee acceptance of organizational change was positively influenced by education, job motivation, job satisfaction, job security, organizational commitment, positive affectivity, and a harmonious working environment. At the same time, the study tested whether union membership, role conflict, tenure, and environmental opportunities would decrease acceptance of organizational changes.
a population of approximately 2,000 hospital staff members, a random sample 761 (74% female, 26% male, 65% union members, and 35% non-union members) returned a multiple-item survey. Statistical analyses from multiple regressions, Chow test, and Linear Structural Relations (LISREL) were utilized to interpret the results. The results indicated that the 11 determinants had significant effects on the acceptance of organizational change. Organizational commitment was both a determinant and mediator within the change process. Union membership was highlighted as the most important determinant of influencing acceptance. The study found that union members were less accepting of change than their counterparts. Overall, the findings indicated that employee acceptance is not unusual, though organizational factors may play a role in the way that organizational changes are viewed. In the current study, unions were not taken into consideration as an organizational factor; however, adding this element could lead to ideas for future research in exploring reactions to change.

Judson (1991) summarized that many behaviors naturally support resistance to change; however, individuals can be influenced to accept change. One of the most influential forms of acceptance is enthusiastic cooperation. This rare occurrence brings together an individual’s personal desires, which are a direct connection to the overall group’s desires, and are satisfied by the expectations and outcomes of the change event. Among some of the desired outcomes are the following: (a) anticipated economic gains, (b) hopes about personal security, (c) hopes of increased personal convenience, (d) increased job satisfaction, (e) social anticipations, and (f) reinforced cultural beliefs. Similarly, common themes for acceptance relate back to Maslow’s hierarchy of needs. If the anticipated change event satisfies elements of the basic stages, one would be more
open to accept change and to embrace it. Zammuto, Gifford, and Goodman (2000) supported the notion that leadership within organizations should create an atmosphere of psychological safety during the times of change by exploring the way in which their beliefs and values are impacted and by engaging with the individuals impacted by the change.

In a study conducted in the 1970s, Kotter and Schlesinger (1979) stated, “Many managers underestimate not only the variety of ways people can react to organizational change, but also the ways they can positively influence specific individuals and groups during a change” (p. 109). They stressed that in order to increase acceptance of change, one must listen to individuals involved and impacted by the change and use their advice. Education and communication efforts can be ideal for bringing more people to accepting the notions for change. The same sentiments may hold true in today’s ever-changing environment.

**Summary**

In today’s organization, change can be viewed as a negative determinant for some and regarded as a positive opportunity for others. As change continues to occur, the speed, complexity, and difficulty of altering behaviors and their impact on individuals should be considered by those implementing the change. To reach the stage of acceptance, it is thought that one would experience stages similar to grief: (a) shock and denial, (b) anger, (c) bargaining, (d) depression, and (e) acceptance and integration (Kübler-Ross, 1969). However, some individuals may progress through the stages more rapidly, giving the overall perception of willingness for acceptance.

Acceptance of change cannot be underestimated as a given response during
change events. Efforts by management, change agents, and those responsible for implementing change must seek to understand the primary reactions to change (i.e., Maslow’s hierarchy of needs); make efforts to communicate the importance and benefits, create an environment conducive for expressing ideas; and listen to advice and feedback from those impacted (Kotter & Schlesinger, 1979) by the change.

Many factors (i.e., trust in leadership, organizational commitment, environmental opportunity, job security, positive affectivity, harmonious industrial relationships, and job satisfaction) may play significant roles in influencing acceptance or resistance to change (Iverson, 1996). The strategy, the process, and the involvement of key individuals impacted by the change may lend to greater openness for acceptance of changes in organizational settings.
CHAPTER III

METHODOLOGY

Introduction

The current study analyzed the relationships among elements of mindfulness, tolerance of ambiguity, and resistance to change in industrial organizations. A correlational research design was utilized to evaluate these relationships among individual responses from three validated instruments. Individual perception data were gathered using Qualtrics, an online, self-administered survey software, to analyze the validated scales and measurements. The central research question explored in the current study was: How are the psychometric constructs of mindfulness and tolerance for ambiguity related to resistance to change within organizations? This chapter will first discuss the research methodology and design. A discussion will follow on the setting, population and sample, procedures; instrumentation, data collection and analysis, limitations, and ethical considerations. All data collection procedures and instruments were reviewed and approved by the Institutional Review Board (IRB) at Western Kentucky University prior to being administered to participants at various industrial locations in Kentucky.

Research Questions

The current study examined the factors of mindfulness and tolerance of ambiguity and the manner in which they relate to individuals’ perceptions of resistance to change. The specific research questions are the following:

1) How do demographic factors of the respondents and the organizational factors under which they work relate to the psychometric scales of Mindfulness and
Tolerance of Ambiguity and their influence on Resistance to Change?

2) After controlling for demographic factors, how does psychometric mindset (Sub-constructs of Mindfulness and Tolerance of Ambiguity) influence individual Resistance to Change:
   a) Routine seeking?
   b) Emotional reaction?
   c) Short-term focus?
   d) Cognitive rigidity?

3) What is the degree of relationship among these measures of Mindfulness and Tolerance of Ambiguity?

**Research Design**

The current study employed a descriptive, non-experimental correlational design that utilized quantitative research methods to evaluate the relationship among the chosen variables. Predictions regarding a population should not be interpreted for a population different than from which the original samples were drawn (Khalid et al., 2012). Quantitative correlational research allows the researcher to make generalizations about the subjects, variables, phenomena, or conditions being evaluated. It requires the researcher to choose a suitable research design, to evaluate the chosen variables, to select an appropriate sampling method to ensure the validity and reliability of the chosen instruments, to collect credible data to perform data analysis, and to draw correlations.

Although correlation research cannot determine causality between variables, it can determine the strength and relationship between different sets of data or predict scores based on the scores of known variables (Neuman & Kreuger, 2003). In the current
research, three instruments (in addition to a demographic data section) were combined into one survey to collect data for comparison of individuals’ perceptions of psychometric constructs to resistance to change. Described by Isaac and Michael (1995), the survey research method was used:

\[ \ldots \text{to answer questions that have been raised, to solve problems that have been posed or observed, to assess needs and set goals, to determine whether or not specific objectives have been met, to establish baselines against which future comparisons can be made, to analyze trends across time, and generally, to describe what exists, in what amount, and in what context. (p. 136)} \]

Gall, Borg, and Gall (2006) summarized that the purpose of a survey is to collect data from a sample to which the general outcomes of the data analysis can be generalized to the larger population. Additionally, surveys can collect data on phenomena that are not easily observable by the researcher. The self-administration collection method is useful in correlational studies due to its versatility, efficiency, and generalizability (Neuman & Kreuger, 2003).

Regression models were utilized to assess univariate relationships between mindfulness and tolerance of ambiguity as well as multivariate relationships among mindfulness, tolerance of ambiguity and resistance to change. Responses from the survey were reported in the aggregate to reflect the general demographics, operational controls, psychometric responses, and perceptions of resistance to change. Descriptive statistics included the mean, median, mode, standard deviation, range, minimum, maximum, and sum of the selected variables. A one-way Analysis of Variance (ANOVA) assisted with the identification of potential differences and correlations between the means of the
descriptive variables.

**Setting, Population, and Sample**

**Setting and Population**

Elements of mindfulness, tolerance of ambiguity, and resistance to change were the specific constructs evaluated by employees located at various industrial sites in the state of Kentucky. According to the Kentucky Cabinet for Economic Development (2014), 2,411 industrial companies, particularly manufacturing, were listed in the state employing 235,544 full-time workers. In the current study, four industries volunteered to participate by responding to requests through the Bowling Green, Kentucky, Chamber of Commerce or the Barren River Area Development District (BRADD). The companies consisted of the following:

- Cup Manufacturer, Horse Cave, Kentucky
- Rubber to Metal Bonding Manufacturer, Bowling Green, Kentucky
- Personal Care Manufacturer, Bowling Green, Kentucky
- Construction Company, Bowling Green, Kentucky

The data gathered during the process of administering the survey reflected the population of the salary workforce (exempt and non-exempt), which determined the appropriate sample size and the estimated response rate.

**Sampling**

Khalid et al. (2012) suggested that the foremost objective of quantitative research is to make generalizations on the population of interest. In many cases, it is quite impossible for the researcher to include an entire population in a study; therefore, a representative subgroup of a population can be used to draw inferences (as cited in Lind,
Marchal, & Wathen, 2008). Hence, studying the sample of the population can save the researcher time, energy, and resources that may otherwise be unobtainable through equivalent efforts (Parker & Berman, 2003). In the current study, the researcher chose the method of convenience sampling to select the industries and participants. Convenience sampling is a non-probability sampling method use in selecting units, or individuals, most conveniently available for study (Zikmund, 2000). Creswell (2012) recommended including approximately 30 participants in a correlational study that relates variables. The researcher exceeded the recommended sample size by obtaining 65 participants who volunteered to participate from industrial or manufacturing sites.

**Participants**

For the purpose of describing the individuals who participated in the current study, the words *participants* and *respondents* were used interchangeably. The participants represented salaried exempt and non-exempt employees in a variety of industries in the state of Kentucky.

**Procedures**

To maintain confidentiality and anonymity, no information on the electronic survey will be traceable to the identity of any respondent to the researcher and to those who might be reviewing these results. Additionally, participants will be notified of this protection in writing prior to publishing the results and to emphasize that the results will be presented in the aggregate form. Instructions clearly indicated that individual responses to the research questions will not be shared with either the participants, the organization of the participants, or any institution affiliated with the research. Prior to participating, all individuals were asked to volunteer to participate and to acknowledge
their implied consent through completion of the survey. All participants received an email from their local human resource representative containing a survey link from Qualtrics. Participants were allotted approximately four weeks to complete the survey. A general opening statement explained the purpose of the study and the manner in which the survey information will be used. If participants chose not to participate, they were given the right to withdraw by simply not responding and deleting the email.

The final document did not include any names of the participants or other personal information such as place of employment, home addresses, telephone numbers, or e-mail addresses. Individual survey responses and registration information will be kept within strict confidence, and the researcher will abide by the rules and regulations granted by the Institutional Review Board (IRB). As a process for storing data for analyses, collected data will be stored electronically and protected by a password known only by the researcher. After the conclusion of the study, the online survey, along with the collected data, will be deleted. According to IRB regulations, coded data used for analyses will be retained for three years and destroyed upon the expiration of time.

After the introduction of the survey and the acknowledgement of the consent agreement, participants responded to questions related to their perceptions of mindfulness, tolerance of ambiguity, and resistance to change. Next, participants were prompted to answer demographic questions and those related to organizational factors. The survey was open to participants for a minimum period of four weeks.

With an emphasis on increasing response rates, Dillman (1978, 2007) found that follow-up letters were an effective means of increasing participation during surveys. Dillman acknowledged, in the age of advanced technologies, that self-administered
electronic surveys promise an enormous benefit for data collection. Conversely, concerns exist with electronic surveys. Individuals must have a computer or possess the means to receive the survey, and electronic surveys can be easily ignored or deleted, along with other uninvited emails. Follow-up efforts are imperative in order to increase response rates. Dillman (2007) suggested several principles for the overall survey design and to increase responses for surveys administered through e-mails:

- Utilize a multiple contact strategy similar to those used in mail surveys.
- Personalize all e-mail contacts so that none are part of mass mailings that reveal multiple recipients’ addresses.
- Keep the cover letter brief to enable respondents to get to the first question without having to scroll down the page.
- Inform respondents of alternative ways to respond, if applicable.
- Include a replacement questionnaire with the reminder message.
- Begin with an interesting but simple-to-answer question.
- Consider limiting scales’ lengths and making other accommodations to the limitations of e-mail to facilitate mixed-mode comparisons. (pp. 367-374)

Follow-up emails were sent at the end of the second week to emphasize the importance of the study and its contribution to research. The researcher relied on the human resource managers within each facility to send subsequent emails to salaried participants. As an inducement, participants also had an opportunity to enter their name into a drawing for gift cards. At the completion of the survey, all participants were automatically redirected to another website (Survey Monkey) independent of the Qualtrics survey website. If participants chose not to enter the drawing, they had the
right not to participate by exiting the website. Some facilities chose not to participate in
the drawing but accepted donations to a charity of their choice.

**Instruments**

The Likert scale is a well-known instrument format used for administering survey
questions and analyzing data collection from respondents (Creswell, 2012); as a result, it
is easily understood. It is easily quantifiable and does not force the respondent into a
straightforward *yes or no* response; degrees of response (either positive or negative) are
allowed. Developed over 80 years, Likert scales have been utilized in numerous studies
and have served as an advantageous and uncomplicated method for data collection and
analysis (Arnold, McCroskey, & Prichard, 1967). The current study used Likert
responses for a combination of three scales that were framed in the online Qualtric
Survey Software: the *Langer Mindfulness Scale* (LMS14), the *Tolerance of Ambiguity
Scale* (TOA), and the *Resistance to Change* (RTC) scale.

**Measuring Mindfulness**

Pirson et al. (2012) developed the LMS14, an instrument with a 7-point Likert
scale, used to evaluate the level of mindfulness in salaried employees among different
organizations and industries. The answer selections for the scale are: 1 = *strongly
disagree*, 2 = *disagree*, 3 = *slightly disagree*, 4 = *neutral*, 5 = *slightly agree*, 6 = *agree,*
and 7 = *strongly agree.* The revised scale is composed of 14 questions that represent
three subscales: (a) *novelty-seeking*, (b) *novelty-producing*, and (c) *flexibility.* The
original 21-item scale included *engagement* as a subscale. Examples of the statements in
the 14-item scale are: *I like to investigate things, I try to think of new ways to doing
things,* and *I like how to figure out how things work.* Some items were reverse coded so
that interpretations of results were accurate and consistent with the intent of the respondent. The data gathered in the initial pilot of LMS14 reflected a coefficient alpha across a single factor ranged from .83 to .90, and the overall reliability was deemed “very good.” The study highlighted the following results for the remaining three factors: (a) novelty-seeking, \( \alpha = .75 \) to .86; (b) novelty-producing, \( \alpha = .71 \) to .90; and (c) engagement, \( \alpha = .65 \) to .80.

**Measuring Tolerance of Ambiguity**

The measurement of tolerance of ambiguity was conducted through the *Tolerance of Ambiguity Scale* (Budner, 1962). This instrument assesses the strength of tolerance for ambiguity using 16 items distributed among three subscales that include *novelty*, *complexity*, and *insolubility*. Similar to the LMS 14, respondents self-rated using a 7-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly disagree*, 4 = *neutral*, 5 = *slightly agree*, 6 = *agree*, and 7 = *strongly agree*), for which higher scores indicated a lesser tolerance for ambiguity. In order to score the instrument accurately, the even-numbered items must be reverse-scored. The average scoring reflects scores in ranges of 44-48. The three subscales were calculated to reveal the degree of tolerance of ambiguity for each category (Budner, 1962):

- **Novelty Score** – Indicates the extent to which participants are tolerant of new, unfamiliar information or situations
- **Complexity Score** – Indicates the extent to which participants are tolerant of multiple, distinctive, or unrelated information
- **Insolubility Score** – Indicates the extent to which participants are tolerant of problems that are very difficult to solve
Individuals with overall high scores may have a higher tendency to perceive situations as threatening, rather than opportunistic, and are considered to be less tolerant of ambiguity. Maintained by Budner (1962), the validation of the scale across 17 different populations reflected an internal alpha of $r = .49$. Further evidence (Furnham, 1994) supported the validity of the scale through an alpha of $r = .59$, a stronger correlation than Budner’s initial results. Overall, higher scores indicated a greater intolerance of ambiguity.

**Measuring Resistance to Change**

Resistance to change was measured using Oreg’s (2003) *Resistance to Change* (RTC) scale that contained the following subscales: *routine seeking*, *emotional seeking*, *short-term focus*, and *cognitive rigidity*. The 6-point Likert scale ($1 = strongly disagree$, $2 = disagree$, $3 = inclined to disagree$, $4 = inclined to agree$, $5 = agree$, and $6 = strongly agree$) had two items reverse coded, and the mean score of 17 items related to the following subscales:

- Routine Seeking: Items 1-5
- Emotional Seeking: Items 6-9
- Short-term Focus: Items 10-13
- Cognitive Rigidity: Items 14-17

The scoring method for the RTC scale reflects individual scores for each subscale, in addition to providing an overall mean score. Lower overall scores indicated a positive disposition toward change. Oreg (2003) originally validated the instrument to standardize the regression weights, in which four factors loaded significantly. The four unique subscale alpha factors were routine seeking ($\alpha = .75$), emotional reaction ($\alpha = .71$), short-term thinking ($\alpha = .71$), and cognitive rigidity ($\alpha = .69$). The alpha coefficient
for the combined model was $\alpha = .87$. Oreg (2006) conducted a subsequent study utilizing the same scale parameters, and the overall Cronbach’s alpha was $\alpha = .86$.

**Demographic and Organizational Factors**

The demographic questions asked participants to report their age, gender, ethnicity, and educational level. The organizational factors asked participants to submit information regarding their years of employment at their current location, current position, industry category, and number of direct reports. The data were used to examine correlations among the psychometric constructs and resistance to change and to determine whether any differences were noted across these features. The emphases for the organizational and demographic factors were deemed important due to the nature of the study and the industry settings. These variables were considered to be revealing, and the conclusions concerning the data will be discussed in the *Limitations* section.

**Data Collection and Analysis**

The data collection process was administered over a four-week period. The researcher did not elect to extend the collection period an additional week based on the level of participation. Upon collection of the individual data, the results were exported to Statistical Package for the Social Sciences (SPSS), a computerized program designed for simple and complex data management and analyses. From this analysis, reports, graphs, and comparisons were generated on the aggregate data collected from the surveys. In addition, the results were compared to the outcomes through SAS (Statistical Analysis Software) generated by the advice of the research team’s statistician.

According to Rubin and Rubin (2005), data analysis is the stage in which research transitions from being raw data to “evidence-based interpretations that are the foundation
for published reports” (p. 201). Data should be accurate and complete in order to arrange in a format to apply various descriptive concepts for explanation. A number of descriptive tools were utilized, such as frequency distributions, cumulative frequency distributions, or scatter diagrams to support the explanation of the survey results. In explanatory studies, the researcher must rely on statistical techniques to test correlations. The *Pearson Coefficient of Correlation* is the most commonly used measure of identifying correlations between two or more variables (Lind et al., 2008; Triola, 2008). Likewise, the value of $r$ will lie between the values of -1 and +1, inclusively. Values closer to -1 will reflect a strong negative correlation and values closer to +1 will show a strong positive correlation.

The data analyses were utilized to construct regression models for which the researcher correlated the strength of the relationships for the compared variables. Multiple regression models were used for comparison of mindfulness, tolerance of ambiguity, and elements of resistance of change. As noted earlier, regression analyses in the current study will not assume causation. As summarized by Triola (2008), several cautions should be used while interpreting the regression equations:

- The regression equation should not be used if there is not a linear correlation between the selected variables. Some relationships may reflect a curvilinear relationship between the variables and should be reported in the correct format.
- It is important to stay within the scope of the available sample data while using the regression equation for predictions.
• Ensure the data collected are relatively recent, as a regression equation based on old data may not be valid to represent the present or near future environment.

Last, the electronic survey was designed to eliminate the nuisance of collecting incomplete data. Participants must have completed all questions on the current page prior to proceeding to the next page of the survey. If a question was unanswered, an automatic statement would be displayed stating, “Sorry you cannot continue until you correct the following.” Next, the survey would highlight any missing data to be answered.

**Limitations**

No research study can cover or attend to all relevant data; therefore, every study is subject to limitations. For example, self-administered surveys may include biases that may occur through the lack of responses from the participants (Bell, 1996). Other sources that could potentially skew data may be found in answers to questions that could be misinterpreted or unintentionally reflected in the participant’s natural responses. Respondents also may have difficulty interpreting their own behavior during the time of the assessment due to distractions in the organization’s environment, personal barriers outside the organization, or personal opinions toward taking an electronic survey. Although direct causality cannot be determined in correlational research, the strengths or weaknesses in the relationships among variables should be used with caution when interpreting the results. Generalizations, for example, can be assumed for other industrial or manufacturing populations similar in size, demographics, technologies, or other factors comparable to the current population.
Ethical Considerations

Researchers must adhere to the requirements and ethical considerations governed by the Institutional Review Board process and personal integrity. Each researcher is responsible for his or her actions to ensure that no harm or risk is posed to the participants in the studies. The rights and welfare of the study participants are extremely important to the researcher and to the University. The current study was granted approval to conduct the research by the Western Kentucky University’s Institutional Review Board. Although the study proclaims that the probability of harm or discomfort was minuscule, all customary precautions were taken. Participants were assured that the survey was completely anonymous, their identities were not linked to any of their responses, and all data were reported in the aggregate. In fact, no identifying information was attributable to any particular individual.

Qualtrics provided an additional layer of security to protect the participants’ data by encrypting private information from being displayed over the Internet. Qualtrics uses Transport Layer Security (TLS) encryption as a protection for sensitive data in the surveys and other collection methods. As a precautionary method for any concerns, participants were provided with the contact information of the researcher, the Institutional Review Board, and the dissertation chairperson for the current study, should they have had any questions.

Summary

When considering the measurement of various aspects of resistance to change within organizations, several methods have been utilized to illustrate the relationships and the strength of their correlations. In the current quantitative study, data collections from
three instruments were used in a correlational design. Two instruments were 
administered to evaluate an individual’s psychometric traits: Langer’s (Pirson et al., 
2012) *Langer Mindfulness Scale* (LMS14) and Budner’s (1962) *Tolerance of Ambiguity 
Scale* (TOA). One instrument was administered to evaluate the degree of resistance to 
were conducted in multiple phases to investigate the relationship between the individual 
psychometric traits and resistance to change for salaried exempt and non-exempt 
employees in Kentucky industrial or manufacturing sites. The results from the current 
study are reviewed in Chapter IV.
CHAPTER IV

RESULTS

Introduction

The purpose of the current study was to determine the existence and strength of relationships when examining mindfulness, tolerance of ambiguity, and resistance to change among salaried employees within industries located in Kentucky. Statistical data analyses were performed on survey data comprised of the following three instruments: Langer Mindfulness Scale (LMS14), Tolerance of Ambiguity Scale (TOA), and Resistance to Change (RTC) scale. This chapter reports the findings from the analyses of data collected from 65 participants responding to the Qualtrics Web-based survey. In particular, analyses were conducted through bi-variant correlation analyses (also known as Pearson’s r), independent t-tests, and Cronbach’s alpha. The strengths of the relationships were predicated on Cohen’s (1988) interpretation. Coefficient values between .10 and .29 were considered small or weak, those between .30 and .49 were considered moderate, and those between .50 and 1.0 were considered large or strong.

Scoring Method for Each Scale

Resistance to Change Scale

Oreg’s (2003) Resistance to Change Scale is comprised of 17 items with four subscales – routine seeking, emotional reaction, short-term focus, and cognitive rigidity. Each subscale relates to the extent to which individuals seek routines, react to emotions during change, encompass short-term focus during change, and the frequency to which individuals change their minds. The overall range of the scale, including the subscales, is scored between 1 and 6, with 1 representing the least level of resistance. Individuals
scoring higher on the overall scale or subscales indicate a higher resistance to change.

**Langer Mindfulness Scale**

The *Langer Mindfulness Scale* (Pirson et al., 2012) contains 14 items and is composed of three subscales—*novelty seeking*, *engagement*, and *novelty producing*. The 7-point scale is scored such that higher scores indicate a greater level of awareness toward thinking. High scores for novelty producing insinuate one would perceive new situations as opportunities to learn new information. Individuals with high scores for engagement are more susceptible to noticing details within their environment, as opposed to others. Higher novelty producing scores indicate that individuals are likely, more creative, and predisposed to generating new ideas when faced with new information.

**Tolerance of Ambiguity Scale**

Budner’s (1962) *Tolerance of Ambiguity Scale* is a 16-item scale with ratings ranging from 1 to 7; 1 represents strong disagreement, indicating a greater tolerance for ambiguity. It is important to note that higher scores relate to greater *intolerances* for ambiguity.

The results of the statistical analyses will be presented in four sections to describe the outcomes and to summarize data supporting each research question. In the first section, descriptive statistics will recount the demographic and organizational factors of the sample population. All results have been reported at the aggregate level. The remaining sections will address the responses to each research question by providing narrative and statistical outputs.

The following general research question guided the current study: How are the psychometric constructs of mindfulness and tolerance for ambiguity related to resistance
to change within organizations? Three specific research questions were examined:

1) How do demographic factors of the respondents and the organizational factors under which they work relate to the psychometric scales of Mindfulness and Tolerance of Ambiguity and their influence on Resistance to Change?

2) After controlling for demographic factors, how does psychometric mindset (Sub-constructs of Mindfulness and Tolerance of Ambiguity) influence individual Resistance to Change:
   a) Routine seeking?
   b) Emotional reaction?
   c) Short-term focus?
   d) Cognitive rigidity?

3) What is the degree of relationship among these measures of Mindfulness and Tolerance of Ambiguity?

The results of the statistical analyses related to each research question are presented in the order of the research questions. The related discussion of these results is reflected in Chapter V.

Participants in the Study

Located in Kentucky, the population represented a microcosm of several industries in the manufacturing sector within the proximity of Warren County. The data collected were based on a convenient sample. A total of 65 participants volunteered to complete an electronic survey that was designed to capture complete responses to a total of 48 questions. Participants were not allowed to proceed to the next page of the survey unless all questions on the current page were completed. Three participants did not
complete the survey, and their responses were not included in the end results. From the population of 183 salaried (exempt and nonexempt) employees, 65 surveys were officially returned, constituting a response rate of 36%. A description of the participants’ job types is presented in Table 4. Managerial-type jobs dominated 36% of the sample population, followed by roles in technical support, which reflected 16.9%. Six categories of job types and an “Other” category were used for the respondents.

Between August 15, 2014, and September, 17, 2014, the survey was administered at local industries through the aid of the human resource managers within each location. The researcher emailed the electronic survey after the participating industries returned the letter of participation. All employees were asked to complete the survey on a voluntary basis and were made aware that the individuals would remain anonymous and that responses would be held in confidence and in accordance with the WKU Institutional Review Board (IRB) approval and policies. According to the survey program, the average time reported for completion of the surveys was 12.7 minutes.
Table 4

*Frequencies of Salaried Job-Types within Sample Population*

<table>
<thead>
<tr>
<th>Job-Type</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production supervision</td>
<td>9</td>
<td>13.8%</td>
</tr>
<tr>
<td>Managerial</td>
<td>24</td>
<td>36.9%</td>
</tr>
<tr>
<td>Human resources</td>
<td>6</td>
<td>9.2%</td>
</tr>
<tr>
<td>Technical support</td>
<td>11</td>
<td>16.9%</td>
</tr>
<tr>
<td>Quality support</td>
<td>6</td>
<td>9.2%</td>
</tr>
<tr>
<td>Professional specialty</td>
<td>6</td>
<td>9.2%</td>
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</table>

**Analysis of Research Question 1**

The first research question explored the relation of demographic and organizational factors to the psychometric scales of Mindfulness and Tolerance of Ambiguity and their influence on Resistance to Change. Descriptive statistics reflected both demographic and organizational factors—gender, education, years at the company, and direct reports—for the 65 employees who participated in the current study. Table 5 reveals an overview of the demographics. The distributions of variables were distributed evenly between only two variables: years at the company and direct reports.
Table 5

*Demographic and Organizational Information of Participating Salaried Employees (N = 65)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>45</td>
<td>69.23</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>20</td>
<td>30.77</td>
</tr>
<tr>
<td>Education</td>
<td>High School</td>
<td>6</td>
<td>9.23</td>
</tr>
<tr>
<td></td>
<td>Some College</td>
<td>10</td>
<td>15.38</td>
</tr>
<tr>
<td></td>
<td>2-year College Degree</td>
<td>7</td>
<td>10.77</td>
</tr>
<tr>
<td></td>
<td>4-year College Degree</td>
<td>34</td>
<td>52.31</td>
</tr>
<tr>
<td></td>
<td>Master’s Degree or Higher Education</td>
<td>8</td>
<td>12.31</td>
</tr>
<tr>
<td>Years at Company</td>
<td>0 to 4 years</td>
<td>14</td>
<td>21.54</td>
</tr>
<tr>
<td></td>
<td>5 to 10 years</td>
<td>21</td>
<td>32.31</td>
</tr>
<tr>
<td></td>
<td>11 to 20 years</td>
<td>15</td>
<td>23.08</td>
</tr>
<tr>
<td></td>
<td>21 years or more</td>
<td>15</td>
<td>23.08</td>
</tr>
<tr>
<td>Direct Reports</td>
<td>0 Direct Reports</td>
<td>32</td>
<td>49.23</td>
</tr>
<tr>
<td></td>
<td>1 or More Direct Reports</td>
<td>33</td>
<td>50.77</td>
</tr>
</tbody>
</table>

*Note.* Descriptive analyses were provided for values in the above table.

Other demographic variables, including ethnicity and age, were recorded. A statistical analysis was not conducted due to the uneven distribution of the variables. Of the 65 participants, 59 were Caucasian and the remaining 6 were minorities. The ages of the participants ranged from 28 years to 65 years. Table 6 outlines the distribution for the demographic variables that were not used for analysis in the current study.
Table 6

Demographic Information of Participating Salaried Employees (N = 65)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>White/Caucasian</td>
<td>59</td>
<td>90.77</td>
</tr>
<tr>
<td></td>
<td>Minorities</td>
<td>6</td>
<td>9.23</td>
</tr>
<tr>
<td>Age</td>
<td>Young</td>
<td>6</td>
<td>9.23</td>
</tr>
<tr>
<td></td>
<td>Middle Age</td>
<td>52</td>
<td>80.00</td>
</tr>
<tr>
<td></td>
<td>Older</td>
<td>7</td>
<td>10.77</td>
</tr>
</tbody>
</table>

*Note.* Descriptive analyses were provided for values in the above table.

Additionally, frequency distributions and data analyses were not conducted for individual sites to protect anonymity. All results were reported at the aggregate level and included the following categories for the participating industries: Cup Manufacturing, Personal Care Manufacturing, Construction, and Rubber to Metal Bonding Manufacturing.

**Gender Male and Female**

Although more than twice as many males than females participated in the current study, independent *t*-tests were conducted to determine whether differences existed between the mean scores of the scales and subscales for male and female employees. No statistically significant differences were found between the outcome of the psychometric constructs (Mindfulness and Tolerance of Ambiguity) and Resistance to Change, except on one subscale. Cognitive rigidity revealed a statistical difference between the scores of males (*n* = 45, *M* = 3.81, *SD* = 0.63) and females (*n* = 20, *M* = 3.36, *SD* = 0.86), *t* (63) = 2.34, *p* = .05, *α* = .05. Table 7 shows the differences reflected among the results.
Table 7

*Differences between Genders Among Each Scale and Subscale*

<table>
<thead>
<tr>
<th>Scales/ Subscales</th>
<th># of Items</th>
<th>Male Mean (SD)</th>
<th>Female Mean (SD)</th>
<th>t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMS_14 NS (Novelty Seeking)</td>
<td>5</td>
<td>5.99 (0.76)</td>
<td>5.95 (0.62)</td>
<td>0.19</td>
</tr>
<tr>
<td>LMS_14 NP (Novelty Producing)</td>
<td>5</td>
<td>5.03 (0.96)</td>
<td>5.06 (0.92)</td>
<td>-0.11</td>
</tr>
<tr>
<td>LMS_14 E (Engagement)</td>
<td>4</td>
<td>5.53 (1.09)</td>
<td>5.64 (0.87)</td>
<td>-0.40</td>
</tr>
<tr>
<td>LMS_14 Tot (Total Avg. Mean)</td>
<td>14</td>
<td>5.51 (0.81)</td>
<td>5.54 (0.63)</td>
<td>-0.14</td>
</tr>
<tr>
<td>TOA_Tot (Total Avg. Mean)</td>
<td>16</td>
<td>3.85 (0.75)</td>
<td>3.57 (0.56)</td>
<td>1.46</td>
</tr>
<tr>
<td>RTC_RS (Routine Seeking)</td>
<td>5</td>
<td>3.08 (0.94)</td>
<td>2.85 (0.83)</td>
<td>0.96</td>
</tr>
<tr>
<td>RTC_ER (Emotional Reaction)</td>
<td>4</td>
<td>3.52 (1.07)</td>
<td>3.19 (1.15)</td>
<td>1.12</td>
</tr>
<tr>
<td>RTC_STF (Short-term Focus)</td>
<td>4</td>
<td>2.94 (1.10)</td>
<td>2.66 (0.89)</td>
<td>0.99</td>
</tr>
<tr>
<td>RTC_CR (Cognitive Rigidity)</td>
<td>4</td>
<td>3.81 (0.63)</td>
<td>3.36 (0.86)</td>
<td>2.34*</td>
</tr>
<tr>
<td>RTC_Tot (Total Avg. Mean)</td>
<td>17</td>
<td>3.32 (0.80)</td>
<td>3.01 (0.80)</td>
<td>1.47</td>
</tr>
</tbody>
</table>

*Note.* *(p < .05). Only Cognitive Rigidity displayed a significant difference between males and female scores.*
Education

Due to the imbalanced distributions of participants, statistical analysis for *Education* was not performed. The frequency distribution reflected that 52.31% (34) of the participants possessed a four-year degree, 12.31% (8) obtained a master’s degree or higher, 26.15% (17) possessed a two-year degree or some college, while the remaining 9.23% (6) were high school graduates. The frequency distribution is presented in Table 5.

Direct Reports and No Direct Reports

An individual variances *t*-test was conducted and failed to reveal a statistically reliable difference between the mean scores of salaried employees without direct reports and salaried employees with direct reports. As an example, scores from routine seeking, a subscale of resistance to change, were not significantly different between employees without direct reports (*n* = 32, *M* = 3.12, *SD* = 0.96) and employees with direct reports, (*n* = 33, *M* = 2.91, *SD* = 0.85), *t* (65) = 0.93, *p* = 0.37. Table 8 outlines the relationships between each scale and subscale within the current study.
Table 8

*Differences between Employees with Direct Report and Employees Without Direct Reports Among Each Scale and Subscale*

<table>
<thead>
<tr>
<th>Scales/ Subscales</th>
<th># of Items</th>
<th>No Direct Reports</th>
<th>With Direct Reports</th>
<th>t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><em>n = 32</em></td>
<td><em>n = 33</em></td>
<td></td>
</tr>
<tr>
<td>LMS_14 NS</td>
<td>5</td>
<td>5.89 (0.83)</td>
<td>6.05 (0.58)</td>
<td>-0.91</td>
</tr>
<tr>
<td>(Novelty Seeking)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_14 NP</td>
<td>5</td>
<td>4.84 (1.02)</td>
<td>5.24 (0.82)</td>
<td>-1.73</td>
</tr>
<tr>
<td>(Novelty Producing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_14 E</td>
<td>4</td>
<td>5.48 (1.14)</td>
<td>5.64 (0.90)</td>
<td>-0.60</td>
</tr>
<tr>
<td>(Engagement)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_14 Tot</td>
<td>14</td>
<td>5.40 (0.91)</td>
<td>5.64 (0.55)</td>
<td>-1.31</td>
</tr>
<tr>
<td>(Total Avg. Mean)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOA_Tot</td>
<td>16</td>
<td>3.88 (0.82)</td>
<td>3.65 (0.57)</td>
<td>1.28</td>
</tr>
<tr>
<td>(Total Avg. Mean)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_RS</td>
<td>5</td>
<td>3.12 (0.96)</td>
<td>2.91 (0.85)</td>
<td>0.93</td>
</tr>
<tr>
<td>(Routine Seeking)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_ER</td>
<td>4</td>
<td>3.66 (1.05)</td>
<td>3.17 (1.10)</td>
<td>1.83</td>
</tr>
<tr>
<td>(Emotional Reaction)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_STF</td>
<td>4</td>
<td>3.05 (1.17)</td>
<td>2.66 (0.87)</td>
<td>1.55</td>
</tr>
<tr>
<td>(Short-term Focus)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_CR</td>
<td>4</td>
<td>3.84 (0.71)</td>
<td>3.51 (0.71)</td>
<td>1.85</td>
</tr>
<tr>
<td>(Cognitive Rigidity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_Tot</td>
<td>17</td>
<td>3.40 (0.83)</td>
<td>3.05 (0.75)</td>
<td>1.77</td>
</tr>
<tr>
<td>(Total Avg. Mean)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* No significant differences were found between salaried employees with direct reports and salaried employees without direct reports among the scales and subscales in the current study.
Years at the Company

A one-way analysis of variance (ANOVA) was calculated on participants’ ratings of the psychometric constructs and resistance to change as a comparison to the number of years at the company. Comparisons indicated no statistically significant differences were presented between groups of 0 to 4 years, 5 to 10 years, 11 to 20 years, and 21 years and greater. As an example, on novelty-seeking, a subscale of the Langer Mindfulness Scale, the analysis was not significant between the four groups, $F(3, 61) = .31, p = .82$. Table 9 reflects the overall results of the four groups.
Table 9

ANOVA Comparison of Years at the Company between Four Groups

<table>
<thead>
<tr>
<th>Scales and Subscales</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between Groups</td>
<td>.49</td>
<td>3</td>
<td>.16</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>32.19</td>
<td>61</td>
<td>.53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>32.68</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_NS</td>
<td>Between Groups</td>
<td>2.59</td>
<td>3</td>
<td>.86</td>
<td>.97</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>54.15</td>
<td>61</td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>56.74</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_NP</td>
<td>Between Groups</td>
<td>.53</td>
<td>3</td>
<td>.18</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>66.35</td>
<td>61</td>
<td>1.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>66.88</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_E</td>
<td>Between Groups</td>
<td>.70</td>
<td>3</td>
<td>.23</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>35.64</td>
<td>61</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36.34</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_M</td>
<td>Between Groups</td>
<td>.36</td>
<td>3</td>
<td>.12</td>
<td>.24</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>31.50</td>
<td>61</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>31.87</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOA_M</td>
<td>Between Groups</td>
<td>.67</td>
<td>3</td>
<td>.22</td>
<td>.26</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>51.88</td>
<td>61</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>52.55</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_RS</td>
<td>Between Groups</td>
<td>4.56</td>
<td>3</td>
<td>1.52</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>72.60</td>
<td>61</td>
<td>1.19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>77.16</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_ER</td>
<td>Between Groups</td>
<td>.07</td>
<td>3</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>69.29</td>
<td>61</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>69.36</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_STF</td>
<td>Between Groups</td>
<td>1.41</td>
<td>3</td>
<td>.47</td>
<td>.89</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>32.47</td>
<td>61</td>
<td>.53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>33.89</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_CR</td>
<td>Between Groups</td>
<td>.76</td>
<td>3</td>
<td>.25</td>
<td>.38</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>40.81</td>
<td>61</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>41.57</td>
<td>64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. SD = standard deviation; df = degrees of freedom; MS = mean squared; F = F value; p = significance (p < 0.05). No groups were found to be significantly different.
Analysis of Research Question 2

The second research question used bivariate correlations to determine the strength of the relationships between the psychometric constructs (Mindfulness and Tolerance of Ambiguity) and Resistance to Change, including the four subscales. All of the Pearson correlations were significant across each of the findings, with the exception of the LMS scale and Cognitive Rigidity of Resistance to Change subscale, $r(65) = -.225, p = .072$. The overall LMS scales reflected a strong negative relationship, $r(65) = -.530, p < .001$, with the RTC scale. The TOA scale revealed a moderate positive correlation $r(65) = .624, p < .001$. Table 10 presents the bivariate correlations between the LMS scales and subscales, TOA scales and subscales, and RTC scales and subscales.

Table 10

*Bivariate Comparison of the Psychometric Constructs and Resistance to Change*

<table>
<thead>
<tr>
<th></th>
<th>RTC Tot Mean</th>
<th>RTC RS</th>
<th>RTC ER</th>
<th>RTC STF</th>
<th>RTC CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMS_ Tot Mean</td>
<td><strong>-.530</strong></td>
<td><strong>-.551</strong></td>
<td><strong>-.426</strong></td>
<td><strong>-.536</strong></td>
<td>-.225</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.072</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.072</td>
</tr>
<tr>
<td>TOA_ Tot Mean</td>
<td><strong>.624</strong></td>
<td><strong>.650</strong></td>
<td><strong>.411</strong></td>
<td><strong>.604</strong></td>
<td><strong>.440</strong></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.000</td>
<td>.000</td>
<td>.001</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.001</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>$N$</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
</tr>
</tbody>
</table>

*Note.* **Correlation is significant at the 0.01 level (2-tailed). RS = Routine Seeking; ER = Emotional Reaction; STF = Short-term Focus; CR = Cognitive Rigidity*

Further bivariate analyses for LMS explored the strength of the relationships between the subscales of the Langer Mindfulness Scale and the subscales of the Resistance to Change scales. The correlational analysis was statistically significant between all variables.
except Engagement of the LMS and Cognitive Rigidity of RTC, $r(63) = -.35, \ p = .781$, concluding that the variables were unrelated. Table 11 shows the correlations between each of the variables and the strength of their relationships.

Table 11

*Correlational Analysis of the Three Subscales of the Langer Mindfulness Scale and Resistance to Change*

<table>
<thead>
<tr>
<th></th>
<th>RTC_Tot Mean</th>
<th>RTC_RS</th>
<th>RTC_ER</th>
<th>RTC_STF</th>
<th>RTC_CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMS_NS</td>
<td>Correlation</td>
<td>-.505**</td>
<td>-.505**</td>
<td>-.362**</td>
<td>-.532**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.003</td>
<td>.000</td>
<td>.021</td>
</tr>
<tr>
<td>LMS_NP</td>
<td>Correlation</td>
<td>-.479**</td>
<td>-.495**</td>
<td>-.368**</td>
<td>-.469**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.003</td>
<td>.000</td>
<td>.038</td>
</tr>
<tr>
<td>LMS_E</td>
<td>Correlation</td>
<td>-.373**</td>
<td>-.410**</td>
<td>-.359**</td>
<td>-.378**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.002</td>
<td>.001</td>
<td>.003</td>
<td>.002</td>
<td>.781</td>
</tr>
</tbody>
</table>

N 65 65 65 65 65

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

**Analysis of Research Question 3**

The last research question explored the degree of the relationship between Mindfulness and Tolerance of Ambiguity. Bivariate analyses were used to correlate the relationship between the two psychometric constructs. The correlations revealed a significantly strong negative relationship between the total mean score of the LMS and the total mean score of the TOA, $r(63) = -.53, \ p < .01$. The mean scores for each of the LMS subscales, compared to the total mean of the TOA, showed the following: Novelty-seeking and TOA, $r(63) = -.48, \ p < .01$; Novelty-producing and TOA, $r(63) = -.53, \ p <$
.01; and Engagement and TOA, \( r(63) = -.32, p < .01 \). It is important to note that higher scores on the Tolerance of Ambiguity scale indicate a greater *intolerance* of ambiguity. Tables 12 and 13 display a descriptive analysis and correlations for each of the scales and subscales. The correlations between variables are presented in Table 14.
Table 12

Descriptive Statistics and Correlations among Responses of Tolerance of Ambiguity Scale, Langer Mindfulness Scale and Subscales, and Resistance to Change and Subscales

<table>
<thead>
<tr>
<th>Scales</th>
<th>LMS_NS</th>
<th>LMS_NP</th>
<th>LMS_E</th>
<th>TOA_Tot</th>
<th>RTC_RS</th>
<th>RTC_ER</th>
<th>RTC_STF</th>
<th>RTC_CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMS_NS</td>
<td>(.77)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_NP</td>
<td>.76**</td>
<td>(.72)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_E</td>
<td>.49**</td>
<td></td>
<td>.51**</td>
<td>(.69)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOA_Tot</td>
<td>-.48**</td>
<td>-.53**</td>
<td>-.32**</td>
<td>(.72)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_RS</td>
<td>-.51**</td>
<td>-.50**</td>
<td>-.41**</td>
<td>.65**</td>
<td>(.85)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_ER</td>
<td>-.36**</td>
<td>-.37**</td>
<td>-.36**</td>
<td>.41**</td>
<td>.71**</td>
<td>(.88)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_STF</td>
<td>-.53**</td>
<td>-.47**</td>
<td>-.38**</td>
<td>.60**</td>
<td>.77**</td>
<td>.80**</td>
<td>(.90)</td>
<td></td>
</tr>
<tr>
<td>RTC_CR</td>
<td>-.28*</td>
<td>-.26*</td>
<td>-.04</td>
<td>.44**</td>
<td>.51**</td>
<td>.45**</td>
<td>.41**</td>
<td>(.86)</td>
</tr>
<tr>
<td># of Items</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>16</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mean</td>
<td>5.98</td>
<td>5.04</td>
<td>5.56</td>
<td>3.76</td>
<td>3.42</td>
<td>2.85</td>
<td>3.67</td>
<td>3.22</td>
</tr>
<tr>
<td>SD</td>
<td>0.71</td>
<td>.94</td>
<td>1.02</td>
<td>.71</td>
<td>1.10</td>
<td>1.04</td>
<td>.73</td>
<td>.81</td>
</tr>
</tbody>
</table>

Note. \( N = 65 \). Cronbach’s alpha reliabilities for each dimension/construct are listed in parentheses on diagonal. Cronbach’s Alpha measures indicated a high internal consistency among the items reflected in each scale.

*p < .05 level (two-tailed)

**p < .01 level (two-tailed)
Table 13

*Descriptive Statistics and Correlations among Responses of the Total Tolerance of Ambiguity Scale, Langer Mindfulness Scale, and Resistance to Change*

<table>
<thead>
<tr>
<th></th>
<th>LMS_Tot Mean</th>
<th>TOA_Tot Mean</th>
<th>RTC_Tot Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMS_MeanTotal</td>
<td>(.86)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOA_Meantotal</td>
<td>-.53**</td>
<td>(.72)</td>
<td></td>
</tr>
<tr>
<td>RTC_Meantotal</td>
<td>-.53**</td>
<td>.62**</td>
<td>(.93)</td>
</tr>
<tr>
<td>Number of items</td>
<td>14</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Mean</td>
<td>5.52</td>
<td>3.76</td>
<td>3.01</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>.75</td>
<td>.71</td>
<td>.91</td>
</tr>
</tbody>
</table>

*Note. N = 65. Cronbach’s alpha reliabilities for each dimension/construct are listed in parentheses on diagonal. No subscales for Tolerance of Ambiguity were referenced in research. Cronbach’s Alpha measures indicated a high internal consistency among the items reflected in each scale.*

*p < .05 level (two-tailed)

**p < .01 level (two-tailed)
Table 14

Descriptive Statistics and Correlations among Responses Related to Operational and Demographic Factors, Tolerance of Ambiguity Scale, Langer Mindfulness Scale and Subscales, and Resistance to Change and Subscales

<table>
<thead>
<tr>
<th></th>
<th>MEAN</th>
<th>SD</th>
<th>AGE</th>
<th>YRS</th>
<th>DRR</th>
<th>TOA_</th>
<th>LMS_</th>
<th>LMS_</th>
<th>LMS_</th>
<th>LMS_</th>
<th>RTC_</th>
<th>RTC_</th>
<th>RTC_</th>
<th>RTC_</th>
<th>RTC_</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>45.71</td>
<td>7.82</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YRSWRK</td>
<td>12.83</td>
<td>9.43</td>
<td>.52</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRRPTS</td>
<td>10.05</td>
<td>21.62</td>
<td>-.18</td>
<td>.01</td>
<td>1.00</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOA_M</td>
<td>3.76</td>
<td>.71</td>
<td>.15</td>
<td>.11</td>
<td>-.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_M</td>
<td>5.52</td>
<td>.75</td>
<td>-.07</td>
<td>-.07</td>
<td>.10</td>
<td>-.53</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_NS</td>
<td>5.98</td>
<td>.71</td>
<td>-.12</td>
<td>-.12</td>
<td>.04</td>
<td>-.48</td>
<td>.87</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_NP</td>
<td>5.04</td>
<td>.94</td>
<td>-.05</td>
<td>.01</td>
<td>.18</td>
<td>-.53</td>
<td>.90</td>
<td>.76</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMS_E</td>
<td>5.56</td>
<td>1.02</td>
<td>-.01</td>
<td>-.10</td>
<td>.01</td>
<td>-.32</td>
<td>.78</td>
<td>.49</td>
<td>.51</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_M</td>
<td>3.22</td>
<td>.81</td>
<td>-.14</td>
<td>-.10</td>
<td>-.08</td>
<td>.62</td>
<td>-.53</td>
<td>-.51</td>
<td>-.48</td>
<td>-.37</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_RS</td>
<td>3.01</td>
<td>.91</td>
<td>-.13</td>
<td>-.07</td>
<td>-.04</td>
<td>.65</td>
<td>-.55</td>
<td>-.51</td>
<td>-.50</td>
<td>-.41</td>
<td>.90</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_ER</td>
<td>3.42</td>
<td>1.10</td>
<td>-.23</td>
<td>-.17</td>
<td>-.07</td>
<td>.41</td>
<td>-.43</td>
<td>-.36</td>
<td>-.37</td>
<td>-.36</td>
<td>.90</td>
<td>.71</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTC_STF</td>
<td>2.85</td>
<td>1.04</td>
<td>-.05</td>
<td>.00</td>
<td>.06</td>
<td>.60</td>
<td>-.54</td>
<td>-.53</td>
<td>-.47</td>
<td>-.38</td>
<td>.91</td>
<td>.77</td>
<td>.80</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>RTC_CR</td>
<td>3.67</td>
<td>.73</td>
<td>-.07</td>
<td>-.08</td>
<td>-.14</td>
<td>.44</td>
<td>-.23</td>
<td>-.28</td>
<td>-.26</td>
<td>-.04</td>
<td>.65</td>
<td>.51</td>
<td>.45</td>
<td>.41</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. N = 65. The correlation coefficient ranges from -1 to +1, with -1 indicating a perfect negative correlation; +1 indicating a perfect positive correlation, and 0 indicating no correlation.
Summary

The current study explored the relationships among the psychometric constructs of the study and resistance to change. The data analysis of the bivariate correlations produced significant results across the total scales, though very few relationships among the subscales were not significant. As a result of the low response rate, statistical analyses were not performed across selected variables that were not evenly distributed. Data analysis with ANOVA exposed no significant difference between years of experience of the four groups of salaried employees. In particular, these findings open the possibility to explore the way which salaried employees’ view change or remain the same over years at the same company. Chapter V will discuss the aforementioned analyses and the meaning of relationships among the chosen constructs.
CHAPTER V
DISCUSSION

Introduction

In this chapter, the research will posit interpretations of the key findings of each research question, summarize the major conclusions, explore implications for practical applications, discuss limitations, and identify directions for future research. The current study sought to determine the strength of the relationships among Mindfulness, Tolerance of Ambiguity, and Resistance to Change. A convenient sample was used to obtain survey data from salaried (exempt and non-exempt) industry employees.

Prior to discussing each research question, it is important to highlight briefly the relationship of Maslow’s hierarchy of needs and the way in which concepts of resistance relate to an individual’s perceptions of change. Through Maslow’s (1987) five stages of individual needs—(a) physiological, (b) safety, (c) social, (d) esteem, and (e) self-actualization, one could perceive change as a threat (Greenberg & Baron, 2008). Maslow (1987) suggested that individuals who are threatened have a tendency to gravitate toward lower levels of the hierarchy. These hypothetical reactions could relate to areas for resistance. In the current study, psychological constructs, mindfulness, and tolerance of ambiguity were explored to discover the relationship of resistance to change. If varying degrees of mindset influence an individual’s sensitivity to change, then one could perceive change as less threatening, offering less resistance. Other factors (demographic and organizational) also may affect individuals’ perceptions of change, though the results in the current study did not reveal overall significant differences.
Discussion of Research Question 1

The first research question examined the relationship of demographic and organizational factors to psychometric scales (Mindfulness and Tolerance of Ambiguity) and their influence on Resistance to Change. As a result of imbalanced distributions, statistical analyses were not performed on all variables reported in the study; however, variables for gender, years at the company, and direct reports were sufficient for correlations. The results of the data analysis for gender indicated no significant difference between male and female employees across all scales and subscales, with the exception of cognitive rigidity. Cognitive rigidity denotes an individual’s tendency to maintain one’s view or, on the other hand, the ease with which individuals change their minds (Oreg, 2003). Additionally, an independent sample $t$-test was conducted across all scores for gender. The sample mean for males of $3.81 (SD = 0.63)$ was significantly different from the sample mean for females of $3.36 (SD = 0.86)$, $t(63) = 2.34$, $p = 0.02$.

The overall gender correlations between the resistances to change variables for the current study were consistent with those reported in previous studies (Oreg, 2003), which indicated no significant difference. Table 7 reflects the results for gender differences, suggesting that, where these constructs are concerned, gender is not an issue. Both males and females are subject to organizational change and their reaction to such is very similar (at least not in statistically significant ways). As a result, organizational leaders are free to focus on the process for leading workers through all types of changes without worrying about different genders’ responses.

A one-way analysis of variance (ANOVA) was used to determine whether there were significant differences between the mean of the four levels—0 to 4 years, 5 to 10
years, 11 to 20 years, and 21 years or more—representing the number of years employed ($p < .05$). No significant difference between the group scores could indicate that change is fluid and continually evolves over time. Regardless of whether employees are newly hired or have worked for more than 21 years, internal and external influences apparently impact each group equitably—at least according to these data. Surprisingly, these findings are in contrast with other studies (Rusbult & Farrell, 1983; Van Dam et al., 2008), which stated that tenure is significantly related to resistance. Their rationale is supported by the notion that longer tenured employees are more invested in their jobs, and changes in the organization could be viewed as threats. Still, this notion holds true, regardless of the number of years an employee works; exposure to constant change is inevitable.

An independent sample $t$-test was conducted to determine whether a significant difference exists between the mean scores for employees with direct reports and those without. No significant difference was found between the two groups across any of the scales or subscales. Table 14 highlights the results among each scale measurement. These results could be interpreted to denote that having direct reports may or may not influence an individual’s level of mindfulness, tolerance of ambiguity, or resistance to change. Specifically addressing tolerance of ambiguity, Hambrick, Finkelstein, and Mooney (2005) offered that individual differences play a key role as to whether employees could engage in cognitive simplification during change events. If an employee inherently scores high or low in mindfulness, is tolerant or intolerant of ambiguity, or accepts or resists change, having direct reports may not matter as a factor of influence. More information is needed to explore whether having direct reports affect
an individual’s psychometric scoring or their ideals regarding resistance to change. However, based on the current study results, neither being male or female, longevity at the company, nor having direct reports influences one’s attitudes toward various aspects of organizational change. If statistically significant differences are to be found among demographic or organizational variables in the current data, answers will have to be sought elsewhere.

**Discussion of Research Question 2**

The second research question sought to explore the strength of the relationship between the psychometric constructs (mindfulness and tolerance of ambiguity) and resistance to change. It is hypothesized that a relationship exists between mindfulness and resistance to change. Piderit (2000) suggested:

> Resistance to change can be reframed in a more integrative way by borrowing the concept of attitude from social psychology. Mindful adaptation of the concept might be required, because the research on attitudes does not always provide clear guidance about which dimensions of attitude are most salient. (p. 786)

In the current study, mindfulness reflected a strong negative relationship to resistance to change, $r(63) = -.53, p < .01$. The results could be interpreted to mean that individuals with high levels of mindfulness are inclined to have less resistance to change. Piderit (2000) stated, “The idea that resistance can be overcome cognitively suggests that it may include a component of negative thoughts about the change” (p. 786). The emphasis on this idea is congruent with Langer’s concept and practice of mindfulness (Langer, 1997; Langer & Moldoveanu, 2000), which maintained that changes in one’s mindset often can drive both mental and behavioral changes. Drawing on the literature, the subjective feel
of mindfulness could combat resistance through the following: (a) a greater sensitivity to one’s environment, (b) more openness to new information, (c) creation of new perceptions, and (d) an enhanced awareness of multiple perspectives (Langer & Moldoveanu, 2000).

Likewise, Oreg’s (2003) previous studies indicated a relationship between resistance to change and tolerance for ambiguity. The current study supported this notion of a strong relationship between the two scales, \( r(63) = .62, p < .01 \). The total mean for Resistance to Change and Tolerance for Ambiguity was positively related, indicating that individuals who scored higher on the Tolerance of Ambiguity scale (or had a greater intolerance of ambiguity) have a stronger tendency to resist change. Higher scores on both scales reflect greater resistance and less tolerance for ambiguity, respectively.

According to Langer (1989, 1997), individuals who are inclined to have higher levels of mindfulness are more open to accept new information by creating new categories for learning and have a heightened awareness of more than one perspective.

Logically, one would make these types of pre-study assumptions. If mindfulness means greater awareness and openness to ideas, then one might expect a mindful employee to be more open to altering environmental conditions and more tolerant of a more fluid workplace. If one is more open to change, then regularity and consistency are less important in both life and work. Likewise, if one is more comfortable with ambiguity (unsettled and less routine conditions) in life and at work, then resistance to change should be less than others at the opposite end of the spectrum.

These results are important for those leading change efforts within organizations in the following ways and for the following reasons. First, Langer and Moldoveanu
(2000) emphasized that, “Those in the business world have been eager to utilize techniques that increase mindfulness in workers and managers” (p. 2). The payoff would likely increase employees’ awareness, creativity, and productivity and produce less burnout. Second, Furnham and Ribchester (1995) defined tolerance of ambiguity as “the way an individual (or group) perceives and processes information about ambiguous situations and stimuli when confronted by an array of unfamiliar, complex, or incongruent clues” (p. 179). Individuals with high tolerance perceive ambiguity as appealing, interesting, and challenging in a positive manner. Together, employees who have high levels of the two primary constructs (mindfulness and tolerance of ambiguity) could conceivably be advantageous to organizations during change processes and could employ others to be less resistance to change.

**Discussion of Research Question 3**

Last, the third research question explored the degree to which the two psychometric constructs were related to one another. Mindfulness and tolerance of ambiguity presented a strong negative relationship, $r(63) = -0.53$, $p < .01$. The results suggested that, as individuals possess higher levels of mindfulness, they are likely to have more tolerance for ambiguity. In previous studies (Furnham & Marks, 2013; Le, Haller, Langer & Courvoisier, 2012) involving elements of mindfulness and tolerance of ambiguity, the results revealed similar findings $r(73) = -0.35$, $p < .01$. Le et al. (2012) publicized that higher levels of mindfulness were related to a greater tolerance of ambiguity. At the opposite end of the spectrum, individuals who possess high levels of mindfulness may not always have high levels of tolerance of ambiguity. Some elements of mindfulness (i.e., novelty seeking, engagement, novelty producing, flexibility, and
awareness) may not necessarily translate to higher levels of elements within tolerance of ambiguity (i.e., novelty, complexity, insolubility), though some areas may overlap. Mentioned earlier, the significant relationship between the two constructs could prove advantageous for individuals in their personal and professional lives. Businesses could take advantage of candidates and employees who possess high levels of these behaviors and could possibly provide them with a competitive advantage in different levels of the organization.

**Implications for Policies and Practice within Organizations**

In the current study, the elements of mindfulness, tolerance of ambiguity, and resistance to change were measured at the individual level for employees in four separate industries. Individuals who self-rated high regarding mindfulness have a tendency to be more open to ideas within their environment; therefore, they are open to change. Additionally, individuals who score higher on the Tolerance of Ambiguity scale indicated a greater *intolerance* for ambiguity and are *more* likely to resist change. The inverse relationship between mindfulness and tolerance of ambiguity may indicate key qualifications that could be used in industries as suggested predictors for employee resistance during change events. Ideally, managers in industries could utilize the two psychometric constructs (mindfulness and tolerance of ambiguity) to aid in determining the change agents prior to implementing significant organizational change. Related, the findings of the current research could be used as a foundation for probing job candidates whose jobs are to implement change. Regardless of whether a person is an individual contributor or manages others, he or she may encapsulate the same ideas toward change, ambiguity, and mindfulness. In the context considered here, change at the individual
level affects each individual differently, though there are persuasions (e.g., behavioral, environmental, personal, psychological, and elements of Maslow’s hierarchy of needs) that may influence one’s view on change.

According to Maurer (2009), resistance will happen; however, steps can be taken to create a smoother transition. Three of these steps would be to (a) make your case, (b) remove the fear, and (c) rebuild relationships. Prior to the first step, it is important to build a compelling case for the need for change and to understand the manner by which the change strategy will be implemented. For future cases of change, facts should be shared with those influenced by the change process. Furthermore, key players could help define roles for assisting in the implementation of change. Although the change process can be daunting and difficult to understand, it is imperative for leaders to create a supportive environment (Zammuto et al., 2000).

According to Judson (1991) and others (Jick, 1991; Kotter, 1995), one could approach resistance to change through several stages: acceptance, indifference, passive resistance, and active resistance. Judson’s (1991) five-phase approach could be used as a model to implement change and to contest resistance. The steps are as follows: (a) analyze and plan for the change, (b) communicate the change, (c) gain acceptance of new behaviors, (d) change from status quo to the desired state, and finally (e) consolidate and institutionalize the new state.

In the current study, it was determined that salaried male and female employees were not significantly different from one another. Employees with direct reports and those without direct reports were not significantly different, signifying that perhaps individuals bear their own ideologies toward change, mindfulness, and ambiguity that
may not be influenced by one’s position and level of responsibility. Hypothetically, if employees who do not have direct reports are promoted to positions in which they are managing others, their view toward change, their level of mindfulness, and their tolerance of ambiguity likely will remain unchanged. Additionally, no significant differences were noted between the group of employees with more years of service than those who had less years of service or were newly hired. The results suggested that employee views regarding resistance to change, mindfulness, and tolerance of ambiguity may remain constant over time. Other variables such as ethnicity, education, and age may have fostered greater differences between groups of salaried employees, offering different outcomes. More evidence is needed to validate these hypotheses based on the sample size, industries, and demographic and organizational factors of the current study.

Contrary to the results in the current study, the researcher believes that there are significant differences between various groups within demographic and organizational settings. Leaders should not underestimate the differences to assume individuals or groups are the same. To overcome these natural phenomena (change and resistance), leaders should explore new ways to cultivate their workforce in order to understand the necessities of change, the benefits, and the means by which the organization will maintain and survive in this ever-changing and competitive environment.

**Limitations of the Study**

Fundamentally, the very nature of designed research is that it contains limitations. No study is completely thorough, nor can it completely explore all aspects of a topic. The current study is no different. First, it is important to acknowledge that the current study was a non-experimental correlational design. Consequently, results from the
correlations do not imply causation; the results determined only whether two or more factors were related and to what extent. Next, measuring psychometrics is inherently subjective. According to Norton (1975), difficulty can occur in measuring the way in which individuals think and act within organizational environments. Variables within the environment, the time of day that the data are collected, the collection method, and inherent or learned biases of individuals may skew the results of the responses.

A convenience sample was utilized to enlist the targeted population of salaried employees located in industries within the proximity of Warren County in the state of Kentucky. A self-administered electronic survey was chosen as the collection method. The unit of analysis for this method rests at the individual level rather than the group level due to the accessibility of the salaried employees. The current study included 65 salaried employees located across four industries: Cup Manufacturing, Personal Care Manufacturing, Construction, and Rubber to Metal Bonding Manufacturing. The results were limited by the number of participants and, therefore, restricted the analysis between groups of individuals, such as age, education, ethnicity, and job-types. Statistical analyses were not performed on the aforementioned groups due to the uneven distributions within the selected population. An additional limitation was the insufficient numbers that were available to analyze all variables.

According to Privitera (2014), low response rates are limited to those individuals who actually complete the survey and may not represent the larger population. Individuals who respond to surveys may be different from those who choose not to respond. Since one cannot collect data from individuals who do not participate, it is
unknown whether the results are a true representation of the larger population of interest. In turn, the low response rate could limit the population validity of the current study. Subsequently, the findings within the current research may not be generalizable to other industries, organizations, or to other levels of salaried employees who are not similar in settings. Caution must be used when making inferences from the results of the current study to industries, even with similar demographic and organizational factors.

**Recommendations for Future Research**

The current study sought to explore the relationships between two psychometric constructs and resistance to change. However, given the limited participation, additional research is needed to investigate the relationships of mindfulness, tolerance of ambiguity, and resistance to change among salaried employees’ ages, educational levels, job types, and ethnicity. Exploring the way in which job types and educational levels related to the aforementioned constructs would offer evidence that demographic and organizational factors are important.

Along the same lines, the current study focused exclusively on salaried employees; one could explore hourly employees utilizing the same instruments to determine whether correlations are similar. It is important to determine whether positions (hourly or salary) make a difference in determining the way that individuals gauge themselves through psychological constructs and resistance. This information would add to the growing body of knowledge that mindfulness and tolerance of ambiguity are important (or unimportant) factors when gauging resistance to change. Likewise, further research is needed to support the findings in the current study by replicating it to include other manufacturing industries within Kentucky or across different states. Interestingly,
one could replicate the current study across organizations outside of manufacturing to include public schools, NGO’s (non-governmental organizations), colleges or universities, churches, or governmental organizations. Furthermore, selecting organizations in different countries (i.e., China, Sweden, Japan, Germany, or Russia) could prove whether psychological differences and resistance to change are unique to human developments or simply cultural. Through a replicated study, one also could evaluate the way in which age, gender, education, and reporting structure could yield different results not indicated the current study.

A longitudinal study could be performed to explore whether, over time, employees change their views regarding change, ambiguity, and mindfulness. For example, do newly hired employees significantly change their view after remaining with a company for five years or more? In another example, do employees who are promoted to positions in which they manage others change their views across this change or do they remain constant? The results may indicate that organizations should pay closer attention and invest time during the hiring process, if implementing change would be an essential function of the employee’s role. Different types of organizations may benefit more readily than others—e.g., technology-based organizations, pharmaceutical industries, and defense industries—as higher levels of mindfulness and greater tolerance of ambiguity could promote creativity and openness to future opportunities. More research is needed to determine whether resistance to change is primarily a human or cultural condition that can be influenced by one’s mindset or factors within the environment.
Summary and Conclusion

Change within organizations is inevitable. That reality will remain constant in organizations—and in one’s personal and professional life (Conner, 1992). The way in which one chooses to cope with change could be a deciding factor of success, failure, or choosing to remain the same—which in organizations tends to equate with failure, particularly if change means simply improving. Resistance is a natural reaction to change and is part of the human psyche. Research and literature support this notion of human nature to resist change and elements related to the process of change (Coch & French, 1948; Conner, 1992; Oreg, 2003; O’Toole, 1995; Zander, 1950). It is possible that a greater understanding of mindfulness and tolerance of ambiguity could increase the possibilities of new ideas to drive lower resistance to change.

The current study explored the two psychometric constructs of mindfulness and tolerance of ambiguity and their relationship to resistance to change within industrial settings. Bivariate correlations yielded both strong positive and negative correlations among the three scales assessed by salaried employees located across different industries. Statistical analyses also were used to investigate further relationships among demographic and operational variables of interest. Results from the literature were generally supported.

The *Langer Mindfulness Scale*, Budner’s *Tolerance of Ambiguity Scale*, and Oreg’s *Resistance to Change* scale were attributed to the foundation of the current study. The results contributed to the practical and theoretical significance of individuals’ responses to change through the measurement of the aforementioned constructs.
To the extent the findings in the current research could be extrapolated to other industries or organizations, a final suggestion should be noted. When considering future directions for research related to probing psychometric constructs and resistance to change, the current study may have relevance across different nationalities and cultures. The elements of change will continue to challenge the fabric of organizations, while the internal and external pressures of rising costs, variations in supply and demand, relentless competition, and developing technology test the resolve for survival. The readiness of individuals within organizations and their ability to challenge perceptions of change and resistance, may determine their competitiveness and, ultimately, their success.
REFERENCES


http://eds.b.ebscohost.com.libsrv.wku.edu/ehost/pdfviewer/pdfviewer?vid=3&sid=6b68f9cf-4cc3-4d1d-809a-ace6ed9f8fa7%40sessionmgr115&hid=105


APPENDIX A: ACCEPTANCE OF CHANGE SURVEY (p. 1 of 9)

INFORMED CONSENT DOCUMENT

PROJECT TITLE: ACCEPTANCE OF CHANGE: EXPLORING THE CORRELATION OF PSYCHOMETRIC CONSTRUCTS TO RESISTANCE

Investigator: Brian Dunican, WKU Educational Leadership Program – Organizational Leadership, Doctoral Candidate, Dept. of Education Leadership, Western Kentucky University, brian.duncan391@topper.wku.edu

Dear participant:

You are being asked to participate in a project conducted through Western Kentucky University. As a doctoral candidate at WKU, you are invited to take part in the assessment of your perception of mindfulness, tolerance of ambiguity and their relationship to resistance to change. The purpose of this survey is to assess how individuals in organizations respond to the chosen psychometric constructs and resistance to change. With your help, we can further our goal of evaluating the correlations to add to the growing body of knowledge on the perceptions of change and resistance in organizations. Since limited research has been conducted on mindfulness and tolerance of ambiguity in comparison to resistance to change, the data could be used as a foundation for future research in organizations and academia.

The potential benefit may assist organizational leaders to identify how the elements of mindfulness and tolerance of ambiguity influence behaviors of resistance to change within their organizations and their employees.

If you agree to participate, we ask you to complete the online survey that will take approximately 15 – 20 minutes. The survey is completely confidential as your identity will not be linked to your survey responses and all data will be reported in the aggregate. Please note that there are no anticipated risks for completing the survey and the probability of harm or discomfort is minuscule. In addition, your participation is entirely voluntary.

Thank you very much for your contribution to research. For more information, please contact Dr. Ric Keaster, Education Administrator at Western Kentucky University – ric.keaster@wku.edu

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Your continued cooperation with this research implies your consent.

---

THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Paul Mooney, Human Protections Administrator
TELEPHONE: (270) 745-2129
Langer Mindfulness Scale
(Personal Outlook)

Instructions: Below are a number of statements that refer to your personal outlook. Please rate the extent to which you agree or disagree with each of these statements. If you are confused by the wording of an item, have no opinion, or neither agree nor disagree, use the "4" or "NEUTRAL" rating.

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like to investigate things.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I generate few novel (original or new) ideas.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I make many novel contributions.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I seldom notice what other people are up to.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I avoid thought provoking conversations.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I am very creative.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I am very curious.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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</table>

Langer Mindfulness Scale
(Personal Outlook)
continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
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<th>4</th>
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<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I try to think of new ways of doing things.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I am rarely aware of changes.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I like to be challenged intellectually.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I find it easy to create new and effective ideas.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I am rarely alert to new developments.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I like to figure out how things work.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I am not an original thinker.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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</tr>
</tbody>
</table>
## ACCEPTANCE OF CHANGE SURVEY (p. 3 of 9)

### Tolerance of Ambiguity Scale

instructions: Below are a number of statements that refer to your level of **tolerance**. Please rate the extent to which you agree or disagree with each of these statements. If you are confused by the wording of an item, have no opinion, or neither agree nor disagree, use the "4" or "neutral" rating.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strongly Disagree</strong></td>
<td><strong>Disagree</strong></td>
<td><strong>Slightly Disagree</strong></td>
<td><strong>Neutral</strong></td>
<td><strong>Slightly Agree</strong></td>
<td><strong>Agree</strong></td>
<td><strong>Strongly Agree</strong></td>
</tr>
<tr>
<td>An expert who doesn’t come up with a definite answer probably doesn’t know much.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I would like to live in a foreign country for a while.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>There is really no such thing as a problem that can’t be solved.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>People who fit their lives to a schedule probably miss most of the joy of living.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>A good job is one where what is to be done and how it is to be done are always clear.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>It is more fun to tackle a complicated problem than to solve a simple one.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### Tolerance of Ambiguity Scale (continued)

<table>
<thead>
<tr>
<th>1</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Strongly Disagree</strong></td>
<td><strong>Disagree</strong></td>
<td><strong>Slightly Disagree</strong></td>
<td><strong>Neutral</strong></td>
<td><strong>Slightly Agree</strong></td>
<td><strong>Agree</strong></td>
<td><strong>Strongly Agree</strong></td>
</tr>
<tr>
<td>Many of our most important decisions are based upon insufficient information.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I like parties where I know most of the people more than ones where all or most of the people are complete strangers.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Teachers and supervisors who hand out vague assignments give one a chance to show initiative and originality.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The sooner we all acquire similar values and ideals the better.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>A good teacher is one who makes you wonder about your way of looking at things.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</table>
Tolerance of Ambiguity Scale
(continued)

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<tr>
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</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>Many of our most important decisions are based upon insufficient information.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I like parties where I know most of the people more than ones where all or most of the people are complete strangers.</td>
<td></td>
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<tr>
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<td></td>
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<td>The sooner we all acquire similar values and ideals the better.</td>
<td></td>
<td></td>
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<tr>
<td>A good teacher is one who makes you wonder about your way of looking at things.</td>
<td></td>
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</tbody>
</table>
Resistance to Change Scale

Listed below are several statements regarding one's general beliefs and attitudes about change. Please indicate the extent to which you agree or disagree with each statement.

Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. Your responses will be kept in absolute confidence.

<table>
<thead>
<tr>
<th>Statement</th>
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<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I generally consider changes to be a negative thing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'll take a routine day over a day full of unexpected events any time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like to do the same old things rather than try new and different ones.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whenever my life forms a stable routine, I look for ways to change it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I'd rather be bored than surprised.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I were to be informed that there's going to be a significant change regarding the way things are done at school, I would probably feel stressed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>When I am informed of a change of plans, I tense up a bit.</td>
<td></td>
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</tbody>
</table>
## Resistance to Change Scale (continued)

<table>
<thead>
<tr>
<th></th>
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<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Inclined to Disagree</td>
<td>Inclined to Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>1. When things don’t go according to plan, it stresses me out.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. If one of my professors changed the grading criteria, it would probably make me feel uncomfortable even if I thought I’d do just as well without having to do extra work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Changing plans seems like a real hassle to me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. Often, I feel a bit uncomfortable even about changes that may potentially improve my life.</td>
<td></td>
<td></td>
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<tr>
<td>5. When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.</td>
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</table>

## Resistance to Change Scale (continued)

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Inclined to Disagree</td>
<td>Inclined to Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>1. I sometimes find myself avoiding changes that I know will be good for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I often change my mind.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I don’t change my mind easily.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Once I’ve come to a conclusion, I’m not likely to change my mind.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. My views are very consistent over time.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
ACCEPTANCE OF CHANGE SURVEY (p. 7 of 9)

What is your age?

Number of years

18  25  31  38  45  52  58  65

What is your gender?

- Male
- Female

What is your race?

- White/Caucasian
- African American
- Hispanic
- Asian
- Native American
- Pacific Islander
- Other
What is the highest level of education you have completed?

- High School / GED
- Some College
- 2-year College Degree
- 4-year College Degree
- Masters Degree or Higher Education

Choose an industry that closely relates to your current job?


How many years have you worked at your current company?

![Number of years slider]

Which of the following descriptions closely matches to your current role?


How many direct reports do you manage?

Number of direct reports

Thank you for participating in the "Acceptance of Change" study. Your contribution to research is greatly appreciated.

You will now be automatically redirected to another website, separate from Qualtrics to enter the drawing for a $50 gift card and for some industries a donation will be made to a local charity on your behalf.
DATE: July 16, 2014

TO: Brian Duncan, Ed.D.
FROM: Western Kentucky University (WKU) IRB

PROJECT TITLE: [617636-1] Acceptance of Change: Exploring the Correlation of Psychometric Constructs to "Resistance to Change"

REFERENCE #: IRB 14-478
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: July 16, 2014

REVIEW TYPE: Exempt from Full Board Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Exempt from Full Board Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by an implied consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or irb@wk.edu. Please include your project title and reference number in all correspondence with this committee.
APPENDIX C: INFORMED CONSENT DOCUMENT

INFORMED CONSENT DOCUMENT

PROJECT TITLE: ACCEPTANCE OF CHANGE: EXPLORING THE CORRELATION OF PSYCHOMETRIC CONSTRUCTS TO “RESISTANCE TO CHANGE”

Investigator: Brian Duncan, WKU Educational Leadership Program – Organizational Leadership, Doctoral Candidate, Dept. of Education Leadership, Western Kentucky University, (270) 605-7192

Dear participant:

You are being asked to participate in a project conducted through Western Kentucky University. As a doctoral candidate at WKU, you are invited to take part in the assessment of your perception of mindfulness, tolerance of ambiguity and their relationship to resistance to change. The purpose of this survey is to assess how individuals in organizations respond to the chosen psychometric constructs and resistance to change. With your help, we can further our goal of evaluating the correlations to add to the growing body of knowledge on the perceptions of change and resistance in organizations. Since limited research has been conducted on mindfulness and tolerance of ambiguity in comparison to resistance to change, the data could be used as a foundation for future research in organizations and academia.

The potential benefit may assist organizational leaders to identify how the elements of mindfulness and tolerance of ambiguity influence behaviors of resistance to change within their organizations and their employees.

If you agree to participate, we ask you to complete the online survey that will take approximately 20 – 25 minutes. The survey is completely confidential as your identity will not be linked to your survey responses and all data will be reported in the aggregate. Please note that there are no anticipated risks for completing the survey and the probability of harm or discomfort is minuscule. In addition, your participation is entirely voluntary.

Thank you very much for your contribution to research. For more information, please contact Dr. Ric Keaster, Education Administrator at Western Kentucky University – ric.keaster@WKU.edu

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Your continued cooperation with this research implies your consent.

This project has been reviewed and approved by the Western Kentucky University Institutional Review Board

Paul Moosey, Human Protections Administrator
TELEPHONE: (270) 745-2129

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Permission to use LMS in Dissertation
Duncan, Brian
Thu 4/24/2014 10:21 AM
To: langer@wjh.harvard.edu <langer@wjh.harvard.edu>
1 attachment
Langer Mindfulness Scale.docx;

Greetings Dr. Ellen Langer,

My name is Brian Duncan and I am a doctoral student in Educational Leadership at Western Kentucky University in Bowling Green, KY. I have been quite impressed with your knowledge and research conducted on Mindfulness. I am interested in using your Langer Mindfulness Scale (LMS) as a dependent variable for my dissertation. My study will examine the relationships among, mindfulness, attention-awareness, and tolerance for ambiguity to "resistance to change" within selected manufacturing sites throughout Kentucky.

I would like to ask for your permission to use the attached Langer Mindfulness Scale. Thank you in advance for your time and patience. Please let me know if there is any additional information needed for your permission.

Kindest regards,
Brian Duncan

Brian Duncan
Western Kentucky University
Organizational Leadership
Cohort VIII
(270) 392-4592

https://pod51030.outlook.com/owa/ 6/1/2014
APPENDIX D: RESPONSE TO USE LANGER MINDFULNESS SCALE

RE: LMS - Dunican, Brian

RE: LMS
Dunican, Brian
Thu 4/24/2014 10:36 AM
To: Natalie Trent

Excellent! Thank you for your assistance. I would be more than happy to send you and your team the data. I am currently in the early stages of my dissertation and I am requesting permission to use the authors' scales (Langer Mindfulness Scale, Mindfulness Attention-Awareness Scale, Tolerance of Ambiguity Scale, and Resistance to Change Scale). Once IRB is approved, I should be able to collect the data in July.

Again, thank you and I look forward to sharing.

Brian Dunican
Western Kentucky University
Organizational Leadership
Cohort VIII
(270) 392-4592

From: Natalie Trent
Sent: Thursday, April 24, 2014 10:24 AM
To: Dunican, Brian
Subject: LMS

Hi Brian,

Here is the LMS 14 version, with 3 factors (flexibility, novelty-seeking, novelty-producing). Once you are done collecting data we will let you know how to score the scale. We also require that you send us your data for further scale validation.

Best
Natalie

Natalie Trent, PhD
Postdoc and Lab Manager
Department of Psychology
Harvard University
William James Hall
33 Kirkland St room 820

(Email address has been hidden)
CURRICULUM VITAE

BRIAN DUNICAN
3520 Nugget Drive, Bowling Green, KY 42104
cell: (270) 996-8038
brian.dunican391@topper.wku.edu

EDUCATION

Doctor of Education, Western Kentucky University, Bowling Green, KY.
Organizational Leadership Strand, May 2015

Master of Arts, Webster University, Greenville, SC.
Major field: Business Management, May 2001

Bachelor of Science, University of North Carolina at Charlotte, Charlotte, NC.
Major field: Psychology, May 1996.

PROFESSIONAL EXPERIENCE

Business Unit Leader, SCA (Svenska Cellulosa Aktiebolaget), Bowling Green, Kentucky.
– 2010 to Present

Plant Manager, A3 (formerly Rio Tinto Alan Composites), Glasgow, Kentucky.
– 2007 to 2010

Medical Power Production Manager, Greatbatch, Inc., Alden, New York.
– 2005 to 2007

Multiple Positions, Covidien (formerly Tyco Healthcare), Various Locations
– 1999 to 2005
  Production Manager, Crystal Lake, Illinois (2003 to 2005)
  Production Superintendent, DeLand, Florida (2001 to 2003)
  Corporate Logistics Planner, Mansfield, Massachusetts (2000 to 2001)
  T.E.D. Manufacturing Supervisor, Seneca, South Carolina (1999 to 2000)

TEACHING EXPERIENCE

Teaching Assistant, Western Kentucky University, Bowling Green, KY
MGT314 Operations Management
– Fall 2013
PROFESSIONAL CERTIFICATIONS

Lean Certification, Rochester Institute of Technology, Rochester, NY
– Summer 2006
Strategy and Innovation Certification, University of Chicago - Graham Business School, Chicago, IL
– Spring 2005

SUMMARY OF QUALIFICATIONS

Operations Leader with dynamic management experience and consistent contributions to increase safety, productivity, quality, performance, and profitability. Strong operations leader with excellent analytical, organizational, and fact-based decision making skills. Innovative problem-solver that successfully restructures inefficiencies to enhance the bottom-line.

Product/Process Experience

- Implantable Medical Devices
- Adult Incontinence Care Vascular Devices
- High-Speed Packaging
- Automation Equipment,
- Plastic Injection Molding
- Commercial Excellence
- Extrusion
- Purchasing

Functional/Management Skills

- Team Building & Team Leadership
- Cost Improvement & Avoidance
- Strategic Sourcing
- Production Planning & Scheduling
- Root Cause Analysis & Team Problem Solving
- Global Logistics, Marketing
- Six Sigma & Lean Initiatives - Kanban, SMED, 5S
- Project Planning & Management
- Quality Control Management (FDA, ISO)
- Acquisitions