The Leader’s Mind Matters: The Effect of Mindful Leadership Development Programs on Leadership Effectiveness, Mindfulness, and Well-Being Among Global Manufacturing Leaders

Lisa M. Critchley Dr.
lisacritchley3@gmail.com

Follow this and additional works at: https://fisherpub.sjfc.edu/education_etd

How has open access to Fisher Digital Publications benefited you?

Recommended Citation


Please note that the Recommended Citation provides general citation information and may not be appropriate for your discipline. To receive help in creating a citation based on your discipline, please visit http://libguides.sjfc.edu/citations.

This document is posted at https://fisherpub.sjfc.edu/education_etd/473 and is brought to you for free and open access by Fisher Digital Publications at St. John Fisher College. For more information, please contact fisherpub@sjfc.edu.
The Leader’s Mind Matters: The Effect of Mindful Leadership Development Programs on Leadership Effectiveness, Mindfulness, and Well-Being Among Global Manufacturing Leaders

Abstract
The purpose of this quasi-experimental quantitative study was to examine the effects of mindful leadership development programs and mindfulness practices on wellbeing, dispositional mindfulness, and leadership effectiveness among 102 global manufacturing leaders facing volatile, uncertain, complex, and ambiguous (VUCA) business environments. Organizations worldwide report challenges to develop leaders to lead effectively and maintain well-being in VUCA environments. Evidence points to the benefits of mindfulness to reduce stress and anxiety, in addition to providing behavioral and cognitive improvements to support leadership effectiveness. Although a few global organizations are offering mindful leadership development programs, there is a gap between industry practices and scholarly research. The results of this study suggest leaders who completed one mindful leadership development program reported greater well-being and received higher annual leadership effectiveness performance appraisal scores (PAS). Leaders who engaged in consistent mindfulness practices also reported higher levels of leadership effectiveness (PAS) as compared to leaders without a mindfulness practice. Implications exist for the bodies of knowledge concerning well-being and leadership effectiveness in VUCA environments, and leadership development programs. Recommendations were provided for future research, culture and strategy, professional practice, and executive leadership. This is the first study (to date) to investigate the effects of mindful leadership development programs for global manufacturing leaders facing VUCA conditions.

Document Type
Dissertation

Degree Name
Doctor of Education (EdD)

Department
Executive Leadership

First Supervisor
Dr. Shannon Cleverley-Thompson

Second Supervisor
Melissa Goodwin, Ph. D.

Subject Categories
Education

This dissertation is available at Fisher Digital Publications: https://fisherpub.sjfc.edu/education_etd/473
The Leader’s Mind Matters: The Effect of Mindful Leadership Development Programs on Leadership Effectiveness, Mindfulness, and Well-Being Among Global Manufacturing Leaders

By

Lisa Critchley

Submitted in partial fulfillment of the requirements for the degree Ed.D. in Executive Leadership

Supervised by
Shannon Cleverley-Thompson, Ed.D.

Committee Member
Melissa Goodwin, Ph. D.

Ralph C. Wilson, Jr. School of Education
St. John Fisher College

December 2020
Dedication

“You’ve always had the power my dear, you just had to learn it for yourself.”

Glinda, the Good Witch of the South

“Mindfulness is a state of being fully present, aware of oneself and other people, and sensitive to one’s reactions to stressful situations. Leaders who are mindful tend to be more effective in understanding and relating to others and motivating them toward shared goals. Hence, they become more effective in leadership roles.”

Bill George, professor of Management Practice, Harvard Business School, former CEO of Medtronic

My father dreamed of a day when one of his six children would become a doctor. Well dad, that day has finally arrived. While I am not the veterinarian you secretly hoped for, I am a doctor, nonetheless. I can only imagine how you would have chatted up complete strangers along your travels to share your good news about your daughter, the doctor. I can see your toothy smile as you beamed proudly. Heaven needed you before I finished. So, know this, I will raise a triumphant Budweiser and look to the heavens in your honor on the day I become Dr. Lisa! Mom, I love you and thank you for being there for me all these years.

On Friday evening May 18, 2018, I walked through the doors of St. John Fisher College to begin my doctorate degree in the Executive Leadership Program. Much like Dorothy in the Wizard of Oz, my epic adventure has required perseverance and enduring belief in myself. This intrepid traveler encountered peril, hardships, and triumphs along the journey, but I was not alone. Along every step of the way, during my trials and tribulations, my family, dear friends, faculty, DEXL classmates, and trusted colleagues
were there. There is a motto in our DEXL executive leadership program, “Trust the process!” I have turned to this many times when I had to let go of what I thought I knew, to leap without knowing where I would land, all the while learning to trust the process as it unfolded along this incredible journey. My doctoral adventure took stamina. I had to make friends with ambiguity and become very comfortable with learning what I needed to do just in time every time, as untold hours, weeks, and months passed by. Now I am at the end of my amazing doctoral adventure, only to begin my travels anew as Dr. Lisa into more unchartered territory.

It is time for this dissertation heroine to recognize the many people who played an integral role in my success. No journey is possible without the support and love of family. I cherish you Walter, my dear Soul Mate and husband. You believed in me at the very moments it was difficult for me to believe in myself. You have been the keeper of the faith for me when the nights were long tucked away from you reading and writing in my office.

My Soul Sister Colleen, my champion and inspiration for the opening quote. Dorothy and the Wizard of Oz have served us well in our lives. Colleen, you taught me long ago that to live my life with passion requires courage. I have used every ounce of courage to face the unknown with confidence and curiosity and continue to live my life with passion. Passion for learning, passion for success, and passion for my dissertation.

To my dear friend and doctoral cheerleader Dr. Alice Chen, a constant source of positive energy and encouragement. How to thank you? Perhaps lunch at White Swan where we so often discussed aspects of my dissertation and how delighted you were to hear about my progress. I loved hearing about your doctoral journey and all of your
adventures as a preeminent mycologist (mushroom) expert in the world. Also, Alice you introduced me to my love of Asian brush painting over 8 years ago. You have been my dedicated teacher and dear friend from the moment we met. Mindfulness and Asian brush painting both espouse letting go and the impermanence of everything. You taught me about wabi sabi - the perfection of imperfection. You taught me how to allow my life energy, my chi, flow from my heart to my brush letting the ink glide with energetic strokes across the crisp rice paper in a beautiful dance of inspiration and vitality. I transferred this way of being to a new medium – my laptop – as I wrote my dissertation: an intricate dance of mind, heart, and courage to learn and persevere. There is so much more to say, my dear friend, thank you for all that you are.

Cohort 13 Scholar Machine – such an appropriate name – and my DEXL family for the past 28 months. Thank you all for your ongoing support and for believing this was possible for each of us. I love you all and look forward to seeing where our postdoctoral journeys take us now. Within our cohort I must recognize and thank my team - Team Heroic: each of you made the journey so memorable. I will miss our many Zoom team meetings, Liz’s penchant for keeping us supplied with tasty gummies, Matt’s sense of humor, and Jenn’s sweet countenance. To my DB Sisters – you know who you are and how much you all mean to me. I love our sisterhood and took comfort in knowing that we had each other’s back with unwavering support and an incredible sense of humor.

To my tribe, there are no words that are truly expansive enough to tell you what you have meant to me during my doctoral journey. Thank you for checking in, offering to make meals, and take care of things when I could not. Thank you for understanding when I could not join you. Most of all, I appreciate your enthusiasm and interest in my
research, as well as my struggles and frustrations, offering support and encouragement. You have been there through thick and thin, the good, the bad, and the not so pretty times – the truest friends who always knew what I needed when I did not or could not think straight – L. D., P. C., S.D., S.H., and your husbands: B. D., M. C., K. D., and J. H. As it was said, *find your tribe and love them hard!*

To the DEXL professors, I am in awe of your sheer talent and knowledge. Your dedication to our learning has been evident every step of the way. Thank you for your dedication and support. I have been transformed by the social justice philosophy that permeated every aspect of my education. My dissertation journey would not be possible if not for each and every one of you.

I feel a special debt of gratitude to Dr. Marie Cianca, my advisor. Thank you for your guiding hand, quick smile, inspiring optimism, and expert advice to make “it” – whatever “it” was just a little bit better. To Betsy, whom I enjoyed working with in my role as the graduate assistant for the program, I will miss our walks around the building and conversations.

To my dissertation chair Dr. Shannon Cleverley-Thompson and committee member Dr. Melissa Goodwin, thank you for your support. Thank you both for continuing to believe in me as this thing blossomed into the behemoth I refer to as my dissertation. I know our work together was challenging at times and there were many obstacles that interfered with my forward momentum. Then by some bit of magic and hard work, it all came together. Dr. Shannon Cleverley-Thompson I will be forever grateful for how much you cared, your dedication to excellence, and your commitment to my learning and professional growth as a scholar, researcher, and writer. You stand as an
exemplary leader with courage, honesty, and integrity. You embody the meaning of Kouzes and Posner’s five practices of exemplary leadership: you model the way, you inspire a shared vision, you challenge the process, you enable others to act, and most of all you know how to encourage the heart!

I wish to thank Dr. Blaine for your unending support and supreme display of patience as I learned R and RStudio over my field experience. A significant debt of gratitude for all that you did to support my dissertation success.

To my children Claudette, James, and Kiera, all of my siblings, nieces, and nephews, near and far, I have finally made it. I appreciate your support and patience as I described with unbridled enthusiasm ad nauseam about mindfulness, leadership, and one study after another. Yes, exciting for certain – at least for me -and you never once stopped me—just listened politely and smiled.

To my colleagues, thank you for engaging with me regarding my dissertation topic. I have appreciated the opportunity to discuss ideas with and for your interest and support. I believe my research regarding the effects of mindful leadership development programs on leadership effectiveness, mindfulness, and well-being is needed more than ever. I look forward to our continued discussions.

A special shout out to Al Cabral, my dear colleague and field experience advisor for two sessions. It was a supreme pleasure to learn from you as we co-created the Mindful Leader short course. I look forward to launching the pilot under your guidance.

Finally, to the organization who made this study possible. I cannot truly express how grateful I am for your generosity and curiosity. Thank you for the support you provided from so many people. Thank you for continuing to support me and this study
when the specter of COVID-19 made your business all the more challenging. Thank you, S. M., M. R., M. F., A. C., H. G., G. H.- S., and G. B. – you are ROCK STARS! I wish to acknowledge all of the leaders who took the time to participate in my survey. You have made this study possible and have helped me contribute significant findings to the scholarly body of knowledge regarding leadership and the effects of mindful leadership development programs on leadership effectiveness, well-being, and mindfulness. While I did not have the opportunity to meet you, I am filled with deep gratitude for you.

The Tinman, Scarecrow, Lion, and Dorothy tell us that for any journey worth pursuing requires heart, knowledge, courage, and most importantly belief in yourself. When you believe you can, you are halfway there. As parting thought, the leader’s mind matters, and to the greatness within each of us…

“It is clearly important to read and add knowledge to be an effective manager and leader. Even more important is the mind we show up with every day. The practice of mindful leadership optimizes the mind for true greatness.”

Matt Tenney, author of The Mindfulness Edge: How to Rewire Your Brain for Leadership and Personal Excellence Without Adding to Your Schedule
Biographical Sketch

Lisa Critchley attended St. John Fisher College and graduated with a Bachelor of Arts degree in communications journalism with a minor in business administration. Critchley attended the Rochester Institute of Technology and graduated with a Master’s in Business Administration with concentrations in international business and human resources. She has dedicated herself to the human resources profession, serving in progressively responsible roles for several companies in the Rochester area, including Hansford Manufacturing, Harris RF Communications, and Bausch & Lomb. Critchley led the human resources function for Nothnagle Realtors, ALSTOM Signaling, and Home Properties. She has earned certifications including the Senior Professional in Human Resources (SPHR), the Senior Certified Professional (CSP) in human resources and professional leadership coaching. Critchley’s community volunteer leadership roles included Rochester Habitat for Humanity and Willow, the Center for Domestic Violence. Critchley completed her doctoral studies in the Ed.D. Program in Executive Leadership in 2020 to achieve her lifelong dream. Critchley’s research focused on the effects of mindful leadership development programs on leadership effectiveness, mindfulness, and well-being among global manufacturing leaders facing volatile, uncertain, complex, and ambiguous environments under the direction of Dissertation Chair Dr. Shannon Cleverley-Thompson and Committee Member Dr. Melissa Goodwin.
Abstract

The purpose of this quasi-experimental quantitative study was to examine the effects of mindful leadership development programs and mindfulness practices on well-being, dispositional mindfulness, and leadership effectiveness among 102 global manufacturing leaders facing volatile, uncertain, complex, and ambiguous (VUCA) business environments. Organizations worldwide report challenges to develop leaders to lead effectively and maintain well-being in VUCA environments. Evidence points to the benefits of mindfulness to reduce stress and anxiety, in addition to providing behavioral and cognitive improvements to support leadership effectiveness. Although a few global organizations are offering mindful leadership development programs, there is a gap between industry practices and scholarly research.

The results of this study suggest leaders who completed one mindful leadership development program reported greater well-being and received higher annual leadership effectiveness performance appraisal scores (PAS). Leaders who engaged in consistent mindfulness practices also reported higher levels of leadership effectiveness (PAS) as compared to leaders without a mindfulness practice. Implications exist for the bodies of knowledge concerning well-being and leadership effectiveness in VUCA environments, and leadership development programs. Recommendations were provided for future research, culture and strategy, professional practice, and executive leadership. This is the first study (to date) to investigate the effects of mindful leadership development programs for global manufacturing leaders facing VUCA conditions.
# Table of Contents

Dedication .......................................................................................................................... iii  
Biographical Sketch........................................................................................................... ix  
Abstract ............................................................................................................................... x  
Table of Contents ............................................................................................................... xi  
List of Tables .................................................................................................................... 14  
List of Figures ................................................................................................................... 15  
Chapter 1: Introduction ....................................................................................................... 1  
  Leadership in VUCA Environments ................................................................................. 3  
  Problem Statement ......................................................................................................... 13  
  Theoretical Rationale ..................................................................................................... 15  
  Statement of Purpose ..................................................................................................... 20  
  Research Questions ........................................................................................................ 20  
  Potential Significance of the Study ................................................................................ 21  
  Definition of Terms ........................................................................................................ 21  
  Chapter Summary .......................................................................................................... 23  
Chapter 2: Review of the Literature .................................................................................. 25  
  Introduction and Purpose ............................................................................................... 25  
  Literature Review .......................................................................................................... 27  
  Workplace Leadership Development Programs ............................................................ 27  
  Stress, Leadership Effectiveness, and Well-Being in VUCA Environments ................ 38
Recommendations........................................................................................................ 108

Conclusion ................................................................................................................... 114

References....................................................................................................................... 119

Appendix A..................................................................................................................... 137

Appendix B..................................................................................................................... 138

Appendix C..................................................................................................................... 139

Appendix D..................................................................................................................... 140

Appendix E..................................................................................................................... 141
# List of Tables

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>Definitions of VUCA Terms, Examples, and Impact on Leaders</td>
<td>4</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Research Participant Demographics</td>
<td>75</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Descriptive Statistics of Total Mindfulness Practice Time and Frequency</td>
<td>78</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Analysis of Covariance Between Groups for Mindful Leadership Development Program Dosage Completed</td>
<td>79</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Descriptive Statistics for Leader Mindfulness, Well-being, and Leadership Effectiveness</td>
<td>81</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>Pearson’s Product Moment Correlation Coefficients Among Variables</td>
<td>83</td>
</tr>
<tr>
<td>Table 4.6</td>
<td>Summary of Hierarchical Multiple Linear Regression Analysis for Variables Predicting Dispositional Mindfulness, Well-being, and Leadership Effectiveness Based on Presence of Mindful Leadership Development Programs</td>
<td>87</td>
</tr>
<tr>
<td>Table 4.7</td>
<td>Summary of Hierarchical Multiple Linear Regression Analysis Predicting Dispositional Mindfulness, Well-being, and Leadership Effectiveness Based on Mindful Leadership Development Program Dosage</td>
<td>88</td>
</tr>
<tr>
<td>Table 4.8</td>
<td>Summary of Hierarchical Multiple Linear Regression Analysis Predicting Dispositional Mindfulness, Well-being, and Leadership Effectiveness Based on Mindfulness Practice Time</td>
<td>91</td>
</tr>
</tbody>
</table>
## List of Figures

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1</td>
<td>The Three Tenets of the Intention, Attention, and Attitude (IAA) Model</td>
<td>17</td>
</tr>
<tr>
<td>Figure 2.1</td>
<td>Conceptual Framework Illustrating of the Potential Relationships Between Mindfulness, Neurological Changes, Emotional Intelligence, Leadership Competency Development, and Leadership Effectiveness</td>
<td>48</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Outlier Boxplot Analysis of Total Mindfulness Practice Time</td>
<td>77</td>
</tr>
</tbody>
</table>
Chapter 1: Introduction

Organizations need leaders who are equipped to face increasingly challenging work in the age of rapid change under volatile, uncertain, complex, and ambiguous (VUCA) business conditions (Brendel et al., 2016). For leaders to be effective in VUCA environments they have to discern complex matters, make decisions quickly with incomplete information, and lead with limited certainty (Baron et al., 2018; Bird et al., 2010). Goleman (1995, 2013) posited that leaders with developed self-awareness and self-regulation have the foundational competencies to think and behave differently while being effective and maintaining well-being in these dynamic environments. VUCA environments can be cognitively, emotionally, and physically challenging as leaders strive to be nimble and respond to constant change and uncertainty occurring on a global scale (Holmberg et al., 2016). Pervasive change and instability can increase workplace stressors and erode emotional, mental, and physical well-being leading to poor health outcomes for leaders which may also negatively impact leadership effectiveness (Blackburn & Epel, 2017; Nielson & Daniels, 2012). Despite the need for competent and overall healthy leaders, organizations worldwide report difficulties to develop leaders who can perform and maintain health in VUCA environments (Bird et al., 2010; Cumberland et al., 2016; Gallup, 2015; IBM, 2010, 2019; King et al., 2016; Petrie, 2011; Weiss & Molinaro, 2010).

Some organizations are infusing mindfulness into leadership development programs to build the competencies leaders need to be effective and to maintain well-

Well-being is a multidimensional construct that is broadly depicted in the literature and includes psychological and physical health (Arnold et al., 2007). Psychological well-being includes three separate distinctions: (a) subjective well-being, referred to as **eudaemonic well-being**, the idea of a well-lived life; (b) **affective well-being**, which refers to the balance between pleasant and unpleasant emotions; and (c) **cognitive well-being**, which concerns life satisfaction, motivation, and behavior (Arnold et al., 2007; Schimmack, et al., 2002). Physical health is often included in the well-being literature and refers to the quality of bodily functioning and the absence of serious illness, disease, or pain (Arnold et al., 2007; Davis, 2019; Linton et al., 2016). However, for the purposes of this study, leader well-being will be defined as psychological health (Keyes, et al., 2002).

Global for-profit organizations such as General Mills, Goldman Sachs, Google, Intel, and Proctor & Gamble are incorporating mindfulness into leadership development programs to develop leaders to thrive and perform in VUCA environments (Brendel et al., 2016; Donaldson-Feilder et al., 2019; Gelles, 2016). Although a few global organizations are forging ahead with mindful leadership development programs, there is a significant gap between industry practices and scholarly research (Donaldson-Feilder et al., 2019; Lomas et al., 2017).
Leadership in VUCA Environments

The U.S. Army War College introduced the VUCA acronym to describe the nature of the world today—complex, highly unpredictable, ambiguous, and not completely knowable (Kinsinger & Walch, 2012).

*Volatile* describes situations of extreme, pervasive, and rapid change, which are driven by the digital revolution and global competition (Horney et al., 2010). The speed of change and the unpredictable nature of the current business landscape create new levels of *uncertainty* such as when the COVID-19 pandemic began or when war breaks out (Codreanu, 2016; World Health Organization, 2020). Bennett and Lemoine (2014) suggested the only thing leaders could point to with surety in the world is that now nothing is readily or completely known in VUCA environments. Not only is there a new level of uncertainty within VUCA environments, but leaders also face an increasing level of *complexity* with rapidly expanding global competition (Bird et al., 2010; Horney et al., 2010). Multilayered interdependencies create significant complexity, due to converging geopolitical, economic, and societal conditions (Baron et al., 2018). Complexity can make it difficult for leaders to understand situations fully and to make sense of such nuanced and manifold global business landscapes in VUCA environments (Lawrence, 2013). Finally, *ambiguous* refers to the lack of clarity about the meaning of a situation, event, interaction, or development that occurs as with emerging disruptive technology (Codreanu, 2016). Table 1.1 provides a definition for each VUCA descriptor, pairs each descriptor to examples, and lists the impact of the VUCA descriptor on leaders.
**Table 1.1**

*Definitions of VUCA Terms, Examples, and Impact on Leaders*

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Examples</th>
<th>Impact on Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatility</td>
<td>Relatively unstable change: information is available, and the situation is understandable, but change is frequent and unpredictable.</td>
<td>Geopolitical, economic, and societal conditions: (e.g., 2008-2009 U.S. financial crisis; H1N1 or COVID-19 pandemic; war in Afghanistan)</td>
<td>Cannot anticipate the nature, speed, or magnitude of change.</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>A lack of knowledge if an event will have meaningful ramifications. Cause and effect are understood, but it is not known if an event will create significant change.</td>
<td>Geopolitical, economic, and societal conditions: (e.g., 9/11 terrorist attacks on the United States; supply chain shortages)</td>
<td>Difficult to forecast and confounds decision making; not enough information.</td>
</tr>
<tr>
<td>Complexity</td>
<td>Many interconnected parts form an elaborate network of information, processes, and procedures; often multiform, convoluted. Difficult to view all parts simultaneously and understand the nature of all interdependencies within the system.</td>
<td>Global competition: (e.g., expanding business operations into new markets outside current business footprint, especially where different geopolitical, economic conditions, and social mores exists)</td>
<td>Difficult to capture all the layered intricacies; leads to confusion and impacts strategy development and execution.</td>
</tr>
<tr>
<td>Ambiguity</td>
<td>A lack of knowledge regarding the application and potential impact of the situation or new technology. Cause and effect are not understood.</td>
<td>Disruptive technologies, digital revolution 24/7 connectivity: (e.g., smart devices, print-to-digital media transition, brick-and-mortar shopping to online commerce, social media)</td>
<td>Cannot rely on what has worked in the past. Impacts ability to conceptualize threats and opportunities.</td>
</tr>
</tbody>
</table>


Petrie (2011) asserted that to lead effectively in an unpredictable and complex world, leaders need cognitive flexibility to think differently along with specific behavioral competencies such as self-awareness and self-regulation (Kennedy et al., 2013).
Leadership effectiveness is often characterized as a leader’s ability to influence and guide followers toward the achievement of shared goals measured by group, team, or organizational performance (Hogan et al., 1994; Hogan & Kaiser, 2005; Stodgill, 1948). Although a leader’s productive use of influence with followers is important, the definition of leadership effectiveness is evolving to include the multidirectional and relational aspects of the leader–follower interaction as a process of social influence (Northouse, 2019; Van Velsor et al., 2010). The social influence process refers to how people alter their behavior to match the demands of the situation which is shaped by interpersonal interactions (McCauley & Van Velsor, 2010). Leaders influence this socially constructed relationship with followers through repeated interaction and discussion (Bushe & Marshak, 2016). A leader’s authentic presence and emotional affect during interactions is thought to have a pronounced effect on followers in the workplace (Goleman, 1995; Judge et al., 2002). For the purposes of this study, leadership effectiveness is defined as a dynamic, interdependent, relational process between the leader and the followers to achieve desired organizational results (Bushe & Marshak, 2016; DeRue & Ashford, 2009; Hogan et al., 1994; Hogan & Kaiser, 2005; Lord & Brown, 2001; Lord et al., 1999; Stodgill, 1948).

Dynamic VUCA environments present a set of challenges that can impede a leader’s ability to influence followers to achieve organizational outcomes. When business conditions change dramatically, but resident leadership competencies remain the same, incongruence between leadership competencies and complex business challenges can arise (Hunter, 2017; Hunter & Chaskalson, 2013; Lawrence, 2013). Incongruence between the business environment and leadership competencies can make it more
difficult for leaders to understand and attend to complex issues that may negatively impact leadership effectiveness. IBM (2010, 2019) reported that the majority of CEOs surveyed agree that leaders are not cognitively and emotionally ready to manage the level of complexity and rapid pace of change in VUCA environments. CEOs report that the lack of leader readiness is compounded by the difficulty organizations face to develop leaders with the competencies to perform in VUCA environments (Hunter, 2017; Hunter & Chaskalson, 2013; IBM, 2010, 2019).

Uhl-Bien and Marion (2009) argued leaders need to develop different competencies to support the cognitive and behavioral changes needed to perform effectively in VUCA environments. For example, when leaders develop greater self-awareness and self-regulation, resultant improved cognitive functioning may include intentional focused attention, sustained concentration, increased working memory capacity, and better problem-solving and decision-making abilities (Brendel et al., 2016; Jha et al., 2010; King & Haar, 2016; Kiyonaga et al., 2010). Additionally, research also points to several behavioral changes as the result of enhanced self-awareness and self-regulation, including the leader’s increased awareness of their impact on others, stronger ability to manage emotions under stress, more attentive to followers’ needs, and effective relationship management skills which may benefit leaders influencing followers in VUCA business conditions (Aikens et al., 2014; Judge et al., 2002; King & Haar, 2016; Mahfouz, 2018; Shapiro et al., 2015; Uhl-Bien & Marion, 2009).

Hunter (2017) and Petrie (2011) suggested that the competencies necessary for leadership effectiveness in VUCA environments are not generally included in workplace leadership development programs. These competencies include the development of
leaders’ self-awareness, self-regulation, and well-being (Aikens et al., 2014; Barrick et al., 2001; Bird et al., 2010; Hunter & Chaskalson, 2013; Judge et al., 2002; King & Haar, 2016; Mahfouz, 2018; Shapiro et al., 2015). There is some evidence that mindful leadership development programs include development of these specific behavioral competencies which may better prepare leaders for VUCA environments than leadership development programs currently used (Baron & Cayer, 2011; Brendel et al., 2016; Hall & Rowland, 2015; Hunter, 2016; Hyland et al., 2015; Lawrence, 2013; Petrie 2011).

**Workplace Leadership Development Programs**

The goal of workplace leadership development programs is to help leaders acquire the collection of skills, knowledge, and abilities, also known as competencies, to become more effective and successful in their organizations (Ashford & DeRue, 2012; Hunter, 2017; Hunter & Chaskalson, 2013). Many of the leadership development programs for leaders existed well before the emergence of VUCA environments (Day, 2001; Day et al., 2014; Day & Dragoni, 2015; Hunter, 2017). Hall and Rowland (2015) suggested that the challenges of leading in these changing and complex VUCA environments require leadership development programs to change and adapt to support business leaders.

Lawrence (2013) reported that some organizations are changing long-standing leadership development programs in response to VUCA environments to improve leadership effectiveness of employees. For example, McDonald’s, a global, fast-food service organization, offers a leadership development program designed to support leaders in VUCA environments (Intagliata & Small, 2005; Lawrence, 2013). Features of the new program include management skills assessment, creation of a personal
development plan, planned experiential learning assignments, and the opportunity to build relationships across the organization (Lawrence, 2013; Ohlott, 2004). McDonald’s leadership development program provides technical skills development and connects leaders across the organization, but it does not focus on increasing leader self-awareness and self-regulation behavioral competencies, which have been identified as important for leadership effectiveness and well-being in VUCA environments (Brendel et al., 2016; Carleton et al., 2018; Chaskalson, 2011; Cumberland et al., 2016; Intagliata & Small, 2005; Petrie, 2011).

Nestlé, a global, retail packaged-goods manufacturer, provides another example of an organizational response to develop leadership effectiveness in a volatile environment using a multifaceted, experiential-learning leadership development program (Ruderman et al., 2014). Nestlé’s model forgoes formal classroom lecture and features experiential learning through hands-on simulation of business challenges. The business simulation focuses on key leadership topics with real-time digital social media feeds to capture leader behaviors with geographically distributed teams (Ruderman et al., 2014). Nestlé’s leadership development program exposes leaders to dynamic VUCA environments in a controlled setting that focuses on developing technical expertise to solve urgent business issues. While the business simulation leadership development program provides leaders many new experiences, it does not focus on developing behavioral competencies of self-awareness, self-regulation, and well-being identified as necessary for leadership effectiveness and leader well-being in VUCA environments (Hall & Rowland, 2015; Iordanoglou, 2018; Kayes, 2002; Lawrence, 2013; McCall, 2010; Petrie, 2011; Ruderman et al., 2014; Stomski & Leisten, 2015).
Despite efforts by some organizations to improve leadership development programs, gaps still exist to develop the competencies identified as necessary for leaders to perform effectively and maintain well-being in VUCA environments (Hunter, 2017). There is clinical evidence that mindfulness helps individuals develop self-awareness, self-regulation, and well-being but there is much less study of mindful leadership development programs in workplace settings (Baer, 2003; Brown & Ryan, 2003; Carmody et al., 2018; Creswell & Lindsay, 2014; Garland et al., 2007; Kabat-Zinn, 1990, 2003; Keng et al., 2011; Khoury et al., 2013). More research is needed to understand if mindful leadership development programs help build the behavioral competencies leaders need to perform effectively and maintain well-being in VUCA environments (Baron & Cayer, 2011; Brendel et al., 2016; Lippincott, 2018; Reb & Atkins, 2015).

**Mindfulness and Mindful Leadership Development Programs**

The origins of modern-day mindfulness date back over 2,500 years ago to Eastern Buddhist spiritual philosophy (Weick & Putnam, 2006). The word mindfulness is derived from the Buddhist word sati, which means intentness, wakefulness, and lucidity of the mind (Davids & Stede, 1959). Awareness, a type of elevated consciousness, is at the heart of mindfulness (Baron & Cayer, 2011, Kabat-Zinn, 1990). The literature defines mindfulness as a way of being intentional about awareness, focusing on the present, in a calm, non-anxious manner, with an attitude of curiosity, objectivity, openness, and acceptance as experience unfolds, moment by moment (Bishop et al., 2004). The attitudes of curiosity, objectivity, and openness engender a *beginner’s mind* where the lack of preconceptions affords many possibilities to understand experience and supports an eagerness to learn (Baron, 2015; Baron & Cayer, 2011; Kabat-Zinn, 1990). A beginner’s
mind perspective may enable leaders in VUCA environments to be open to new information, consider more possibilities, and to rise above fears, emotions, and entrenched, habitual reactions that may interfere with problem-solving, increase stress, and negatively impact leadership effectiveness and leader well-being (Alberts & Hülsheger, 2015; Baron & Cayer, 2011; Brendel et al., 2016).

Mindfulness, as a way of being with an experience, is thought to help leaders develop a broad array of behavioral and cognitive competencies, including self-awareness, self-regulation, overall well-being, focus, concentration, flexibility, and adaptability (Goleman, 2013; Good et al., 2015; Kabat-Zinn, 1990; Lippincott, 2018; Jennings et al., 2011; Mahfouz, 2018; Rauzi, 2013; Wolever et al., 2012). Mindfulness helps develop higher levels of consciousness in leaders that is thought to aid learning and support more complex thinking as self-awareness and self-regulation increase (Baron & Cayer, 2011; Kegan & Lahey, 2009; Weick & Putnam, 2006; Weiss & Molinaro, 2010).

For example, a mindful leader working in a VUCA environment may be more likely to exhibit a calm, focused demeanor under pressure, highly aware and present while managing emotions and keeping stress in check. Whereas a less mindful leader may be exhibit fractured attention, with lower self-awareness and clarity, exhibiting habitual reactivity to VUCA pressure. Stress may erode the leader’s ability to manage effectively in the moment, as well as carry negative consequences for followers (Dickmann & Stanford-Blair, 2009; Hölzel et al., 2011). Leaders facing VUCA environments may benefit from exposure to mindfulness to develop self-awareness and self-regulation.

Kabat-Zinn (1990) posited that mindfulness is an innate human capacity that can be developed with practice. Mindfulness is a consciousness practice that usually involves
some form of instruction and consistent practice to cultivate intentional awareness and
presence in the present moment (Jazaieri & Shapiro, 2017; Jazaieri et al., 2016).

Mindfulness is often associated with meditation, the practice of focusing on a chosen
object of attention such as breath; however, the conceptualization of mindfulness practice
extends beyond meditation or breathing techniques (Dalai, 2001; Lutz et al., 2008).

Mindfulness practice can take a number of different forms or modalities, including
mindful movement or yoga, to noticing, journaling, and other contemplative activities,
which can serve to sharpen present-moment awareness (Kabat-Zinn, 1990; Goldman-
Schuyler et al., 2017; Langer, 1989). In VUCA environments, leaders’ intentional
awareness and openness to experience, with a curious, objective stance, is thought to
support learning, self-awareness, self-regulation, overall well-being, and leadership
effectiveness (Ashford & DeRue, 2012; Creswell & Lindsay, 2014; Donaldson-Feilder et
al., 2019; Langer, 1997). Ruderman and Clerkin (2015) posit that mindfulness may be a
useful approach to develop leaders who work in chaotic and turbulent business
environments when incorporated with conventional leadership development activities
including coaching, mentoring, and experiential learning. Leaders may benefit from
leadership development programs that incorporate mindfulness to develop the
competencies needed for success when facing dynamic VUCA environments (Baron et
al., 2015; Baron & Cayer, 2011; Brendel et al., 2016; Chesley & Wyolson, 2016).

Mindfulness migrated slowly from clinical practice for use in the workplace,
beginning with Mindfulness-Based Stress Reduction (MBSR) programs, in the early
2000s to help employees manage stress and anxiety and promote well-being (Gelles,
2016). Over time, the use of mindfulness in the workplace has broadened to include a
wide variety of mindfulness programs for employees and leaders that are primarily focused on employee stress, anxiety, and well-being (Gelles, 2016; Hyland et al., 2015; Janssen et al., 2018).

Scholarly studies by Alberts and Hülsheger (2015), Aikens et al. (2014), and Good et al. (2015) provide evidence of the health-giving benefits of mindfulness in diverse workplace settings outside of global manufacturing. Some companies, such as Aetna (Wolever et al., 2012), General Mills (Gelles, 2016), Google (Gelles, 2016), Target (Ehrlich, 2017), and the U.S. Army (Jha et al., 2010) have created mindful leadership development programs. Outcomes of research on leader mindfulness and mindful leadership development programs include reduction in stress and anxiety for nurse leaders (Pipe et al., 2009), decreases in reactivity and increased self-regulation for global executive leaders (Lippincott, 2018), improvements in well-being for U.S. K-12 leaders (Mahfouz, 2018), and enhancements in competencies associated with leader effectiveness, including self-awareness, for U.S. leaders in diverse industries (Frizzell et al., 2016). Other outcomes associated with leader mindfulness include increased focus for U.S. leaders in a software company (Chesley & Wylson, 2016); openness to experience, creativity, flexibility, and tolerance for ambiguity for U.S. leaders in diverse businesses, including higher education (Brendel et al., 2016); tolerance for ambiguity with Australian engineering leaders (King & Haar, 2016), and adaptability to change and relating to others for leaders in German technology, education, and chemical industries (Rupprecht et al., 2019).

Reb et al. (2014) pointed to the positive consequences of leader mindfulness on follower well-being, job satisfaction, organizational citizenship behaviors, and job
performance. Reb et al. (2014) posited that mindful leaders are perceived as being more present and attentive to followers’ needs and, as a result, followers report higher engagement, job satisfaction, and they deliver better performance. High leader self-awareness and self-regulation are essential behavioral competencies for leadership effectiveness (Goleman, 2013). Mindful leadership development programs, supported by consistent practice, may offer an efficacious developmental pathway for leaders to cultivate specific competencies that support leadership effectiveness and well-being for dynamic VUCA work environments (Goleman, 2013; Hall & Rowland, 2015; Iordanoglou, 2018; Lawrence, 2013; Lippincott, 2018; Petrie, 2011; Rupprecht et al., 2019; Stomski & Leisten, 2015).

Even with the popularization of mindfulness and mindful leadership development programs for leaders in the workplace, Shapiro et al. (2015) contended there is a significant gap in the mindfulness leadership literature focused on rigorous scientific investigation of the effects of mindfulness on leadership effectiveness. Additionally, there is limited mindfulness leadership research focusing on manufacturing, one of the largest business sectors in the world (Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Lomas et al., 2017). More research is needed to understand the effect of mindful leadership development programs on leaders in for-profit, manufacturing organizations working in VUCA environments (Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Jamieson & Tuckey, 2017; Lomas et al., 2017).

**Problem Statement**

The VUCA business environment requires leaders to adapt to changing business conditions and to perform under significant pressure (Baron & Cayer, 2011). The
demands of VUCA environments require business leaders to expand their competencies to include more highly developed self-awareness and self-regulation, to be open to new experience and information, and to find ways to maintain overall well-being (Hunter, 2017; Hunter & Chaskalson, 2013; Lawrence, 2013; Petrie, 2011). Tension exists between workplace demands to deliver results and the organization’s ability to provide leadership development programs to build the competencies leaders need to perform effectively and maintain well-being in VUCA environments (Hunter, 2017; Hunter & Chaskalson, 2013).

Pervasive, ongoing pressure can increase leader stress and anxiety in VUCA work environments, which may lead to poor psychological health outcomes (Blackburn & Epel, 2017; Creswell & Lindsay, 2014; Nielsen & Daniels, 2012). Unchecked leader stress can spill over to followers and negatively impact leadership effectiveness (Bono & Illes, 2006; Glomb et al., 2011; Tepper, 2000). Research has found that individuals who consistently practice mindfulness develop greater self-awareness, self-regulation, and overall well-being, among other cognitive benefits (Atkins & Styles, 2017; Kabat-Zinn, 1990; King & Haar, 2016; Pipe et al., 2009; Wasylkiw et al., 2015).

Early studies on mindful leadership development programs provide evidence of the salutary benefits of mindfulness on self-awareness, self-regulation, well-being — competencies that are thought to support leadership effectiveness (Glomb et al., 2011; Stedman & Skaar, 2019). A significant volume of research on mindfulness in clinical setting exists; however, there is little research regarding the effects of mindful leadership development programs on leaders (Baer, 2003, 2006, 2008; Donaldson-Feilder et al., 2019; Lomas et al., 2017; Reb & Atkins, 2015). There is limited understanding of the
effects of mindful leadership development programs on leader mindfulness, leadership effectiveness, and well-being—especially in VUCA manufacturing business environments (Dane & Brummel, 2014; Donaldson-Feilder et al, 2019; Good et al., 2015; Reb et al., 2014; Rupprecht et al., 2019; Shapiro et al., 2015).

**Theoretical Rationale**

The key to competency development involves a shift in perspective (Kegan, 1982; Portnow et al., 1998). Leadership development is inherently about changing a leader’s thinking and behavior through a cognitive shift in perspective (Day, 2001; Kouzes & Posner, 2017). Mindfulness awareness, with a receptive, nonjudgmental attitude to experience in the present moment, enables a shift in perspective and brings rise to adaptive cognitive and behavioral flexibility (Shapiro et al., 2006). The mechanism of mindfulness is thought to promote a shift in perspective to develop specific competencies relating to leadership effectiveness and well-being including self-awareness, self-regulation, and openness to new experience (Goleman, 1995; Livermore, 2015; Jazaieri & Shapiro, 2017; Jazaieri et al., 2016; Jha et al., 2010; Shapiro et al., 2006; Wasylkiw et al., 2015).

The theoretical framework for the study will use the intention attention attitude (IAA) model (Shapiro et al., 2006) as a lens through which to understand how the mechanisms of mindfulness in leadership development programs enable leaders to develop self-awareness and self-regulation in VUCA environments. The IAA model (Shapiro et al., 2006) depicts the mechanism of mindfulness as a process to effect positive behavioral and cognitive changes and assumes individuals have the innate ability
to be more aware of experiences that may lead to healthy, adaptive changes in thinking, attitudes, and behaviors.

The IAA model (Shapiro et al., 2006) has three tenets: (a) intention, (b) attention, and (c) attitude (Figure 1.1). The tenets map directly to the operational definition of mindfulness: intention, “on purpose”; attention, “paying attention”; and attitude, “in a particular way,” (Kabat-Zinn, 1990, p. 4), meaning a calm, non-anxious manner, with an attitude of curiosity, objectivity, and open acceptance (Bishop, 2004). Shapiro et al. (2006) suggested that intention, attention, and attitude are nonlinear, interconnected elements of a single, cyclical process that happens simultaneously. The IAA model (Shapiro et al., 2006) characterizes mindfulness as a continuum of development, beginning with cultivation of self-awareness and self-regulation and leading to self-understanding.

The first fundamental tenet of the IAA model is intention (Shapiro et al., 2006). It sets the stage for what is possible and serves as a guide to drive the internal process of growth and change (Carmody et al., 2009). Intention connects to the leader’s aspirations and vision to become an effective and healthy leader and to maintain overall well-being. Intention provides the compelling reason to practice mindfulness. Intentional mindfulness practice underpins leadership competency development of self-awareness and self-regulation: much like the effort needed to master any skill, intention, purpose, development, and practice are necessary to make progress (Goleman, 2013).
Many leadership development programs do not cultivate a leader’s intention or connect intention to learning as essential to achieve the leader’s development vision. Mindfulness may offer leaders facing VUCA environments a strong reason to practice and develop the competencies needed for leadership effectiveness, as well as provide opportunities to develop overall well-being essential to perform and thrive in such volatile conditions (Baron et al., 2018; Goldman-Schuyler et al., 2017; King & Haar, 2016; Rupprecht et al., 2019).

Attention, the second tenet in the IAA model, focuses on keen observation—a way of paying attention in the moment, being fully present (Shapiro et al., 2006). Attention suggests awareness of things as they really are, moment by moment, and includes not only the actual objective experience, but attention also includes the content.
of conscious thought (Jazaieri & Shapiro, 2017). Sustained concentration and focused attention to what arises in one’s consciousness develops and strengthens the capacity to, first, be aware of thoughts, and second, to view experiences more objectively (Shapiro et al., 2006). Consistent practice of objective attention builds leaders’ capacity to manage reflexive reactionary responses to thoughts, moods, and bodily sensations (Goleman, 2013; Kabat-Zinn, 1990). Reduced reactivity may aid leaders in a number of ways to maintain composure, manage reaction to pressure, and keep a clear head when faced with dynamic, VUCA work environments (Hölzel et al., 2011).

The third tenet of the IAA model is **attitude**, and it focuses on the qualities of attending, also known as the attitudinal foundations of mindfulness, which is essential to mindfulness (Kabat-Zinn, 1990; Shapiro et al., 1998; Shapiro et al., 2006). In this context, the attitudes of acceptance, compassion, kindness, trust, patience, compassion, curiosity, and openness to new experiences embody the essence of a mindful attitude (Bishop et al., 2004; Siegel, 2007; Stedman & Skaar, 2019). Adopting such attitudes is pivotal to the foundation for mindfulness practice and to support the developmental process of increasing self-awareness, self-regulation, and self-understanding (Shapiro et al., 2006). When leaders in a VUCA workplace are mindful and accept a full range of experiences, including emotions, thoughts, and bodily sensations, without judgement, a receptive attitude is enables learning and enables more thoughtful responses to experience (Brendel et al., 2016; Hülsheger et al., 2013; Kabat-Zinn, 1990).

The IAA model describes mindfulness through the combination of the three tenets where intentionally attending in the moment, with awareness, and the appropriate attitudinal foundation, leads to a shift in perspective (Carmody & Bayer, 2008; Shapiro et
This shift in perspective is considered the meta-mechanism of action, referred to as *reperceiving*, which is “the ability to dis-identify from the contents of consciousness (i.e., *thoughts*) and view his or her moment-by-moment experience with greater clarity and objectivity” (Shapiro et al., 2006, p. 377). Reperceiving enables leaders to view thoughts as ephemeral, temporary cognitive events that do not require any response or judgement, which are not a reflection of self (Carmody & Bayer, 2008; Garland et al., 2007). When leaders witness experiences objectively, and separate self from their experience, experiences have less sway over the leaders’ automatic reactions, which creates a space for the leaders to consider alternative ways of responding (Goleman, 1995; Lippincott, 2018). The meta-mechanism of reperceiving is an overarching part of the IAA model that enables learning (Carmody, et al., 2009; Frizzell et al., 2016; Mahfouz, 2018; Shapiro et al., 2006). Shapiro et al. (2006) contended that bringing awareness through attention and acceptance, with a receptive, nonjudgmental attitude, to experience in the present moment, enables a shift in perspective and brings rise to adaptive, cognitive, and behavioral flexibility. Developmental psychologists and others have posited that the key to development involves a shift in perspective (Day, 2001; Kegan, 1982; Kegan & Lahey, 2009; Shapiro et al., 2005; Shapiro et al., 2006).

Research suggests mindful leadership development programs, supported by consistent practice, equips leaders to increase self-awareness, reduces habitual reactivity (Hölzel et al., 2011), and enables focus and clarity in VUCA environments for success and well-being (Baron et al., 2018; Baron & Cayer, 2011; Brendel et al., 2016; Frizzell et al., 2016; Goleman, 2013; Lippincott, 2018). For the study, the IAA model of mindfulness (Shapiro et al., 2006) provides the theoretical perspective to understand and
explain the effect of mindful leadership development programs on leaders working in global, VUCA manufacturing environments.

**Statement of Purpose**

The purpose of this study was to examine the effects of mindful leadership development programs and practice on mindfulness, well-being, and leadership effectiveness among global manufacturing leaders working in VUCA environments. Research suggests mindful leadership development programs may enable leaders develop dispositional mindfulness, to be more effective, and maintain well-being while working in VUCA work environments (Baron et al., 2018; King & Haar, 2016; Rupprecht et al., 2019). This study will use a quantitative, quasi-experimental design to explore if a mindful leadership development program and mindfulness practice predicts dispositional mindfulness, leadership effectiveness, and well-being among leaders in a global manufacturing organization.

**Research Questions**

The study focused on the following research questions:

1. What is the effect of mindful leadership development programs on dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?

2. Does mindful leadership development program dosage predict dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?

3. Does mindfulness practice predict well-being, dispositional mindfulness, and leadership effectiveness among global manufacturing leaders?
Potential Significance of the Study

This study added empirical evidence to the nascent research concerning mindfulness leadership research. This study also contributed to a deeper understanding of the effect of mindful leadership development programs on mindfulness, leadership effectiveness, and well-being among global manufacturing leaders working in VUCA environments. The results generated from this study may be instructive to guide future organizational leadership development program efforts for leaders in global manufacturing. Leaders may benefit from evidenced-based mindful leadership development programs to build the competencies they need to be successful and maintain well-being in VUCA environments. Organizations may benefit from empirical evidence to guide leadership development programs and potentially receive greater return on the significant annual investment on leadership development.

Definition of Terms

Scholarly study of leadership and mindfulness is best supported by clarity of the terminology as defined by the literature. To ensure consistent understanding, the following definitions are provided:

*Anxiety* - an emotion characterized by strong feelings of tension, worry, and an irrational and proportionate reactive response to perceived changes without a clear identified cause or threat often accompanied by physiological changes such as increased blood pressure. Anxiety can result from increased stress (Kabat-Zinn, 1990).

*Beginner’s Mind* – having an attitude of openness, eagerness, and lack of preconceptions by experiencing each moment as it unfolds (Kabat-Zinn, 1990).
Horizontal Leadership Development – focuses on collecting knowledge and the technical skills needed for a specific job or role (Loew & O’Leonard, 2012).

Leadership Effectiveness – a dynamic, interdependent, relational process between leaders and their followers to achieve desired organizational results (Bushe & Marshak, 2016; DeRue & Ashford, 2009; Hogan et al., 1994; Stodgill, 1948).

Mindfulness – a fundamental way of being intentional about awareness, focusing on the present, in a calm, non-anxious manner, with an attitude of curiosity and objectivity, with open acceptance as experiences unfold, moment by moment (Bishop et al., 2004)

Psychological Well-Being – is a multidimensional concept with three components: (a) subjective well-being referred to as eudaemonic well-being, the idea of a well-lived life; (b) affective well-being, which refers to the balance between pleasant and unpleasant emotions; and (c) cognitive well-being, which concerns life satisfaction, motivation, and behavior (Arnold et al., 2007; Davis, 2019; Linton et al., 2015). Psychological well-being includes mental and emotional stability, job satisfaction, organizational commitment, and life satisfaction resulting in a state of overall happiness (Arnold et al., 2007; Davis, 2019; Linton et al., 2015).

Reperceiving – a shift in perspective that occurs upon seeing a situation as it unfolds, moment by moment, absent of judgment or emotional arousal (Shapiro et al., 2006).

Self-Awareness – “an individual’s ability to assess others’ evaluations of the self and to incorporate these assessments into one’s self-evaluation” and it involves the capacity to accurately access one’s inner feelings (Atwater & Yammarino, 1992, p. 143).
Stress - is the body's reaction to any change that requires an adjustment or response and may include physical, mental, and emotional responses (Kabat-Zinn, 1990).

VUCA (Volatile, Uncertain, Complex, Ambiguous) – a military acronym used to describe the dynamic nature of the contemporary, global business environment (Bennett & Lemoine, 2014).

Vertical Leadership Development – the evolution of leader attitudes, assumptions, and beliefs with a goal to expand overall thinking skills and awareness, to manage greater complexity, and further emotional and cognitive development (Petrie, 2011, 2014, 2015).

Well-Being – the conceptualizations of psychological well-being, resulting in a state of overall happiness and health (Arnold et al., 2007; Davis, 2019).

Chapter Summary

The nature of VUCA global businesses presents challenges for leaders to perform and maintain well-being and these conditions equally challenge organizations to develop leaders with the competencies and well-being to perform (Petrie, 2011; Schwartz et al., 2014). There are several ways organizations develop leaders to perform in VUCA environments; however, despite these efforts, most leadership development programs are not producing leaders with the competencies they need to perform and maintain well-being (Hunter, 2017; Petrie, 2011). Organizations are experimenting with mindful leadership development programs to develop leaders to lead effectively and maintain well-being in VUCA environments (Gelles, 2016; Roche et al., 2014; Rupprecht et al., 2019; Wasylkiw et al, 2015). Empirical evidence suggests mindfulness helps to develop the self-awareness and self-regulation that support leadership effectiveness and well-being for leaders facing VUCA environments (Baron et al., 2018; Hülsheger et al., 2013;
Roche et al. 2014; Siegel, 2007). This chapter described how mindful leadership development programs can support leader learning through the meta mechanism of reperceiving using the IAA model theoretical rational (Shapiro et al., 2006).

Chapter 2 provides an extensive review of the literature and includes an overview of the leadership development practices and issues, the application of mindfulness in the workplace, and the mindful leadership development programs. Chapter 3 discusses the research methods used in this study to collect and analyze the data. Chapter 4 presents the results and analysis of the data collected for this study. Chapter 5 provides a discussion, interpretation, and implications of the findings of this study, as well as offers recommendations.
Chapter 2: Review of the Literature

Introduction and Purpose

Dynamic VUCA work environments represent a significant shift in business conditions that are typified by constant change, instability, and perplexity (Brendel et al., 2016; Lawrence, 2013; Petrie, 2011). VUCA business environments can increase workplace pressures that can escalate stress and anxiety for leaders. Pervasive stress and anxiety can negatively affect a leader’s psychological well-being, which may lead to poor health outcomes (Nielsen & Daniels, 2012). A leader’s diminished health has the potential to spill over into the workplace which may also negatively impact follower performance and well-being (Kelloway et al., 2005; Rupprecht et al., 2019). Leaders’ poor health may stymy leadership effectiveness and achievement of organizational goals.

Hall and Rowland (2015) attested that leaders need to develop specific competencies, including self-awareness and self-regulation, to lead followers effectively and maintain well-being in dynamic VUCA environments. The leader’s level of self-awareness and self-regulation directly impacts relationship with followers and the leader’s overall effectiveness to achieve organizational goals (Frizzell et al., 2016; Goleman, 1995, 2013; Lippincott, 2018). Surveys of global leaders, including CEOs of manufacturing firms, which represent one of the largest industry sectors in the world, report ongoing challenges to develop leaders for VUCA environments (Gallup, 2015; IBM, 2010, 2019). In like manner, leaders also cite difficulties to adapt and maintain focus and composure under pressure due to the pace of change, uncertainty, and
ambiguity of VUCA environments (Budner, 1962, Castelli, 2016; George, 2014; King & Haar, 2016). Global organizations including manufacturing need leaders who are equipped to successfully perform in dynamic VUCA conditions (Gallup, 2015; Lippincott, 2018). However, despite significant annual investment in leadership development programs, for-profit organizations are not producing leaders with the competencies to perform effectively and to maintain well-being in VUCA environments (IBM, 2010, 2019; Petrie, 2011).

To overcome the challenges with the existing leadership development programs, some organizations are infusing mindfulness to build specific competencies leaders need to be effective and to maintain well-being in VUCA environments (Baron et al., 2018; Gelles, 2016; Mahfouz, 2018; Rupprecht et al., 2019; Wasylkiw et al., 2015). Studies have shown mindfulness reduces leader stress and anxiety, and increases self-awareness and self-regulation, which are thought to contribute to overall leader well-being and leadership effectiveness (Beach et al., 2013; Mahfouz, 2018; Stanley et al., 2011). The use of mindful leadership development programs in for-profit organizations is rising in popularity; however, there is a paucity of scholarly research studying the effects of these programs on leader dispositional mindfulness, leadership effectiveness, and well-being for leaders in the for-profit, global manufacturing workplace (Dane & Brummel, 2014; Donaldson-Feilder et al, 2019; Good et al., 2015; Reb et al., 2014; Rupprecht et al., 2019; Shapiro et al., 2015).

The purpose of this study was to examine the effects of mindful leadership development programs and mindfulness practices on dispositional mindfulness, well-
being, and leadership effectiveness among global manufacturing leaders working in VUCA environments. Therefore, this study will answer the following research questions:

1. What is the effect of mindful leadership development programs on dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?

2. Does mindful leadership development program dosage predict dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?

3. Does mindfulness practice predict well-being, dispositional mindfulness, and leadership effectiveness among global manufacturing leaders?

**Literature Review**

This literature review is divided into four sections and provides a synopsis of the scholarly research examined. The first section discusses the literature on workplace leadership development programs, the impact of VUCA environments on leaders’ well-being, and the factors contributing to poor leadership development program outcomes. The second section focuses on mindfulness workplace programs to relieve stress and anxiety and the migration of mindfulness into leadership development programs. The third section examines mindful leadership development programs as an emerging approach to develop mindfulness, leadership effectiveness, and well-being for VUCA environments. The last section examines the methodology, gaps in the mindful leadership development program literature, and provides recommendations for future research.

**Workplace Leadership Development Programs**
The purpose of workplace leadership development programs is to build the skills, knowledge, and abilities leaders need to become more effective and successful in their organizations (Ashford & DeRue, 2012). Day et al. (2014) viewed leadership development as a dynamic process that involves a multitude of interacting factors and experiences that occur over time. The literature suggests leadership development falls primarily into two different approaches, either horizontal or vertical leadership development programs, depending on the goals guiding such programs (Petri, 2011, 2014, 2015).

**Horizontal Leadership Development**

Horizontal leadership development relies on a skill-based approach to leadership development, and this has been the predominant method to develop leaders since the 1950s (Lowe & O’Leonard, 2012). The goal of horizontal leadership development is to add hard, technical skills, such as accounting, finance, operations, strategy, and marketing expertise, for leaders who need to manage a function or enterprise (Marshak & Grant, 2008). Horizontal leadership development relies primarily on some form of classroom-style training (Day, 2001). Research suggests adults retain only 10% of the information delivered in a classroom learning setting, compared to a 66% retention rate when the leadership development program involves learning by doing (Gurdjian et al., 2014). Skill-based, horizontal leadership development programs, once established, are often a static model, and may not consider organizational strategy, changing business conditions, or the cognitive, and emotional maturity of the leader (Kegan & Lahey, 2009; Petrie, 2011).
Skills-based, horizontal leadership development goes against many years of leadership theory research (Blume et al., 2010; Day et al., 2014; Day & Dragoni, 2015). Leadership is a complicated relational interplay between the leader, the followers, and the social and environmental context, where leadership development involves more than collecting a set of technical skills (Day, 2001). Horizontal leadership development does not focus on soft skills relating to the relational aspects of leadership effectiveness such as self-awareness and self-regulation (Petrie, 2011). The relational aspects of leadership is an important for leaders to master for maximum influence on follower performance and leadership effectiveness (Hogan et al., 1994; Hogan & Kaiser, 2005). Self-awareness and self-regulation are behavioral competencies that are not easily developed by classroom instruction and require feedback, reflection, acceptance, insight, and ongoing practice to master (Goleman, 1995; Hunter, 2017; Kabat-Zinn, 1990).

Horizontal leadership development is often most effective when the problem is clearly defined and proven techniques exist for solving it, unlike the condition’s leaders face in VUCA environments where there is significant ambiguity, volatility, and solutions to problems are not readily known (Petrie, 2011). Relying on horizontal leadership development, alone, will not provide leaders with the overall development needed for mindfulness, leadership effectiveness, and well-being in dynamic VUCA environments (Ashford & DeRue, 2012; Cumberland et al., 2016; Day, 2001; Hunter, 2017; Lawrence, 2013; Petrie, 2011).

*Vertical Leadership Development*

In contrast to horizontal leadership development, vertical leadership development focuses on expanding a leader’s self-awareness to challenge existing beliefs,
assumptions, and values, and to further emotional and cognitive development (Eigel & Kuhntert, 2005; Petrie, 2011, 2014, 2015; Uhl-Bien et al., 2007). The goal of vertical leadership development is to advance a leader’s thinking, being, and doing capabilities in more complex, conscious, and sophisticated ways (Johnson et al., 2008; Kegan & Lahey, 2009). For example, horizontal leadership development is similar to adding software to an existing operating system; whereas vertical leadership development is likened to upgrading to a new computing system. After some time, the existing operating system will likely face limitations and will not run as well, or do as much, as the new computing system with expanded capabilities.

To be effective, a leader’s thinking and emotional capabilities need to match or surpass the complexity of VUCA work environments (Baron & Cayer, 2018; Goleman, 1995, 2013; Kegan & Lahey, 2009). It is thought that VUCA work environments cause stress in leaders due to underdeveloped self-awareness, self-regulation, and thinking capabilities (Davidson & Begley, 2012; Kabat-Zinn, 1990; Petrie, 2011, 2014). Vertical leadership development is designed to broaden a leader’s self-awareness, but it may not specifically focus on stress reduction or leader well-being, which potentially leaves a developmental gap for leaders working in VUCA environments (Frizzell et al., 2016; Lawrence, 2013). Despite the benefits of vertical leadership development, leaders still need support to manage stress and anxiety in VUCA environments (Brendel et al., 2016; Creswell & Lindsay, 2014; Wasylkiw et al., 2015).

Vertical leadership development programs can use experiential-based learning, coaching or mentoring, and reflection to develop a leader’s self-awareness and broaden critical and complex thinking skills (Boud et al., 1985; DeRue et al., 2012; DeRue &
For-profit organizations use experiential learning leadership development programs that are defined as learning that results from a transformation of experience (Kolb, 1984). An example of an experiential learning program can involve placing leaders in a completely different work role, or function, or asking leaders to manage an important new initiative. The ambiguous and complex nature of experiential learning often requires leaders to tackle high-risk, high-visibility challenges, with many variables that are outside the leaders’ control—conditions very similar to VUCA work environments (DeRue & Wellman, 2009). Leaders involved in experiential learning may face a fear of failure and experience increased stress and anxiety as a result of internal pressure to perform. Leaders’ positive psychological well-being is critical for learning and necessary to promote desired behavioral changes in leaders who are engaged in leadership development programs (Mason et al., 2012). Similar to classroom-based leadership development programs, self-regulation is not typically included in experiential learning-based leadership development programs (Hunter, 2017). Since vertical leadership development may not use mindfulness, leaders still need something more to perform successfully and maintain well-being in VUCA environments. Without mechanisms to manage heightened emotional reactions and stress when experiencing new challenges in VUCA workplace environments, leaders may not benefit from exposure to experiential learning-based leadership development programs (DeRue & Wellman, 2009).

Some for-profit organizations rely on coaching or mentoring-based leadership development programs, commonly characterized as a facilitated one-to-one relationships between a less experienced leader and a professional coach or a seasoned leader (Patti et
DeRue and Wellman (2009) found that leaders who are more effective are open to new information are not easily triggered, are more self-aware, and are more receptive to consider the coach or mentor’s observations. Leaders who resist direct feedback from a coach or mentor do not receive the benefits that coaching, or mentoring-based leadership development programs can provide (DeRue & Wellman, 2009).

Coaching and mentoring leadership development programs may be more effective when there is a specific focus to arrest habitual reactivity; however, most coaching programs do not provide this learning content (DeRue & Wellman, 2009). Similarly, leaders facing dynamic VUCA work environments may benefit from greater receptivity to new information to aid problem-solving and manage habitual reactivity under potentially stressful, changing conditions (Hölzel et al., 2011).

Some organizations use reflection-based leadership development programs to develop leaders (Mezirow, 1990). Reflection is defined as a process of intentionally examining experiences and considering preexisting assumptions that may influence beliefs to make new meaning and promote new understanding (Boud et al., 1985; Mezirow, 1990). Reflection offers leaders the opportunity to shift their thinking from habitual, auto-pilot processing, to a more deliberate, objective, and facilitated analysis of experience and behavior (DeRue et al., 2012; Kabat-Zinn, 1990). When leaders develop the capacity to step back, observe, and dissect the experience, learning, behavior change, and improved performance may be possible (DeRue et al., 2012). For example, if a leader learns how to objectively take perspective in a volatile work environment from a nonemotionally charged stance, potential solutions may more readily and thoughtfully be considered than when a leader is overcome with stress, anger, or frustration (Goleman,
Many studies bear out the negative consequences of heightened emotional reactions on cognitive processes and overall well-being (Ashkanasy & Tse, 2000; Goleman 1995, 2013; Marturano, 2014; Roeser et al., 2013; Shonin et al., 2014; Siegel, 2007; Stanley et al., 2011; Tang & Posner, 2013; Wasylkiw et al., 2015). Once reflection-based leadership development programs end, there may not be ongoing practices to reinforce learning and deepen self-awareness, reduce emotional reactivity to promote leadership effectiveness and well-being needed for health and performance in VUCA environments.

**Factors Impacting Effectiveness of Leadership Development Programs**

Global for-profit organizations invest over $366 billion annually on leadership development, yet despite this investment, organizations report leaders are not developing the competencies needed to perform and maintain well-being in VUCA environments (Westfall, 2019). Gurdjian et al. (2014) contended there are four factors that impact the efficacy of leadership development programs: (a) flawed foundational assumptions, (b) context, (c) decoupling reflection from real work, and (d) underestimating leaders’ beliefs.

**Flawed Foundational Assumption**

Challenges with leadership development programs arise from a flawed foundational assumption that the world of work is stable, rather than the constantly changing VUCA environment that many global leaders face (Baron et al., 2018). The work context for leaders and organizations has changed dramatically; however, leadership development programs have changed very little (Gurdjian et al., 2014; Petriglieri et al., 2011). With a flawed assumption regarding the true nature of work and
the workplace, it can be difficult for companies to respond with appropriate leadership development programs to prepare leaders with the competencies and well-being needed for VUCA environments (Baron & Cayer, 2011; Horney et al., 2010; Hunter, 2017; Hunter & Chaskalson, 2013).

**Context**

Leadership development programs may not incorporate organizational and individual leader context (Hunter, 2017). Organizations often design leadership development programs with limited identification and understanding of the real gap that the leadership development program will address (Kellerman, 2012). Prior assessment and identification of the business challenges that define organizational context is necessary to meet the development needs of the leader to perform effectively and maintain psychological health in VUCA environments (Hunter, 2017).

On an individual leader level, leadership development programs may assume a one-size-fits-all context; wherein, the same development needs uniformly apply regardless of the organization culture and business challenges leaders face across the enterprise (Gurdjian et al., 2014). Horizontal leadership development programs typically usher in a group of leaders and assumes each participant possesses the same learning needs: this approach typically does not consider the leader's level of self-awareness or level of emotional maturity or ability to self-regulate (Petrie, 2011). The assumption of one-size-fits-all may contribute to reported poor leadership development program outcomes (Hunter, 2017; IBM, 2010, 2019).
Decoupling Reflection from Real Work

Decoupling reflection from real work occurs when leadership development programs are more focused on delivering content which may not integrate current workplace issues (Petrie, 2011). Reflection on actual work experiences enables leaders to develop new perspectives, deepen self-awareness, understand possible limiting beliefs and assumptions, and increase self-regulation which are thought to support leadership effectiveness (DeRue et al., 2012). Reflection is seen to be an important practice for leaders to consider alternative perspectives, develop deeper self-awareness and self-regulation, and to make positive changes in behavior (Dennison, 2009). In dynamic VUCA work environments, leaders benefit from learning how to gain perspective, manage stress and anxiety appropriately, and to respond, rather than react, to complex business challenges (Petrie, 2011). Reflection, a form of reperceiving, enables leaders to generate expansive thinking and make positive changes in behavior for enhanced leadership effectiveness and overall well-being (DeRue et al., 2012; Goleman, 2013; Shapiro et al., 2006; Shapiro et al., 2015).

Underestimating Leader Beliefs

Underestimating leader beliefs and assumptions is the final factor thought to impact the efficacy of leadership development programs (Gurdjian et al., 2014; Petrie, 2011). Changing leadership behavior relies on the ability of leaders to identify thoughts, feelings, assumptions, and beliefs that may be impediments to new ways of thinking and behaving (Ashford & DeRue, 2012; Baron, 2015; Horney et al., 2010; Kabat-Zinn, 2003). Self-awareness, self-regulation, curiosity, and openness to new information enables leaders to consider new perspectives, which is thought to be a precondition of behavioral
change (Gurdjian et al., 2014). However, leadership development programs rarely discuss or consider a leader’s assumptions and beliefs (Petrie, 2011). Failure to understand leaders’ beliefs, values, and assumptions may negatively impact the efficacy of leadership development programs in cases where leaders do not believe development is necessary or will not provide a benefit.

Flawed foundational assumptions, individual and organizational context, decoupling reflection from real work, and underestimating leaders’ beliefs are four factors that are perceived to contribute to the lack of success organizations report with leadership development programs (Gurdjian et al., 2014; Hunter, 2017; Lawrence, 2013; Petrie, 2011, 2014, 2015). Moreover, horizontal leadership development approaches fail to provide the opportunities leaders need to expand thinking and challenge beliefs and assumptions that may limit development and also contribute to the lack of success organizations report to develop leaders (Petrie, 2011). Even vertical leadership development programs, while an improvement over horizontal leadership development programs, still do not focus on helping leaders develop self-regulation to alleviate and manage stress for leadership effectiveness and psychological well-being in VUCA environments (Lawrence, 2013). There is a growing call by researchers to incorporate mindfulness into leadership development programs to overcome the factors thought to impede leadership development (Chaskalson & Hadley, 2015; Hunter 2017; Hunter & Chaskalson, 2013; Hyland et al., 2015; Jha et al., 2010; Mahfouz, 2018; Rupprecht et al., 2019; Stanley et al., 2011; Wasylkiw et al., 2015).
Stress, Leadership Effectiveness, and Well-Being in VUCA Environments

Companies spend about $300 billion annually for healthcare and missed workdays as a result of workplace stress (Hassard et al., 2018; Smith, 2016). Petrie (2011) argued that the VUCA work environment has brought dramatic changes in global business conditions that may negatively impact leader performance and health. Leaders facing VUCA work environments may become overwhelmed with the constant pace of change and pervasive lack of stability. Leader stress can undermine performance and interfere with cognitive functioning including awareness, concentration, problem-solving, decision-making, and may negatively impact interactions with followers (Keng et al., 2011). Followers typically look to leaders for support, especially in VUCA business conditions, which adds another source of pressure on leaders (Creswell & Lindsay, 2014). Stress and anxiety can negatively impact a leader’s performance, which may spillover to followers in the workplace and amplify the leader’s feelings of stress (Bono & Illes, 2006; Glomb et al., 2011; Tepper, 2000). Evidence suggests mindfulness can help leaders who need to develop self-awareness and self-regulation to better manage stress due to the demands of VUCA environments; however, more research is needed to explore the effects of mindfulness on leaders facing VUCA environments (Aikens et al., 2014; Brendel et al., 2015; Chaskalson, 2011; Creswell & Lindsay, 2014; Frizzell et al., 2016; Kabat-Zinn, 1990).

The use of mindfulness in the United States first began in the late 70s with the introduction of MBSR training programs as a treatment in clinical settings to help patients manage stress and pain resulting from chronic illness (Baer, 2003; Kabat-Zinn, 1990). Over time, mindfulness migrated into healthcare organizations where the MBSR
program was adapted for use with psychologically healthy adults to reduce workplace stress and anxiety (Gelles, 2016). The pioneering research of Shapiro et al. (1998) represents one of the first workplace mindfulness studies to explore the effect of mindfulness on stress and anxiety with psychologically healthy participants. By the late 2000s, much of the scholarly workplace mindfulness research completed focused on employee stress and well-being; however, studies slowly broadened to include more diverse workplace sectors beyond healthcare including the education, military, technology, and insurance sectors (Hülsheger, 2013, 2015; Jamieson & Tuckey, 2017; Leroy, 2013; Michel et al., 2014; Shonin et al., 2014; Walach et al., 2007; Wolever et al., 2012).

**Stress, Leadership Effectiveness, and Well-Being in VUCA Environments**

In VUCA environments, leader stress can undermine work performance and interfere with cognitive functioning, including awareness, concentration, problem-solving, and decision-making and can negatively impact leader well-being (Keng et al., 2011). Epstein (1999) argues healthcare leaders in dynamic workplace settings also experience stress that impacts leader well-being. Several studies examined the effects of mindfulness on healthcare leaders facing demanding VUCA workplace conditions where mindfulness played a role to alleviate stress (Beach et al., 2013; Pipe et al., 2009; Wasylkiw et al., 2015).

Beach et al. (2013) studied the effects of self-reported mindfulness on clinician leader stress and quality of patient care in four large HIV clinics in the United States. Beach et al. (2013) found that clinician leaders with high, self-reported levels of mindfulness, in the absence of mindfulness training, experienced lower stress and
exhibited more patient-centered patterns of communication than low mindfulness
clinician leaders. Additionally, patients’ positive evaluations of care and overall
satisfaction corresponded to high levels of self-reported clinician leader mindfulness
(Beach et al., 2013). Relying on a leader’s inherent or natural mindfulness may not be
enough to combat the effects of workplace stress for leaders working in VUCA
environments (Brendel et al., 2016; Pipe et al., 2009; Rupprecht et al., 2019; Shapiro et
al., 2015; Stanley et al., 2011).

Research suggests workplace mindfulness programs help alleviate the perception
of stress for leaders in healthcare facing similar complex, fast changing, and volatile
conditions as leaders in VUCA environments (Pipe et al., 2009; Wasylkiw et al., 2015).
Two studies explored the impact of workplace mindfulness programs on healthcare
leader stress and well-being in dynamic and demanding settings (Pipe et al., 2009;
Wasylkiw et al., 2015). Pipe et al. (2009) studied the effects of mindfulness using a
modified 4-week MBSR training program that showed statistically significant
improvements in nurse leaders’ self-reported stress symptoms and lower symptom
distress measured post-program, compared to the control group that did not receive
MBSR training. Whereas Wasylkiw et al. (2015) studied the impact of an intensive 3-day
mindfulness awareness program (MAP) weekend retreat on healthcare middle managers.
The intervention or training group results, compared to the control group, revealed that
the MAP training produced higher levels of momentary awareness and lower perceived
stress in leaders (Wasylkiw et al., 2015). Additionally, in debrief interviews, intervention
group leaders reported changes in self-awareness and focus that translated to more
attentive interactions at work, which was evidenced by deep listening, curiosity to understand, and openness to consider alternatives (Wasylkiw et al., 2015).

Beach et al. (2013), Pipe et al. (2009), and Wasylkiw et al. (2015) add empirical strength regarding the beneficial effect of mindfulness—either inherent or as a result of a mindfulness program—to reduce leader stress and to improve leader well-being in changing, high-stakes workplace settings. It is not known, though, if these findings can be generalized to leaders in manufacturing facing similar urgency to perform in dynamic VUCA work environments where comparable workplace stress may interfere with leader well-being and negatively affect performance (Baron et al., 2018; Creswell & Lindsay, 2014; Gelles, 2016). More research is needed to explore the effects of mindfulness on leader stress and well-being in VUCA for leaders in global manufacturing (Aikens et al., 2014; Baron et al., 2018; Hyland et al., 2015).

Similar to the healthcare field, leaders in education and in the military also report the deleterious effects of pervasive, daily workplace stress on emotional, social, and attentional competencies that comprise psychological well-being (Bolton et al., 2001; Jha et al., 2010; Roeser et al., 2013; Stanley et al., 2011; Taylor et al., 2016). Scholarly study of leaders in education and the military reveals various types of mindfulness training programs decreased leader self-reported stress, and, in like manner, increased leader self-awareness and self-regulation (Jha et al., 2010; Roeser et al., 2013; Stanley et al., 2011; Taylor et al., 2016). In one study, mindfulness training was associated with improvements in working memory capacity and positive affective experience for leaders in the military experiencing ongoing, high-stress situations (Jha et al., 2010).
Across studies set in VUCA-type workplace environments, empirical evidence demonstrates the benefits of mindfulness to reduce leader stress and improve well-being (Aikens et al., 2014; Jha et al., 2010; Pipe et al., 2009; Roeser et al., 2013; Stanley et al., 2011). Additional ancillary benefits were reported that suggest mindfulness also impacts an array of characteristics associated with leadership effectiveness, including increased self-awareness, self-regulation, presence, working memory capacity, openness to experience, curiosity, focus and concentration, and improved workplace performance (Beach et al., 2013; Jha et al., 2010; Kiyonaga et al., 2010; Pipe et al., 2009; Roeser et al., 2013; Wasylkiw et al., 2015). Leaders may also benefit from the emotional, well-being, and cognitive outcomes associated with mindfulness development to thrive and perform in dynamic VUCA work environments.

**Mindful Leadership Development Programs in the Workplace**

Well-known companies are starting to offer mindful leadership development programs, such as Apple, AT&T, General Electric, Goldman Sachs, IBM, Mayo Clinic, Pfizer, Proctor & Gamble, Starbucks, and the U.S. Air Force. There are two high-profile workplace mindfulness programs that have received much media coverage: General Mills, “Finding the Space to Lead” (Marturano, 2014) and Google’s “Search Inside Yourself” (Tan, 2012) (Brendel et al., 2016; Gelles, 2016). Mindfulness workplace conferences have also been offered over the past few years featuring organizations that have implemented some form of mindfulness program at work; however, such conferences are not necessarily grounded by empirical study (Mindful Leader, 2019). A widening gap continues to grow between scholarly research and the for-profit industry’s use of mindfulness in the workplace to develop leadership competencies and well-being.
for VUCA environments (Lippincott, 2018). While scholarly interests are starting to focus more attention on mindful leadership development programs, this area of research is quite immature (Baron, 2015; Baron et al., 2018; King & Haar, 2016).

Frizzell et al. (2016) hypothesized that a developmental chasm exists between the readiness of leaders and the demands of VUCA work environments which leads to missed business opportunities and an overall decline in leadership performance. Several studies examined the effect of mindful leadership development programs in education, healthcare, manufacturing, and other diverse work settings (Baron, 2015; Brendel et al., 2016; Mahfouz, 2018; Rupprecht et al., 2019; Wasylkiw et al., 2015). Unlike the stress-and anxiety-focused mindfulness leader workplace programs, the mindful leadership development programs focused on building leader self-awareness and self-regulation (Baron et al., 2018; Frizzell et al., 2016) in addition to developing a wide variety of other behavioral and cognitive competencies including resilience and flexibility (Baron et al., 2018; Brendel et al., 2016; Mahfouz, 2018), social-emotional competence (Mahfouz, 2018), and tolerance for ambiguity (Aikens et al., 2014; Baron, 2015; Brendel et al., 2016). Leadership flexibility, tolerance for ambiguity, social-emotional competence, and resilience may enable leaders to make better decisions and manage the complexities of the VUCA workplace while also helping followers reduce feelings of stress and anxiety (Baron et al., 2018).

Two studies hypothesized that leader mindfulness contributes to the development of behavioral flexibility, defined as the capacity to stop, and think before taking any action (Baron et al., 2018; Chesley & Wyolson, 2016). Behavioral flexibility is thought to enable leaders to effectively manage ambiguity and uncertainty in highly complex and
changing situations without a deleterious effect on leader well-being (Baron et al., 2018; Chesley & Wylson, 2016).

Baron et al. (2018) studied the relationship between leader mindfulness and behavioral flexibility in leaders. Survey data collected from over 150 Canadian leaders in various leadership roles, including senior executives, provided evidence that mindfulness is positively associated with a higher overall score for leadership flexibility and mindfulness (Baron et al., 2018). Baron et al. (2018) suggested that incorporating mindfulness into leadership development programs may help leaders to be more flexible and able to adapt to changing workplace circumstances typical for VUCA environments.

In another example, Chesley and Wylson (2016) examined how leaders in a California software company used mindfulness to manage ambiguity during transformational change. The change leaders with high self-reported levels of mindfulness used self-awareness and self-care to promote greater flexibility and adaptability when managing significant ambiguous business situations (Chesley & Wylson, 2016). Leaders in that study who reported high degrees of mindfulness also reported acceptance of ambiguity, which they perceived as a normal part of a leader’s workday. Additionally, as leaders adopted a stance of intentional acceptance for the reality of the situation, perceptions of anxiety and stress diminished and perceptions of relationships with followers improved (Chesley & Wylson, 2016). A mindful way of thinking and being at work helped leaders develop self-awareness and self-regulation that supported leader flexibility and leadership effectiveness in ambiguous and dynamic workplace environments (Baron et al., 2018; Chesley & Wylson, 2016).
Both Baron et al. (2018) and Chesley and Wylson’s (2016) research advances mindfulness as a mechanism where reperceiving experience may increase self-regulation skills and tolerance for ambiguity, while also enhancing leaders’ relationships with others and thereby improving overall leadership effectiveness in VUCA environments. The scholarly focus on the effects of mindfulness on leader flexibility and adaptability contributes to the literature; however, these studies did not explore whether mindful leadership development programs would produce similar results (Baron et al., 2018; Chesley & Wylson, 2016).

Roche et al. (2014) examined the direct effect of leader heightened awareness on mental well-being and follower well-being, using four leadership levels with the largest sample size of all of the studies included in this review ($N = 697$). Roche et al. (2014) measured mindfulness, well-being, burnout, psychological capital, and anxiety and depression across leader samples, from entry-level supervisor to executive leader, and included entrepreneurs working in VUCA conditions. The study found evidence that leaders develop healthy psychological well-being through mindfulness and as a result are more present and available to support followers’ needs at work (Roche et al., 2014; Siegel, 2007). Followers who experience leaders who are more present and aware are apt to perform and strive to meet work expectations, thereby increasing the leader’s effectiveness (Goleman, 2013; Hülsheger et al., 2013; Hyland et al., 2015). Roche et al. (2014) points to the possibility that regardless of leadership level, mindfulness has the potential to improve well-being and thereby improve leadership effectiveness. While the Roche et al. (2014) study was sufficiently broad from a leadership level and included
diverse industries, it is not clear how many leaders, if any, represented the manufacturing sector.

Manufacturing represents a significant business sector in the global economy, yet there is relatively little research on the impact of mindfulness in manufacturing environments (Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Jamieson & Tuckey, 2017; Lomas et al., 2017). Although there are four mindfulness-related studies that concern the manufacturing sector, two studies (Huang et al., 2015; Jay et al., 2014) focus on employee stress. One study examined the effect of transcendental meditation on leaders but did not focus on the construct of mindfulness (Carlisle, 2005). As a result, three of the four studies are outside the scope of this review (Carlisle, 2005; Huang et al., 2015; Jay et al., 2014).

Aikens et al. (2014) is the only study that explored the impact of a mindfulness development program on employee and leader stress, well-being, resiliency, work engagement, and vigor in a U.S. manufacturing setting (Shirom, 2003: 2011). While Aikens et al. (2014) included some leaders, it was not solely focused on leadership development. There is limited study of mindfulness and mindful leadership development programs on leaders in manufacturing organizations (Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Jamieson & Tuckey, 2017; Lomas et al., 2017).

**Mindfulness and Practice**

Several studies on mindfulness programs and mindful leadership development programs include some form of mindfulness practice as either a requirement or expectation for leaders (Frizzell et al., 2016; Goldman-Schuyler et al., 2017; Jha et al., 2010; Lippincott, 2018; Mahfouz, 2018; Roeser et al., 2013; Stanley et al., 2011).
Extensive research on acquiring expertise suggests that mastery of any skill or competency occurs over time, and it is generally understood to take 10 years or 10,000 hours of diligent practice (Ericcson & Charness, 1994). Five studies reported recurring themes that leaders perceived as outcomes from consistent mindfulness practice that positively influenced leadership effectiveness including improvements in: (a) self-awareness; (b) self-regulation; (c) relationship management; (d) reduced stress and anxiety; and e) increased empathy, compassion, and self-care (Frizzell et al., 2016; Goldman-Schuyler, 2017; Mahfouz, 2018; Lippincott, 2018; Rupprecht at al., 2019). Kabat-Zinn (1990) equated the necessity of a consistent mindfulness practice to an ongoing exercise regime where regular practice is needed to develop and maintain healthy psychological well-being. Day (2001) concurred that leadership development is a process that occurs over a period of time and requires ongoing practice.

Three studies explored the effect of existing mindfulness practice on leadership development and effectiveness among global leaders (Frizzell et al., 2016; Goldman-Schuyler et al., 2017; Lippincott, 2018). As a result of increased self-awareness, leaders reported success in transforming organizational culture, positive improvement in emotional intelligence, better leadership performance at work, minimized psychological and physical impairment due to stress, and overall increased leadership effectiveness leaders (Frizzell et al., 2016; Goldman-Schuyler et al., 2017; Lippincott, 2018). Additional findings from these three studies also included reports of enhanced cognitive abilities in a multitude of areas, such as decision making, problem-solving, attention and focus, and decreases in reactivity under pressure (Goleman, 2013; Kabat-Zinn, 2003; Lippincott, 2018; Long, 2018). These findings contribute additional support for the
relationship between consistent mindfulness practice and global leaders’ perceptions of the development of self-awareness, self-regulation, and improvements in several areas of cognitive functioning (Frizzell et al., 2016; Goldman-Schuyler et al., 2017; Kabat-Zinn, 2003; Lippincott, 2018). While all the study participants in these three studies perceived that mindfulness had a positive impact on their leadership, due to the qualitative nature of the study, the results do not provide direct evidence that a relationship exists between mindfulness and improvements in workplace performance (Frizzell et al., 2016; Goldman-Schuyler et al., 2017; Lippincott, 2018). The perceived beneficial outcomes of mindfulness practice, as described by global leaders, may also be helpful to global manufacturing leaders facing VUCA environments; however, more research is needed to explore the possible relationships (Baron et al., 2018; Brendel et al., 2016; Rupprecht et al., 2019). Lippincott (2018) called for more quantitative research to further understand the effect of mindfulness on leadership effectiveness and well-being.

Although numerous studies identified the importance of mindfulness practice in a variety of different modalities to effect positive outcomes for leaders, little analytic attention has been paid to the effect of practice on leadership effectiveness beyond leader perceptions (Frizzell et al., 2016; Goldman-Schuyler, 2017; Lippincott, 2018; Mahfouz, 2018; Rupprecht et al., 2019; Stanley et al., 2011). This study builds on previous research and will contribute further evidence regarding the predictive strength of mindfulness practice on leadership effectiveness, dispositional mindfulness, and well-being.

**Mechanism of Mindfulness**

There is little scientific understanding of the mechanisms of mindfulness to influence leadership effectiveness and well-being in the literature, despite the popularity
of mindfulness (Lippincott, 2018; Lomas et al., 2017). Across many studies there is limited discussion of the mechanism of mindfulness and how mindfulness and mindful leadership programs result in positive outcomes in behavioral competencies, well-being, and other cognitive benefits (Good et al., 2015; Hülsheger et al., 2013; Lomas et al., 2017). Lippincott (2018) offered a conceptual framework (Figure 2.1) that draws on the literature from many disciplines, including psychology, neurology, physiology, leadership, and behavioral science, to describe how the mechanism of mindfulness may support leadership development. Lippincott’s (2018) conceptual framework illustrates the possible relationship between mindfulness, neurological changes, emotional intelligence, leadership competency development, and leadership effectiveness. Lippincott (2018) posited that mindfulness training and consistent practice brings rise to neurological changes in several areas of the brain that, in turn, enables behavioral competency development necessary for leadership effectiveness.

**Figure 2.1**

*Conceptual Framework Illustrating the Potential Relationships Between Mindfulness, Neurological Changes, Emotional Intelligence, Leadership Competency Development, and Leadership Effectiveness*
Methodological Review

From a methodological perspective, out of the 23 ($N = 23$) studies included in the literature review, there are 12 ($n = 12$) quantitative studies, compared to five ($n = 5$) qualitative studies and six ($n = 6$) mixed methods studies. Within the 12 ($N = 12$) quantitative studies, there were four ($n = 4$) randomized controlled trial studies (Aikens et al., 2014; Pipe et al., 2009; Roeser et al., 2013; Taylor et al., 2016) and three ($n = 3$) quasi-experimental studies (Baron et al., 2018; Brendel et al., 2016; DeRue et al., 2012). The quantitative and mixed methods studies used a broad array of survey instruments to measure a wide range of variables. Leader mindfulness was measured by two validated and reliable instruments: The Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003) and the Five Facet Mindfulness Questionnaire (FFMQ) (Baer et al., 2006; 2008; Bohlmeijer et al., 2011), with MAAS used most frequently in the literature (Baer et al., 2006; Brown & Ryan, 2003). Some studies use several different measures for the same variable (Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Jamieson & Tuckey, 2017). For example, a wide variety of different tools were used to measure well-being, which has also included stress as a component of well-being. The Positive Affect and Negative Affect Schedule (PANAS) (Watson et al., 1998) was the instrument used most
commonly in the literature (Brendel et al., 2016; Pipe et al., 2009; Jha et al., 2010; Stanley et al., 2011; Roche et al., 2014; Roeser et al., 2013; Wasylkiw et al., 2015).

Leadership effectiveness was measured in a variety of ways, but primarily through the use of self-reported instruments to assess authentic leadership, leadership flexibility, tolerance for ambiguity, and psychological capital (Aikens et al., 2014; Baron et al., 2018; Brendel et al., 2018; Chesley & Wylson, 2016; Frizzell et al., 2016; Goldman-Schuyler et al., 2017; King & Haar, 2016; Lippincott, 2018; Mahfouz, 2018; Roche et al., 2014; Rupprecht et al., 2019; Wasylkiw et al., 2015). Only three studies used some form of third party-provided performance data in addition to leader self-reported measures to assess leadership effectiveness (Beach et al., 2013; King and Haar, 2017; Wasylkiw et al., 2015).

Less than one-third \((n = 6)\) of the 23 \((N = 23)\) studies in the literature review examined the effects of mindful leadership development programs on leadership effectiveness (Baron, 2015; Brendel et al., 2016; Mahfouz, 2018; Rupprecht et al., 2019; Taylor et al., 2016; Wasylkiw et al., 2015). The type and length of the mindful leadership development programs demonstrated a wide variety regarding the number of sessions, duration of program, content, purpose, mode of delivery, and whether mindfulness practice was required (Donaldson-Feilder et al., 2019; Lomas et al., 2017). The wide differences between mindful leadership development program content and delivery make it difficult for comparisons and meaningful inferences to be made (Donaldson-Feilder et al., 2019; Huck, 2012; Lomas et al., 2017).

Sixty-seven percent of the research was situated in organizations outside the United States. Only three studies focused on leaders working for global organizations and
these studies did not include leaders participating in mindful leadership development programs (Goldman-Schuyler et al., 2017; King & Haar, 2016; Lippincott, 2018). Many of the studies focused on participants either at the middle and/or senior leadership level. The studies included in the review represented a multitude of research interests (Donaldson-Feilder et al., 2019; Lomas et al., 2017).

The exclusive use of self-reported data in research can introduce common-method bias (Huck, 2012). Of the studies included in the literature, 84% collected self-reported data to understand the effects of mindfulness on leaders. Three studies sought to overcome a potential common method bias by using non self-reported data, in the form of patient satisfaction data or supervisor and follower ratings of leadership performance, as a source of independent information to evaluate aspects of leadership effectiveness (Beach et al., 2013; King & Haar, 2016; Wasylkiw et al., 2015). In all three studies, leaders’ self-reported mindfulness was related to higher levels of leadership effectiveness as corroborated by outside data sources, lending additional strength to the research findings (Beach et al., 2013; King & Haar, 2016; Wasylkiw et al., 2015). Researchers called for the use of other forms of data in addition to self-reported measures to overcome common-method bias in future studies (Lippincott, 2018; Wasylkiw et al., 2015). Most studies in the review did not collect the leader’s performance measures which could be used as indicators of behavioral changes and competency development. In the absence of such data, it may make it difficult to ascertain if mindful leadership development programs are enabling leader competency development (Kaisier & Curphy, 2013).

Gaps and Recommendations
There are several gaps to consider for future empirical investigation. Given the interest and reported benefits associated with mindful leadership development programs on leadership effectiveness, mindfulness, and well-being, more research is warranted. Manufacturing is one of the largest business sectors in the world; however, very little empirical research has focused on the impact of mindful leadership development programs on this leadership population. Future study should make use of quasi-experimental research methods to add to the body of social science research (Lomas, 2017; Reb & Atkins, 2015). Quasi-experimental research allows the study of leader behavior in the natural workplace setting. Mindful leadership research should consider incorporating additional measures of leadership effectiveness, such as third-party leadership performance indicators representing the perceptions of followers and the leaders’ direct-line superiors, to overcome common-method bias with the use of only self-reported instruments. More quantitative research is needed to understand the impact of consistent, ongoing mindfulness practice on leader well-being, effectiveness, and performance in VUCA environments (Jha et al., 2010; Kabat-Zinn, 2003; Roeser et al., 2013; Stanley et al., 2011).

**Summary**

Leaders face challenges to perform and maintain well-being to lead effectively in dynamic VUCA work environments (Ashford & DeRue, 2012; Baron et al., 2018; Petrie, 2011). Leaders’ well-being is critical for top performance and productive relationships with followers (Brendel et al., 2016). Companies need competent leaders, yet current development efforts are not meeting the business needs (Ashford & DeRue, 2012; Hunter, 2017; Petrie, 2011). Application of mindfulness in the workplace is increasing,
and research, while nascent, is showing similar well-being and leader competency development outcomes as those found in 35 years of clinical-based empirical study (Reb & Atkins, 2015). Despite these findings, more research is needed to address the gaps in the literature and deepen the understanding of the effect of mindfulness as a possible new frontier for leadership development to enhance well-being and leadership effectiveness among global manufacturing leaders facing VUCA manufacturing work environments (Atkins & Styles, 2017; Chesley & Wylson, 2016; Horney et al., 2010; Hunter, 2017; Hunter & Chaskalson, 2013; Petrie, 2011).

Chapter 3 describes the methodology used for this study, introduces the study context, the research participants, measures, data collection process, and reviews the data analysis methods. Chapter 4 will discuss the study findings and focus on data output. Chapter 5 will provide an in-depth report of the results of this study, discuss findings, limitations, and provide recommendations for further research.
Chapter 3: Research Design Methodology

Introduction

Global manufacturing organizations face challenges to develop effective leaders equipped with competencies and well-being to thrive in VUCA environments (Brendel et al., 2016). Many global organizations are attempting to develop leaders for the current work environment using leadership development programs that were designed for a vastly different and stable work paradigm (Lawrence, 2013; Petrie, 2011). Changes are needed in leadership development programs to address the gap between the competencies leaders have and what they need to meet the demands of VUCA business environments (Frizzell et al., 2016; Hunter, 2017; Lawrence, 2013; Petrie, 2011). Reb and Atkins (2015) posited that mindfulness, along with ongoing practice, creates a developmental pathway for leaders to cultivate greater self-awareness and self-regulation to support leadership effectiveness. Some global organizations, including Aetna, Apple, General Mills, and Google, are incorporating mindfulness into leadership development programs to help leaders manage stress and perform in VUCA business environments (Gelles, 2016). However, there is little research on mindful leadership development programs in global manufacturing organizations (Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Jamieson & Tuckey, 2017; Lomas et al., 2017). Further study of the effects of mindful leadership development programs and practice on dispositional mindfulness, well-being, and leadership effectiveness among leaders in global manufacturing facing VUCA
environments is needed (Donaldson-Feilder et al., 2019; Goleman, 2013; Hülsheger et al., 2013; Jamieson & Tuckey, 2017).

The purpose of this study was to understand the influence of mindful leadership development programs and personal mindfulness practice on leadership effectiveness, mindfulness, and well-being in VUCA global manufacturing organizations. This study explored the following research questions:

1. What is the effect of mindful leadership development programs on dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?
2. Does mindful leadership development program dosage predict dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?
3. Does mindfulness practice predict well-being, dispositional mindfulness, and leadership effectiveness among global manufacturing leaders?

**Research Design**

This study used a quasi-experimental methodology to examine the relationships between mindful leadership development programs and mindfulness practice on well-being, dispositional mindfulness, and leadership effectiveness among leaders working in a global manufacturing organization facing VUCA environments. The quasi-experiment quantitative research method for this study compared four preexisting or naturally occurring groups where there was exposure to different dosage levels of mindful leadership development programs (Adams & Lawrence, 2019). Another defining characteristic of this quasi-experimental design is that participants were not randomly
assigned (Adams & Lawrence, 2019; Holosko & Thayer, 2011). This study adds to the body of quantitative research that examines the effects of mindful leadership development programs and practices on well-being, mindfulness, and leadership effectiveness among leaders working in a manufacturing organization (Jamieson & Tuckey, 2017).

**Research Context**

This study was conducted within the division of a public, global, for-profit manufacturing organization. For confidentiality reasons, this organization is referred to as Vantage throughout the study. Vantage manufactures industrial components and has approximately 1,400 employees located at 12 manufacturing, sales, and distribution centers, with facilities located in Asia, Europe, and North America. The organization has been actively pursuing a growth trajectory, organically, and through strategic acquisitions. The organization embraces a philosophy of a dual bottom-line, which is based on the belief that employee development and the company’s financial bottom-line are equally important. The profitability of Vantage is directly linked to the development of its employees (Vantage Chief Executive Office [CEO], personal communication, December 19, 2018). Vantage’s culture supports the organization’s dual, bottom-line philosophy and actively encourages employees to improve themselves, and everything around them, as a means to achieve the fullest expression of professional and personal potential at work. When the employees’ work encompasses the pursuit of personal developmental goals, Vantage can achieve the best outcomes for the company and the employees (CEO, personal communication, August 5, 2019). There is a strong belief in
human potential, which is cascaded from the executive leadership team down to all employees.

Vantage offers mindful leadership development programs as part of their people development strategy which is aligned to their business strategy. The mindful leadership development programs for this study included three sequential, multi-session, online mindful leadership development programs. The pseudonyms for the course names were (a) Mindful Leadership I, (b) Mindful Leadership II, and (c) Mindful Leadership III. The mindful leadership programs were offered to all full-time Vantage leaders, and participation was voluntary.

The first mindful leadership development programs started in 2011 with subsequent programs added over time. The program focused on the application of mindfulness principles in a leadership capacity. The program emphasized finding purpose, developing self-awareness, and practicing the principles of mindfulness. Appendix A provides a high-level summary of the content and structure of the mindful leadership development programs. The mindful leadership program was designed to enable Vantage leaders to realize the fullest expression of their human potential and to ultimately support mindfulness, well-being, and leadership effectiveness. The curriculum drew from a number of mindfulness experts and programs including Jon Kabat-Zinn (1990) and Otto Scharmer with the Presencing Institute. The three, self-paced programs were offered online and include instructor-led content, video segments from the executive team and others, exercises, and participant workbooks. The mindful leadership development programs focused on a variety of mindfulness practice modalities, as well as reinforcement of mindfulness principles in the workplace. Sessions within each program
were typically 90-minutes long and participants were encouraged to adopt a consistent mindfulness practice at work and at home to support competency development and well-being. Participants typically completed the classes over a 6-month period of time to allow for completion of exercises, reading, reflection, and mindfulness practice.

Leadership concepts and mindfulness principles were embedded in the mindful leadership development programs. The programs also focused on the company’s dual bottom-line combined with practices and processes to help leaders understand “the self,” “the collective,” “the community,” and “the world.” Building self-awareness and self-regulation were core aspects of the mindful leadership development programs. The role of the leader was discussed along with a focus on specific competency development including self-awareness, community building, critical thinking, deep listening, emotional regulation, and effective communication. Over the three programs, mindfulness was described as a natural, creative, and generative power that was available to everyone (CEO, personal conversation, December 2018). Mindfulness was integrated into the practices and processes as the Vantage Way of being a leader. Leader self-awareness was seen as connected to the organization’s dual bottom line for business success and seen as essential for leader development (CEO, personal conversation, December 2018).

The Mindful Leadership I course consisted of six self-paced sessions offered monthly that were approximately 90-minutes long that focused on the individual and mindfulness with the theme of the full release of possibility. Mindfulness was at the core of supporting human and leadership development. Mindful Leadership I was designed to integrate sessions to deepen participant knowledge regarding the way of work at Vantage with practical experiences for a transformational journey. The six sessions included: a)
Leadership Shadows, Learning, and Growth; b) Vulnerability and Living a “Whole-hearted Life”; c) Releasing Your Full Potential and the Untethered Soul; d) Radical Self-Acceptance; e) Solitude, Reflection, and Renewal; and f) Exploring Your Purpose.

Within the curriculum for mindful leadership development program I, two themes were emphasized: (a) prepare yourself ahead of time, which focused on removing all preconceived mental models and barriers that may impeded full participation and (b) manage yourself before, during, and after for all meetings and interactions. Prepare yourself ahead of time embedded the notion of using a beginner’s mind to facilitate openness and present moment awareness where leaders were expected to approach each experience as if was the first-time. Manage yourself asked leaders to develop self-regulation by increasing awareness of how emotions are embodied and arise as thoughts and experiences occur. Both themes focused leaders to be mindful, present, and aware of thoughts and emotions and that may impact behavior, receptivity, awareness of others, empathy, and self-mastery (Human Resources, personal communication, December 19, 2018).

Handouts, exercises, and videos were provided for each mindful leadership program session. Mindfulness principles and exposure to a variety of mindfulness practice modalities were woven throughout the programs along with the opportunity for individual reflection and integration. Participants were encouraged to develop their own consistent mindfulness practice. The participants were also expected to create and maintain an accountability group, comprised of colleagues, which met monthly to discuss program content and reinforce learning.
The Mindful Leadership II course also consisted of six 90-minute, self-paced sessions offered monthly, which continued to focus on the themes outlined in Mindful Leadership I and introduced several new leadership concepts. The next six sessions also built upon each other: a) The Principles of Self-Management; b) The Integrated Leader; c) Human Dignity and Character; d) Resilient Leadership: Turning Negatives into Positives; e) Role Models and Mentors; and f) Bringing it All Together: The Self-Actualized Leader. Each session provided handouts, exercises, videos, and included a Self-Actualized Assessment. As with Mindful Leader I, participants taking Mindful Leader II were encouraged to continue mindfulness practices and were expected to meet once a month with their established accountability group to discuss the content, reflect, and reinforce learning.

The third course, Mindful Leader III, consisted of four 90-minute, self-paced sessions offered monthly that continued the focus outlined in Mindful Leader I and II, but also added community building, as a new focus area. The four sessions expanded the discussion to include the entire Vantage community: a) Community Building and “I” Statements, b) Community Building Intentions and Practices, c) Community Building Speech Acts and Communication, and d) Community Building and the Role of the Leader. Each session provided handouts, exercises, and videos. Mindfulness and leadership principles, along with a new focus on community building practices, were integrated throughout the course. As with Mindful Leader I and II, participants were encouraged to continue mindfulness practices and encourage to try new modalities. Leaders were expected to meet once a month with their established accountability group
to discuss the content and reinforce learning. For this study, the three mindful leadership development programs (I, II, and III) were referred to as doses.

**Research Participants**

The study sample was drawn from the Vantage global leadership population which consisted of approximately 165 leaders. The leaders were located at 12 manufacturing, sales, and distribution centers located in Asia, Europe, and North America. Participants who held a leadership title and managed at least two direct reports met the established inclusion criteria and were eligible to be included in the study. Participants were excluded from this study if they did not meet the two established inclusion criteria.

**Measures**

Qualtrics, an online survey instrument, was used to collect data. The survey included demographic questions, measures for mindfulness and well-being, and questions regarding mindfulness practices. In addition, leadership effectiveness was measured using two independent, third-party generated assessments.

**Predictor Variables**

Three predictor variables were used for this study: presence of mindful leadership development programs, mindful leadership development program dosage, and mindfulness practice time. Qualtrics was used to collect data for the predictor variables, Excel and SPSS were used to calculate descriptive statistics including frequencies, percentages, means, and standard deviations.

**Presence of Mindful Leadership Development Programs.** Three mindful leadership development programs were offered over the past 5 years. Survey questions
asked participants to indicate whether they had completed any mindful leadership development programs.

**Mindful Leadership Development Program Dosage.** Survey questions asked participants to indicate the number of mindful leadership development programs ranging from none to a maximum of three completed and the year the programs were completed.

**Mindfulness Practice Time.** The survey asked participants to answer up to six optional questions regarding leader mindfulness practices. Questions included presence of mindfulness practice, the amount of time weekly leaders practiced, and practice time at work, the frequency of practice per week, and the forms or modalities that comprised the practice.

**Outcome Variables**

**Mindfulness.** The survey measured dispositional mindfulness and used the MAAS (Brown & Ryan, 2003) instrument which consisted of 15 questions. Dispositional mindfulness is the trait that allows for present moment awareness (Brown & Ryan, 2003). MAAS is a unidimensional, self-report scale that requires participants to indicate frequency and strength of mindfulness experienced (Brown & Ryan, 2003; MacKillop & Anderson, 2007). MAAS uses a reverse coded, 6-point, Likert-type scale measuring frequency of experience for each item (1 = *almost always* to 6 = *almost never*), where a higher score indicates a greater level of dispositional mindfulness (Brown & Ryan, 2003). MAAS was scored by computing a mean of the 15 survey questions.

Participants were asked to consider everyday experiences and indicate the frequency of their experiences. Correlational, quasi-experimental, and experimental studies have shown MAAS measures the aspects of consciousness that are related to, and
predictive of, mindfulness, emotion regulation, behavior regulation, interpersonal skills, and well-being (Brown & Ryan, 2003; Brown et al., 2007). Analysis of MAAS with healthy populations in a variety of studies reflects internal consistency (Brown & Ryan, 2003; Carlson & Brown, 2005). Additionally, MAAS has demonstrated high test-retest reliability, discriminant, convergent validity, known-groups validity, and criterion validity (Carlson & Brown, 2005; Osman et al., 2016). MAAS is in the public domain, and special permission for use was not required (Appendix B).

**Well-Being.** The survey measured leader positive and negative affect as a proxy for well-being using the PANAS (Watson et al., 1988). PANAS consists of 20 questions that are comprised of two, 10-question, self-report scales measuring dimensions of positive affect (PA) and negative affect (NA). The scale uses a 5-point Likert-type scale (1 = very slightly or not at all to 5 = extremely). Both scales directed participants to consider their felt emotions at the present moment or over the previous week (Crawford & Henry, 2004; Watson et al., 1988). On the positive scale, participants rated the extent of experiencing positive emotions and mood states, such as enthusiasm, interest, and pride; whereas, for the negative scale, participants rated the extent of experiencing negative or unpleasant mood states, such as guilt, irritability, or hostility (Watson et al., 1988). PANAS produced a single total score for PA scale and NA scale by adding up the answers to the questions associated with each scale. PANAS is a widely used instrument in community contexts (Merz et al., 2013). Crawford and Henry (2004) reported moderate to high reliability for both the PA and NA scales. PANAS scales are internally consistent and possess strong convergent validity and discriminate correlations.
(Thompson, 2007; Watson et al., 1988). The PANAS instrument is in the public domain and special permission for use was not required (Appendix C).

**Leadership Effectiveness.** Two third-party measures of leadership effectiveness were collected.

*Leadership Effectiveness Performance Appraisal Score.* The participant’s annual performance appraisal score (PAS) was used as the first measure of leadership effectiveness. Vantage used an internally created performance appraisal form that was completed by the leaders’ direct managers to assess the participant’s annual performance. Leadership effectiveness PAS used a range of five performance levels: (a) unacceptable, (b) needs improvement, (c) meets expectations, (d) consistently exceeds expectations, and (e) exceptional. The rubric used to define the characteristics of the leader performance associated with each level is depicted in Appendix D.

*Leadership Effectiveness Net Promoter Score (NPS).* The participant’s annual net promoter score (NPS) was used as the second measure of leadership effectiveness. The NPS is an internally created online survey to assess leader effectiveness from a follower’s perspective (Human Resources, G. S., personal communication, September 27, 2019). The NPS is a measure of employee engagement and represents the follower’s inclination to promote the company to others and their intention to stay with the company. Leadership effectiveness NPS is a single score expressed as a percentage, using a -100% to +100% scale. A positive NPS score of 0% or higher is indicative of favorable employee engagement where higher positive scores and year-over-year positive upwards trends were favored (Executive, A. C., personal communication, February 18, 2020).

*Covariates*
There were 10 demographic questions in the survey that asked participants to indicate gender, age, ethnicity, work status, work location by country, highest education level completed, leadership title, years in a leadership role, number of direct reports, and years of service. The following demographics were selected a priori as covariates in this study: gender, age, ethnicity, highest education level completed, leadership title, years in a leadership role, number of direct reports, and years of service.

**Procedures for Data Collection**

The researcher received approval to conduct the study from the company. This study was submitted for review and approved by the St. John Fisher College Institutional Review Board (IRB) for approval. Following approval by IRB (Appendix E), Vantage provided an Excel file that contained the email addresses for all the employees holding a leadership title, which served as the survey distribution list. The survey was launched in late May 2020 using Qualtrics, an online survey tool. An email was sent to each participant on the email distribution list with the following items: (a) a letter that described the purpose of the study; (b) a two-part informed consent form: the first consent asked for agreement to participate in the study, and the second consent served to authorize the collection of the participant’s employee performance appraisal score and NPS performance data from Vantage for the prior year; (c) the electronic Qualtrics survey link, and (d) the researcher’s contact information. Only survey recipients who consented to the two-part consent form and agreed to participate had access to the survey.

The survey was open for 4 weeks. Two follow-up reminders were automatically sent by Qualtrics to the participants who had not completed the survey at 5 days and at 12 days following survey launch. To increase recruitment and overcome spam issues which
impacted delivery of two previous email reminders, a leader at Vantage sent an email reminder message 18 days following survey launch to all leaders on the distribution list. The survey closed at the end of June 2020.

After the survey closed, survey data was exported from Qualtrics to Excel. A list of participants who consented to participate in the study and consented to release their performance appraisal rating and net promoter score information was created in Excel. The Excel file was sent to the Vantage Director of Human Resources to add the employee performance appraisal scores and net promoter scores. The Excel file was returned to the researcher. The researcher matched the participant’s performance data to the Qualtrics data file to their email address. Following pairing of participants’ performance data, email addresses were deleted from the Excel file.

Steps were taken to ensure participant confidentiality. First, study participants and management did not have access to the Qualtrics system. Second, participants did not know who participated in the survey. Third, the researcher safeguarded the online Qualtrics survey password credentials and protected access to the survey data. Lastly, all materials pertinent to this study were locked in a secure filing cabinet in the researcher’s office and in a password-protected file on a password-protected device with different passwords known only to the researcher.

**Data Review and Screening**

Survey data was exported from Qualtrics and imported into Excel. The Excel survey data file was examined, cleaned, and formatted prior to data analysis. Participants were assessed for inclusion in this study by evaluating their answers to two demographic questions: (a) organizational level by title, and (b) number of direct reports managed.
Participants who held a leadership title and managed at least two direct reports meet the established inclusion criteria and were eligible to be included in the study. Participants were excluded from this study if they did not meet the two established inclusion criteria.

Participants with missing data were removed from the file. Variables were recoded and created for the following data: mindful leadership development programs variables and leadership effectiveness performance appraisal scores. First, the mindful leadership development programs data was coded as a presence/absence variable where absence of mindful leadership development programs was coded as zero and presence was coded as 1. Second, variables were created to indicate mindful leadership development programs dosage where 0 = no dose, 1 = one dose, 2 = two doses, and 3 = three doses. Third, leadership effectiveness performance appraisal score data was recoded to numerals where 1 = unacceptable, 2 = needs improvement, 3 = meets expectations, 4 = consistently exceeds expectations, and 5 = exceptional. Each step of this process was documented to track any decisions made regarding the data including treatment of missing data, removal of data, and the creation and recoding of variables.

After data examination, cleaning, and formatting was completed, survey data was exported from Excel and imported into SPSS and R/RStudio statistical software packages (Cronk, 2018; Fox et al., 2019). RStudio compliments R and provided a set of integrated tools for plotting, viewing history, debugging, and managing statistical analysis in R (Fox et al., 2019).

**Data Analysis**

Descriptive data analyses were performed using Qualtrics, Excel, SPSS, and R/RStudio. The descriptive data analysis process provided the participant context for this
study (Holosko & Thyer, 2011). Summary statistics were run which explored the distributions of the demographic data, MAAS and PANAS instruments, leadership effectiveness scores, and mindfulness practices data. Outcome data was computed regarding distributional properties including mean, median, mode, standard deviation, variability, modality, symmetry, and the presence of outliers. Plots were run for mindful leadership development programs, program dosage, and mindfulness practices independent variables. One-way analysis of variance (ANOVA) and analysis of covariance (ANCOVA) tests were run using SPSS and R/RStudio to understand variance between and within groups. For statistically significant variances, post hoc analysis using Tukey Honestly Significant Difference (HSD) and Fisher’s Least Significant Difference (LSD) were conducted to understand which groups were different. Independent $t$ tests were run for the dichotomous gender variable to explore if the means between groups were statistically different. Pearson correlation coefficients were computed to explore the strength and direction of the relationship for outcome variables. Next, correlations between covariates, predictor, and outcome variables were explored. Next, hierarchical multiple linear regression models were estimated for each outcome variable to explore the relationship between independent variables.

**Substantive Analyses**

For this study, to answer the three research questions, a series of hierarchical multiple linear regression models were estimated to test the hypotheses that completion of mindful leadership development programs and/or increased dosage of these programs predicted participant dispositional mindfulness, well-being, and leadership effectiveness as compared to participants who had not completed these programs or had completed
lower doses. It was also hypothesized that participants who practiced mindfulness were more effective, would experience higher levels of dispositional mindfulness, well-being, and leadership effectiveness than participants who did not practice mindfulness. Data from the demographic and mindfulness practice survey questions, MAAS, PANAS, and two leadership effectiveness scores, PAS and NPS, were used to build the regression models.

First, SPSS and R/RStudio were used to estimate hierarchical multiple linear regression models for each outcome variable: (a) dispositional mindfulness, (b) well-being PA, (c) well-being NA, (d) leadership effectiveness (PAS), and (e) leadership effectiveness (NPS) including the following covariates: gender, age, ethnicity, highest education level completed, leadership title, years in a leadership role, number of direct reports, and years of service.

Next, predictor variables were added one at a time to each model: (a) presence of mindful leadership development, (b) mindful leadership development dosage, and (c) mindfulness practice time. Statistical outcomes were compared to determine the proportion of variance explained by the addition of the predictor variable to each outcome model for dispositional mindfulness, well-being PA and NA, and leadership effectiveness PAS and NPS.

Research Question 1 (RQ1) explored the effect of mindful leadership development programs, well-being, and leadership effectiveness among global manufacturing leaders. To answer RQ1, hierarchical multiple linear regression models were estimated where the covariates were entered in a block in the first step. The mindful leadership development program predictor variable which was added to the model as the
second step for each outcome variable. Presence of mindful leadership development variable was entered as a presence/absence variable, where 0 = absence and 1 - presence.

Research Question 2 (RQ2) examined whether leader mindfulness and well-being predicted leadership effectiveness based on mindful leadership program dosage. To answer RQ2, hierarchical multiple linear regression models were estimated where the covariates were entered in a block in the first step. Then the mindful leadership program dosage predictor variables were added to the model as the second step for each outcome variable. The mindful leadership development program dosage predictor variable was entered as four variables, where 0 = no program dose completed, 1 = one program dose completed, 2 = two program doses completed, and 3 = the maximum dosage of three programs completed.

Research Question 3 (RQ3) investigated whether leader mindfulness practices predicted leadership effectiveness, dispositional mindfulness, and well-being. To answer RQ3, hierarchical multiple linear regression models were estimated with covariates were entered in a block in the first step. Then the total hours of mindfulness practiced weekly was entered as the predictor variable as the second step to the model for each outcome variable.

Summary

This research study used a quasi-experimental design. The purpose of this study was to discover the effect of mindful leadership development programs and mindfulness practices on leader well-being, mindfulness, and leadership effectiveness among global manufacturing leaders working in a VUCA environment. The instruments used to collect data consisted of: (a) demographic survey, (b) MAAS (Brown & Ryan, 2003), (c)
PANAS (Watson et al., 1988), (d) leadership effectiveness annual performance appraisal score (PAS) for the prior year, (e) leadership effectiveness net promoter score (NPS) annual assessment for prior year, and (f) mindfulness practice time.

Preliminary data analyses included descriptive statistics, a Pearson’s product-moment correlation coefficients analysis, independent t tests, one-way ANOVA and ANCOVA tests, and post hoc analyses using Excel, SPSS, and R/RStudio. To answer the three research questions, hierarchical multiple linear regression modelling was conducted in two steps. This study adds to the body of quantitative research which explored the effect of mindful leadership development programs and mindfulness practices on leadership effectiveness, dispositional mindfulness, and well-being among global manufacturing leaders facing VUCA environments.
Chapter 4: Findings

Introduction

VUCA business conditions require leaders who are equipped to face challenging and unpredictable situations in an age of rapid change (Brendel et al., 2016). Organizations worldwide including manufacturing continue to report challenges to develop leaders with the competencies needed for success (IBM, 2010, 2019). Leader developmental maturity and readiness has not kept pace with the demands of VUCA work environments (Petrie, 2011, 2014, 2015; Weiss & Molinaro, 2010). Evidence suggests mindful leadership development programs may help leaders to address these gaps to develop the competencies associated with leadership effectiveness and maintain well-being in dynamic VUCA environments (Baron et al., 2018; King & Haar, 2016; Rupprecht et al., 2019). Therefore, the primary purpose of this study was to examine the effects of mindful leadership development programs and mindfulness practices on dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders working in VUCA environments.

The study answered three research questions:

1. What is the effect of mindful leadership development programs on dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?
2. Does mindful leadership development program dosage predict dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders?

3. Does mindfulness practice predict well-being, dispositional mindfulness, and leadership effectiveness among global manufacturing leaders?

Based on a review of the literature, this study hypothesized that leaders who have completed mindful leadership development programs will experience higher levels of dispositional mindfulness and well-being and will be more effective as compared to leaders who have not completed these programs. It was also hypothesized that leaders with higher dosage levels of mindful leadership development programs will be more effective, report increased levels of well-being and dispositional mindfulness than leaders with lower or no doses. Lastly, it was hypothesized that leaders who practice mindfulness are more effective and will experience higher levels of dispositional mindfulness and well-being than leaders who do not practice mindfulness.

Chapter 4 presents the results of this study using hierarchical multiple linear regression analysis of survey responses to demographic and mindfulness practice questions, the MAAS) the PANAS) and two third-party leadership effectiveness measures. This chapter is divided into four sections. The first section provides the data review and screening, descriptive statistics for the research participants, and an overview of measures. The second section discusses the results of the study including preliminary analyses and substantive analyses to answer the research questions. The third section describes participant feedback to the survey and the final section provides a chapter summary.
Data Review and Screening

The survey data file was exported from Qualtrics into Excel, R/RStudio, and SPSS. The data was reviewed to identify incomplete survey responses, missing, erroneous, and alternative forms of data. Out of 163 leaders contacted, 115 leaders responded to the survey. Of the 115 surveys collected, 12 survey responses were removed that did not meet study eligibility requirements and one survey response was incomplete, resulting in 102 eligible cases for analysis. Therefore, the survey response rate was 62.6%.

Qualtrics survey reporting tools, Excel, R/RStudio, and SPSS statistical software programs were used to conduct data analysis for the study. Qualtrics survey reporting tool, Excel, and SPSS were used to compute descriptive statistics including frequencies, percentages, means, minimums, maximums, and standard deviations for survey demographics, mindful leadership development programs, mindfulness practices, mindfulness, well-being, and leadership effectiveness measures. R/RStudio and SPSS were used to compute independent $t$ tests, one-way ANOVAs, ANCOVAs, post hoc analyses, and multiple hierarchical regression models using data from demographic and mindfulness practice questions, and mindfulness, well-being, and leadership effectiveness measures.

For this study, the sample consisted of 74.5% ($n = 76$) males and 25.5% ($n = 26$) females which was representative of the gender distribution in the overall employee population (Director of Human Resources, personal communication, July 2020). Sixty-six percent ($n = 67$) of participants were White, 60% ($n = 61$), worked in the United States, and 76.5% were college educated ($M = 2.8$, $SD = 1.3$) holding a bachelor’s degree.
(45%, n = 46) or a master’s degree (31.5%, n = 32). Participants worked in operations
/production/manufacturing roles (23.5%, n = 24), followed closely by sales and business
development (20.6%, n = 21). Forty-four percent of the participants (n = 45) were
managers and 28.4% (n = 29) were directors. Most participants (87%, n = 87) were early
to mid-career leaders (M = 2.92, SD = 1.38) holding leadership roles between less than 2
and 5 years (46%, n = 45) and 6 to 15 years (41%, n = 42) years. Fifty-four percent of
participants (n = 60) managed two to 10 direct reports (M = 1.78, SD = 1.24). Table 4.1
reflects research participant demographics.

Measures

Predictor Variables

Three predictor variables were used for this study: presence of mindful leadership
development programs, mindful leadership development program dosage, and
mindfulness practice time. Qualtrics was used to collect data for the predictor variables
and Excel was used to calculate descriptive statistics including frequencies, percentages,
means, and standard deviations.

Presence of Mindful Leadership Development Programs. Mindful leadership
development programs were offered over the past 5 years. Eighty percent (n = 82) of
study participants reported completion of mindful leadership development programs (M =
1.31, SD = 1.13), whereas 20% (n = 20) reported no programs completed (Table 4.1).
Table 4.1

Research Participant Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>Functional Area of Responsibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>76</td>
<td>74.5</td>
<td>Operations/Production/Mfg.</td>
<td>24</td>
<td>23.5</td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
<td>25.5</td>
<td>Sales/Business Development</td>
<td>21</td>
<td>20.6</td>
</tr>
<tr>
<td>Status</td>
<td></td>
<td></td>
<td>Finance/Accounting</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td>Fulltime</td>
<td>102</td>
<td>100</td>
<td>Executive/General Management</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td>Part-time</td>
<td>0</td>
<td>0</td>
<td>Engineering</td>
<td>7</td>
<td>7.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>Purchasing/Supply Chain/Logistics</td>
<td>7</td>
<td>6.9</td>
</tr>
<tr>
<td>20 – 30</td>
<td>6</td>
<td>5.9</td>
<td>Human Resources</td>
<td>6</td>
<td>5.9</td>
</tr>
<tr>
<td>31 – 40</td>
<td>23</td>
<td>22.5</td>
<td>Customer Service</td>
<td>6</td>
<td>5.9</td>
</tr>
<tr>
<td>41 – 50</td>
<td>37</td>
<td>36.3</td>
<td>Quality</td>
<td>5</td>
<td>4.9</td>
</tr>
<tr>
<td>51 – 60</td>
<td>30</td>
<td>29.4</td>
<td>Marketing / Other</td>
<td>4</td>
<td>3.9</td>
</tr>
<tr>
<td>61+</td>
<td>6</td>
<td>5.9</td>
<td>Product Line Management</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td>Innovation/Projects</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>United States</td>
<td>61</td>
<td>60.0</td>
<td>Years of Service at the Organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>9</td>
<td>8.8</td>
<td>Less than 2</td>
<td>5</td>
<td>4.9</td>
</tr>
<tr>
<td>Germany</td>
<td>8</td>
<td>7.8</td>
<td>2 – 5 Years</td>
<td>20</td>
<td>19.6</td>
</tr>
<tr>
<td>Canada</td>
<td>8</td>
<td>7.8</td>
<td>6 – 9 Years</td>
<td>30</td>
<td>29.4</td>
</tr>
<tr>
<td>Mexico</td>
<td>7</td>
<td>6.8</td>
<td>10 – 15 Years</td>
<td>22</td>
<td>21.6</td>
</tr>
<tr>
<td>Australia</td>
<td>4</td>
<td>3.9</td>
<td>16 – 25 Years</td>
<td>17</td>
<td>16.7</td>
</tr>
<tr>
<td>Singapore</td>
<td>3</td>
<td>2.9</td>
<td>26+ Years</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.0</td>
<td>High School Diploma</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td>Associate’s Degree</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td>White</td>
<td>67</td>
<td>65.7</td>
<td>Bachelor’s Degree</td>
<td>46</td>
<td>45.1</td>
</tr>
<tr>
<td>Asian</td>
<td>17</td>
<td>16.7</td>
<td>Master’s Degree</td>
<td>32</td>
<td>31.5</td>
</tr>
<tr>
<td>Hispanic, Latino, Spanish</td>
<td>11</td>
<td>10.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American, and</td>
<td>5</td>
<td>4.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level in Organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Leader</td>
<td>7</td>
<td>6.9</td>
<td>2 – 10</td>
<td>60</td>
<td>58.9</td>
</tr>
<tr>
<td>Supervisor</td>
<td>15</td>
<td>14.7</td>
<td>11 – 20</td>
<td>23</td>
<td>22.5</td>
</tr>
<tr>
<td>Manager</td>
<td>45</td>
<td>44.1</td>
<td>21 – 30</td>
<td>6</td>
<td>5.9</td>
</tr>
<tr>
<td>Director</td>
<td>29</td>
<td>28.4</td>
<td>31 – 50</td>
<td>6</td>
<td>5.9</td>
</tr>
<tr>
<td>Executive Level</td>
<td>6</td>
<td>5.9</td>
<td>51 – 100</td>
<td>4</td>
<td>3.9</td>
</tr>
<tr>
<td>Years in a Leadership Role</td>
<td></td>
<td></td>
<td>Mindful Leadership Development Program Dosage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 2 years</td>
<td>13</td>
<td>12.7</td>
<td>Mindful Leadership I</td>
<td>34</td>
<td>33.3</td>
</tr>
<tr>
<td>2 – 5 years</td>
<td>34</td>
<td>33.3</td>
<td>Mindful Leadership I &amp; II</td>
<td>22</td>
<td>21.6</td>
</tr>
<tr>
<td>6 – 9 years</td>
<td>23</td>
<td>22.5</td>
<td>Mindful Leadership I, II, &amp; III</td>
<td>26</td>
<td>25.5</td>
</tr>
<tr>
<td>10 – 15 years</td>
<td>19</td>
<td>18.6</td>
<td>No Programs Completed</td>
<td>20</td>
<td>19.6</td>
</tr>
<tr>
<td>16 – 20 years</td>
<td>5</td>
<td>4.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20+ years</td>
<td>8</td>
<td>7.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Mfr. = Manufacturing

N = 102
**Mindful Leadership Development Program Dosage.** Thirty-three percent \( (n = 34) \) of the participants reported completion of one dose of mindful leadership development programs, 22% \( (n = 22) \) of participants completed two doses, and 26% \( (n = 26) \) completed three program doses \( (M = 1.31, SD = 1.13) \) as reflected in Table 4.1. Director and executive level participants 88% \( (n = 29) \) reported completing at least one dose of mindful leadership development programs.

To determine the differences between mindful leadership development program dosage level, a Fisher’s Least Significant Difference (LSD) test with a 95% family-wise confidence level was computed (Adams & Lawrence, 2019). For dispositional mindfulness there was a statistically significant difference between the group of participants who completed one dose of mindful leadership development programs as compared to participants who completed no doses. There was also a difference for leadership effectiveness PAS between group of participants who completed three doses of mindful leadership development programs as compared to participants who completed one dose that was higher but did not reach statistical significance.

**Mindfulness Practice Time.** Survey questions explored participant engagement in mindfulness practices including time, frequency per week, and modalities. In this study, 74.5% \( (n = 76) \) of participants reported engaging in mindfulness practices \( (M = 8.5 \) hours, \( SD = 11.26) \) per week. Ninety-one percent \( (n = 72) \) of participants reported practicing mindfulness both outside of work and at work. A box plot analysis was conducted to summarize data distribution normality and identified 10 outliers which were removed from the dataset (Fox & Weisberg, 2019). Figure 4.1 displays the box plot results.
Participants reported total weekly mindfulness practice time from a minimum of one hour to a maximum of 100 hours which suggested possible skewed data distribution.

Notes: Outlier practice data points were depicted as open circles to the right of the dashed line. N = 10.

The data was recomputed using Excel with the outliers removed. Approximately half of the total time participants devoted to mindfulness practices each week (M = 4.7 hours, SD = 5.14) occurred at work. Participants engaged in mindfulness practices ranging from a minimum of once a week to a maximum of 33 occurrences per week (M = 6.8, SD = 5.99). Participants used different mindfulness practice modalities which ranged from a minimum of one to a maximum of seven per week (M = 3.34, SD = 1.28). Grounding and centering was used most often at 82.9% (n = 63), followed by check-in/check-out 63.2% (n = 48), and meditation 59.2% (n = 45). The most frequently reported mindfulness practice modalities were taught in mindful leadership development programs as reflected in Table 4.2.
### Table 4.2

*Descriptive Statistics of Total Mindfulness Practice Time and Frequency*

<table>
<thead>
<tr>
<th>Mindfulness Practice</th>
<th>N / %</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Weekly Practice Time (hours per week)</td>
<td>66 / 100</td>
<td>8.5</td>
<td>11.26</td>
<td>.25</td>
<td>54</td>
</tr>
<tr>
<td>Weekly Practice Time at Work (hours per week)</td>
<td>63 / 95</td>
<td>4.7</td>
<td>5.14</td>
<td>.4</td>
<td>20</td>
</tr>
<tr>
<td>Frequency of Mindfulness Practice (occurrences per week)</td>
<td>66 / 100</td>
<td>6.8</td>
<td>5.99</td>
<td>1</td>
<td>33</td>
</tr>
</tbody>
</table>

*Notes: Mindfulness practice time was expressed in hours. Total mindfulness practice time and frequency were based on a 7-day week. Practice Time at Work is a subset of Total Weekly Practice Time.*

*N = 66 with outliers removed.*

For this study, a between subjects ANCOVA was computed to compare the effects of mindful leadership development programs dosage on all study covariates and outcome variables including leader mindfulness, well-being, and leadership effectiveness PAS and NPS. There was a statistically significant differences between groups of mindful leadership development program dosage on dispositional mindfulness $F(3, 98) = 2.68, p = .05, \eta^2_p = .076$ and for leadership effectiveness PAS $F(3, 98) = 2.03, p = .05, \eta^2_p = .055$. The comparison of means for mindful leadership development program dosage and well-being PA results were higher but did not achieve statistical significance $F(3, 98) = 2.20, p = .09, \eta^2_p = .063$. There were no main differences on the other outcome variables or for any covariates as reflected in Table 4.3.

**Outcome Variables**

**Mindfulness.** In this study, the MAAS instrument was used to assess participant’s level of dispositional mindfulness described as the short-term receptive state of mind where attention is informed by awareness of the present moment encountered in everyday
experience (Brown & Ryan, 2003). Excel was used to calculate MAAS descriptive statistics. The MAAS could yield a minimum score of 15, which indicated the lowest level of mindfulness to a maximum score of 90, which represented the highest level of mindfulness. Respondent scores ranged from a minimum of 42 to a maximum score of 90. A MAAS mean was computed ($M = 4.59, SD = .69$) which was indicative of moderate dispositional mindfulness. and similar to results reported in mindfulness leadership studies ($M = 4.69, SD = .71$) (Baron, 2015) and ($M = 4.3, SD = .76$) (King & Haar, 2017). Table 4.4 provides the descriptive statistics for MAAS.

**Well-being.** In this study, participant well-being was measured by the PANAS instrument which is comprised of two mood scales: one scale measures positive affect (PA) and the other scale measures negative affect (NA) (Watson et al., 1988). PA and NA captured how participants felt in that moment or over the past week. Scores can range from a minimum of 10 to a maximum of 50, where a lower score indicates decreased

<table>
<thead>
<tr>
<th>Table 4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis of Covariance Between Groups for Mindful Leadership Development Program Dosage Completed ($N = 102$)</strong></td>
</tr>
<tr>
<td>MLDP Dosage</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Mindfulness</td>
</tr>
<tr>
<td>Well-being PA</td>
</tr>
<tr>
<td>Well-being NA</td>
</tr>
<tr>
<td>Leadership Effectiveness - PAS</td>
</tr>
<tr>
<td>Leadership Effectiveness - NPS</td>
</tr>
</tbody>
</table>

Notes: Well-being PA = Positive Affect. Well-being NA = Negative Affect. PAS = Performance Appraisal Score. NPS = Net Promoter Score.

$p = .05$. 

<p>| Notes: Well-being PA = Positive Affect. Well-being NA = Negative Affect. PAS = Performance Appraisal Score. NPS = Net Promoter Score. |</p>
<table>
<thead>
<tr>
<th>---</th>
<th>---</th>
<th>---</th>
<th>---</th>
<th>---</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
levels of either positive or negative affect, and higher scores indicate increased levels of either positive or negative affect. In this study, Excel was used to create a score for each scale and to run descriptive statistics. PA scores ranged from a minimum of 25 to a maximum score of 48 with ($M = 37.3$, $SD = 5.6$). NA scores ranged from a minimum of 10 to a maximum score of 32, with ($M = 16.8$, $SD = 5.0$). The results of this study suggests overall moderate PA and low NA suggesting moderate participant well-being. Table 4.4 provides the descriptive statistics for PANAS.

**Leadership Effectiveness Performance Appraisal Score (PAS).** In this study, the participant’s performance appraisal score (PAS) was used as one of two measures for leadership effectiveness. PAS reflects the participants’ ability to influence followers to achieve organizational objectives as evaluated by the participant’s direct manager. PAS has five levels: a) $1 = \text{unacceptable}$, b) $2 = \text{needs improvement}$, c) $3 = \text{meets expectations}$, d) $4 = \text{consistently exceeds expectations}$, and e) $5 = \text{exceptional}$. Excel was used to compute descriptive statistics. Eighty-one percent of participants were rated consistently exceeds expectations with 15.7% rated as meets expectations ($M = 3.84$, $SD = .44$). The results of this study suggests many participants demonstrated high leadership effectiveness PAS. Table 4.4 provides a summary of leadership effectiveness PAS descriptive statistics.

**Leadership Effectiveness Net Promoter Score (NPS).** In this study, the participant’s net promoter score (NPS) was used as the second measure for leadership effectiveness. NPS represents the followers’ assessment of the participant’s leadership effectiveness. NPS is a measure of employee engagement and specifically captures the follower’s intention to promote the company to others and to stay with the company,
which is influenced by the leader. The NPS is a single score, based on a -100% to +100% scale. A positive NPS score of 0% or higher is indicative of positive employee engagement, whereas a negative NPS is indicative of unsatisfactory employee engagement. Excel was used to compute descriptive statistics. NPS scores for participants in this study ranged from a low of -66 to a high of +100 with \( M = 56.6, SD = 35.9 \).

Based on this study, 93% \( (n = 87) \) of participants were rated with positive NPS. The findings of this study suggests participants demonstrated moderate to high leadership effectiveness NPS. Ten leaders did not have a NPS score resulting in \( N = 92 \). Table 4.4 provides a summary of NPS descriptive statistics.

### Table 4.4

**Descriptive Statistics for Leader Mindfulness, Well-being, and Leadership Effectiveness**

<table>
<thead>
<tr>
<th>Measures</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAS Mean</td>
<td>102</td>
<td>4.59</td>
<td>.69</td>
<td>2.80</td>
<td>6.00</td>
</tr>
<tr>
<td>PANAS Positive Affect (PA)</td>
<td>102</td>
<td>37.3</td>
<td>5.6</td>
<td>25</td>
<td>48</td>
</tr>
<tr>
<td>PANAS Negative Affect (NA)</td>
<td>102</td>
<td>16.8</td>
<td>5.0</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Leadership Effectiveness PAS</td>
<td>102</td>
<td>.44</td>
<td>3.84</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Leadership Effectiveness NPS</td>
<td>93</td>
<td>35.9</td>
<td>56.6</td>
<td>-66.0</td>
<td>100</td>
</tr>
</tbody>
</table>

**Notes:**

MAAS = Mindfulness Awareness Attention Scale. The possible range of composite scores for MAAS was 15 - 90. \( N = 102 \). MAAS Mean possible range of mean values 1.00 – 6.00. \( N = 102 \).

PANAS = Positive and Negative Affect Schedule. PA = Positive Affect. NA = Negative Affect. The possible range of scores for PA or NA scale was 10 - 50. \( N = 102 \).

Leadership Effectiveness PAS = Performance Appraisal Score. Performance appraisal score variables were entered as: 1 = Unacceptable, 2 = Needs Improvement, 3 = Meets Expectations, 4 = Consistently Exceeds Expectations, and 5 = Exceptional. \( N = 102 \).

Leadership Effectiveness NPS = Net Promoter Score. Possible range of scores -100 to +100. \( N = 93 \).
Results

Preliminary Data Analyses

Prior to conducting data analyses, the data was examined, cleaned, and formatted. Participants with missing data were removed from the file. SPSS and R/RStudio were used to conduct all preliminary data analyses including a Pearson’s product-moment correlation coefficients, ANOVAs, ANCOVAs, t tests, and post hoc analysis.

First, a Pearson’s product-moment correlation coefficient ($r$) was calculated between outcome variables and produced scores between $-.01 > r > .38$ (Holosko & Thyer, 2011). Dispositional mindfulness has a significant positive relationship with well-being PA $r (102) = .37$, $p < .001$ and a significant negative correlation with well-being NA $r (92) = -.26$, $p = .01$ which suggests as participant dispositional mindfulness tended to increase, well-being improved on both scales. There is a significant positive correlation between mindfulness practice time and well-being PA $r (77) = .23$, $p = .05$ which suggests as mindfulness practice time increased well-being PA also tended to increase.

Dispositional mindfulness and mindfulness practice are positively correlated with well-being PA. However, there are two small correlations between leadership effectiveness NPS and well-being NA $r (92) = .26$, $p < .01$ and dispositional mindfulness $r (92) = -.26$, $p = .01$ that are contrary to the literature where increased leadership effectiveness NPS tended to increase well-being NA and tended to decrease dispositional mindfulness as reflected in Table 4.5 (Wasylkiw et al., 2015).

Next, correlations between demographic variables, predictor, and outcome variables were explored. Several covariates had a significant relationship with a predictor or outcome variables; however, none of the covariates showed a significant relationship
Table 4.5

Pearson’s Product Moment Correlation Coefficients Among Variables ($N = 102$)

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dispositional Mindfulness (MAAS)</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Well-being Positive Affect (PANAS PA)</td>
<td>.37**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Well-being Negative Affect (PANAS NA)</td>
<td>-.38**</td>
<td>-.24*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Leadership Effectiveness - PAS</td>
<td>.08</td>
<td>.03</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Leadership Effectiveness - NPS</td>
<td>-.26*</td>
<td>.04</td>
<td>.26*</td>
<td>.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. MLDP Dosage</td>
<td>-.08</td>
<td>.19</td>
<td>-.06</td>
<td>.12</td>
<td>.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Total Mindfulness Practice Time</td>
<td>.15*</td>
<td>.23*</td>
<td>-.05</td>
<td>.06</td>
<td>-.09</td>
<td>.09</td>
<td></td>
</tr>
</tbody>
</table>

Note: MAAS – Mindfulness Awareness Attention Scale. PANAS PA = Positive and Negative Affect Schedule, Positive Affect. PANAS NA = Positive and Negative Affect Schedule, Negative Affect. PAS = Performance Appraisal Score. NPS = Net Promoter Score. MLDP = Mindful Leadership Development Program.

*p = .05. **p = .01 =

with both a predictor and outcome variable. One-way between subjects ANOVAs were computed to determine statistically significant differences for mindfulness, well-being PA and NA, and leadership effectiveness PAS and NPS outcome variables based on covariates including age, ethnicity, education, organizational level, years of service, years in a leadership role, and number of direct reports and no significant differences were found. A Welch’s $t$ test was computed to address unequal variances and unequal sample sizes for gender and outcome variables. The results were statistically significant Welch’s $F(1, 100) = 4.13, p = .05$ for leadership effectiveness PAS. Therefore, men ($M = 3.9, SD = .05$) received higher performance appraisal scores from their supervisors than women.
No significant differences in average values based on gender were found for mindfulness, well-being, and leadership effectiveness NPS outcome variables.

**Covariates**

For this study, participant demographic data was used as covariates and included: gender, age, ethnicity, highest education level completed, leadership title, years in a leadership role, number of direct reports, and years of service.

**Substantive Analyses**

For this study, a series of hierarchical multiple linear regression models were estimated to test the hypotheses that completion of mindful leadership development programs and increased dosage of these programs predicted participant dispositional mindfulness, well-being, and leadership effectiveness as compared to participants who had not completed these programs or completed lower doses. It was also hypothesized that participants who practiced mindfulness were more effective, would experience higher levels of dispositional mindfulness and well-being, than participants who did not practice mindfulness. Data from the demographic and mindfulness practice survey questions, the MAAS, the PANAS, and two leadership effectiveness scores, PAS and NPS, were used to build the regression models.

As a first step, SPSS was used to estimate hierarchical multiple linear regression models for each outcome variable: (a) dispositional mindfulness, (b) well-being PA, (c) well-being NA, (d) leadership effectiveness performance appraisal score (PAS), and (e) leadership effectiveness net promoter score (NPS) with the following covariates: gender, age, ethnicity, highest education level completed, leadership title, years in a leadership role, number of direct reports, and years of service.
Next, as a second step, predictor variables were added one at a time to each model: (a) presence of mindful leadership development, (b) mindful leadership development dosage, and (c) mindfulness practice time. Statistical outcomes were compared to determine the proportion of variance explained by the addition of the predictor variable for each outcome model: dispositional mindfulness, well-being PA and NA, and leadership effectiveness PAS and NPS. Presence of mindful leadership development variable was entered as a presence/absence variable, where 0 = absence and 1 = presence. The mindful leadership development program dosage variable was entered as four variables, where 0 = no program dose completed, 1 = one program dose completed, 2 = two program doses completed, and 3 = the maximum dosage of three programs completed.

**Research Question 1**

Research Question 1 (RQ1) examined whether participation in mindful leadership development programs predicted dispositional mindfulness, well-being PA and NA, and leadership effectiveness PAS and NPS. Covariates accounted for 13.5% of the proportional variance in the model predicting well-being. Following the addition of the presence of mindful leadership development programs, the model was statistically significant $F(9, 92) = 1.96$, $p = .05$, accounting for an additional 16% of the proportional variance. Consistent with the hypothesis, presence of mindful leadership development programs predicted participant well-being for the participants in this study. The model predicting dispositional mindfulness did not reach significance $F(9, 92) = 1.79$, $p = .08$. contrary with the study hypothesis and with the literature (Aikens et al., 2014; Roeser et al., 2013; Wasylkiw et al., 2015). Models for dispositional mindfulness, well-being
NA, and leadership effectiveness PAS and NPS were not significant. Therefore, the participants in this study who completed mindful leadership development programs reported higher well-being PA as compared to participants who did not complete any programs. The results of the analyses to answer RQ1 are summarized in Table 4.6.

**Research Question 2**

Research Question 2 (RQ2) explored whether mindful leadership development program dosage predicted dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders. Covariates accounted for 10% of the proportional variance in the model predicting leadership effectiveness PAS where mindfulness practice accounted for an additional 14% of the proportional variance in the model which was statistically significant \( F(9, 92) = 2.03, p = .05 \). Models for dispositional mindfulness, well-being PA and NA, and leadership effectiveness NPS were not significant. Therefore, the participants in this study who reported completion of mindful leadership development programs reported higher well-being PA and were assessed as more effective by their direct managers as compared to participants who did not complete any programs. Table 4.7 reflects the results of the regression modelling.
### Table 4.6

Summary of Hierarchical Multiple Linear Regression Analysis for Variables Predicting Dispositional Mindfulness, Well-being, and Leadership Effectiveness Based on Presence of Mindful Leadership Development Programs (N = 102)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mindfulness</th>
<th>Well-being PA</th>
<th>Well-being NA</th>
<th>Leadership Effectiveness PAS</th>
<th>Leadership Effectiveness NPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td><strong>Step 1 df = 8, 93</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.123</td>
<td>.161</td>
<td>.077</td>
<td>-.003</td>
<td>.031</td>
</tr>
<tr>
<td>Age</td>
<td>.232</td>
<td>.084</td>
<td>.311</td>
<td>-.006</td>
<td>.040</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.018</td>
<td>.088</td>
<td>.021</td>
<td>.076</td>
<td>.041</td>
</tr>
<tr>
<td>Education</td>
<td>-.005</td>
<td>.069</td>
<td>-.007</td>
<td>.043</td>
<td>.032</td>
</tr>
<tr>
<td>Leader Level</td>
<td>.071</td>
<td>.075</td>
<td>.098</td>
<td>-.052</td>
<td>.035</td>
</tr>
<tr>
<td>Years in Leader</td>
<td>.017</td>
<td>.084</td>
<td>.029</td>
<td>.065</td>
<td>.039</td>
</tr>
<tr>
<td>Leader Role</td>
<td>-.155</td>
<td>.085</td>
<td>-.278</td>
<td>-.029</td>
<td>.040</td>
</tr>
<tr>
<td>Number of Direct</td>
<td>.024</td>
<td>.067</td>
<td>.036</td>
<td>-.033</td>
<td>.031</td>
</tr>
<tr>
<td>Reports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 df = 9, 92</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of MLDLP</td>
<td>-.33</td>
<td>.15</td>
<td>-.23</td>
<td>.08</td>
<td>.09</td>
</tr>
<tr>
<td>R²</td>
<td>.32</td>
<td>.40</td>
<td>.11</td>
<td></td>
<td>.11</td>
</tr>
<tr>
<td>F for change in R²</td>
<td>4.86</td>
<td>2.76*</td>
<td>1.27</td>
<td></td>
<td>.89</td>
</tr>
</tbody>
</table>

Notes: Mindful leadership development programs were entered as presence/absence variables where absence = 0 and presence = 1. Well-being PA = Positive Affect. Well-being NA = Negative Affect. PAS = Performance Appraisal Score. NPS = Net Promoter Score.

*p = < .05.
Table 4.7

Summary of Hierarchical Multiple Linear Regression Analysis Predicting Dispositional Mindfulness, Well-being, and Leadership Effectiveness Based on Mindful Leadership Development Program Dosage (N = 102)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mindfulness</th>
<th>Well-being PA</th>
<th>Well-being NA</th>
<th>Leadership Effectiveness PAS</th>
<th>Leadership Effectiveness NPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Step 1 df = 8, 93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.123</td>
<td>.161</td>
<td>.077</td>
<td>-.133</td>
<td>.076</td>
</tr>
<tr>
<td>Age</td>
<td>.232</td>
<td>.084</td>
<td>.311</td>
<td>-.006</td>
<td>.040</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.018</td>
<td>.088</td>
<td>.021</td>
<td>.076</td>
<td>.041</td>
</tr>
<tr>
<td>Education</td>
<td>-.005</td>
<td>.069</td>
<td>-.007</td>
<td>.043</td>
<td>.032</td>
</tr>
<tr>
<td>Leader Level</td>
<td>.071</td>
<td>.075</td>
<td>.098</td>
<td>-.052</td>
<td>.035</td>
</tr>
<tr>
<td>Service Years in a Leader Role</td>
<td>.017</td>
<td>.084</td>
<td>.029</td>
<td>.065</td>
<td>.039</td>
</tr>
<tr>
<td>Number of Direct Reports</td>
<td>-.155</td>
<td>.085</td>
<td>-.085</td>
<td>-.029</td>
<td>.040</td>
</tr>
<tr>
<td>Step 2 df = 9, 92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLDP Dosage</td>
<td>.136</td>
<td>.065</td>
<td>-.097</td>
<td>.091</td>
<td>.054</td>
</tr>
<tr>
<td>R²</td>
<td>.11</td>
<td></td>
<td>.08</td>
<td></td>
<td>.22</td>
</tr>
<tr>
<td>F for change in R²</td>
<td>1.29</td>
<td>.84</td>
<td>1.19</td>
<td></td>
<td>1.48*</td>
</tr>
</tbody>
</table>

Notes: MLDP = Mindful Leadership Development Programs. Mindful leadership development program dosage variables were entered as: 0 = no dose, 1 = one dose, 2 = two doses, and 3 = three doses. Well-being PA = Positive Affect. Well-being NA = Negative Affect. PAS = Performance Appraisal Score. NPS = Net Promoter Score.

*p = < .05.
Research Question 3

Research Question 3 (RQ3) explores whether mindfulness practice predicted well-being, dispositional mindfulness, and leadership effectiveness among global manufacturing leaders. Covariates accounted for 10% of the proportional variance in the model predicting leadership effectiveness PAS where mindfulness practice time accounted for an additional 21% of the proportional variance in the model which was statistically significant $F(9, 57) = 1.82, p = .04$. The results for the remaining models were not statistically significant. Therefore, study participants who reported engaging in mindfulness practices received higher leadership effectiveness PAS than leaders who did not engage in mindfulness practices (Table 4.8).

Participant Survey Feedback

In this study, participants were asked to share feedback regarding the survey. Twenty participants provided comments. Comments included specific feedback on survey mechanics and user experience ($n = 4$) in addition to several comments ($n = 16$) which concerned aspects of mindfulness. This section will summarize participant feedback related to mindfulness, and mindfulness practices, well-being, and leadership effectiveness.

Participants in this study commented on a variety of mindfulness practice modalities and the perceived benefit of meditation, breathing, and mindful movement. “I started practicing daily meditation in 2018 to help manage stress and the practice has grown over the past couple of years as I’ve realized the immense benefit of it.” In addition to meditation, other forms of meditative practice were thought to alleviate
Table 4.8

Summary of Hierarchical Multiple Linear Regression Analysis Predicting Dispositional Mindfulness, Well-being, and Leadership Effectiveness Based on Mindfulness Practice Time (N = 66)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mindfulness B</th>
<th>SE B</th>
<th>β</th>
<th>Well-being PA B</th>
<th>SE B</th>
<th>β</th>
<th>Well-being NA B</th>
<th>SE B</th>
<th>β</th>
<th>Leadership Effectiveness PAS B</th>
<th>SE B</th>
<th>β</th>
<th>Leadership Effectiveness NPS B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>Step 1 df = 8, 58</td>
<td></td>
<td></td>
<td></td>
<td></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>Gender</td>
<td>-.14</td>
<td>.21</td>
<td>-.09</td>
<td>-.272</td>
<td>1.39</td>
<td>-.24</td>
<td>-.18</td>
<td>.13</td>
<td>-.17</td>
<td>-.27</td>
<td>.14</td>
<td>-.26</td>
<td>-17.05</td>
<td>10.19</td>
<td>-.22</td>
</tr>
<tr>
<td>Age</td>
<td>.17</td>
<td>.12</td>
<td>.20</td>
<td>.38</td>
<td>.72</td>
<td>.07</td>
<td>-.04</td>
<td>.07</td>
<td>-.08</td>
<td>.00</td>
<td>.07</td>
<td>.00</td>
<td>-2.36</td>
<td>5.42</td>
<td>-.06</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.01</td>
<td>.01</td>
<td>.02</td>
<td>-.01</td>
<td>.77</td>
<td>-.00</td>
<td>.10</td>
<td>.07</td>
<td>.17</td>
<td>.05</td>
<td>.06</td>
<td>.09</td>
<td>14.42</td>
<td>4.79</td>
<td>.38</td>
</tr>
<tr>
<td>Education</td>
<td>.02</td>
<td>.08</td>
<td>.03</td>
<td>.40</td>
<td>.59</td>
<td>.08</td>
<td>.06</td>
<td>.06</td>
<td>.14</td>
<td>-.05</td>
<td>.05</td>
<td>-.12</td>
<td>.91</td>
<td>3.59</td>
<td>.03</td>
</tr>
<tr>
<td>Leader Level</td>
<td>-.01</td>
<td>.10</td>
<td>-.02</td>
<td>-.42</td>
<td>.63</td>
<td>-.08</td>
<td>-.04</td>
<td>.06</td>
<td>-.09</td>
<td>.03</td>
<td>.07</td>
<td>.06</td>
<td>-2.45</td>
<td>4.81</td>
<td>-.07</td>
</tr>
<tr>
<td>Service Years</td>
<td>-.04</td>
<td>.11</td>
<td>.06</td>
<td>.73</td>
<td>.78</td>
<td>.17</td>
<td>-.02</td>
<td>.07</td>
<td>-.04</td>
<td>-.00</td>
<td>.07</td>
<td>-.02</td>
<td>-.16</td>
<td>5.20</td>
<td>-.06</td>
</tr>
<tr>
<td>Leader Role</td>
<td>-.13</td>
<td>.11</td>
<td>-.23</td>
<td>-.49</td>
<td>.75</td>
<td>-.12</td>
<td>.03</td>
<td>.07</td>
<td>.08</td>
<td>-.01</td>
<td>.07</td>
<td>-.02</td>
<td>2.01</td>
<td>5.12</td>
<td>.07</td>
</tr>
<tr>
<td>Number of Direct Reports</td>
<td>-.01</td>
<td>.08</td>
<td>-.02</td>
<td>-.35</td>
<td>.54</td>
<td>-.08</td>
<td>-.04</td>
<td>.05</td>
<td>-.10</td>
<td>-.01</td>
<td>.05</td>
<td>-.01</td>
<td>-4.98</td>
<td>4.03</td>
<td>-.16</td>
</tr>
<tr>
<td>Step 2 df = 9, 57</td>
<td></td>
<td></td>
<td></td>
<td></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>Mindfulness Practice Time</td>
<td>-.01</td>
<td>.01</td>
<td>-.097</td>
<td>.11</td>
<td>.07</td>
<td>.18</td>
<td>-.00</td>
<td>.00</td>
<td>-.05</td>
<td>.11</td>
<td>.05</td>
<td>.39*</td>
<td>-.33</td>
<td>.38</td>
<td>-.12</td>
</tr>
<tr>
<td>R²</td>
<td>.11</td>
<td></td>
<td></td>
<td></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>F for change in R²</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Well-being PA = Positive Affect. Well-being NA = Negative Affect. PAS = Performance Appraisal Score. NPS = Net Promoter Score.

*p = < .05.
anxiety for participants: “Centering and controlled breathing really works for me, particularly during anxious times.” One participant highlighted the importance of awareness and how noticing becomes a mindfulness practice, “I still find my mind wondering to the past and present frequently; however, I now tend to catch myself quickly and pull myself back to the present. I get better at this each day.”

The participant comments suggest mindfulness and mindfulness practice provided benefits that included enhanced well-being and leadership effectiveness, as well as benefits beyond aspects of work life. For example, one participant shared, “These mindfulness practices have significantly changed my ability to be an effective leader and a stronger person. I cannot say enough good things about this type of behavior.” The perceptions shared by the participants underscore the value and benefits ascribed to mindfulness and mindfulness practice to strengthen leadership effectiveness. Mindfulness and consistent practice were seen to help leaders alleviate stress and anxiety, to deepen presence, build self-awareness, as well as to enhance well-being, and provide other benefits outside of work for global manufacturing leaders facing VUCA environments.

Summary

The purpose of this study was to examine the effects of mindful leadership development programs and mindfulness practice on leader mindfulness, well-being, and leadership effectiveness among global leaders in a VUCA manufacturing environment. This chapter reported the results of the study based on hierarchical multiple linear regression statistical analysis of data collected from the study’s survey questionnaire and third-party provided leadership effectiveness data.
In response to the three research questions, data analysis uncovered several statistically significant findings. Overall, the results provided empirical evidence for the impact of mindful leadership development programs on dispositional mindfulness, well-being PA, and leadership effectiveness PAS. The study results also provided evidence that mindfulness practice has a statistically significant impact on well-being PA and leadership effectiveness PAS.

The third section provided a summary of participant survey feedback which reinforced the perceived positive impact of mindfulness, and mindfulness practice to alleviate leader stress and anxiety, enhance well-being, and build leadership effectiveness. Chapter 5 will interpret the results and discuss the implications for practice, limitations, and recommendations for future research.
Chapter 5: Discussion

Introduction

Global manufacturing leaders face an unprecedented age of rapid change with VUCA business conditions (Brendel et al., 2015). Organizations across the globe continue to report challenges to develop leaders with the competencies needed for success (IBM, 2010, 2019). Weiss and Molinaro (2010) postulate that a gap exists between the demands of the VUCA work environment and the developmental maturity and readiness of leaders. In VUCA environments, leaders need different competencies including self-awareness and self-regulation to manage increased stress, maintain health and well-being, and lead effectively (Bird et al., 2010; Hall & Rowland, 2015). Mounting evidence points to the benefits of mindfulness to reduce stress and anxiety in addition to an array of behavioral and cognitive improvements in self-awareness, awareness of others, self-regulation, focus and concentration, decision making, and creativity (Atkins & Styles, 2017; Brendel et al., 2016; Donaldson-Feilder et al., 2019; King & Haar, 2014; Pipe et al., 2009; Wasylkiw et al., 2015).

Some organizations are using mindful leadership development programs to equip leaders with the skillset to meet the challenges of VUCA environments while maintaining well-being (Aikens et al., 2014; Gelles, 2016; Jennings et al., 2011; Judge et al., 2002; King & Haar, 2014; Lippincott, 2018; Mahfouz, 2018; Marturano, 2014; Rupprecht et al., 2019; Tan, 2012; Uhl-Bien & Marion, 2009). While a few global organizations offer
mindful leadership development programs, there is a significant gap between industry practices and scholarly research (Donaldson-Feilder et al., 2019; Gelles, 2016).

The focus of this study was to explore the effects of mindful leadership development programs and mindfulness practice on dispositional mindfulness, well-being, and leadership effectiveness among global leaders in manufacturing facing VUCA environments. The quantitative quasi-experimental research methodology allowed the researcher to conduct a study with a global manufacturing organization committed to actively supporting mindful leadership development programs.

Multiple hierarchical linear regression models were estimated test the hypotheses that completion of mindful leadership development programs and mindfulness practice would increase leader dispositional mindfulness, well-being, and leadership effectiveness PAS and NPS. The participants in this study who had some level of mindful leadership development programs reported a higher well-being positive affect, which was statistically significant (PA) $F(9, 92) = 1.96, p = .05$. Leaders who completed at least one dose of a mindful leadership development program received higher leadership effectiveness performance appraisal scores (PAS) from their direct managers, which was statistically significant $F(9, 92) = 2.03, p = .05$. Also, findings in this study provide evidence that participants who engaged in mindfulness practices received higher leadership effectiveness performance appraisal scores (PAS) from their direct managers, which was statistically significant $F(9, 57) = 1.82, p = .04$. Leadership effectiveness NPS was not statistically significant.

Chapter 5 provides a discussion and interpretation of the results of this study and is divided into four sections. The first section discusses the implications on the findings
of the study for the body of knowledge, professional practice for global manufacturing leaders, mindful leadership development programs, organizational culture, and executive leadership. The second section describes the limitations of this study. The third section offers recommendations for future research, professional practice for global manufacturing leaders, mindful leadership development programs, organizational culture and strategy, and executive leadership. The fourth section provides a chapter summary.

Implications of the Findings

The results from this study reveal several implications related to mindful leadership development programs and mindfulness practice for leaders in global manufacturing roles facing VUCA work environments.

Expanding the Body of Knowledge

This study expands upon the body of knowledge regarding mindfulness and leadership in several ways including theory, research methodology, measures, and study participants.

The IAA model (Shapiro et al., 2006) depicts the mechanism of mindfulness as a process to effect positive behavioral and cognitive changes and assumes individuals have the innate ability to be more aware of experiences that may lead to healthy, adaptive changes in thinking, attitudes, and behaviors. Shapiro et al.’s (2006) IAA model describes mindfulness through the combination of three tenets where intentionally attending in the moment with awareness, combined with the appropriate attitudinal foundation, leads to a shift in perspective. This shift in perspective is thought to enable adaptive, cognitive, and behavioral flexibility necessary for learning and skill development to occur. Few studies include the IAA model (Shapiro et al., 2006) or identify the specific mechanism of
mindfulness may enable leaders to develop self-awareness and self-regulation in VUCA environments (Jamieson & Tuckey, 2017).

This study expanded the application of the IAA model (Shapiro et al., 2006) as a theoretical lens in three ways: (a) to manufacturing leaders, which represents a new population of interest; (b) to a new work setting, global manufacturing organization operating in VUCA environments; and (c) to mindful leadership development programs. For this study, the IAA model of mindfulness (Shapiro et al., 2006) provides the theoretical perspective to understand and explain the effect of mindful leadership development programs and mindfulness practice on leaders working in global, VUCA manufacturing environments.

In this study, the leaders who completed at least one mindful leadership development program reported higher well-being PA. Even though moderate dispositional mindfulness was reported that was not statistically significant, these leaders may have learned how to shift perspective in dynamic VUCA environments to manage stress more effectively than leaders who did not complete mindful leadership development programs. The mechanism of mindfulness is thought to promote a shift in perspective to develop specific competencies relating to leadership effectiveness and well-being including self-awareness, self-regulation, and openness to new experience (Goleman, 1995; Jazaieri & Shapiro, 2017; Jazaieri et al., 2016; Jha et al., 2010; Livermore, 2015; Shapiro et al., 2006; Wasylkiw et al., 2015).

Leader healthy psychological well-being is thought to positively influence leadership effectiveness. The findings in this study imply completion of mindful leadership development programs may have influenced adaptive behavior for leaders to
manage increased pressure and stress to perform better in VUCA environments in global manufacturing even in the wake of COVID-19.

The findings of this study contribute evidence for Lippincott’s (2018) conceptual framework which describes how the mechanism of mindfulness may support leadership development. Similar to the IAA model (Shapiro et al., 2006), Lippincott’s (2018) theoretical framework suggests as leader self-awareness and self-regulation deepen, behavioral competencies develop, leadership competencies strengthen, and leadership effectiveness improves. Lippincott’s (2018) model suggest mindfulness training and practice bring rise to neurological changes in several areas of the brain that, in turn, enable behavioral competency development. While this study did not measure neurological changes in the brain, this study did provide evidence of changes in leader well-being PA and leadership effectiveness PAS for participants who completed some level of mindful leadership development and engaged in mindfulness practices. The findings in this study imply that completion of mindful leadership development programs and consistent mindfulness practice may have led to changes in participant behavior that supported higher well-being PA and leadership effectiveness for global manufacturing leaders facing VUCA environments.

Much of the evidence that supports a relationship between mindfulness and leadership effectiveness is drawn from self-reported measures (Dane & Brummel, 2014; Good et al., 2015; Lippincott, 2018; Roche et al., 2014). The exclusive use of self-reported data in research can introduce common-method bias whereby variations in responses may be caused by the instrument and not capture the actual tendency of the participants (Huck, 2012). Collecting data from multiple sources helps to control for
common method bias (Podsakoff et al., 2003). To address possible common method bias, this study used two forms of third-party generated data sourced directly from the organization.

Self-reported well-being measures are often used as a proxy for leadership effectiveness in mindfulness leadership research. Leader well-being is considered an indicator of leadership effectiveness following a line of reasoning that the leader’s psychological health directly influences leadership performance (Donaldson-Feilder et al., 2019). This study expanded the body of knowledge by adding two new measures of leadership effectiveness to augment leader self-reported measures. Based on the findings in this study global manufacturing leaders who completed one mindful leadership development course received higher leadership effectiveness annual PAS.

This study expanded on the mindful leadership program research on leaders by using the same measure for well-being as Jha et al. (2010) who examined U.S. military leaders facing deployment in VUCA conditions. The leaders in this study reported similar total scores of PANAS PA ($M = 37.3$, $SD = 5.6$) and NA ($M = 16.8$, $SD = 5.0$) as the military leaders (Jha et al., 2010) with ranges PANAS PA ($M = 36.6$, $SD = 5.3$) and NA ($M = 17.7$, $SD = 5.5$). Both studies reported leaders who completed mindful leadership development perceived improvements in well-being PA. The comparison could imply that leaders in different business sectors facing VUCA conditions who complete mindful leadership development programs may also report increased well-being PA.

This study expanded the research of Aikens et al. (2014) by focusing exclusively on manufacturing leaders and included leaders from global locations. Aikens et al.’s (2014) study examined the effects of an online mindfulness workplace development
program on employees and leaders working in a U.S. manufacturing setting; however, leader outcomes were not reported separately. Aikens et al. (2014) reported that mindfulness decreased stress, increased mindfulness, resiliency, and vigor. The findings of this study contributed additional evidence to Aikens et al.’s (2014) research suggesting global manufacturing leaders who completed mindful leadership development programs and engaged in consistent mindfulness practices experienced higher well-being and delivered stronger performance.

In this study male leaders \((n = 76)\) outnumbered female leaders \((n = 26)\) almost 3 to 1. According to Deloitte (2015), women hold 27% of manufacturing roles; however, women comprise almost 47% of the total U.S. work force. Women in leadership positions in manufacturing lags behind other business sectors (Deloitte, 2015). While the percentage of global women leaders in this study is similar to the U.S. percentage, women are underrepresented in manufacturing. Based on the findings of this study, there are implications for future research.

The findings in this study also revealed male leaders received higher leadership effectiveness performance appraisal scores as compared to female leaders. Hoyt and Burnette’s (2013) study on gender bias in leader evaluations suggests prevailing attitudes toward women in authority significantly predicted a pro-male gender bias in leader evaluations. The findings of this study may imply female leaders in global manufacturing may not be seen as effective as their male counterparts.

**Professional Practice of Global Manufacturing Leaders**

Empirical research has focused on mindfulness and leaders, but far fewer studies have focused on the effects of mindful leadership development programs among global
manufacturing leaders facing volatile and uncertain environments (Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Lomas et al., 2017). The findings in this study provide evidence that completion of mindful leadership development programs increased well-being PA for global manufacturing leaders. Leaders who reported higher levels of well-being PA may be insulated against the pressures of VUCA environments that can lead to stress and anxiety. Therefore, the participants in this study may have developed some enhanced capacity to manage stress in a VUCA work environment. Well-being is an important competency for leaders to develop as a protective resource to buffer the stress of VUCA environments (Mahfouz, 2018). Increased stress in the workplace may interfere with leader and follower ability to achieve organizational goals, thereby compromising leadership effectiveness. When leaders know how to develop and maintain psychological health, they may be able to regulate reactions to pressure in healthier ways. Therefore, to mitigate the potential for escalating stress in VUCA environments, global manufacturing leaders may want to consider completing mindful leadership development programs as a means to increase well-being PA.

The performance appraisal score is a measure of leadership effectiveness and reflects the leader’s ability to achieve organizational goals and objectives through followers, as evaluated by their direct manager (Hogan & Kaiser, 2005). The findings in this study provided evidence that completion of one mindful leadership development program resulted in higher performance appraisal scores for global manufacturing leaders even when controlling for gender. This implies that global manufacturing leaders who completed mindful leadership development programs may interact with followers differently to influence performance as evidenced by higher performance appraisal
scores. The leaders in this study who completed one mindful leadership development program leaders also reported higher well-being PA, $F(9, 92) = 1.96 \ p = .05$, where covariates accounted for 13.5% of the proportional variance in the model predicting well-being. Following the addition of the presence of mindful leadership development programs, the model was statistically significant $F(9, 92) = 1.96 \ p = .05$, accounting for an additional 16% of the proportional variance.

These findings suggest the leaders in this study may be able to manage the pressure of the VUCA work environments more effectively. When leaders can manage psychological well-being in VUCA environments, leaders may have increased capacity to be present with followers and attend to work matters with greater clarity and as a result may influence better results at work (Beach et al., 2013; Mahfouz, 2018; Wasylkiw et al., 2015). Followers may be more receptive to leaders who are psychologically healthy, self-aware, and more skilled at regulation emotions (Mahfouz, 2018; Reb et al., 2012). Therefore, global manufacturing leaders who completed one mindful leadership development program may experiences less stress and influence follower performance to achieve goals.

To cultivate a new skill, consistent exercise or practice has been shown to be essential (Hall & Rowland, 2015; Iordanoglou, 2018; Jazaieri & Shapiro, 2017; Jazaieri et al., 2016; Lawrence, 2013; Petrie, 2011; Stomski & Leisten, 2015). The models predicting the effects of mindfulness practice were significant and revealed that leaders who reported engaging in mindfulness practices received higher annual leadership effectiveness PAS from their direct manager as compared to leaders who did not practice mindfulness, $F(9, 57) = 1.82, \ p = .04$, accounting for 21% of the variance. These findings
imply global manufacturing leaders who engage in mindfulness practices may be better able to influence follower performance and be perceived as more effective by their direct managers. Therefore, global manufacturing leaders may consider developing a consistent mindfulness practice to improve leadership effectiveness.

*Mindful Leadership Development Programs*

CEOs of for-profit companies have reported ongoing challenges to develop leaders for the fast-paced 21st century (IBM, 2010, 2019). Global companies are experimenting with mindful leadership development programs to prepare leaders for dynamic VUCA work environments (Brendel et al., 2015; Gelles, 2016). Evidence points to the benefits of mindfulness to reduce stress and anxiety, in addition to providing behavioral and cognitive improvements thought to support well-being and leadership effectiveness in volatile environments (Brendel et al., 2015). In this study, 80% of participants attended at least one mindful leadership development program. Three courses were offered, and the results of this study suggests one course was sufficient for leaders to gain a statistically significant benefit for well-being and leadership effectiveness.

The first mindful leadership development course provided the introduction and foundation for mindfulness which focused on behavioral and cognitive shifts in perspective: (a) prepare yourself ahead of time and (b) manage yourself before, during, and after. Both themes established expectations for leaders to be mindful, present, and aware of thoughts and emotions and that may impact behavior and self-regulation. Education, discussion, reflection, and mindfulness practices reinforced the main themes to increase participant self-awareness, self-regulation, awareness of others, empathy, and
self-mastery. The models predicting the effects of mindful leadership development programs in this study provided evidence that leaders who completed one dose of mindful leadership development programs exhibited enhanced well-being PA which was statistically significant $F(9, 92) = 1.96, p = .05$, accounting for an additional 16% of the proportional variance, and leadership effectiveness which was also statistically significant $F(9, 92) = 2.03, p = .05$, which accounted for an additional 14% of the proportional variance.

This finding implies that global manufacturing leaders may not need numerous course doses to receive better psychological health and increased performance PAS from completing mindful leadership development programs (Brendel et al., 2015; Wasylkiw et al., 2015). Therefore, organizations may be able to save money and reduce the time required to develop leaders by offering one mindful leadership development program to increase leader well-being and enhance performance.

**Organizational Culture and Strategy**

The findings of this study have implications for organizational culture and strategy in global manufacturing organizations. Schein, (2017) attests culture plays an important role for leadership and organizational success. For several companies, mindfulness was treated as a strategic imperative and efforts were launched to align strategy to a mindful organizational culture including Aetna, Apple, Eileen Fisher, Google, and Intel (Brendel et al., 2016; Gelles, 2016). In this study, the mindful leadership development programs integrated mindfulness to business strategy in the first program and reinforced the role mindfulness and mindful leadership plays to support business success in dynamic VUCA environments. Gebauer (2012) posits leaders and
organizations can better manage the demands of volatile and uncertain business conditions by pursuing mindfulness as a strategy and building a culture of mindfulness to manage the business and people. The findings in this study provide evidence of the impact of mindful leadership development programs, mindfulness practice and a company committed to mindful leadership on leader well-being PA and leadership effectiveness PAS. The findings imply the importance of integration of culture and strategy to support mindful leadership development (Ehrlich, 2015; Gebauer, 2012).

The findings in this study also revealed male leaders received higher leadership effectiveness performance appraisal scores as compared to female leaders. Hoyt and Burnette’s (2013) study on gender bias in leader evaluations suggests prevailing attitudes toward women in authority significantly predicted a pro-male gender bias in leader evaluations as seen in this study. Manufacturing is among several male dominated industries where there are fewer female leaders (World Economic Forum, 2016). The culture of male dominated industries may not value the contributions of female leaders on par with male leaders (Burnette, 2013). The findings of this study may imply female leaders in global manufacturing may not be seen as effective as their male counterparts regardless of completion of mindful leadership development programs and actual performance outcomes.

**Executive Leadership**

Based on the findings of this study, leaders who completed at least one dose of mindful leadership development programs reported higher well-being PA and received higher leadership effectiveness PAS regardless of level in the organization or years in a leadership role. Evidence suggests a connection between mindful leadership development
programs and improved leader well-being and performance (Wasylkiw et al., 2015). The findings imply that all levels of leaders from team leader to executive had improved psychological health and performed better. Therefore, executive leaders in global manufacturing who want a healthier workforce and better performance may need to consider creating or securing a provider to offer mindful leadership development programs.

In this study, executive leaders shared their personal mindful leadership journey with study participants in each of the mindful leadership development programs. Leaders had the opportunity to understand the impact top leaders in the organization ascribed to mindful leadership programs and consistent mindfulness practices. Based on the results of this study, 80% of leaders completed at least one mindful leadership development program and 75% reported engaging in mindfulness practices. The high percentage of leaders completing mindful development and engaging in mindfulness practices may have been influenced by top leadership testimonials and active involvement in mindfulness practice. Top leadership mindful behaviors may have contributed to the high leadership participation in the voluntary leadership development programs and adoption of mindfulness practices. Therefore, executive leadership support and tone at the top may be needed for leaders to attend mindful leadership development programs and engage in mindfulness practices.

Limitations of the Study

This section presents the limitations of the study that may impact results and findings. The scope of this study was limited to one global manufacturing organization that offers mindful leadership development programs with an ingrained culture that
promotes the benefits of mindfulness for leaders. Any generalizations that may be inferred are limited to global manufacturing leaders working in similar VUCA environments in organizations that offer similar mindful leadership development programs.

Another limitation concerns the potential impact of COVID-19 on leaders’ mindfulness and well-being since this study was launched in the middle of a pandemic. In December of 2019, the first case of the coronavirus disease (COVID-19) was reported and on March 11, 2020, the World Health Organization declared COVID-19 a global pandemic. This study was launched on May 28, 2020 during the first 6 months of the COVID-19 pandemic. The pandemic has added a significant layer of complexity for leaders to manage on top of an already ambiguous and dynamic workplace (New York Times, 2020). The pandemic has had a profound impact on the psychological well-being of people across the world where social isolation, restriction of movement, employment changes, and uncertainty may heighten potential feelings of anxiety, fear, paranoia, and loneliness (Alradhawi, 2020; World Health Organization, 2020). In the literature, it is common for leaders who completed mindful leadership development programs to report higher dispositional mindfulness; however, in this study that was not the finding (Aikens et al., 2014; Wasylkiw et al., 2015). Outcome measures of mindfulness and well-being in this study may have been negatively impacted due to the effects of the COVID-19 pandemic on stress and being present (Alradhawi, 2020).

Lastly, leaders completed mindful leadership development program dosages over time. As leaders accumulated increased dosage levels of mindful leadership development programs, the proximity between completion of programs and assessment may have
influenced study results such that the actual effects of development may have diminished over time. Since this study was conducted as a quasi-experiment, the researcher did not have control over the timing, quality, or content of mindful leadership development program delivery or completion.

**Recommendations**

The findings of this study and the review of literature suggest several recommendations future research, professional practice for leaders, mindful leadership development programs, and organizational culture and strategy, and executive leadership in global manufacturing.

**Future Research**

Based on the results of this study, it is recommended future research explore the lived experiences of global manufacturing leaders who have completed mindfulness-based leadership development programs. A qualitative phenomenological methodology may identify and isolate specific content areas that leaders perceive develop self-awareness, self-regulation, well-being, and contribute to leadership effectiveness. These insights may influence design and efficacy of future mindful leadership development programs.

This study did not find any statistically significant differences in leadership effectiveness NPS following the leader’s completion of mindful leadership development programs or mindfulness practice. It is possible that leadership effectiveness NPS, as a measure, may be indicative of other inputs in addition to the leader’s influence. For example, NPS also concerns the follower’s intention to stay with the company which may have little to do with the leader’s actions at work. Followers are directly impacted by the
leader’s daily performance and are in a unique position to evaluate leadership
effectiveness. Little is known about the effects of mindful leadership development
programs on followers (Donaldson-Feilder, 2019). It may be helpful to understand the
impact of the leader’s completion of mindful leadership development programs and
mindfulness practices on followers. It is recommended that future study expands the
focus regarding the effects of mindful leadership development programs on followers and
leaders.

This quantitative study explored the effects of mindful leadership development
programs and mindfulness practices in one publicly traded, global manufacturing
organization where leader mindfulness was supported and developed. Further research is
needed to validate the findings of this study in other global manufacturing organizations
facing VUCA environments. It is also recommended future research be conducted after
COVID-19 is no longer a public health hazard to assess the impact of mindful leadership
development programs and mindfulness practices on mindfulness and well-being among
global manufacturing leaders facing VUCA environments.

Future studies involving mindful leadership development programs and
mindfulness practices may consider using a true experiment for more control over study
parameters including random selection of participants, creation of a waitlist control
group, and include pre, post and follow-up participant assessments (Aikens et al., 2014;
Pipe et al., 2009; Roeser et al., 2013). A true experiment may also overcome the
proximity between delivery of mindful leadership development programs and the
assessment limitation noted.
It is also recommended future investigation of mindful leadership development programs and mindfulness practices consider longitudinal research methodology to evaluate the impact on leaders as they progress through their careers (Roche et al., 2014). Baron (2015) studied the impact of a 3-year leadership development program that fostered leader mindfulness via changes in leader perspective and behaviors (Shapiro et al., 2006). Such study should consider employ pre, post, and follow-up measures to evaluate potential changes in leader dispositional mindfulness, well-being, and leadership effectiveness over time (Baron, 2015).

This study’s participant population was primarily male and White which is common in the historically male dominated manufacturing sector (World Economic Forum, 2016). Scholarly inquiry may consider expanding future research to include global manufacturing organizations that reflect a more diverse leadership group. Therefore, it is recommended that future research consider studying other global manufacturing organizations to explore the effects of mindful leadership development programs and mindfulness practices on diverse leadership populations.

Women are underrepresented in leadership positions in manufacturing (Deloitte, 2015). In this study, the female leaders represented 25% of the participants. It is recommended future research consider studying female leaders in other global manufacturing organizations to understand the effects of mindful leadership programs on dispositional mindfulness, well-being, and leadership effectiveness to expand empirical understanding.

Professional Practice
The findings of this study suggest online mindful leadership development programs provide global manufacturing leaders a method for development of greater well-being and leadership effectiveness. Leaders in this study accessed online content individually suggesting leaders can learn mindful leadership with remote learning as a leader-led initiative. Leaders in global manufacturing organizations who want to increase well-being and leadership effectiveness may consider participating in mindful leadership development programs. In the absence of an organization-based offering of mindful leadership development programs, it is recommended global manufacturing leaders explore mindful leadership development programs as part of their own self-development.

Consistent practice is needed to develop and strengthen competencies associated with mindfulness. In this study, leaders reported using several forms of mindfulness practices. Global manufacturing leaders may find that more than one form of mindfulness practice is helpful to create and sustain a consistent mindfulness practice. Therefore, based on this study, it is recommended that global manufacturing leaders consider experimenting with a variety of mindfulness practices to determine which modalities may work best to support a consistent mindfulness practice to maintain well-being and strengthen leadership effectiveness.

**Mindful Leadership Development Programs**

Global manufacturing leaders face uncertainty, escalating change, and complex work environments and need support to develop capabilities to lead under such conditions. Leaders in this study who completed one mindful leadership development program reported greater well-being and were rated higher on one measure of leadership effectiveness. The results of this study compel leadership development experts to
consider integration of mindfulness into leadership development programs. Based on the results of this study, it is recommended that global manufacturing organizations consider following the lead of Aetna, Apple, General Electric, General Mills, Goldman Sachs, Google, IBM, Pfizer, Proctor & Gamble, and Starbucks and incorporate mindfulness into leadership development programs to help leaders learn how to maintain well-being and deliver strong performance in VUCA environments (Brendel et al., 2016; Gelles, 2016).

A consistent mindfulness practice is essential for leaders to develop the behavioral and cognitive benefits associated with mindful leadership development programs (Brendel et al., 2016; Lippincott, 2018). Reitz and Chaskalson’s (2016) findings point to the benefits leaders experienced by practicing mindfulness for at least 10 minutes a day. Practice reinforces the key concepts of mindful leadership development programs and may help leaders develop mindfulness practice as a consistent habit deemed necessary for ongoing health and performance benefits (Kabat-Zinn, 1990; 2003). It is recommended that the curriculum for mindful leadership development programs incorporate time for leaders to learn and practice mindfulness techniques (Brendel et al., 2016, Lippincott, 2018; Reitz & Chaskalson, 2016).

Organizational Culture and Strategy

Culture and organizational strategy are inextricably enmeshed where mindful leadership may not exist without cultural and strategic alignment (Schein, 2017). In this study the tenets of mindfulness were used as a compass to design a receptive and supportive organizational culture and as a lens for aligning business strategy for the VUCA environment (CEO, personal conversation, December 2018). Gebauer (2012) posits leaders and organizations can better manage the demands of volatile and uncertain
business conditions by pursuing mindfulness as a strategy and building a culture of mindfulness to manage the business and people. Based on the results of the study, leaders who completed one mindful leadership development program reported higher well-being PA and delivered better performance suggesting the integration of mindfulness into company culture and strategy may also be a contributing factor to these outcomes. To implement mindful leadership development programs, it is recommended that organizations consider building an organizational culture aligned to the company strategy where mindful leadership can grow and thrive (Ehrlich, 2015; Gebauer, 2012).

In this study, the participants were 75% White men and the findings revealed male leaders received higher leadership effectiveness performance appraisal scores as compared to female leaders. Mindfulness practices have been used as strategies to reduce reactivity, implicit bias, stereotyping, and promote inclusiveness (Choudhary, 2015; Coleman, 2019; Lueke & Gibson, 2016). Mindful leadership development programs may help increase leader capacity to understand implicit bias and barriers that may diminish leadership effectiveness. While this outcome of higher male performance appraisal scores may not be intentional, it is recommended global manufacturing organizations study their performance appraisal and performance management processes to uncover possible unconscious bias.

**Executive Leadership**

Scholarly research provides evidence of the connection between mindful leadership development and leader well-being and performance at work (Mahfouz, 2018; Pipe et al., 2009). Well-being is considered essential for leaders to influence the performance of followers to achieve organizational goals. Based on the findings of this
study, it is recommended executive leaders in global manufacturing who want a healthier workforce and better performance consider offering mindful leadership development programs.

Top leader support of mindful leadership programs can be helpful to encourage leaders to attend mindful leadership development programs. In this study, it was voluntary for leaders to attend mindful leadership development programs. Executive leaders promoted the personal and professional benefits of these programs. Leaders look to the executive leadership team for direction and reinforcement about what is most important. For executive leaders, there is an opportunity to be a role model for the organization. Based on the study’s findings, almost all executive team members reported completion of at least one dose of mindful leadership development programs and also reported engaging in mindfulness practices weekly. It is recommended executive leaders provide visible support by attending mindful leadership development programs and adopting a consistent mindfulness practice as a role model for other leaders to follow suit.

**Conclusion**

Leaders in the 21st century face an unprecedented age of rapid change with volatile, uncertain, complex, and ambiguous (VUCA) business conditions (Baron et al., 2017; Brendel et al., 2015; Chesley & Wylson, 2016; King & Haar, 2017; Petrie, 2014; Roche et al., 2014; Rupprecht et al., 2019; Wasylkiw et al., 2015). Organizations worldwide report challenges to develop leaders with the competencies needed for success under these conditions (IBM, 2010, 2019). To thrive in VUCA environments, leaders need different competencies including self-awareness and self-regulation to lead effectively and manage increased stress to maintain health and well-being (Bird et al.,
Mounting evidence points to the benefits of mindfulness to reduce stress and anxiety in addition to behavioral and cognitive improvements that are thought to support effective leadership for leaders in VUCA environments (Donaldson-Feilder et al., 2019; Brendel et al., 2016). A few global organizations are offering mindful leadership development programs to build the behavioral competencies and strengthen well-being for their leaders to thrive in VUCA environments. However, there is a gap between industry practices and scholarly research (Donaldson-Feilder et al., 2019; Lomas et al., 2017).

The purpose of this study was to examine the effects of mindful leadership development programs and dosage on dispositional mindfulness, well-being, and leadership effectiveness among global manufacturing leaders working in VUCA environments. The study also explored the effect of mindfulness practices to predict well-being, dispositional mindfulness, and leadership effectiveness. The goals established for this study were fulfilled using a quasi-experiment research paradigm.

This study used a quasi-experimental methodology to examine the relationships between mindful leadership development programs and mindfulness practice on well-being, dispositional mindfulness, and leadership effectiveness among leaders working in a global manufacturing organization facing VUCA environments. Hierarchical multiple linear regression models were estimated to answer three research questions.

There were several key findings as a result of this study. The findings of this study suggest that global manufacturing leaders who completed mindful leadership development program reported higher well-being PA as compared to leaders who did not complete any programs. In the midst of the of an extremely stressful pandemic, leaders in
this study who completed mindful leadership development programs still reported higher well-being PA.

The second key finding from the results of this study provides evidence that global manufacturing leaders who completed at least one dose of mindful leadership development programs received higher annual PAS from their managers than leaders who did not complete any programs. The third key finding is that leaders who engage in mindfulness practices received higher leadership effectiveness performance appraisal scores as compared to leaders who did not report a mindfulness practice. The results of this study implied that completing mindful leadership development programs and engaging in consistent mindfulness practices can support well-being and leadership effectiveness for leaders in global manufacturing facing dynamic VUCA business environments.

Even though the findings of this study did not achieve statistical significance for dispositional mindfulness as predicted, it is important to consider the study was launched in late May, just 2 months after COVID-19 was declared a global pandemic (World Health Organization, 2020). It is possible COVID-19 may have affected study results for participants facing the unprecedented uncertainty, complexity, ambiguity of the pandemic.

The results from this study support and expand research regarding the effects of mindful leadership development programs and mindfulness practice on well-being and leadership effectiveness on global manufacturing leaders facing VUCA conditions (Aikens et al., 2014; Donaldson-Feilder et al., 2019). This study also expanded the body of knowledge regarding mindful leadership development in several ways including
theory, research methodology, measures, and study participants. This study also expanded the body of knowledge by using third-party generated leadership effectiveness measures in addition to self-reported measures to assess the effects of mindful leadership development programs (King & Haar, 2017; Wasylkiw et al., 2015; Wasylkiw et al. 2014).

The results from this study expand the body of knowledge regarding mindful leadership development program research by focusing on leaders in global manufacturing (Aikens et al., 2014; Bartlett et al., 2019; Donaldson-Feilder et al., 2019; Lomas et al., 2017). Several recommendations were offered based on the findings of this study for research, professional practice, mindful leadership development programs, organizational culture and strategy, and executive leadership. Recommendations focused on promoting leader and organizational adoption of mindful leadership development programs, alignment of culture and strategy, and involvement of executive leaders to model the way of mindful leadership. The findings and recommendations in this study provided insight regarding the benefits of mindful leadership development programs and consistent mindfulness practices for health and performance for leaders in global manufacturing facing dynamic VUCA environments.

In the 21st century, volatile, uncertain, complex, and ambiguous conditions prevail. Organizations need leaders equipped to lead in these dynamic conditions in ways that enhance leader well-being and support leadership effectiveness. Leaders need support for health and to perform at their best. Based on the findings of this study, the researcher concludes that global organizations facing VUCA work environments should integrating mindfulness into leadership development programs and encourage consistent
mindfulness practice to equip leaders to maintain and enhance well-being and support leadership performance in VUCA environments. It has been said that one transformed leader can make a positive difference (Frizzell et al., 2016). If organizations offered mindful leadership development programs and provided support for leaders to practice mindfulness, imagine the transformative power many global manufacturing leaders may have leading uniquely equipped for success in dynamic VUCA environments.
References


Davidson, R. J., & Begley, S. (2012). *The emotional life of your brain: How its unique patterns affect the way you think, feel, and live, and how you can change them.* Hudson Street Press.


randomized controlled trial. *PLoS ONE* 10(9): e0138089. https://doi.org/10.1371/journal.pone.0138089


131


135


## Appendix A

### Description of Mindful Leadership Programs I, II, and III

<table>
<thead>
<tr>
<th>Program Components:</th>
<th>Module Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindfulness Theory</td>
<td>Essence, Purpose, Values, &amp; Principles</td>
</tr>
<tr>
<td>Mindfulness Application</td>
<td>Governance &amp; Structure</td>
</tr>
<tr>
<td>Leadership Theory</td>
<td>Incremental Change, Renewal, &amp; Reinvention. IAA model</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leadership Application</th>
<th>Mindful Leadership I</th>
<th>Mindful Leadership II</th>
<th>Mindful Leadership III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership Practice</td>
<td>Value Creation</td>
<td>Courageous</td>
<td>The Role of a Leader</td>
</tr>
<tr>
<td>Duration:</td>
<td>6 months</td>
<td>7 months</td>
<td>5 months</td>
</tr>
<tr>
<td>Individual Class Session</td>
<td>90 minutes</td>
<td>90 minutes</td>
<td>90 minutes</td>
</tr>
<tr>
<td>Number of Sessions</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Pre-Work Assignments</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Total Estimated Time</td>
<td>22 hours</td>
<td>25 hours</td>
<td>20 hours</td>
</tr>
<tr>
<td>Outside-of-Class Practice:</td>
<td>30 minutes daily</td>
<td>30 minutes daily</td>
<td>30 minutes daily</td>
</tr>
<tr>
<td>Meditation</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Centering Exercises</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Active Listening</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Individual Reflection</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Journaling</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Feedback</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Purposeful Pause</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>360° Feedback</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

| Work-Based Community Building Practices: | Meeting Etiquette: Check-in; Check-out; Use “I” statements to own feelings and observations; Demonstrate unconditional positive regard; Learning then teaching (1:1); Use My Voice. |

**Note:** Data was obtained from Vantage’s learning management system online portal.
Dear Colleague,

The trait Mindful Attention Awareness Scale (MAAS) is in the public domain and special permission is not required to use it for research or clinical purposes. The trait MAAS has been validated for use with college student and community adults (Brown & Ryan, 2003), and for individuals with cancer (Carlson & Brown, 2005). A detailed description of the trait MAAS, along with normative score information, is found below, as is the scale and its scoring. A validated state version of the MAAS is also available in Brown and Ryan (2003) or upon request.

Feel free to e-mail me with any questions about the use or interpretation of the MAAS. I would appreciate hearing about any clinical or research results you obtain using the scale.

Yours,

Kirk Warren Brown, PhD
Department of Psychology
Virginia Commonwealth University
806 West Franklin St.
Richmond, VA 23284-2018
e-mail kwbrown@vcu.edu
Appendix C

Positive and Negative Affect Schedule (PANAS)
Distributed by Mapi Research Trust

- Basic description
- Access this questionnaire
- Contact and conditions of use

ACCESS THIS QUESTIONNAIRE

LICENSES FOR THE ORIGINAL VERSION

Non-Profit Research Users

It is not necessary to contact the American Psychological Association (APA) Permissions Office to use the PANAS for non-profit research purposes.
Appendix D

Annual Performance Appraisal Rating Scale Rubric

- **Unacceptable**: Performance and/or behaviors are unacceptable due to significant weakness in ability or effort. Employee has failed to demonstrate desired behaviors and/or performance after active coaching, disciplinary action, and/or a performance improvement plan. This is an employee who shows little interest in self-development or learning.

- **Needs Improvement**: Performance and/or behaviors frequently fail to meet performance objectives or competency requirements for the position in one or more key areas. Results fall below expectations due to performance deficiencies. Employee shows limited improvement related to behaviors and/or performance after active coaching, disciplinary action, and/or a performance improvement plan. This is an employee who shows little interest in self-development or learning.

- **Meets Expectations**: Performance and behaviors match what is expected of a qualified and experienced person in the position. Individual objectives and competencies meet the requirements of the position. This is an employee that others rely on to contribute within their department or area. This is an employee who engages in self-development and learning with guidance from their manager.

- **Consistently Exceeds Expectations**: Performance objectives, behaviors and competency requirements are consistently beyond expectations. Makes contributions beyond normal job responsibilities and exhibits strategic thinking and strong execution skills. This is an employee who strives for excellence in all that they do, with a positive “can do” attitude that influences others. This is a person that is recognized as an expert in their area of responsibility and actively teaches others. An employee that is an active learner who not only models behaviors consistent with company values, but actively teaches others and influences well beyond their scope of responsibility.

- **Exceptional**: Performance objectives, behaviors and competency requirements are far superior to peer group. Obtains results beyond expectations, beyond scope of responsibility with little guidance. Work is of very high quality with outstanding visioning, planning, and execution. This is an employee who strives for excellence in all that they do, with a positive “can do” attitude that influences deep into the organization. This is a person that is recognized as an expert in their area of responsibility and is actively leading improvements across the organization. An employee that is an active learner who not only models behaviors consistent with company values, but actively teaches others and influences well beyond their scope of responsibility.

*Note. Provided by Vantage Human Resources Department, September 25, 2019.*
SUMMARY OF KEY INFORMATION:

- You are being invited to be in a research study of a mindful leadership development program experience. As with all research studies, participation is voluntary.
- The purpose of this study is to understand the influence of a mindful leadership development program on mindfulness, well-being, performance, and leadership effectiveness on global manufacturing leaders working in a volatile, uncertain, complex, and ambiguous (VUCA) environment.
- Approximately 173 people will be invited to take part in this study. The results will be used for completion of a doctoral dissertation and to inform scholarship regarding the effects of mindfulness in leadership development programs on leaders in the for-profit workplace facing VUCA work environments.
- If you agree to take part in this study, you will be involved in this study approximately 15 minutes.
- If you agree to participate, you will be asked consent to permit your company to release two performance scores: (a) annual performance appraisal overall rating and (b) annual employee engagement overall rating, for the most recent performance cycle.
- You will also be asked to complete a single, online survey containing 11 demographic questions, two brief self-assessments, and up to six additional questions. The survey may be completed at a time of your choosing during the 2-week period the survey is open, beginning in the spring of 2020.
- I believe this study presents no more than minimal risk.
- You may not directly benefit from this research; however, I hope that your participation in this study can inform organizations and leaders regarding the influence of mindful leadership development programs in the for-profit global workplace on mindfulness, well-being, and leadership effectiveness among leaders working in volatile, uncertain, complex, and ambiguous (VUCA) environments.

DETAILED STUDY INFORMATION

You are being asked to be in a research study examining the influence of a mindful leadership development program on global manufacturing leaders working in a VUCA environment. This study is being conducted at Garlock Sealing Technologies using Qualtrics, an online survey tool. This study is being conducted by: Lisa Critchley, a doctoral candidate.
in the Doctorate in Executive Leadership Program at St. John Fisher College. Faculty members advising the doctoral candidate are Shannon Cleverley-Thompson, Ed.D. and Melissa Goodwin, Ph.D. at St. John Fisher College.

You have been selected as a possible study participant because

Please read this consent form and ask any questions you have before agreeing to be in the study.

PROCEDURES:
If you agree to be in this study, you will be asked to do the following:

- Consent to permit Garlock Sealing Technologies to release the overall rating of your annual performance evaluation and the overall Net Promoter Score (NPS) percentage of your employee engagement survey from the most recent performance cycle, providing such data is available.

- Complete a demographics form, two self-assessment surveys, and up to six additional questions. The demographics form contains 11 multiple choice questions. The two self-assessment surveys each contain 10-20 statements that you will rate yourself on, using a multi-point scale. The survey will take approximately 15 minutes to complete.

COMPENSATION/INCENTIVES:
You will not receive compensation or be offered any incentive to participate in the study.

CONFIDENTIALITY:
The records of this study will be kept private and your confidentiality will be protected. In any sort of report, the researcher(s) might publish, no individual identifying information will be included. The company will not have access to the survey, survey responses, and the company will not know who has completed the survey. Identifiable research records will be stored securely and only the researcher(s) will have access to the records. All data will be kept in a locked filing cabinet in the researcher’s private office as well as on a password-protected laptop. All study records with identifiable information, including approved IRB documents, tapes, transcripts, and consent forms, will be destroyed by shredding, and/or will be deleted after 3 years. The data collected in this study, as well as the results of the research, may be used for scientific purposes and may be published in ways that will not reveal study participants. An anonymized version of the data from this study may be made publicly accessible, for example via the Open Science Framework (osf.io), without obtaining additional written consent. The anonymized data can be used for re-analysis but also for additional analyses, by the same or other researchers. The purpose and scope of this secondary use is not foreseeable. Any personal information that could directly identify an individual will be removed before data and results are made public. Personal information will be protected closely so no one will be able to connect individual responses and any other information that identifies an individual. All personally identifying information collected about an individual will be stored separately from all other data.
VOLUNTARY NATURE OF THE STUDY:
Participation in this study is voluntary and requires your informed consent. Your decision whether or not to participate will not affect your current or future relations with St. John Fisher College. If you decide to participate, you are free to skip any question that is asked. You may also withdraw from this study at any time without penalty.

CONTACTS, REFERRALS AND QUESTIONS:
The researchers(s) conducting this study: Lisa Critchley. If you have questions, you are encouraged to contact the researcher(s) at lmc06850@sjfc.edu, or by cell phone: 585.781.4494. You may also contact Lisa Critchley’s Dissertation Committee Chair, Dr. Shannon Cleverley-Thompson, at scleverley-thompson@sjfc.edu or 585.385.5227.

STATEMENT OF CONSENT:
Electronic Consent: Clicking on the “Agree” button below indicates that:

- I have read the above information.
- I voluntarily agree to participate in the study.
- I voluntarily agree to permit [company name] to release the overall annual performance appraisal rating and the overall Net Promoter Score (NPS) percentage from the employee engagement survey from the most recent performance cycle, providing such data is available.
- I am at least 18 years of age.

If you do not wish to participate in the study, please decline participation by clicking on the “Disagree” button below.

AGREE  DISAGREE

Please keep a copy of this informed consent for you