

ABSTRACT

Leadership Development Influence on Leader Self-Efficacy (LSE): An Explanatory Sequential Mixed Methods Study with Civilian Federal Employees in the Department of Defense

James C. Hylton, Ed.D.

Mentor: Sandra Talbert, Ed.D.

Practitioners across industries have been unable to derive reliable returns-on-investment from leadership development as it relates to the effectiveness of the training on leadership performance (Lacerenza et al., 2017). Research has identified *leader self-efficacy* (LSE) as a key predictor of leadership performance, but the literature fails to identify external or developmental antecedents of LSE (Dwyer, 2019; Hannah et al., 2008). While the *great man* concept of leadership is antiquated (Boyce et al., 2010; Day et al., 2014; Lord et al., 2017; Quigley, 2013), more is known about internal predictors of LSE (e.g., personality, values, etc.). A key factor in this shortfall in knowledge is the inconsistent definition and measurement of LSE (Anderson et al., 2008) and the complexity of leadership itself (Day & Dragoni, 2015; Stajkovic & Luthans, 1998).

This study explored potential formal developmental antecedents of LSE. The researcher used an explanatory sequential mixed methods design and Bandura's self-efficacy framework (Bandura, 1977) to understand the experiences of leadership development learners and the factors influencing changes in LSE. Quantitative pre-course

and post-course tests assessed fluctuations of LSE for 10 learners. To understand how leadership development influences LSE, learners who experienced the largest changes in LSE were interviewed. In addition, to determine what connection course content had with a learner's LSE levels, the author observed course instruction and audited classroom materials using Bandura's (1977) self-efficacy framework as a guide.

The results showed that a significant increase in LSE from pre-course to post-course survey occurred. In the qualitative and mixed methods phase of this study, the results showed that the significant increase in LSE aligned with time on course topics, learner engagement, instructor activity, and type of cognitive activities used. The use of realistic scenarios, peer interaction, feedback, and a spaced-learning (bolstered by supervisory support) was key to the course's success in improving learner's LSE.

Practitioners will use the outcomes of this research to identify which pedagogical and contextual activities influence LSE. With a grasp of what external antecedents influence higher levels of LSE, practitioners will possess a blueprint to develop more effective leadership development courses and more successful leaders.

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Leadership Development Influence on Leadership Self-Efficacy (LSE):
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in the Department of Defense

by

James C. Hylton, M.S.

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Brooke Blevins, Ph.D., Chairperson

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Approved by the Dissertation Committee

Sandra Talbert, Ed.D., Chairperson

Sandi Cooper, Ph.D.

Nicholas R. Werse, Ph.D.

Accepted by the Graduate School
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J. Larry Lyon, Ph.D., Dean

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CHAPTER ONE

Introduction to the Problem of Practice

Introduction

There currently is a lack of research on how formal developmental programs influence leader self-efficacy (LSE). Dwyer (2019) has expressed concern that very little is known about the contextual influences on LSE, even though research has demonstrated that the contextual effect tends to be stronger than internal influences such as personality and values (Chan & Drasgow, 2001). This study focused on LSE and the effectiveness of a leadership development course at the Department of Defense in curating that feeling of self-efficacy. LSE is a leader's perception that they have the capabilities and resources to perform leadership roles (Ali et al., 2018; Anderson et al., 2008; Bandura, 1977; Hannah et al., 2008; Ng et al., 2008; Paglis & Green, 2002; Seibert et al., 2017).

Every year, spending on leadership development exceeds \$50 billion in the United States alone (Conger & Ready, 2003). Additionally, the effectiveness of leadership development programs varies, and few studies measure any performance feedback (Islam, 2019; Lacerenza et al., 2017; Packard & Jones, 2015). Research suggests that desired leadership behaviors are associated with an individual's belief in their ability to perform leadership duties (i.e., self-efficacy; Boyatzis, 2008; Day & Dragoni, 2015; Islam, 2019; Keating et al., 2014). Variables such as supervisor support, organizational climate, and personality influence leadership beliefs (Boyatzis, 2008; Keating et al., 2014). Multiple studies (Allio, 2005; Barling et al., 1996; Hamdani, 2018; Lacerenza et al., 2017) have focused on the correlation of individual self-efficacy to transformational

leadership efficiency and organizational measures of supervisory support and climate; however, few have queried participants to obtain feedback on the perceived effectiveness of the training program in developing self-efficacy from a qualitative standpoint or quantitatively measured the impact of the teaching model on self-efficacy.

This study explored the qualitative and quantitative connections between leadership development and LSE. This mixed methods study is valuable to the field of LSE research because there are gaps in the literature regarding what drives LSE from a development perspective. Seibert et al. (2017) assert that self-efficacy is “likely to be shaped by developmental experiences” (p. 364), referencing the 25-year study on leadership development by Day et al. (2014). While Day et al. (2014) acknowledge the relationship between recent experiences and past experiences with self-development (in terms of LSE), there are no specific developmental curriculum or techniques analyzed. Given the importance of a learner’s belief that they can learn and apply their training, it is vital to gather descriptive data regarding what leads to or supports this belief. This study explored self-efficacy specific to leadership tasks and focused on LSE, defined as a leader’s “perceived capabilities to organize the positive psychological capabilities, motivation, means, collective resources, and courses of action required to attain effective, sustainable performance across their various leadership roles, demands, and contexts” (Hannah et al., 2008, p. 2). The uniqueness of this definition is that it incorporates not only an individual’s perceived know-how to accomplish a task but also their perception of a supportive environment that enables them to apply their know-how.

Statement of the Problem

Leadership development programs have difficulty realizing positive returns on investment. Performance outcomes for leadership development programs have mixed results, even with billions of dollars being spent each year on course delivery (Lacerenza et al., 2017; Packard & Jones, 2015). When organizations invest resources in development programs without a coherent understanding of what pedagogical practices are most effective, this negatively impacts organizations and the learner. This lack of a coherent understanding of what leadership development practices are most effective stems from two problems. The first problem is that practitioners and researchers do not have an adequate understanding of what the psychological construct of LSE entails (Anderson et al., 2008; Hannah et al., 2012). The second problem is that there are few studies with direct descriptive data regarding how leadership development course content and exercises support the development of LSE (Dwyer, 2019).

While LSE predicts the successful performance of a leader (Avolio, 2007; Mumford et al., 2007), how LSE is defined and measured determines what elements of leadership are considered important for performance and development (Anderson et al., 2008). Few studies exist on how leadership course content supports the increase of LSE. Studies on informal development, such as coaching and mentoring, have shown promise in increasing LSE (Baron & Morin, 2009; Grant, 2014; Lester et al., 2011), but the constrained scope of these methods do not address the broad leadership development needs of organizations. Formal development programs have improved LSE (Seibert et al., 2017), learning, and knowledge acquisition (Avolio et al., 2009), but specifically what aspects of formal development improve LSE and what training models are most effective have not been thoroughly explored (Dwyer, 2019). Seibert et al. (2017) indicate that

organizations “lack an evidence-based understanding” (p. 358) of how to design their formal development programs to train more effective leaders, primarily because of the dearth in research on the topic.

Given the multitude of methods to deliver training content and those options only growing with technology, understanding how to influence LSE through instructional design is vital. A mixed methods study on this topic will help shed some light on the drivers of this condition. Describing what course attributes contribute to LSE will help organizations duplicate those conditions in other courses and create consistently positive outcomes for future leadership development courses.

Purpose of the Study

The purpose of this study was to understand the influence of development on LSE and to provide practitioners with a blueprint to develop more effective leadership development courses. The researcher used an explanatory sequential mixed methods design, which entailed the collection of both quantitative and in-depth qualitative data from participants at the Department of Defense in Indianapolis, Indiana. In the first, quantitative phase, learners at the Department of Defense completed survey data to determine if they had experienced a significant change in LSE by attending a leadership development course. The researcher conducted a second, qualitative phase to help explain the quantitative results. In this explanatory follow-up, the researcher conducted semi-structured interviews with learners with significant changes in LSE to determine what course or contextual drivers influenced that change. For this study, LSE is defined as a leader’s “perceived capabilities to organize the positive psychological capabilities, motivation, means, collective resources, and courses of action required to attain effective,

sustainable performance across their various leadership roles, demands, and contexts” (Hannah et al., 2008, p.2). This definition encompasses the internal feelings of efficacy that a leader has when they possess the talent and know-how to perform a task. The definition also considers the external resources required to put that talent and know-how to use effectively.

This study addressed the influence of development on specific factors of LSE. As a mixed methods design, there are quantitative, qualitative, and mixed methods research questions that provide the framework for this study on learners in the new supervisors training (NST) 2.0 course at the Department of Defense in Indianapolis, Indiana.

The quantitative research question asks, “What is the magnitude of change in LSE scores between the pre-course and post-course assessments?” The qualitative research questions are comprised of three parts. The primary qualitative research question asks, “How do learners in the NST 2.0 course experience LSE?” The qualitative research sub-questions ask, “What course learning events are leadership development learners engaged in that are related (positively or negatively) to LSE;” and “What pre-course learning events are leadership development learners engaged in related (positively or negatively) to LSE?” Lastly, the mixed methods research question asks, “How do the interviews with learners help explain LSE changes from pre-course and post-course assessments?”

The purpose of this study was to understand how leadership development influences LSE so that practitioners have a blueprint for developing more effective leadership development courses. The explanatory sequential mixed methods design supported the process to adequately distill and analyze the data. However, a theoretical lens appropriate for LSE enabled the researcher to properly interpret the data.

Theoretical Framework

This study utilized an a priori theoretical framework. Bandura's social cognitive theory (Bandura, 1977, 1991), and specifically his work on self-efficacy that stems from that theory (Bandura, 1982), was the theoretical framework steering this study. Within this framework, an empirically derived definition of LSE from Hannah et al. (2012) and Hannah and Avolio (2013) was utilized to refine the measurement of LSE. Hannah et al. (2012) and Hannah and Avolio (2013) align themselves to the research of Bandura (1997), breaking down the construct of LSE into three separate factors that incorporate the assessment of perceived environmental support in bolstering self-efficacy.

Bandura (1982) states that self-efficacy is a complex cognitive mechanism that melds individual perceptions of performance capability with perceptions of how supportive an environment is to accomplish a specific task:

People can give up trying because they seriously doubt that they can do what is required. Or they may be assured of their capabilities but give up trying because they expect their efforts to produce no results due to the unresponsiveness, negative bias, or punitiveness of the environment. (p. 140)

Bandura's (1982) definition of self-efficacy aligns with the definition of LSE provided by Hannah et al. (2008, 2012) with its encompassment of internal feelings of the necessary talent and know-how to perform a task and an assessment of the environmental resources that are favorable to execute those skills.

Bandura (1977) provides a taxonomy of four experiences that he indicates are most effective in creating a sense of self-efficacy. The first is personal mastery experiences that engender efficacy through the successful performance of tasks (Bandura, 1977). As successful performances build over time, individuals become more resilient to occasional failures and more persistent in their pursuit to complete tasks (Bandura, 1977).

The second is vicarious experiences that engender efficacy through the non-threatening observation of others successfully performing tasks (Bandura, 1977). In these situations, individuals mimic their behavior based on what they have observed, with prototypicality influencing how likely an individual will be used as a behavioral model (Bandura, 1977). The third is verbal persuasion that engenders efficacy through another's suggestion (Bandura, 1977). Of the four sources of efficacy, this is the weakest (though not entirely ineffective) and can quickly decline as a source of efficacy when there is a disconfirming lived experience (Bandura, 1977). The fourth is emotional arousal that engenders self-efficacy through the ability to successfully cope with anxiety and stressful situations, specific to the tasks where efficacy is in question (Bandura, 1977). Emotional arousal can be aided by the other three sources of self-efficacy, as personal mastery, vicarious experiences, and verbal persuasion can be sources of coping skills (Bandura, 1977). This model, according to Paglis (2010) and Seibert et al. (2017), applies to leadership development settings, given its focus on tangible actions that leaders can take to improve LSE. However, neither Paglis (2010) and Seibert et al. (2017) explain what development actions or tactics lead to LSE using Bandura's (1977) taxonomy. The author outlines the antecedents of LSE explored in this study in Figure 1.1.

The definition of LSE used within this theoretical framework is the empirically derived measure from Hannah et al. (2012). Hannah et al. (2012) tested the measure against five different samples and established content, convergent, discriminant, predictive, and nomological validity. Hannah et al. (2012) and Hannah and Avolio (2013) break down LSE's construct into 22 total items that load on three factors: leader action efficacy (LAE), leader self-regulation efficacy (LSRE), and leader means efficacy

(LME). The researcher used the self-efficacy framework of Bandura and the empirically derived definition of LSE from Hannah and Avolio to structure the study of how leadership development influences LSE.

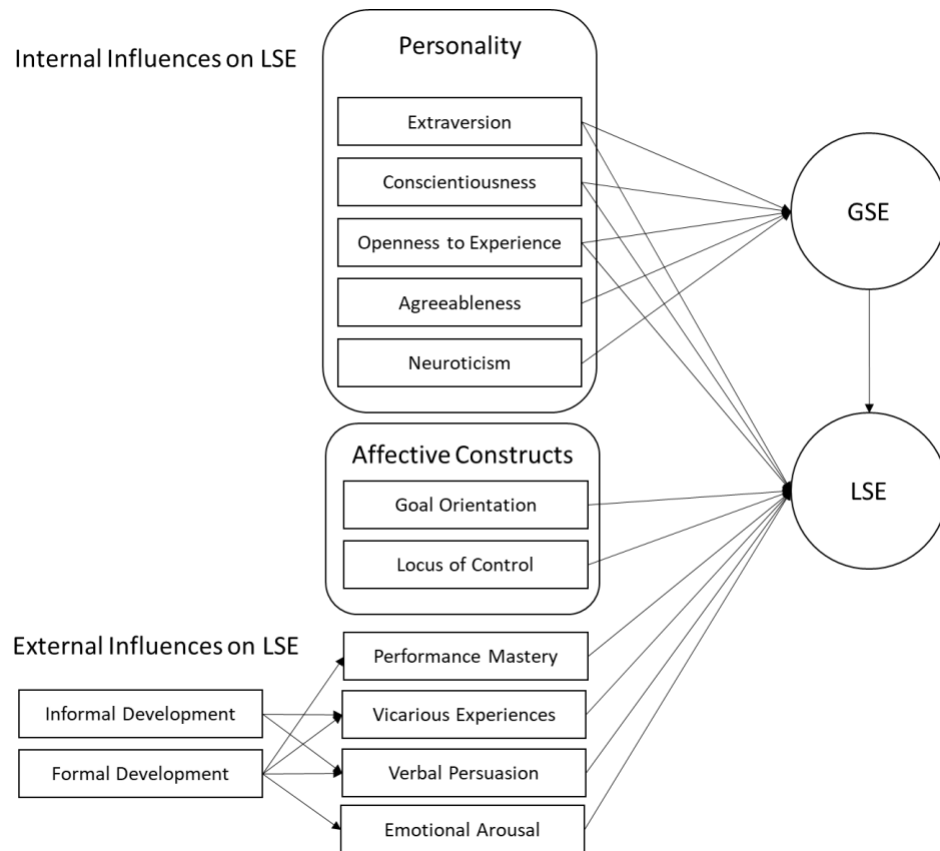


Figure 1.1. Antecedents of LSE.

Research Design and Methods

This study leveraged quantitative and qualitative data about LSE to better understand the experience of LSE and what elements of leadership development influence that experience. The explanatory sequential mixed methods design is a particular type of mixed method design that uses two separate phases of data collection, beginning with a quantitative phase, which is then explained or supported by a qualitative phase (Creswell & Creswell, 2017; Ivankova et al., 2006). This study used the

explanatory sequential mixed methods design to assess how LSE changes after attending a leadership development course with in-depth explanations of what influenced those changes. This study took place in a required leadership development course at the Department of Defense in Indianapolis, Indiana. This study utilized a purposive sample of 17 learners that attended a leadership development course. The learners were new supervisors that have less than one year of on-the-job experience in a supervisory role and were all required to attend this introductory leadership development course.

The leadership development course studied was delivered to learners through a remote training application. The course typically was delivered in a face-to-face environment; however, a new medium was chosen due to health concerns posed by the COVID-19 pandemic. The course was delivered over a span of three consecutive days in January, with three hours of instruction each day.

This study followed a five-step data collection process with quantitative and qualitative tools that follow the respective standards for validity and credibility. The first step included a pre-course survey of LSE using a psychometrically valid instrument developed by Hannah et al. (2012) and Hannah and Avolio (2013). The second step included observation of learners in the classroom, using an observational protocol based on Bandura's (1977) self-efficacy framework. The third step included a post-course survey of LSE using the Hannah et al. (2012) and Hannah and Avolio (2013) survey. The fourth step included interviews with a criterion sample of learners, using an interview protocol based on the Hannah et al. (2012) and Hannah and Avolio (2013) survey as well as Bandura's (1977) self-efficacy framework. The fifth step included a review of course documents using a protocol based on Bandura's (1977) self-efficacy framework. The use

of the explanatory sequential mixed methods design, along with the valid and credible quantitative and qualitative data collection methods afforded the researcher with a comprehensive treatment of how leadership development influences LSE.

Definition of Key Terms

Development: “In the case of leader development, the emphasis typically is on individual-based knowledge, skills, and abilities associated with formal leadership roles...[and a] purposeful investment in human capital...to perform effectively in any number of organizational roles” (Day, 2001, p. 584).

Leadership: “Process of diagnosing where the workgroup is now and where it needs to be in the future and formulating a strategy for getting there” (Paglis & Green, 2002, p. 217). The strategy is accomplished through influencing and motivating those who work for and with the leader (Paglis & Green, 2002).

Leader Action Efficacy (LAE): A leader’s perception that they can effectively perform an array of core leadership duties related to motivating employees and encouraging identification with organizational goals to improve performance (Hannah & Avolio, 2013).

Leadership Effectiveness: The extent to which a leader’s organization meets its short- and long-term goals, their employees’ needs and expectations are satisfied, and their employees are committed to achieving organizational goals (Yukl, 2002).

Leader Means Efficacy (LME): A leader’s perception that they can mobilize support and resources (e.g., people, materials, policies) from their work environment to improve their leadership capabilities (Hannah & Avolio, 2013).

Leader Self Efficacy (LSE): A leader's "perceived capabilities to organize the positive psychological capabilities, motivation, means, collective resources, and courses of action required to attain effective, sustainable performance across their various leadership roles, demands, and contexts" (Hannah et al., 2008, p. 2).

Leader Self-Regulation Efficacy (LSRE): A leader's perception that they can contemplate complex leadership scenarios and develop effective solutions that are appropriate given the idiosyncrasies of their organization and followers (Hannah & Avolio, 2013).

Learning Activities: Specific learning exercises or modules within a single event (e.g., feedback from live simulations; assessments within online training).

Learning Events: Major aspects of course curriculum (e.g., simulation, online training, seminar).

Learning Goal Orientation (LGO): An individual's focus on learning and mastering new tasks, which research has shown has a positive relationship with LSE (Hendricks & Payne, 2007).

Motivation to lead (MTL): MTL is an affective construct, influenced by personality, values, LSE, and leadership experience. MTL "affects a leader's...decisions to assume leadership training, roles, and responsibilities, and...his or her intensity of effort at leading and persistence as a leader" (Chan & Drasgow, 2001, p. 482).

New Supervisor Training 2.0 (NST): An introductory leadership course provided at the Department of Defense for current and emerging leaders that covers essential leadership topics such as employee relations, performance management, communication, planning, and delegating responsibility.

Social Cognitive Theory: The theory that “human functioning is...regulated by an interplay of self-generated and external sources of influence” (Bandura, 1991, p. 249).

Conclusion

Leaders that are high in LSE are more effective in their jobs (Hannah et al., 2008, 2012; Paglis & Green, 2002; Seibert et al., 2017). Evidence suggests that development can increase LSE, but there is a gap in the literature in what development activities lead to that increase (Dwyer, 2019), particularly for formal development (Dwyer, 2019). Research in informal development and general self-efficacy (GSE) development provides a foothold in what activities may be most effective in improving LSE formal development (Baron & Morin, 2009; Grant, 2014; Lester et al., 2011). However, defining and measuring LSE with more specificity is a critical first step in understanding what antecedents are most effective (Anderson et al., 2008; Crawford & Kelder, 2019).

This study explored the influence of an introductory leadership development course on LSE in the Department of Defense. The author used Bandura’s (1977) self-efficacy theory framework to determine if the course content aligned with empirically derived antecedents of LSE. Course participants completed surveys and interviews to assess their reaction to the course and their level of LSE, pre- and post-course delivery.

Past research on LSE provides a strong foothold on how LSE impacts leadership effectiveness, what contributes to its emergence, and the definition of the construct, but gaps still exist. The following chapter reviews pertinent research about LSE and synthesizes the findings to identify the gaps that this study addresses. The author argues, based on the gaps identified, for further research on formal development’s impact on

LSE. This study fulfills that need using the explanatory sequential mixed methods research design.

CHAPTER TWO

Literature Review

Introduction

There currently is a lack of research on how formal developmental programs influence leader self-efficacy (LSE; Dwyer, 2019; Hannah et al., 2008). According to research, LSE has a positive impact on leadership effectiveness, but the contextual antecedents to LSE have not been fully explored (Dwyer, 2019). The lack of research on formal development's impact on LSE, as well as a fundamental misunderstanding of the definition of LSE has prevented practitioners and scholars from effectively designing formal courses around empirically derived principles of LSE that could improve leadership performance. This chapter reviews LSE from four perspectives. First, LSE is a measurable psychological construct and is distinguished from other related concepts. Second, LSE is associated with leadership effectiveness, highlighting what areas of leadership performance a high level of LSE is most impactful. Third, LSE's internal antecedents are trait-based and resilient against change. Fourth, LSE's external antecedents (to include formal development) are more amenable to intervention and change.

Distinguishing General Self-Efficacy from Leader Self-Efficacy

Self-efficacy is a psychological construct that is measured through self-assessment surveys, developed and validated by psychometricians (Sherer et al., 1982). The trajectory of associations and predictions of self-efficacy hinge on its definition and

measurement. In research, there are largely two types of self-efficacy, GSE and specific self-efficacy (SSE), under which LSE falls. Chen, Gully, and Eden (2001) define GSE as a motivational trait and SSE as a motivational state. Treating GSE as an individual trait, akin to cognitive ability and personality, assumes that it is not specific to a task and is stable over time (Zaccaro, 2007). Individual state differences such as SSE, goals, and anxiety are specific to situations that are malleable over time (Bandura, 1997). The difference between state and trait differences is an important distinction when considering how to define and measure LSE, as a general focus will not capture the factors inherent in the construct (Anderson et al., 2008).

General Self-Efficacy

GSE is a distinctly different construct from LSE, in that it is more of a trait that a person can apply equally to various situations (Eden & Kinnar, 1991). GSE is composed of items that focus on a person's perceived efficacy in general situations, such as "I do not seem capable of dealing with most problems that come up in life" (Sherer et al., 1982, p. 666) or "If I can't do a job the first time, I keep trying until I can" (Mesterova et al., 2015, p. 115). While the internal consistency of these scales is moderate to high ($\alpha = 0.82$ to 0.86 ; Chen, Gully, & Eden, 2004; Gardner & Pierce, 1998), GSE is a construct that takes more of a trait approach to self-efficacy in a wide variety of situations and, therefore, is more resistant to short term influences than SSE (Chen et al., 2001). The most powerful antecedent to GSE is previous long-term experiences (Eden, 2001).

GSE has had mixed success in predicting self-efficacy in the performance of tasks in specific domains (Chen et al., 2001). The definition and measurement of GSE have contributed to its mixed success. While the concept of GSE is envisioned as a single

factor construct in some studies (e.g., Gardner & Pierce, 1998), other studies have found that GSE is comprised of three factors of effort, persistence, and perceived behavior initiation that measure the *consequences* of self-efficacy versus self-efficacy itself (Chen et al., 2001; Sherer et al., 1982). Measuring the consequences of self-efficacy is an issue because Bandura (1977, 1991) defined efficacy as an individual's beliefs that drive their choices and motivation, not the choices and motivation themselves. Bandura (1977) makes a distinction between outcome expectancies and self-efficacy expectancies, stating that outcome expectancies are a "person's estimate that a given behavior will lead to certain outcomes" (p. 193) and that a self-efficacy expectation is a person's belief that they "can successfully execute the behavior required to produce the outcome" (p. 193). This focus away from outcomes distinguishes self-efficacy theory from the expectancy theory of Vroom (1964).

To distinguish the outcome-based measure of GSE from a more beliefs-based measure of GSE, Chen et al. (2001) developed an eight-item new GSE (NGSE) scale. A group of 54 managers attending an executive MBA program in Israel completed the outcome-based measure of GSE, the NGSE, and a leadership SSE survey at two points during the course. A principal components analysis of the NGSE indicated that it was unidimensional with one factor, and the GSE was multidimensional with three factors (Chen et al., 2001). NGSE predicted an additional 9.6% (beyond the 46% of the old GSE measure) of the variance for leadership SSE ($\beta = .50$, $\Delta F = 8.76$, $p < .01$). While still distinct from SSE as a measure, it performed better than the original GSE scale developed by Sherer et al. (1982) and demonstrated that NGSE has predictive validity with SSE.

GSE as a predictor variable does not support a relationship between leadership effectiveness and self-efficacy. This finding of a lack of relationship between leadership effectiveness and self-efficacy is due to the specificity of the self-efficacy measure (Chen et al., 2001; Eden, 2001). When a self-efficacy measure or construct matches the specific behaviors predicted, the predictive precision of the tool improves (Chen et al., 2001). Because GSE is ambiguous in its focus, several researchers have considered it inadequate as a measure for leadership efficacy or any specific form of self-efficacy (Bandura, 1997; Locke & Latham, 1990). In a study by Mesterova et al. (2015), the authors “assume that general self-efficacy is closely related to different domain-specific self-efficacies” (p. 112) while acknowledging Bandura (1977) did not include GSE in his theory. Their findings showed that GSE did not correlate with transformational leadership ($r = -.01$), leadership emergence ($r = .08$), perceived leadership effectiveness ($r = .00$), or group performance ($r = -.11$; Mesterova et al., 2015). The authors of the study indicated that inexperienced or overconfident participants, unrealistic leadership goals, and the GSE scale as potential reasons for why they had no relationship between GSE and leadership in their study (Mesterova et al., 2015).

There is additional research by Eden (2001) suggesting the construct of GSE is a partial treatment of the efficacy construct. Far from advocating for a more generalized approach to GSE, Eden (2001) stratifies the construct into two parts. The first is subjective external efficacy, which is an individual’s confidence that they have the means or tools to carry out a task. Examples of means in this context include technology, machines, resources, organizational effectiveness, supervisors, funding, teams, and other external supporting mechanisms that enable an individual to perform tasks. The second is

subjective internal efficacy, which is an individual's confidence that they have the talent and know-how to perform the job. These two forms of efficacy combine to create total subjective efficacy. Gist and Mitchell (1992) argue that subjective external efficacy (or means efficacy) is not a separate construct but is a moderator of self-efficacy. However, even when breaking means efficacy out as a separate factor, Eden (2001) stratifies means efficacy into general and specific categories, aligning with the distinctions between GSE and SSE. The argument made by Eden (2001) and others is that to adequately assess efficacy for a specific topic (such as leadership), specific efficacy scales should be utilized. This inclusion of means into the definition of self-efficacy aligns with how Bandura (1977) originally defined self-efficacy and aligns with the definition of LSE by Hannah et al. (2008).

Leader Self-Efficacy (LSE)

Defining LSE is a critical first step in measuring and studying its impact and its antecedents. Hannah et al. (2008) define LSE as “[l]eaders beliefs in their perceived capabilities to organize the positive psychological capabilities, motivation, means, collective resources, and courses of action required to attain effective, sustainable performance across their various leadership roles, demands, and contexts” (p. 2). An important element of this definition is Hannah et al.'s (2008) incorporation of means efficacy within LSE, similar to the work from other researchers (Eden, 2001; Gist & Mitchell, 1992; Hannah et al., 2012). Additionally, like Day (2001) and his distinction between intrapersonal leader development and interpersonal leadership development, Hannah et al. (2008) make a distinction between leader self-efficacy and collective leadership efficacy. In collective leadership efficacy, Hannah et al. (2008) describe the

role of the reciprocal relationship between leaders and followers that develop a shared mental model based on mutually developed feelings of efficacy. In essence, leadership efficacy is comprised of LSE, follower efficacy, and collective efficacy influencing each other (Hannah et al., 2008). The researcher focused on LSE versus leadership efficacy as the variable of interest for this study.

LSE is a form of specific self-efficacy (SSE), which is constrained to a particular situation and determined by an individual's assessment of their talents, know-how, and resources in a particular domain (Eden & Kinnar, 1991). Eden and Kinnar's (1991) situational definition of self-efficacy aligns with how Bandura (1977) understood, tested, and defined self-efficacy. Though Bandura (1977) indicated that there might be some generalization of self-efficacy to situations other than the one an individual initially experiences, the effects would generalize most predictably to those with similar tasks. Bandura (1977) proposed that self-efficacy motivated individual actions through the interactions outlined in Figure 2.1.

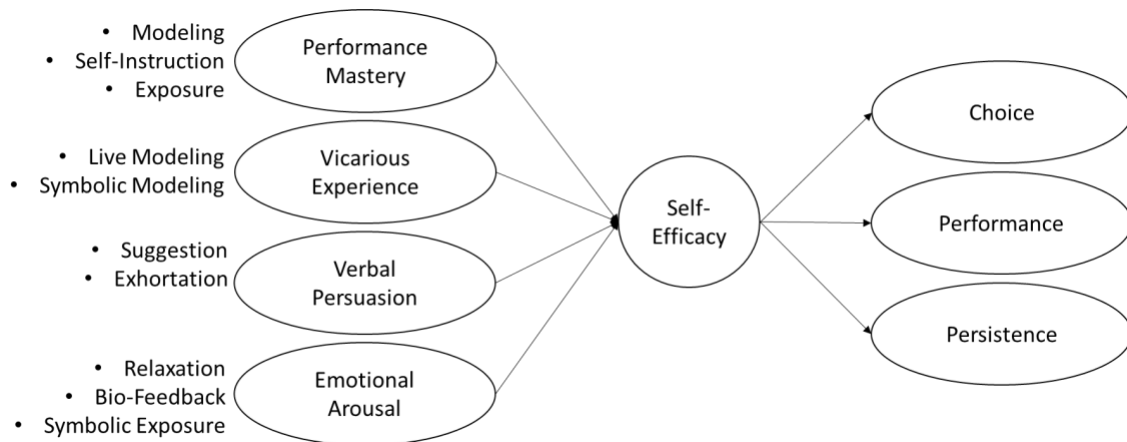


Figure 2.1. Bandura's model of self-efficacy antecedents and outcomes.

Bandura (1977) indicated that efficacy varies on three factors that need consideration when studying the construct: magnitude, generality, and strength. The intensity of efficacy is dependent on task complexity (magnitude), task specificity (generality), and feelings of mastery (strength; Bandura, 1977; Stajkovic & Luthans, 1998). Of the three factors, feelings of mastery (strength) are the most influential on self-efficacy (Bandura, 1977). The sources of efficacy outlined in Figure 2.1 influence the three self-efficacy factors and have a reciprocal relationship (Bandura, 1977; 1993). Leadership development influences these factors through the pedagogical activities used to deliver instruction (Dwyer, 2019). Typical leadership development activities such as feedback and role-playing serve as sources of efficacy, while the level of leadership development instruction, breadth of training topics, and effectiveness of instruction serve as sources for magnitude, generality, and strength, respectively.

Researchers distinguished LSE as a unique, measurable construct from GSE, self-esteem, and optimism. From a social psychology perspective, Chemers, Watson, and May (2000) looked at the impact of positive affective dispositions on effective leadership by assessing the validity of the following constructs: self-esteem, optimism, and LSE. Their study included a sample of undergraduate ROTC cadets ($n = 96$) from California and Arizona, rating them for military leadership potential (MLP) and performance after a 6-week leadership camp. Each cadet completed assessments for self-esteem, optimism, LSE, and MLP. The author's particular measure for LSE assessed different dimensions of leadership, such as "oral communication, written communication, oral presentation, initiative, sensitivity, influence, planning and organization, delegation, administrative control, problem analysis, judgment, decisiveness, technical competence, physical

stamina, mission accomplishment, and followership” (Chemers et al., 2000, p. 271). These dimensions of leadership align with an empirical study by Anderson et al. (2008) of the LSE construct. Though self-esteem, optimism, and LSE all had acceptable Cronbach’s coefficient ($>.75$), only LSE ($\beta = .40$, $t(92) = 3.69$, $p < .001$), and dispositional optimism, ($\beta = .23$, $t(92) = 2.02$, $p < .05$), significantly contributed to ratings of MLP. Leadership efficacy predicted overall performance at the advanced camp, ($\beta = .31$, $t(63) = 2.35$, $p < .05$) and peer ratings ($\beta = .54$, $t(57) = 3.60$, $p < .001$); however, self-esteem and optimism did not. These results suggest that LSE and elements of optimism are distinct constructs from self-esteem.

The definition of LSE by Hannah et al. (2008) includes separate domains of specific LSE for action, self-motivation, and thought. Similar to Chan and Drasgow (2001) and Kane, Zaccaro, Tremble, and Masuda (2002), Hannah et al. (2008) separate these domains from general and specific self-efficacy. However, Hannah et al. (2008) suggest that there are general and specific forms of LSE. In the view of Hannah et al. (2008), the general form of LSE is not decontextualized GSE, but a form of generalized LSE that can apply to broad leadership situations. The diversity of experiences that lead to the emergence of efficacy determines how generalized the LSE is.

From an empirical perspective, there have been very few studies conducted to derive the LSE construct using rigorous psychometric procedures. Paglis and Green (2002) developed an often used four-item survey to assess the level of LSE. The survey had a strong predictive validity for leadership performance ($r = .21$, $p < .05$), but the authors measured performance by assessing the number of attempts leaders made to be effective (Paglis & Green, 2002). Anderson et al. (2008) critiqued the approach of

measuring LSE through behavior as constrained and lacking in a comprehensive accounting of the belief structures for LSE. Other common measures of LSE are similar to Paglis and Green (2002) in their use of self-efficacy theory items customized for leadership roles (e.g., Bobbio & Manganelli, 2009; Tschannen-Moran & Gareis, 2004). Anderson et al. (2008) conducted one of the few empirical studies to create a taxonomy of LSE. A large sample of managers ($n = 251$; 172 females; 79 males), in addition to 10 subordinates, peers, and supervisors selected by each manager, completed a total of 2070 surveys (Anderson et al., 2008). Of the original 88 survey items, 18 factors loaded ($\lambda > .35$) for LSE, to include “change, drive, solve, build, act, involve, self-discipline, relate, oversee, project, credibility, challenge, guide, communicate, mentor, motivate, serve, convince, and know” (Anderson et al., 2008, p. 599). These factors overlap with some of the domains outlined by Hannah et al. (2012). Anderson et al. (2008) also developed and analyzed a companion taxonomy of leadership effectiveness in concert with the taxonomy of LSE. The leadership effectiveness taxonomy includes nine components, including relational, impartial, technical, creative, directive, tenacious, empowering, influential, and strategic (Anderson et al., 2008). When analyzed together, the LSE taxonomy and taxonomy of leadership effectiveness revealed specific canonical relationships (see Table 2.1).

As Bandura (1977), Day and Dragoni (2015), and Stajkovic and Luthans (1998) suggest, the complexity of leadership influences an individual’s LSE. In contrast to Paglis and Green (2002), Anderson et al. (2008) determined in their taxonomy that the construct of LSE itself is much more fine-grained than the constructs of leadership effectiveness.

Empirical evidence suggests that LSE is a complex construct and short, general surveys are inadequate for its measurement.

Table 2.1

Canonical Analysis of LSE and Leadership Effectiveness

Canonical variate	LSE Domain	Leadership Effectiveness Domain	Canonical Correlation
1	Self-Discipline	Impartial Leadership	.73**
2	Change, Challenge and Drive	Creative and Strategic Leadership	.71**
3	Act (negative loading), Motivate and Relate	Relational	.63**
4	Solve and Mentor (negative loading)	Technical	.50**
5	Convince, Project Credibility, Serve (negative loading)	Influential	.49**
6	Involve (negative loading)	Tenacious	.39**
7	Oversee and Guide	Directive	.35*
8	Build and Communicate (negative loading)	Effectiveness in Empowering	.32*

Note. Adapted from Anderson, Krajewski, Goffin, & Jackson (2008). $N = 227$

* $p < .05$; ** $p < .001$

LSE and Leadership Effectiveness

Research has shown that leaders with high LSE are more effective based on objective criteria of leadership performance (Anderson et al., 2008; Avolio et al., 2009; Carleton et al., 2018; Chan & Drasgow, 2001; Chemers et al., 2000; Dvir et al., 2002; Hannah et al., 2008; Hendricks & Payne, 2007; Luthans & Peterson, 2002; Susan E. Murphy & Ensher, 1999; Robertson & Sadri, 1993; Seibert et al., 2017; Semadar et al., 2006; Shamir et al., 1993; van Knippenberg et al., 2004; Walumbwa et al., 2008; Yost et al., 2019). The definition of leadership effectiveness in the research varies and primarily

focuses on quantitative organizational outcomes and the proximal antecedents to those outcomes. This section explores each measure of effectiveness separately.

Table 2.2

LSE Survey Tools and Research Outcomes

LSE Survey Tool	Number of Items and Construct	Research Where LSE Tool Used	Effect Size
Feasel (1995)	6 (GSE)	Hendricks & Payne (2007) Chan & Drasgow (2001)	Small
Gallup (not published)	10 (GSE)	Luthans & Peterson (2002)	Small
Robertson & Sadri (1993)	57 (LSE)	Robertson & Sadri (1993)	Moderate
Paglis & Green (2002)	11 (LSE)	Semadar et al. (2006) Carleton et al. (2018)	Small
Chemers et al. (2000)	24 (LSE)	Chemers et al. (2000)	Moderate
Dvir, Eden, & Banjo, (1995)	17 (GSE)	Dvir et al. (2002)	Moderate
Murphy, (1992); Scheier & Carver, (1985)	8 (self-esteem); 12 (optimism)	Murphy & Ensher (1999)	None
Ng et al. (2008)	11 (LSE)	Seibert et al. (2017)	Small to Moderate
Riggs, Warka, Babasa, Betancourt, & Hooker (1994)	10 (GSE)	Walumbwa et al. (2008)	Small to Moderate

Though most studies utilized Bandura's (1977) model of self-efficacy as a guide to structuring and assessing LSE, the studies did not utilize a standard measure. It is interesting to note that the use of more specific and comprehensive measures of LSE reflects stronger effects of LSE, as shown in Table 2.2.

Quantitative Organizational Outcomes

Researchers assess leadership effectiveness through self, subordinate, or peer ratings. Using more robust LSE measurement tools results in higher LSE scores. This research suggests that LSE requires a thorough definition to properly measure the construct.

Hendricks and Payne (2007) measured leadership effectiveness through subordinate ratings of performance and found a small significant positive correlation with LSE ($r = .29, p < .01$). Luthans and Peterson (2002) included both peer and subordinate ratings of leader effectiveness and found the correlations with LSE to be significant and small ($r = .29, .24, p < .01$). Robertson and Sadri (1993) focused on assessing the overall performance of supervisors as well as sub-criteria for performance (e.g., attitude, written communication, problem solving, etc.). Results showed a significant, moderate positive correlation with LSE for overall leadership performance rating ($r = .35, p < .05$), attitude ($r = .39, p < .05$), effective use of time ($r = .30, p < .05$), business knowledge and skills ($r = .30, p < .05$), problem solving ($r = .25, p < .01$), and supervision of staff ($r = .24, p < .01$). Semadar et al. (2006) also found a significant, but small positive relationship between supervisory performance evaluations and LSE ($r = .21, p < .05$). Chan and Drasgow (2001) defined effectiveness through an instructor rated measure of potential after candidates ($N = 1,592$) completed a leadership development course. Results showed a significant, small positive correlation with LSE ($r = .17, p < .01$; Chan & Drasgow, 2001). Taking a slightly different approach, Chemers et al. (2000) used multiple variables to assess leadership effectiveness. Researchers assessed ROTC cadets for performance against a control group and high LSE predicted better performance at an advanced camp ($\beta = .31, t(63) = 2.35, p < .05$), higher peer ratings ($\beta = .54, t(57) = 3.60, p < .001$), and

higher scores on a test of basic leadership abilities ($\beta = .46$, $t(57) = 2.84$, $p < .01$; Chemers et al., 2000).

Persistence

Bandura (1977) argues that self-efficacy is a key enabler of an individual's persistence in completing a task, even when faced with obstacles. Persistence, in turn, strengthens self-efficacy, assuming supportive experiences (Bandura, 1977). Persistence in leadership is also vital to success, not only to tackle complex leadership tasks but to complete seemingly mundane tasks that have perceived importance to others (DeWall et al., 2011).

A key attribute of leaders with high LSE is motivation to persevere in the face of obstacles (Anderson et al., 2008; Hannah et al., 2008; Hendricks & Payne, 2007). Hannah et al. (2008) proposed that thought is one of the specific factors of LSE. LSE for thought is an individual's confidence in cognitive problem-solving situations and goal setting (Hannah et al., 2008). LSE for thought is related to the findings of Anderson et al. (2008) that leaders who were lower in their level of Involve LSE (and higher in Know and Guide LSE) tended to demonstrate more tenacious leadership effectiveness. Hendricks and Payne (2007) also found leaders higher in LSE demonstrate higher levels of goal orientation. Goal orientation is related to persistence in that it influences how a person perseveres in the face of obstacles (Hendricks & Payne, 2007).

How leaders manage their own goals and execute their tasks is one element of leadership performance. Another element is how they assist in setting goals, designing tasks, and motivating achievement for others. While leaders can partly achieve this assistance role by serving as a source of vicarious experience (e.g., a role model),

research shows how leaders take more direct routes at influencing their staff, as discussed in the next section.

Vision & Goal Facilitation

Another attribute of higher-performing leaders is their ability to establish a vision and facilitate goal setting with those who work for them (Dvir et al., 2002; van Knippenberg et al., 2004; Yost et al., 2019). Yost et al. (2019) developed a self-efficacy assessment for leaders in the educational setting, called CTE (Career and Technical Education) Administrator Self-Efficacy Survey (CASES). CTE administrators are responsible for creating a vision and culture of preparedness for schools that teachers and students adopt. Yost et al. (2019) indicate that CTE administrators lack targeted professional development and that the CASES tool is a method to identify development gaps given research findings on self-efficacy. The survey contains 35 items with a high Cronbach's alpha ($\alpha = .95$), shortened from 51 items after a four-state pilot. The survey consists of three factors. The first factor, administrative management, included 14 items on shared vision and motivating teachers (Yost et al., 2019). The second factor, professional growth, included 14 items on goal attainment, consensus building, and developing partnerships (Yost et al., 2019). The third factor, personal management, included seven items on workload and stress management (Yost et al., 2019). Though researchers validated the content of the CASES tool with school subject matter experts, one limitation of the study is that it did not include a measure of predictive validity with quantitative leadership effectiveness.

Dvir et al. (2002) conducted a field study to demonstrate the impact of training on LSE and the subsequent impact on organizational performance. Dvir et al. (2002)

deployed a transformational leadership training program, using a large sample of military leaders ($n = 160$) with both an experimental and control group. Key attributes of transformational leadership are leaders' ability to inspire, motivate, develop followers, and help followers realize their potential (Avolio et al., 1999). These attributes of leadership are key antecedents to developing self-efficacy in followers and, in turn, developing effective self-efficacious leaders, according to Hannah et al. (2008) and van Knippenberg et al. (2004). The experimental group showed a significant impact from the treatment on their follower's LSE levels, $F_{7,30} = 2.44, p < .05$ (Dvir et al., 2002).

The research suggests that vision development and goal facilitation are important elements of leadership success and LSE. Few studies isolate vision and goal facilitation to determine their singular impact. Even Anderson et al.'s (2008) comprehensive study of LSE merges vision and goal setting with stamina, aspiration, and strategy. However, Dabke (2016) does suggest that vision and goal facilitation contribute more to the transformational leadership model of effectiveness than other factors. Hannah et al. (2012) demonstrated that LSE has predictive validity for the construct of transformational leadership. Those who worked for leaders with increased vision and goal setting, demonstrated a significant positive impact on performance ($F_{5,26} = 3.45, p < .02$; Dabke, 2016). While the positive relationship between high LSE and high vision development and goal facilitation on performance seems to be supported in the literature, high LSE by itself does not guarantee high employee performance.

Employee Performance

Measuring a direct relationship between LSE and objective employee performance has proven to be a challenge in research. Apart from organizational

performance, individual employee performance is a core component of leadership effectiveness (Avolio et al., 2009). Measurements of employee performance include subjective ratings, such as satisfaction with performance and employee engagement levels, as well as objective ratings on employee task performance.

Field studies of employee performance have shown mixed results of LSE's impact. Luthans and Peterson (2002) develop a fit between Gallup's employee engagement construct and LSE. They hypothesized LSE directly or indirectly mediated employee engagement and manager effectiveness. Data from 170 managers and 16.3 subordinates per manager (on average) showed that LSE had a weak positive relationship with employee cognitive engagement ($r_s = .16, p < .05$) and emotional engagement ($r_s = .16, p < .01$) and was thus a partial mediator (Luthans & Peterson, 2002). Murphy and Ensher (1999) used a large sample ($n = 112$) to assess the relationship between LSE and follower performance. Results did not support a significant relationship between high LSE and a positive supervisor-follower relationship from the perspective of the employee (Murphy & Ensher, 1999). Results linked high LSE to a significant moderate correlation of perceived follower performance as rated by the supervisor ($r = .30, p < .05$; Murphy & Ensher, 1999). A limitation of this study is that the self-efficacy tool used is for self-esteem measurement, a construct that Chemers et al. (2000) and Eden (2001) have demonstrated is measurably different than LSE.

Simulation business games have also demonstrated the impact of LSE on employee performance. Using a sample of 400 undergraduate psychology students, Hendricks and Payne (2007) found that LSE significantly correlated with each team's self-assessment of their performance ($r = .29, p < .01$); but did not significantly correlate

with the objective measure of their performance on a simulation task ($r = .12, p > .05$). While perspective measures of employee performance seem to have a reliable relationship with LSE, correlations with objective measures of employee performance are harder to come by.

Transformational Leadership

Transformational leadership style rolls the above-mentioned criteria of effectiveness into one theory of leadership and is linked to LSE (Carleton et al., 2018; Hannah et al., 2012; Shamir et al., 1993). The four components of transformational leadership are idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Avolio et al., 1999). Of the many styles of leadership, transformational leadership has been determined to be one of the most effective in leadership situations when balanced with employee needs (Tepper et al., 2018; Walumbwa et al., 2008), particularly when dealing with creativity and innovation (Kark et al., 2018).

In a study by Seibert et al. (2017), the authors hypothesized an increase in LSE by participation in development programs (i.e., classroom training) that emphasized transformational leadership skills. This increase in LSE would then improve their leadership effectiveness and promotability. The study defined leadership effectiveness through positive answers to the Multifactor Leadership Questionnaire (MLQ; Avolio et al., 1999). The MLQ assesses the level of transformational leadership skills acquired or mastered by a leader. Using multiple surveys of 334 first-line managers (76.1% response rate) and 235 of their supervisors (71% response rate), the authors collected self-report data on formal development program attendance, developmental job challenges,

developmental supervision, LSE, mentor network, leadership effectiveness, and promotability. Using a structural equation model (SEM), the authors found that LSE had a significant, small impact on leadership effectiveness ($\beta = .22, p < .01$) but formal development programs did not have a significant impact on LSE ($\beta = .10, p > .05$; Seibert et al., 2017). However, when both developmental job challenges and developmental supervision were both low or high, then formal development programs had a significant, moderate impact on LSE ($\beta = .25, p < .01$; Seibert et al., 2017).

Dvir et al. (2002) also demonstrated a link between LSE and transformational leadership through their field study of military leaders ($n = 54$), their subordinates ($n = 90$), and their indirect followers ($n = 724$). Hypothesizing that transformational leadership would have a positive impact on direct and indirect follower's performance, Dvir et al. (2002) showed that transformational leadership behavior increased in the experimental group ($F_{1,43} = 4.43, p < .05$) and that the performance of their indirect followers was significantly better as compared to the control group ($F_{5,26} = 3.45, p < .02$).

Walumbwa et al. (2008) used a large sample ($N = 437$) of Midwest banking employees to test the hypothesis that transformational leadership impacted employee performance, using self-efficacy and means efficacy as moderators. Using a general efficacy scale from Riggs et al. (1994), the results of the study demonstrated that transformational leadership had a small significant relationship with self-efficacy and means efficacy ($r = .23, .25, p < .01$). When assessing the relationship with employee performance, results were also significant, but small to moderate showing self-efficacy ($\beta = .21, p < .01$) and means efficacy ($\beta = .19, p < .01$) as moderators of employee performance (Walumbwa et al., 2008).

As described above, LSE is a measurable psychological construct and distinguishable from other related constructs such as GSE and other forms of SSE. LSE is also associated with higher levels of persistence, goal facilitation, vision development, and transformational leadership attributes; which are in turn associated with higher levels of employee and organizational performance. The next section initiates the exploration of where some of the attributes of LSE stem from, beginning with elements that are more resilient against change.

Internal Influences on LSE

Research shows that LSE has a positive impact on leadership performance. Creating consistent leadership development results requires a thorough understanding of what the antecedents of high LSE are. Internal antecedents to LSE have extensive research findings in the areas of individual personality, values, and affective constructs (Chan & Drasgow, 2001; Day et al., 2014; Hendricks & Payne, 2007; Huszycz & Endres, 2017; Ng et al., 2008; Paglis & Green, 2002; Quigley, 2013). This section will explore each of these areas separately.

Personality

Research has determined that individual traits, which are resilient to change, influence LSE. Trait theory typically focuses on the Big Five personality traits of neuroticism, extraversion, openness, conscientiousness, and agreeableness (Lord et al., 2017). Research has shown that all five of the personality traits have a significant, moderate impact on leadership effectiveness ($r = .39, p = .05$; Lord, de Vader, & Alliger, 1986). Research has also shown that three of the five personality factors are particularly influential on LSE: extraversion, conscientiousness, and openness to experience (Day et

al., 2014; Hendricks & Payne, 2007; Huszczo & Endres, 2017; Ng et al., 2008; Quigley, 2013).

Ng et al. (2008) explored the trait theory of leadership and its connection to leadership effectiveness, using LSE as a mediator. The authors hypothesized that LSE related negatively to neuroticism and positively to extraversion and conscientiousness in its mediated relationship with leader effectiveness. Using an all-male sample of 394 military recruits from Singapore, ages 20-26 ($M = 22.46$, $SD = 1.12$), survey results for neuroticism had a significant negative relation to LSE ($\beta = -.12$, $p < .05$) and extraversion ($\beta = .26$, $p < .01$) and a significant positive relation of conscientiousness to LSE ($\beta = .13$, $p < .01$). Ng et al.'s (2008) study differs from the study by Huszczo and Endres (2017), who found a negative relationship between extraversion and LSE for females and a positive relationship between extraversion and LSE for males. Openness to experience was also a significant predictor of LSE for women, but non-significant for men (Huszczo & Endres, 2017). Ng et al. (2008) was the only study that considered leader effectiveness, finding LSE to be a significant predictor of leadership effectiveness ($\beta = .15$, $p < .01$) above and beyond the Big Five traits.

Chan and Drasgow (2001) demonstrated the connection of personality to LSE but also highlighted the importance of external experience to the construct. Highlighting the role of external experience aligns with the latest research by Lord et al. (2017) and Zaccaro (2007) who suggest the consideration of environmental factors for a comprehensive analysis, even in trait-based research. Chan and Drasgow (2001) theorized that personality and values worked through motivation to lead (MTL) and (combined with cognitive ability) influenced leadership effectiveness. The study included

three samples: 1,594 male recruits from the Singapore military; 274 students from the Singapore Ministry of Education; and 293 students from a Midwestern university in the United States. The participants in all three samples completed questionnaires on personality, LSE, MTL, values, cognitive ability, past leadership experience, and biodata forms. Using a six-item measure of LSE developed by Feasel (1995), results showed that key predictors of LSE were extraversion ($\beta = .26, p = .05$), conscientiousness ($\beta = .25, p = .04$), openness to experience ($\beta = .15, p = .05$), and past leadership experience ($\beta = .40, p = .05$; Chan & Drasgow, 2001). LSE was then a key predictor of affective identity MTL ($\beta = .52, p = .06$) and social normative MTL ($\beta = .12, p = .07$; Chan & Drasgow, 2001).

Quigley (2013) studied LSE from a longitudinal perspective and determined how personality influenced LSE over time. Quigley's (2013) sample included 198 first-year masters of business administration (MBA) students from a mid-Atlantic university. Using a five-item measure of LSE developed by Kozlowski, Gully, McHugh, Salas, and Cannon-Bowers (as cited by Quigley, 2013), Quigley (2013) found extraversion to be most predictive of LSE from the outset of the course and throughout instruction ($t = 3.50, df = 144, p < .01$). Findings also showed that agreeableness ($t = 2.15, df = 540, p < .05$), and openness to experience ($t = -2.01, df = 540, p < .05$) were progressively predictive of LSE as the immersive course unfolded (Quigley, 2013).

Affective Constructs

Affective theories or constructs are also influential on the level of LSE that a person has, though more proximal to LSE than personality. Hendricks and Payne (2007) proposed that goal orientation contributed to leadership effectiveness through LSE and MTL. Though personality was also influential, Hendricks and Payne (2007) proposed it

had a more distal relationship to effectiveness than goal orientation. Hendricks and Payne's (2007) study differed from Chan and Drasgow's (2001) by its incorporation of goal orientation into the LSE and leadership effectiveness model. The construct of goal orientation has two factors. The first factor is performance goal orientation (PGO), which is an individual's focus on task performance and their reputation as successful (Hendricks & Payne, 2007). The second construct is learning goal orientation (LGO), which is an individual's focus on learning and mastering new tasks (Hendricks & Payne, 2007). Using a large sample ($N = 400$) of undergraduate psychology students, participants completed personality tests, as well as batteries on LSE, MTL, and goal orientation. Hendricks and Payne (2007) assessed leadership effectiveness using experimental tasks and scripted assessment protocols. Results showed that LGO related positively to LSE; however, it did not account for a significant amount of variance above and beyond the personality variables ($\beta = .19, p = .058$; Hendricks & Payne, 2007).

Paglis and Green (2002) looked at leadership within the context of the organizational change leader role. With a sample of 150 managers and 415 of their subordinates, Paglis and Green (2002) hypothesized that internal locus of control was a key antecedent to LSE and leader performance. Each manager completed surveys on LSE, which was comprised of three components: direction setting, gaining commitment, and overcoming obstacles. The managers also completed surveys on organizational commitment and perceived crisis. Subordinates completed surveys on change cynicism, support for change, resource supply, and leadership rating. The findings showed that successful leadership experience was significantly related to the direction-setting component of LSE ($p < .05$), which is four items from the 11-item LSE instrument

developed by Paglis and Green (2002). Internal locus of control showed a significant, moderate correlation with all three LSE dimensions ($r = .37, p < .05$). This importance of internal locus of control aligns with findings from Flynn, Smither, and Walker (2016) regarding the importance of core self-evaluations on leadership effectiveness. Researchers consider internal locus of control and GSE lower-level constructs within the core self-evaluation construct (Flynn et al., 2016).

Conclusion

Understanding the internal influences on LSE is critical for those wanting to optimize leadership performance and leadership development. An effective plan for performance and development should incorporate the factors of personality attributes ($\beta = .26$; Ng et al., 2008), locus of control ($r = .37$; Paglis & Green, 2002) and goal orientation ($\beta = .19$; Hendricks & Payne, 2007) given their significant impact on LSE. Results also demonstrate that these factors are but one side of a more comprehensive leadership performance and development picture. Though internal traits have an influence on the level of LSE for individuals, and therefore their leadership success, contextual and external influences also play a substantial role and are under-researched (Dwyer, 2019; Guillén et al., 2015).

External Influences on LSE

The area of contextual or external influences on LSE is considered by some of the most recent research on LSE to be the most fruitful area for new discoveries (Dwyer, 2019). However, researchers have been exploring external influences on LSE or self-efficacy for decades. Bandura (1986) critiqued but acknowledged the impact of an intervention with participants to extinguish their phobia using the four experiences of the

self-efficacy framework. Gist et al. (1989) leveraged Bandura's (1986) research in their own experiment on how to improve the self-efficacy of managers in their utilization of computer software. Results of Gist et al.'s (1989) study demonstrated that the experimental group that applied the self-efficacy framework had higher self-efficacy and performance than those in the control group. Researchers employ verbal persuasion, personal mastery, vicarious experience, and the resulting emotional arousal control (Bandura, 1977) in external environments to improve LSE. The author explores research on informal and external development in the next section to determine what research opportunities hold the most promise for furthering the understanding of LSE.

Informal Development

Little is known about the contextual or external influences on LSE, even though these are areas that are subject to intervention (Dwyer, 2019). Informal development provides a testbed of sorts to learn what works in formal development programs. Because informal development is often either limited in its scope (as in executive coaching) or extremely far-reaching with long start and end dates (as in mentoring relationships), the applicability of its impact on LSE is difficult to mimic in consistent ways. However, research has been able to uncover trends.

Mentoring. Though mentoring is a success factor under Anderson et al.'s (2008) LSE taxonomy study, the definition of mentoring for the purposes here is focused on leaders receiving mentoring versus providing mentoring. The definition of mentoring is adapted from Scandura and Williams (2004), defining it as a transformational, long-term relationship between mentor and protégé where values, knowledge, and experience are shared to achieve broad organizational goals. Mentoring aligns with the verbal persuasion

and vicarious experience drivers of self-efficacy under Bandura's (1977) self-efficacy theory.

Chopin et al. (2012) evaluated mentoring and its impact on LSE in a non-experimental field study. Chopin et al. (2012) hypothesized that protégés would have higher LSE scores than non-protégés and that higher-quality mentoring relationships would lead to higher LSE scores regardless of the length of mentoring relationships or previous supervisory experience of the protégés. Chopin et al. (2012) assessed a large sample of mid-Atlantic business graduate school part-time students ($n = 260$) for LSE, political skill, mentoring quality, and mentoring profiles. Using one-way analysis of covariance (ANCOVA), results showed that protégés did not have a significantly higher LSE than non-protégés ($p = .076$), but did have a higher political skill, $F(1, 258) = 5.21, p = .023$ (Chopin et al., 2012). Results also showed that the quality of the mentoring relationship and years of supervisory experience had a positive impact on LSE, $F(3, 171) = 7.37, p < .001$ (Chopin et al., 2012). Chopin et al. (2012) measured LSE using Murphy's (1992) eight-item scale of LSE, which focuses on self-efficacy outcomes versus beliefs. Bandura (1977,1991) considered the focus on self-efficacy outcomes versus beliefs as antitheoretical.

Chopin et al.'s (2012) results differed slightly from the mentoring study results by Lester et al. (2011). In Lester et al.'s (2011) six-month-long assessment of mentoring's impact on LSE over time, West Point cadets ($N = 193$) voluntarily participated mentoring assessment program. Lester et al. (2011) established an experimental and control group, with 76 assigned to one-on-one mentoring as the experimental group and 117 assigned to generalized leadership training as the control group (Lester et al., 2011). Results showed

that those in the one-on-one mentor program were more likely to improve LSE ($t(171) = 2.34, p < .05$; Lester et al., 2011). Lester et al. (2011) also found that increased LSE related to higher levels of trust ($t(171) = 2.43, p < .05$) and negative feedback-seeking ($t(171) = 2.36, p < .05$). The association of higher LSE with more robust mentoring practices aligns with what Chopin et al. (2012) found in their positive findings associated with the quality of mentoring relationships.

Quality of mentoring is a key element in these two studies in terms of whether they impact LSE. Whether the mentor could provide a vicarious experience (i.e., serve as a model) or could aid in personal mastery through assistance in coordinating professional goals was the link to improved LSE in Chopin et al.'s (2012) study. The one-on-one nature of Lester et al.'s (2011) program created a robust relationship and information sharing opportunity for mentor and protégé; and as trust and information sharing increased, LSE did as well.

Coaching. The distinction between coaching and mentoring is subtle but important. According to Grant (2014), coaching is a relationship between coach and client to help the client achieve a defined set of leadership goals. The key difference between coaching and mentoring is that the breadth and scope of goals in coaching are more constrained (Dwyer, 2019). In Grant's (2014) study, 14 coaches conducted coaching sessions with 31 leaders from a single multi-national corporation. Grant (2014) used a within-subjects design across four months and conducted pre and post-tests to determine the impact of coaching on measures such as goal attainment, solution-focused thinking, change readiness, and LSE (Grant, 2014). According to Grant (2014),

significant increases in LSE are associated with participation in coaching ($t(1, 30) = 2.35, p < .05$).

Baron and Morin (2009) studied a large sample of leaders ($N = 127$) over eight months of structured coaching on a particular professional difficulty. Baron and Morin (2009) hypothesized that coaching would have a positive relationship with LSE, but that LGO, affective commitment, work environment, and utility judgment would influence that relationship due to their also having a positive relationship with LSE. According to Baron and Morin (2009), LSE is positively associated with coaching ($\beta = 0.20, p < .05$; Baron & Morin, 2009).

In addition to formal development programs and job experience, Seibert et al. (2017) emphasize the importance of developmental supervision on LSE. Developmental supervision, as defined by Seibert et al. (2017), involves leading by example and coaching. When testing the relationship between the two variables, Seibert et al. (2017) found a small but significant correlation ($r = .14, p < .05$). However, the structural equation model (SEM) to test the path relationship between developmental supervision, LSE, and leadership effectiveness, failed to reach significance ($\beta = .01, p > .05$), as did the path from developmental supervision to LSE ($\beta = .03, p > .05$).

Drawing correlations from mentoring and coaching to LSE produces small to moderate correlations. Very few mentoring and coaching impact assessments on leadership effectiveness show significant results. This lack of findings that link mentoring and coaching success to demonstrated leadership effectiveness demonstrates the complexity of the leadership construct and its successful execution in the field. However, the lessons learned concerning this type of informal development provide the beginning

of a guiding framework for what works in improving LSE in formal development programs.

Formal Development

The research on formal development in LSE is extremely scant and is where the glaring gap exists for LSE research (Dwyer, 2019). In an oft-cited meta-analysis, Avolio et al. (2009) determined that formal leadership programs were impactful on leadership development; however, Avolio et al. (2009) did not determine *how* they were impactful. In a comprehensive study of leadership development over the past 25 years, Day et al. (2014) recognize that development, in and of itself, is a discipline worthy of focus and that effective leadership development is not simply deciding what leadership theory or research is most effective in a given setting and teaching it. Boyce et al. (2010) argue that self-development in leadership is more complex than self-development in other fields and that “the individual characteristics that predict the effectiveness of these particular self-development processes may carry more predictive weight in a model of leader self-development than in a more general model of self-development” (p. 160). In other words, leadership development is complex. The studies above demonstrate that numerous variables influence the success of leadership interventions and the proper measurement of leadership constructs. The same is true for formal leadership development.

Seibert et al. (2017) and Day (2001) admit that there is a shortcoming in the literature explaining exactly how leadership development leads to leadership effectiveness. Seibert et al. (2017) assessed the impact of formal development on LSE using the 11-item scale from Ng et al. (2008). Seibert et al. (2017) measured formal development using another scale, assessing to what degree participants had participated

in formal development over the past year. Seibert et al. (2017) broke the course types out by functional areas (e.g., leadership, technical skills, educational courses, and career strategy workshops). Results showed that the effect of formal development on leadership effectiveness through LSE was non-significant ($\beta = .02, p > .05$) and the path from formal development programs to LSE was also non-significant ($\beta = .10, p > .05$; Seibert et al., 2017). However, when there were low or high levels of both developmental job challenges and developmental supervision, then formal development's impact on leadership effectiveness through LSE was significant ($\beta = .25, p < .01$; $\beta = .13, p < .05$; Seibert et al., 2017). Seibert et al. (2017) suggest that these findings show a synergistic effect of formal development combined with coaching and challenging experiences.

Holmberg, Larsson, and Bäckström (2016) conducted a quasi-experimental study of 86 participants in a leadership program lasting one year. A control group of 44 individuals participated in a standard leadership development program. Holmberg et al. (2016) did not define the nature of the control group's leadership development program. The experimental program consisted of five three-day seminars approximately every two months (Holmberg et al., 2016). The seminars focused on seven themes of leadership (purpose, culture, contract, linking, energy, delegation, and interaction) with a pedagogical emphasis on reflection and mixed delivery of content, using lectures, exercises, and discussions (Holmberg et al., 2016). Holmberg et al. (2016) assessed LSE with Paglis and Green's (2002) tool. Results showed that LSE was higher in the experimental group, $F(1,11) = 6.90; p < .010$, but the authors did not explore what components of the program instruction were most impactful (Holmberg et al., 2016).

A study by Evans, Hess, Abdelhamid, and Stepleman (2016) looked at two small samples for the Pipeline I and Pipeline II ($n = 27, 24$) leadership development programs at Augusta University. The programs were robust in their coverage of leadership topics and the selection of pedagogical techniques (Evans et al., 2016). Using the Paglis and Green (2002) LSE pre and post-test surveys and defined learning outcomes, results showed that LSE significantly improved ($t = 3.17, p < .004$; Evans et al., 2016). There was no control group in this study, and while the pedagogical techniques were robust, the specific activity that led to the increase in LSE was not determined.

A few studies have looked at the impact of formal development programs and their impact on GSE (versus LSE). They are worthy of mention due to the specificity they provide regarding the teaching models used and the impact realized on GSE. Gist (1989) analyzed the impact of cognitive modeling versus lecture on general self-efficacy. Cognitive modeling, as defined by the study, is the act of listening to “one’s thoughts as one performs an activity and utilizing self-instructional thoughts [modeled by a trainer]... to guide performance” (p. 788). Using Bandura’s (1977) cognitive learning theory as their guiding framework, the authors hypothesized that cognitive modeling provided quality vicarious experiences, performance accomplishments, verbal persuasion, and emotional arousal that would lead to higher self-efficacy than in a lecture environment. Participants of the study were 60 managers chosen at random from a federal agency whose mission was in the scientific research field. The author split the group of managers into two groups of 30 (a control group and an experimental group). Each group attended a training program on innovative problem-solving. Both groups sat through a lecture on how to conduct brainstorming and brainwriting, but the practice sessions for each group

applied different pedagogical approaches. The control group received additional lecture and discussion time, along with practice and feedback from the trainer. The experimental group applied cognitive modeling techniques (e.g., lateral thinking, self-instructive, thought-counter-thought). Results showed that those in the modeling condition scored an average of 8.24 in the post-test self-efficacy assessment, while those in the control group scored an average of 5.23. The applied pedagogical method had a significant effect on general self-efficacy ($F = 32.97, p < .001$).

Latham and Saari (1979) studied the impact of behavioral modeling training on first-line supervisors' performance. The participants included 40 randomly selected male supervisors from a Northwestern United States company. Latham and Saari (1979) assigned half ($n = 20$) of the participants to a control group and assigned the other half to an experimental group. Latham and Saari (1979) did not reveal the group assignments to participants. During the nine-week study, the experimental group attended behavioral model training on the topics of new employee orientation, employee recognition, motivation, correcting work habits, disciplinary actions, reducing absenteeism, difficult employees, reducing turnover, and change management. Behavioral modeling in this instance consisted of short lectures, film presentations, group discussions on desired behaviors, role-playing practice, and feedback from class participants on role-play performance. After each topic, course instructors directed participants to test their newly learned skills in the workplace and report back to the class on the effectiveness of their efforts the following week. Latham and Saari (1979) did not provide the training curriculum of the control group.

Latham and Saari (1979) assessed the results of the experimental group using reaction, learning, behavioral, and performance measures. Reactions to the training, measured on a five-point Likert scale, were positive immediately after the course and 8 months after ($M = 4.15$, $SD = .59$; $M = 4.29$, $SD = .51$). Latham and Saari (1979) measured learning after course completion using a test of 85 situational questions based on a job analysis. Those in the experimental group scored significantly better than those in the control group ($t = 2.29$, $df = 38$, $p < .05$). From a behavioral perspective, superintendents evaluated recordings of participants in both the control group and experimental group as they resolved employee problems to determine training effectiveness. Even though the evaluations were blind as to what group the supervisor belonged to, the ratings of those in the experimental group were significantly higher than those in the control group ($t = 5.38$, $df = 28$, $p < .05$). Post-training job performance, based on behavioral assessments, was also higher for the experimental group ($t = 2.51$, $df = 38$, $p < .05$) both one month and one year after the course ended. The company's traditional performance evaluation tool recorded the same difference over time ($t = 2.68$, $df = 38$, $p < .05$). The correlation between behavioral and traditional performance evaluation tools was $.72$ ($p < .01$).

Gist et al. (1989) analyzed the impact of utilizing behavior modeling training to increase self-efficacy and improve managers' effectiveness in computer software usage. Gist et al. (1989) hypothesized that participants who received behavior modeling training would perform better than those who received tutorial training or no intervention because of the impact of behavior modeling on self-efficacy via vicarious experience. Participants were 108 university managers who volunteered for the three-hour training in how to use a

spreadsheet analysis software program. Gist et al. (1989) randomly assigned participants to one of two groups. Gist et al. (1989) provided the first group training using video modeling of the spreadsheet program and provided the second group verbal tutorial training. Results demonstrated that those in the video modeling group performed better on a post-test of spreadsheet techniques than those in the tutorial training, $F(1, 103) = 6.70$, $p < .01$. The authors are careful to mention that this did not measure the transfer of training. Results also showed that there was an interaction between pre-course self-efficacy and the training approach, with modeling having a greater impact on post-course self-efficacy levels, $F(2, 103) = 2.98$, $p < .05$.

Conclusion

The lack of research on how formal development influences LSE is a gap in the learning science literature. Researchers have shown LSE positively influences leadership effectiveness and that organizational leaders can cultivate LSE through training and development. By not thoroughly understanding LSE, its definition, its factors, and its drivers, there is a negative impact on time, money, leadership performance, organizational performance, and employee satisfaction. Though individual traits influence some elements of LSE, this is not a return to the *great man* concept of leadership, as research has shown that organizations can influence factors that increase LSE. While the use of coaching has shown some success in improving LSE, the scope and cost of coaching make it prohibitive to leverage at the scale needed to prepare future pipelines of leaders. Understanding exactly what components of development contribute to improved LSE and exactly how to influence those components are central to the research questions at hand.

CHAPTER THREE

Methodology

Introduction

As stated in the previous chapter, gaps exist in adequately defining LSE as a construct and in understanding how leadership development influences LSE. Understanding how leadership development influences LSE requires a solid understanding of the construct of LSE. Self-efficacy is a strong predictor of work performance (Jiang & Gu, 2017; M. Kim & Beehr, 2017; Ormrod, 2020) but is domain and task-specific (Anderson et al., 2008; Bandura, 1977; Hannah et al., 2012; Kim & Beehr, 2017; Stajkovic & Luthans, 1998). Therefore, any measure of self-efficacy must accurately capture the complexity of the tasks that leaders perform and any other contextual information leaders use to form self-efficacy judgments (Anderson et al., 2008; Bandura, 1977; Hannah et al., 2012; Kim & Beehr, 2017; Stajkovic & Luthans, 1998). Adequately defining LSE provides the means to address the gap in how leadership development influences LSE's emergence or change in learners (Dwyer, 2019).

This study addressed the influence of development on LSE's specific factors for learners in the NST 2.0 course at the Department of Defense in Indianapolis, Indiana. The researcher included separate quantitative, qualitative, and mixed methods research questions due to the mixed methods study design. Creswell and Clark (2017) recommend including separate research questions for each data stream in mixed methods studies. The author ordered the research questions in the same sequence that the affiliated data

collection, analysis, and presentation sections were completed in the explanatory sequential mixed methods design.

The quantitative research question asks, “What is the magnitude of change in LSE scores between the pre-course and post-course assessments?” The qualitative research questions are comprised of three parts. The primary qualitative research question asks, “How do learners in the NST 2.0 course experience LSE?” The qualitative research sub-questions ask, “What course learning events are leadership development learners engaged in that are related (positively or negatively) to LSE;” and “What pre-course learning events are leadership development learners engaged in related (positively or negatively) to LSE?” Lastly, the mixed methods research question asks, “How do the interviews with learners help explain LSE changes from pre-course and post-course assessments?”

The purpose of this study was to understand how a leadership development course influences LSE so that practitioners are provided with a blueprint for more effective leadership development courses. In order to provide a fully reflexive account of the data gathered for this study (Watt, 2007), the researcher’s perspective and positionality are explored in the next section. Positionality provides context for the research conducted in this study to bolster the credibility and trustworthiness of the outcomes.

Researcher Perspective and Positionality

Overview of Positionality

Research has found that multiple factors contribute to researcher bias in studies (Dean et al., 2018; Haraway, 1988; Lu & Hodge, 2019; Milner, 2007; Moser, 2008). Haraway (1988), in her studies of feminism, suggested that objectivity in any kind of research was an illusion and that researchers should “be hostile to easy relativisms and

holisms built out of summing and subsuming parts” (p. 585). According to Haraway (1988), this hostility should be born out of an understanding that we are all partial to certain perspectives based on socially constructed categories such as culture, power, gender, and epistemological beliefs. Moser (2008) suggests considering our psychological personalities, as they contribute to our positionality when conducting research. Personality directly influences the researcher’s interpretation of events and can influence how research participants respond to the researcher (Lu & Hodge, 2019; Moser, 2008).

The different perspectives of researchers have been shown to have a material impact on research findings. Dean et al. (2018) demonstrated that researchers with different positionalities who analyzed the same study focused on different data elements resulting in substantively different findings. Because of these material impacts on research, researchers need to be aware of their positionality and be transparent about the lens through which they will interpret the study.

Researcher’s Positionality

Multiple socially constructed factors could influence my positionality. I am a 44-year-old, Caucasian male that was born and raised primarily in the United States. I was raised in a military family’s microculture with norms and experiences unique to that subgroup (Banks & Banks, 2019; Hall, 2011). Research shows that the military family microculture is more diverse, both racially and economically, than the United States civilian population (Clever & Segal, 2013). This experience and the experience of living in different regions of the United States and overseas have afforded me personal and cultural knowledge that differs from the experience of those not part of the military

family microculture. However, my formal education has been couched within the dominant macroculture and official knowledge (Ladson-Billings, 1995) of the United States, which favors male and white experiences and devalues females and people of color in America (McIntosh, 1989).

From a personality perspective, Moser (2008) suggests that different personalities influence fieldwork (such as participant interviews and group observations) through non-verbal communication and sensitivity to others' emotions. While validation of these traits requires the use of psychological assessments (e.g., Costa & McCrae, 1992; Davis, 1980; Friedman et al., 1980; Rosenthal et al., 2013), I have completed an abridged version of the big five inventory psychological exam (Hudson, 2020). Results suggest I am extremely low in extraversion, low in agreeableness, high in neuroticism, and average in conscientiousness and openness compared to the population norms for that tool. According to Roccas et al. (2002), those low in extraversion and agreeableness may tend to be more reserved and inflexible than those high in these traits. Those high in neuroticism tend to be more anxious or depressed than those that score low in this trait (Roccas et al., 2002). This combination of traits that I scored higher and lower than the population norm may hinder my effective communication with study participants.

My personal work history could also influence my positionality. I have spent my professional working years entirely with the Federal Government. I have worked for 20 years in the United States Department of Defense's human resources (HR) field and for two years in the Shared Services field, working for the National Aeronautics and Space Administration (NASA). While with NASA, I concentrated primarily on the areas of program and project management. My HR work has focused on strategic planning,

recruiting, and data analysis, with my current work focused on HR analytics. Kapoor and Kabra (2014) refer to HR analytics as the “integration of relevant HR data from different sources, the performing of...workforce analysis on this captured data, and...gleaning of insights...to shape decisions for better organization performance” (p. 1). This interest in a measurable and evidence-driven approach to HR programs has influenced my participation in numerous projects focused on forecasting and extrapolating the potential benefits or drawbacks of HR policies, systems, and procedures. As a member of my organization’s analytics center of excellence (CoE), I advocate for data utilization in business settings to come to evidence-based solutions to problems. My organization favors quantitative over qualitative data; however, my organization uses both data types, mainly when analyzing survey feedback.

My personal theoretical and worldview perspective may also influence my positionality. I come to the study with a pragmatic worldview, with post-positivist inclinations. According to Creswell and Poth (2016), post-positivism “has the elements of being reductionistic, logical, empirical, cause-and-effect oriented, and deterministic based on a priori theories” (p. 60). This lens may influence how much emphasis the quantitative elements in this study receive. However, given the complexity of the LSE construct and developmental antecedents, the ability to satisfactorily measure them from a purely quantitative angle could be constraining. My pragmatic lens may help balance the focus on whatever data analysis and data collection approaches are necessary to satisfactorily answer the research questions. As Creswell and Poth (2016) indicate, in the pragmatic worldview, “multiple methods of data collection [are used] to best answer the research question” (p. 65). My interest in this case study is to fill a gap in the evidence-driven

approach to HR practices at my organization. In 2018, I earned a master's degree in Industrial and Organizational Psychology to better appreciate the theoretical underpinnings of HR practices. The measurement of leadership development programs and how participants experience them is personally intriguing and of particular interest to our agency leadership, given the lack of information on what defines and drives leadership success.

Theoretical Framework

Bandura's Self-Efficacy and Hannah et al.'s LSE

This study utilized an a priori theoretical framework based on Bandura's perceived self-efficacy theory (Bandura, 1977). According to Bandura (1977), the primary drivers of self-efficacy are performance mastery, vicarious experience, verbal persuasion, and the ability to cope with emotional arousal. To understand what learning events might contribute to the experience of LSE, there should be a framework by which to categorize what is already known to influence that experience. Bandura's self-efficacy framework is a time-tested approach to predicting what drives self-efficacy and is applicable to the study of LSE (Paglis, 2010).

In concert with Bandura's (1977) framework and to align with Bandura's description of self-efficacy as a task and domain-specific construct, this study adopted a psychometrically derived definition of LSE. Research shows that LSE is not a unidimensional construct (Anderson et al., 2008; Bobbio & Manganelli, 2009; Dwyer, 2019; Hannah et al., 2012). While there is no single definition of LSE, as there is no single definition of what leadership is (Paglis & Green, 2002), the empirically derived definition of LSE utilized by Hannah et al. (2012) and Hannah and Avolio (2013) is one

of the few LSE surveys to utilize factor analysis to develop their LSE items (Dwyer, 2019) and demonstrate convergent validity with other LSE measures (Chen et al., 2004; Sherer et al., 1982). Utilizing valid quantitative measures is a key quality assurance element in quantitative phases of mixed methods studies according to Ivankova (2014). This assurance of quality also ensures that the learners' experiences were adequately measured and understood before moving to the qualitative phase of the study.

From Theoretical Framework to Research Questions

The purpose of this study is to understand how leadership development influences LSE so that practitioners are provided with a blueprint for more effective leadership development courses.

Table 3.1

Theoretical Framework and Research Questions Matrix

Theoretical Framework Element	Research Question
Hannah et al.'s and Hannah and Avolio's LSE Survey	What is the magnitude of change in LSE scores between the pre-course and post-course assessments?
Bandura's Predictors of Self-Efficacy	How do learners in the NST 2.0 course experience LSE?
Bandura's Predictors of Self-Efficacy	What course learning events are leadership development learners engaged in that are related (positively or negatively) to LSE?
Bandura's Predictors of Self-Efficacy	What pre-course learning events are leadership development learners engaged in related (positively or negatively) to LSE?
Hannah et al.'s and Hannah and Avolio's LSE Survey and Bandura's Predictors of Self-Efficacy	How do the interviews with learners help explain LSE changes from pre-course and post-course assessments?

Bandura's (1977) perceived self-efficacy framework provides broad predictors for improved self-efficacy (e.g., performance mastery, vicarious experience, verbal persuasion, and the ability to cope with emotional arousal). Hannah et al. (2012) and Hannah and Avolio (2013) break down the LSE construct in detail, allowing for a more refined change analysis of LSE's factors. This combination of a predictive and factor level analysis of the LSE construct sets the stage for the study's research questions. Table 3.1 outlines the relationship between the theoretical framework and research questions.

Theoretical Framework and Data Collection

Bandura's (1977) perceived self-efficacy framework provides the means to identify potential sources of leadership development influences on LSE by grouping them into four categories (i.e., performance mastery, vicarious experience, verbal persuasion, and the ability to cope with emotional arousal). Bandura's (1977) framework also provides the means to group leadership development influences on LSE by subcategories (e.g., task difficulty, generality, and strength). Hannah et al.'s (2012) and Hannah and Avolio's (2013) survey provides the means to measure LSE at an aggregate and factor level. Hannah et al.'s (2012) and Hannah and Avolio's (2013) survey includes 22 total items that load on three factors: leader action efficacy (LAE), leader self-regulation efficacy (LSRE), and leader means efficacy (LME). In collecting the data, the use of Hannah et al.'s (2012) and Hannah and Avolio's (2013) LSE survey provides the task-specific definition of self-efficacy that Bandura called for in his self-efficacy theory. The Hannah et al. (2012) and Hannah and Avolio (2013) LSE survey items can also be cross-walked to Bandura's (1977) four drivers of self-efficacy. Item 11 is associated with vicarious experience. Items 9 and 13 are associated with verbal persuasion. Items 16, 17,

and 18 are associated with emotional arousal. The remaining items could associate with multiple drivers of self-efficacy, including performance mastery. Table 3.2 outlines the relationships between each item and Bandura's self-efficacy framework.

Table 3.2

LSE Survey and Bandura's Self-Efficacy Framework Alignment

LSE Survey Item	LSE Factor	Bandura Self-Efficacy Driver
1	LAE	Multiple Drivers
2	LAE	Multiple Drivers
3	LAE	Multiple Drivers
4	LAE	Multiple Drivers
5	LAE	Multiple Drivers
6	LAE	Multiple Drivers
7	LAE	Multiple Drivers
8	LME	Multiple Drivers
9	LME	Verbal Persuasion
10	LME	Multiple Drivers
11	LME	Vicarious Experience
12	LME	Multiple Drivers
13	LME	Verbal Persuasion
14	LME	Multiple Drivers
15	LSRE	Multiple Drivers
16	LSRE	Emotional Arousal
17	LSRE	Emotional Arousal
18	LSRE	Emotional Arousal
19	LSRE	Multiple Drivers
20	LSRE	Multiple Drivers
21	LSRE	Multiple Drivers
22	LSRE	Multiple Drivers

Note. Those items that can be influenced by multiple self-efficacy drivers include performance mastery in all of them.

The survey also accounts for feelings of capability from a knowledge standpoint and from a resources and task complexity standpoint (Hannah et al., 2012), which Bandura (1977) saw as critical. Using Bandura's framework as an observation and interview

protocol tool ties the two data collection streams together, linking the LSE outcome to what Bandura saw as predictors of self-efficacy.

Theoretical Framework and Data Analysis

The utilization of Bandura's (1977) self-efficacy framework and Hannah et al.'s (2012) empirically derived definition of LSE are core elements of answering this study's research questions. Ivankova (2014) recommends the use of psychometrically validated surveys in mixed methods studies to ensure the reliability of documented changes. To fully understand how learners experience LSE, there should be an empirically derived definition of what LSE is and a method to categorize known drivers of the root construct of self-efficacy. Bandura's framework and Hannah et al.'s (2012) and Hannah and Avolio's (2013) tool accomplish both of these tasks. In analyzing the data, the theoretical framework provides the means to look at changes in LSE scores, not only in the aggregate but also at the factor level. Since Hannah et al.'s (2012) and Hannah and Avolio's (2013) survey measures LSE at a factor level, the researcher can assess the aggregate LSE change as well as the type of LSE score change. The framework also provides the means to explore, document, and report how the different self-efficacy drivers influenced those changes or experiences.

The researcher used an a priori framework analysis to code, analyze, and interpret the qualitative data for the study. The researcher followed five framework analysis steps outlined by Richie and Spencer (1994, as cited by Goldsmith, 2021): "(1) data familiarization; (2) identifying a thematic framework; (3) indexing all study data against the framework; (4) charting to summarize the indexed data; and (5) mapping and interpretation of patterns found within the charts" (p. 2062).

Using the scant research available on what instructional methods, technology, student engagement tactics, and student-teacher interactions have improved self-efficacy (Dwyer, 2019; Gilbert et al., 2018; Gist et al., 1989; Hannah et al., 2012; Latham & Saari, 1979; Paglis, 2010), thematic analysis (within Bandura’s framework and the survey results) signaled what elements of the leadership development course may have contributed to LSE changes. Additionally, the researcher completed a congruent thematic analysis using the same LSE drivers in each data gathering protocol.

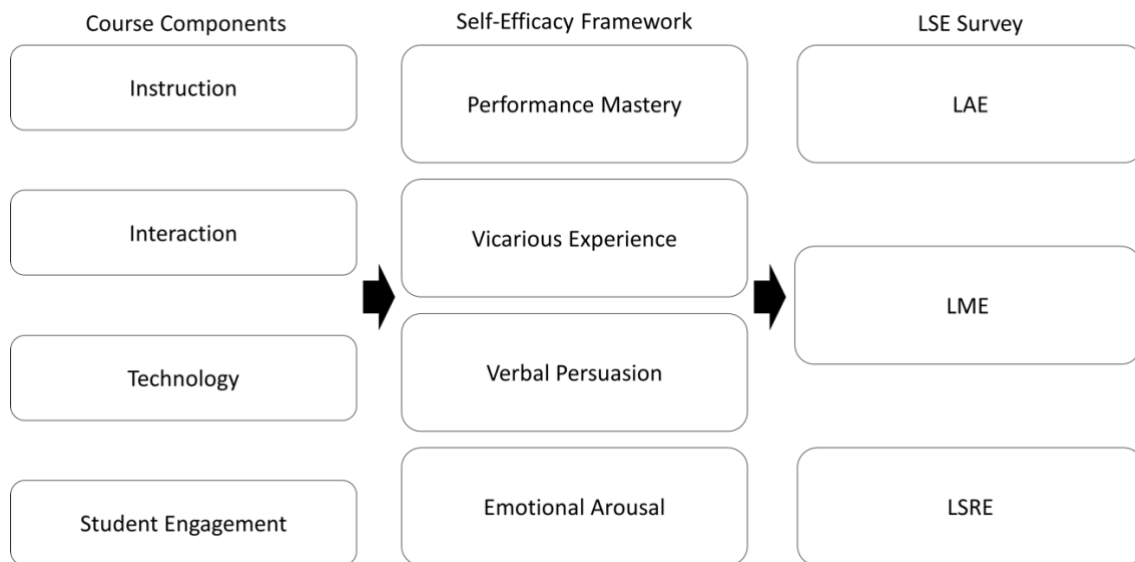


Figure 3.1. Theoretical framework overview.

Research Design and Rationale

This study leveraged quantitative and qualitative data about LSE to better understand the experience of LSE and what elements of leadership development influence that experience. Researchers use mixed methods designs to provide more comprehensive coverage of research topics by collecting and analyzing quantitative and qualitative data (Creswell & Creswell, 2017). The explanatory sequential mixed methods

design is a particular type of mixed method design that uses two separate phases of data collection, beginning with a quantitative phase, which is then explained or supported by a qualitative phase (Creswell & Creswell, 2017; Ivankova et al., 2006). This study used the explanatory sequential mixed methods design (Figure 3.2) to assess how LSE changes after attending a leadership development course with in-depth explanations of what influenced those changes.

Quantitative and Qualitative Phase

The quantitative phase of the explanatory sequential mixed methods design provided an opportunity to achieve two outcomes in this study. The first outcome is after the pre-course survey of LSE, where a baseline assessment of LSE is made using the Hannah et al. (2012) and Hannah and Avolio (2013) survey tool. This provided the means to determine the second quantitative outcome, which is a comparative look at what changes have occurred in LSE with the post-course LSE survey. The explanatory sequential design's qualitative phase provided the framework to explore potential reasons for changes to LSE. The qualitative phase explains the quantitative results, utilizing criterion purposive sampling, observations, semi-structured interviews, material audits, qualitative data collection protocols, and qualitative data analysis techniques (Creswell & Clark, 2017; Ivankova et al., 2006).

Design Emphasis

In addition to the design's core elements, the researcher determined the priority for the quantitative and qualitative phases, the implementation of the phases, and the integration of the data and results (Ivankova et al., 2006). Priority in the explanatory

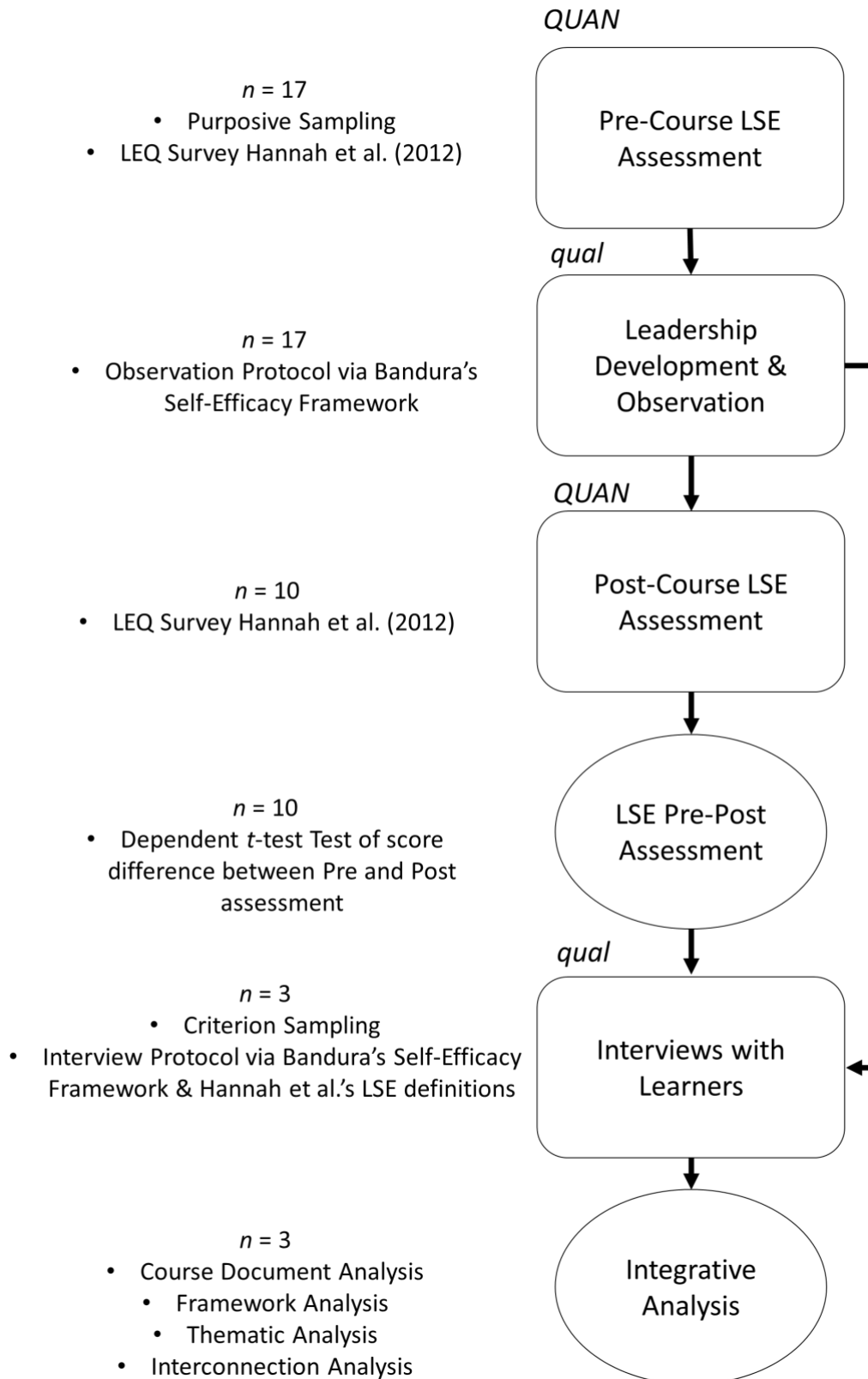


Figure 3.2. Explanatory sequential mixed methods design.

sequential design is typically given to the quantitative phase. For this study, the research questions focus on understanding how learners experience LSE and what specific elements of a leadership development course contribute to LSE changes. The qualitative phase of the design garners detailed information on LSE experiences and is shaped by the results of the quantitative phase. The quantitative phase is, therefore, where the emphasis is placed from a design perspective. With the emphasis on the quantitative phase, the notation system used for this study is QUAN → qual, as recommended by Creswell and Clark (2017).

Quality Assurance

It is critical to the research questions that any documented change in LSE is unambiguous, understood, valid, and reliable. Once an unambiguous change in LSE has occurred, it is critical to understand the drivers of that change and that those drivers are trustworthy. In the explanatory sequential mixed methods design, separately assessing the respective data quality for the quantitative and qualitative phases is key before integration (Ivankova, 2014; Ivankova et al., 2006). The quantitative phase utilized recognized quantitative significance tests to assess the difference in pre-course and post-course LSE outcomes. The Hannah and Avolio (2013) assessment has already undergone the battery of psychometric testing that confirms the assessment's validity and reliability as an assessment of the LSE construct (Hannah et al., 2012). The qualitative phase utilized trustworthiness and credibility procedures such as triangulation and member checking (Creswell & Creswell, 2017) to ensure the results align with quality criteria (Ivankova, 2014). While there is an intervening qualitative data-gathering phase between the pre-

course and post-course LSE assessment, it was critical to ensure that those results did not bias the quantitative results' interpretation.

Integration

From a data integration standpoint, this study's research questions focused on LSE experiences from multiple angles with the fundamental assumption that LSE change has occurred. If a learner did not experience any change in LSE, they would not be considered for interview selection. To isolate the group of learners that met the criteria of change in LSE and learn from their experiences, the explanatory sequential mixed methods design is ideal. The explanatory sequential mixed methods design incorporates systematic sampling to identify those that demonstrate significant changes and linear and non-linear data integration to fully explore the relationships and correlations between the quantitative and qualitative data streams (Ivankova, 2014; Ivankova et al., 2006).

The purpose of this study was to understand how a leadership development course influences LSE. While the construct of LSE is measurable as an aggregate score, *how* learners arrived at that score and the reasons *why* different course instruction modalities influenced them in different ways are complex and not measurable from a quantitative perspective alone. Of specific interest are LSE changes and what elements of leadership development or other contextual experiences drive those changes. The explanatory sequential mixed methods design is ideal for researchers that want to utilize qualitative data to explain the "mechanisms...on why the quantitative results occurred" (Creswell & Clark, 2017, p. 151). Interpretive rigor was achieved through a full exploration of the results using the individual quality criteria for the quantitative and qualitative phases of

the study. This makes the explanatory sequential mixed methods design ideal for understanding drivers of LSE in leadership development.

Site Selection and Participant Sampling

This study took place in a required leadership development course at the Department of Defense in Indianapolis, Indiana. Three factors contributed to the decision to select the Department of Defense Indianapolis, Indiana, site for the study. First, the researcher selected the site out of convenience, as the researcher is an employee at the studied Department of Defense agency. Second, the site stakeholders have an interest in improving their leadership development programs. Third, the site stakeholders have an interest in understanding what leadership development factors contribute to improving the performance of their leaders. As Starkey and Madan (2001) state, studies are optimized when stakeholders see the applicability of research. Because this study is on a topic that site stakeholders value, it was anticipated that the environment would be favorable in garnering the necessary support and resources to conduct a comprehensive study.

Demographics

While the researcher chose a course that was hosted by personnel located at the Indianapolis, Indiana site, the course was delivered online and offered to supervisors located at multiple sites for the studied Department of Defense agency. The Department of Defense agency studied is comprised mostly of civilian federal employees. The employee population at the agency is 58.6% female, compared to 42.9% for other cabinet-level agencies in the Federal Government (Office of Personnel Management, 2019). The agency's employee population has 50.5% that are 50 years old or older,

compared to 56.4% of other cabinet-level agencies in the Federal Government (Office of Personnel Management, 2019). In terms of education, 56.3% of the agency's population has a bachelor's degree or higher, compared to 50.5% of other cabinet-level agencies (Office of Personnel Management, 2019). Lastly, 11.2% of the agency's employees are supervisors, compared to 11.5% of other cabinet-level agencies (Office of Personnel Management, 2019). Overall, the agency is relatively younger, more educated, and has more females than other cabinet-level federal agencies. However, there seems to be parity in the proportion of supervisors to employees across the Federal Government. The three samples of supervisors for this study reflected demographics like those from the agency's total population. Table 3.3 outlines the demographic data for each sample.

Table 3.3

Demographic Statistics for Participant Samples

Statistic	Participants That Attended Online and Live-Virtual Course	Participants That Completed Pre and Post Survey	Participants That Were Interviewed
N	17	10	3
<i>M</i> (age)	41.9	42.5	52.1
<i>SD</i> (age)	9.9	10.3	7.1
% Female	76.5%	80.0%	66.7%
% with bachelor's degrees or higher	94.2%	90.0%	100%

Participants that attended the online and live-virtual NST 2.0 courses ($n = 17$) ranged between 26 and 59 years of age with a mean of 41.9 ($SD = 9.9$). Most of the participants were female (76.5%) and White (88.2%). Participants were primarily from Indianapolis, Indiana (52.9%), Columbus, Ohio (23.5%), and Cleveland, Ohio (11.8%).

A high percentage of participants were college-educated with 47.1% having Master's degrees and 47.1% having Bachelor's degrees. Seven participants did not complete the pre-course and post-course surveys. Participants that completed the pre-course and post-course survey ($n = 10$) ranged between 26–59 years of age with a mean of 42.5 ($SD = 10.3$). Most of the participants that completed the pre-course and post-course survey were from Indianapolis, Indiana (60.0%) and Columbus, Ohio (20.0%). Participants that were interviewed for the mixed methods section of this study ($n = 3$) ranged between 46 and 59 years of age with a mean of 52.1 ($SD = 7.1$). All the interview participants were from Indianapolis, Indiana.

Sampling Schema

According to Onwuegbuzie and Collins (2007), mixed methods studies most commonly utilize non-probability sampling schemes, despite having both quantitative and qualitative approaches to the overall design. Because the purpose of this study was not to generalize the results to another population but was to obtain in-depth information concerning the influence of leadership development on LSE, criteria based purposive sampling is appropriate and desirable (Onwuegbuzie & Collins, 2007; Palinkas et al., 2015). This study utilized a criteria-based purposive sample of 17 learners that attended a single leadership development course in Indianapolis, Indiana, at the Department of Defense. The total class size was comprised of the 17 learners selected for the study. The learners were new supervisors that had less than one year of on-the-job experience in a supervisory role and were all required to attend this introductory leadership development course. This sample size aligns with research from Onwuegbuzie and Collins (2007), who state that sample sizes for non-probability studies should not be “so small as to make it

difficult to achieve data saturation, theoretical saturation, or informational redundancy” (p. 289), but it should not be too large to make in-depth analysis difficult to achieve. It is not uncommon for non-probability mixed methods study sample sizes to be comprised of 30 total participants or less (Teddlie & Yu, 2007).

Table 3.4

Descriptive Statistics for Study Participants

Participant Code	Pre Total LSE	Post Total LSE	Supervisory Experience (Months)	Previous Leadership Training (Hours)	Total LSE Diff	Gender
1	70.0	90.0	1.70	20.0	20.0	F
2	85.0	90.6	1.23	28.0	5.64	F
3 ^a	73.6	85.5	1.70	13.0	11.8	F
4 ^a	78.2	90.5	2.17	27.0	12.3	M
5	91.8	NA	2.17	27.0	NA	F
6	86.8	87.9	0.300	95.0	1.05	F
7	88.2	98.0	0.767	37.0	9.77	M
8	83.2	NA	1.23	45.0	NA	F
9 ^a	65.0	79.1	3.10	22.0	14.1	F
10	83.6	92.5	1.23	28.0	8.82	F
11	63.2	NA	0.300	98.0	NA	F
12	68.2	89.5	3.57	27.0	21.4	F
13	90.0	100	0.300	36.0	10.0	F
14	71.4	NA	1.23	44.0	NA	M

Note: ^a Participant selected for an interview

From the sample of learners that completed both the pre-course and post-course survey, the researcher interviewed a criterion-based sample of learners ($n = 3$) using a systematic process centered on the magnitude of the change in their LSE score from the

pre-course to the post-course survey. The objective was to focus on those learners that experienced the largest change from the pre-course survey to the post-course survey, either positive or negative. Because the Hannah et al. (2012) and Hannah and Avolio (2013) survey presents the LSE construct as both a single measure and as three separate factors, there are multiple ways to view changes in survey scores. Deviant case sampling (Teddle & Yu, 2007) was used to identify those with the largest changes in the overall LSE score, as well as the largest changes in the scores for the LSE factors of action, means, and self-regulation. Learners with LSE factor score changes above or below the standard deviation of the learner population were considered large changes. Deviant case sampling also addresses a validity threat to the quality of the study by drawing proper inferences at the integration stage and by looking into what is driving data outliers (Ivankova, 2014).

Data Collection Procedures

According to Ivankova (2014), in an explanatory sequential mixed methods design, quality data collection is dependent on maintaining the respective validity and credibility standards for quantitative and qualitative data. This study followed a five-step data collection process with quantitative and qualitative tools that meet the respective standards for validity and credibility. The first step included a pre-course survey of LSE using a psychometrically valid instrument developed by Hannah et al. (2012) and Hannah and Avolio (2013). The second step included observation of learners in the classroom, using an observational protocol based on Bandura's (1977) self-efficacy framework. The third step included a post-course survey of LSE using the Hannah et al. (2012) and Hannah and Avolio (2013) survey. The fourth step included semi-structured interviews

with a criterion sample of learners, using an interview protocol based on the Hannah et al. (2012) and Hannah and Avolio (2013) survey and Bandura's (1977) self-efficacy framework. The fifth step included a review of course documents using a protocol based on Bandura's (1977) self-efficacy framework. The following paragraphs explain each step and provide examples of the data collection tools.

Quantitative Data Collection-Stage One

Step one of the data collection process involved the establishment of a baseline LSE score for learners through the utilization of the LSE survey developed by Hannah et al. (2012) and Hannah and Avolio (2013). Typically, pre-course assessments are utilized to guide or revise the content of the instruction to align with the needs of the learners (Blythe & Associates, 1998). However, in this study, the objective of the course is not necessarily to improve LSE, so the baseline data were not used or provided to the course instructors or participants to influence the design of the course. The copyright holder of the survey instrument granted the researcher permission to issue the survey to learners (see Appendix A). LSE is measured through 22 items that load on three factors: leader action efficacy (LAE; 7 items), leader means efficacy (LME; 7 items), and leader self-regulation efficacy (LSRE; 8 items; Hannah et al., 2012; Hannah & Avolio, 2013). Overall composite reliability for the survey instrument ranges from .93 to .94 and .83 to .90 for each factor (Hannah et al., 2012). Each question begins with the stem "As a leader I can...". Sample items include, "Energize my followers to achieve his/her best"; "Rely on my organization to provide the resources needed to be effective"; "Determine what leadership style is needed in each situation" (Hannah & Avolio, 2013). Each response is rated on a continuous scale of 0 (*not at all confident*) to 100 (*totally confident*; Hannah &

Avolio, 2013). The survey's reliability was high during both the pre-course and post-course instances, scoring at .91 and .88 respectively, with each factor scoring high as well (LAE = .94; LME = .78; LSRE = .81).

The survey was delivered to learners through the online survey platform Qualtrics (Qualtrics, 2020). Each learner received a unique survey invitation through the learner's work email address five workdays prior to the beginning of the first day of the NST 2.0 course. One reminder email was sent to learners on the third day of the open survey period. Learners had until the beginning of the course to complete the survey, at which time the survey was closed through the Qualtrics platform. Hannah et al.'s (2012) and Hannah and Avolio's (2013) survey enable aggregate and factor change analysis in LSE. Assessing LSE changes at the aggregate and factor levels is critical when moving into the design's qualitative phase, as it provides a more refined look at the changes in LSE in parallel with the rich and thick qualitative data. The explanatory sequential design's quantitative phase must include an element of rigorous quantitative analysis, such as the use of valid measurement instruments, statistical analysis, and sampling (Creswell & Creswell, 2017). Hannah and Avolio's (2013) survey is psychometrically reliable, with a Cronbach's alpha above .70 in multiple studies (Hannah et al., 2012). The survey also demonstrated discriminant, predictive, and convergent validity (Hannah et al., 2012).

Qualitative Data Collection-Stage One

Step two involved the observation of the learners in the virtual course setting. The course observed was three hours in length per day, lasting for three consecutive days. Each learner logged into a shared virtual learning environment called Adobe Connect (Adobe, 2021), where learners viewed and heard the instructor (and other learners with

secure camera hardware). The researcher acted as an outsider, non-participant during the entire course observation, where notes were taken at a figurative distance, and the researcher was not involved in the course activity or with the learners (Creswell & Poth, 2016). The researcher's name was visible on the list of participants, and learners were aware that the researcher was observing the course; however, the researcher did not have a live video feed as the instructor or other learners.

According to DeMonbrun et al. (2015), an objective of qualitative observations is to ensure that the researcher is capturing “a valid depiction of classroom behaviors” (p. 2). To ensure accurate depictions of the observed classroom behaviors, the author utilized two tools. The first tool included an observational protocol based on Bandura's (1977) self-efficacy framework and the Teaching Dimensions Observational Protocol (TDOP; Wisconsin Center for Education Research, 2014; Hora, 2015). The TDOP is a validated observation instrument that segments and records course activities into pre-established codes and themes in two-minute intervals throughout the length of the course. The TDOP was adapted to identify specific teaching methods and practices that are supportive of self-efficacy based on the literature. Appendix B outlines the adapted protocol with the specific teaching and self-efficacy definitions and codes used. In addition to the incorporation of self-efficacy codes, the author changed the two-minute intervals to 15-minute intervals to align closer to the instruction format of the course being observed. The second tool included a video recording of the course for an assistant to confirm initial observational coding decisions by the researcher. This enabled the researcher to capture any rich and thick descriptive data missed during the initial observation (DeMonbrun et al., 2015). DeMonbrun et al.'s (2015) other approaches to improve the

validity of observational depictions include the use of data triangulation and member checking, which are covered below in the data analysis section.

Quantitative Data Collection-Stage Two

Step three involved the establishment of a comparative LSE score to the pre-course survey through a post-course LSE survey, using the Hannah et al. (2012) and Hannah and Avolio (2013) tool. The purpose of the post-course survey was to determine if a change in LSE occurred between the start and end of the leadership development course. The Qualtrics (Qualtrics, 2020) online survey platform delivered the survey to learners. Each learner received a personalized survey invitation that was unique and enabled the researcher to join post-course LSE scores to pre-course LSE scores at the individual level. Course survey scores without matching pre-course or post-course survey scores were removed prior to analysis. The researcher delivered the survey to the learner's work email address the next business day after the end of the NST 2.0 course. Learners had five business days to complete the survey and received one reminder notice on the third business day, after which time the researcher closed the survey through the Qualtrics platform. The results from step three shaped who was in the sample for the proceeding qualitative stage.

Qualitative Data Collection-Stage Two

Step four involved semi-structured interviews with learners that experienced significant changes in LSE from the pre-course and post-course LSE survey scores. The purpose of the interviews was to explore in-depth reasons for the change in the survey scores. Learner interviews were semi-structured with open-ended questions and were centered on their experience in the leadership development course. According to Jacob

and Furgerson (2012), interview questions should elicit free-flowing answers that are not overly constrained by pointed questions, unless specific information is required for the research topic. Appendix C provides the interview protocol used for this study. Table 3.5 provides a cross-walk between the research questions, the supporting data collection protocols, and the specific items within the data collection protocols that will help answer the research questions.

Table 3.5

Research Question-Data Collection Protocol Matrix

Research Question	Data Collection Protocol	Protocol Item(s)
What is the magnitude of change in LSE scores between the pre-course and post-course assessments?	LSE survey	Items 1-22 (total change); Items 1-7 (Action LSE change); Items 8-14 (Means LSE change); Items 15-22 (Self-Regulation LSE change)
How do learners in the NST 2.0 course experience LSE?	Observation	Self-Efficacy Codes
	Interviews	Items 1, 2, & 3
What course learning events are leadership development learners engaged in that are related (positively or negatively) to LSE?	Observation	Self-Efficacy Codes
	Interviews	Items 1, 2, & 3
	Course Materials	Self-Efficacy Rating Criteria
What pre-course learning events are leadership development learners engaged in related (positively or negatively) to LSE?	LSE survey	Items 8-14
	Interviews	Item 4
How do the interviews with learners help explain LSE changes from pre-course and post-course assessments?	LSE Survey	Items 1-22 (total change)
	Interviews	Items 1, 2, 3, & 4

A final source of data included copies of both the online and virtual course content (e.g., slides, handouts, exercises). The researcher itemized and coded the content against Bandura’s (1977) self-efficacy framework and compared it to learner interview outcomes using an integration matrix to assess potential interrelationships. Table 3.6 provides an example of the document coding tool. The researcher rated each document on a scale of “high,” “medium,” “low,” or “not applicable,” depending on their level of support for the different self-efficacy drivers. Appendix D includes the definitions for the rating scale.

Table 3.6

Document Alignment Coding Tool Example

Course	Topic	Document	Self-Efficacy Drivers			
			PM	VE	VP	EA
Virtual Course	Employee Development	Presentation	Low	Med	Low	N/A
	Performance Management	Scenario	High	Med	N/A	Low
	Employee Recognition	Handout	Low	Low	N/A	N/A
	Diversity and Inclusion	Problem Solving Exercise	High	Med	N/A	N/A

Note: PM = Performance Mastery; VE = Vicarious Experience; VP = Verbal Persuasion; EA = Emotional Arousal; Med = Medium

Data Analysis Procedures

This study applied the six-step process for data analysis outlined by Creswell and Clark (2017) and the four-step systematic process for maintaining quality assurance of quantitative and qualitative data as outlined by Ivankova (2014). Figure 3.3 outlines the actions taken in each step. The first step from Creswell and Clark (2017) includes steps for data preparation, such as transcribing interview results and recoding quantitative data. The second step from Creswell and Clark (2017) includes steps for data exploration, such

as checking for missing data and developing a cursory impression of the qualitative data. The third step from Creswell and Clark (2017) includes steps for data analysis, such as conducting inferential tests and coding qualitative data. The fourth step from Creswell and Clark (2017) includes steps for data representation, such as summarizing statistical results and visualizing qualitative themes. The fifth step from Creswell and Clark (2017) includes steps for data interpretation, such as comparing the results to the research questions and identifying limitations. The sixth step from Creswell and Clark (2017) includes steps for data validation, such as using procedures to reduce validity threats.

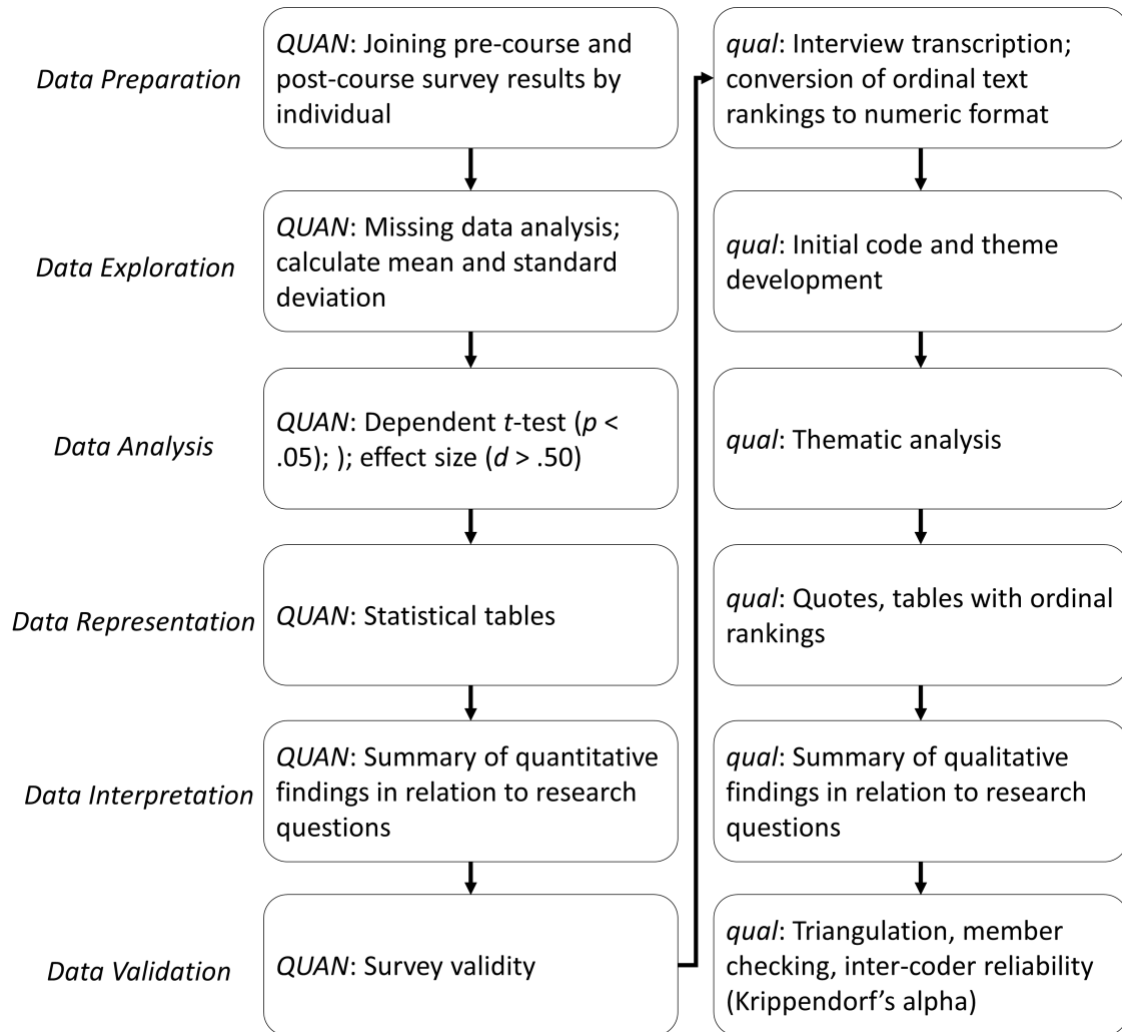


Figure 3.3. Data analysis steps and actions.

The researcher incorporated Ivankova's (2014) four steps for quality assurance throughout these steps. The first step included the utilization of separate procedures to analyze the quantitative and qualitative data that follow the respective validity and credibility procedures for each data strand (Ivankova, 2014). The second step included a methodical process for selecting learners for the follow-up interview to determine drivers in LSE changes. The third step included a systematic process for elaborating on quantitative outliers. The fourth, and final step, included a systematic process for observing interactions between the quantitative and qualitative data strands, which provided for further exploration of quantitative and qualitative data if contradicting findings emerged during the qualitative phase.

Data Preparation

Quantitative. The researcher received the quantitative data for this study directly from the Qualtrics survey platform. Each response to the Hannah et al. (2012) and Hannah and Avolio (2013) items was in a numeric format in the original scale of 1-100. The researcher did not need to convert or recode the responses for analysis. The researcher manually joined the pre-course and post-course scores at the individual learner level, using a unique naming convention for each learner that was only available to the researcher. The researcher used the VLOOKUP function in Microsoft Excel to join the pre-course scores to the post-course scores by the unique naming convention.

Qualitative. The qualitative data for this study came in several formats. The interviews were audio-recorded and had manual field notes completed for them using an interview protocol based on Bandura's (1977) self-efficacy framework and Hannah et

al.'s (2012) and Hannah and Avolio's (2013) survey items. The researcher transcribed the interviews using the transcription function within NVIVO. The researcher exported the transcribed interview results from NVIVO to a dedicated Microsoft Excel Spreadsheet with a tab dedicated for each interviewee. The researcher captured manual fieldnotes in a Microsoft Excel Spreadsheet with the protocol table embedded within it (see Appendix C). The researcher combined the field note spreadsheets and interview transcripts into the same Microsoft Excel workbook.

The researcher captured the qualitative data for the course observation and course materials in Microsoft Excel Spreadsheets with the respective protocol tables embedded within the data collection sheets (see Appendix B and D). The researcher converted the results of the observations and course material audits from ratings of "High," "Medium," "Low," and "Not Applicable," to numeric ratings on a scale of 3 (High) to 0 (Not Applicable).

Data Exploration

Quantitative. For the quantitative data, the researcher summed the scores for the total LSE and for each factor, to arrive at the average score for each. The researcher reported the mean and standard deviation for the pre-course and post-course survey scores, along with the mean and standard deviation for the population difference between the pre-course and post-course scores. Learners that did not complete either the pre-course or post-course survey were removed from the analysis since the score difference could not be calculated and independently, they are not measures of LSE change. The researcher required that learners answer all the items on the LSE survey within Qualtrics, except for the demographic questions. Therefore, the researcher considered any missing

data at the question level as ignorable missing data that did not impact the LSE score (Conaway, 1993). The researcher did not consider the use of imputation methods for missing data, given the importance of each survey result for determining the total change score and the criterion sample in the qualitative phase of the study. Lastly, the researcher investigated the normality of the difference between pre-course and post-course scores in order to utilize *t*-tests to determine the significance of the difference.

Qualitative. For the qualitative data, the researcher identified initial codes using open coding within the data collection protocols. The researcher recorded codes in the same Microsoft Excel Spreadsheet as the original protocol results. Constant comparative analysis and pattern matching were used to group qualitative data together.

Data Analysis

Quantitative. The study had three phases of data analysis, as recommended by Creswell and Clark (2017). The first phase of data analysis began with the quantitative stage, where the author used a dependent *t*-test to calculate the difference between all the pre-course and post-course survey scores. The LSE survey scale is continuous from 0 to 100. Even though the sample size is small, there was normality in the data, and so a dependent *t*-test can be used (Meek et al., 2007). The author used SPSS 27 to calculate the dependent *t*-test, with a significance level of .05, testing for a Cohen's *d* effect size of .50 or larger (Field, 2017; Kirk, 1996). Once the author determined if a significant difference existed between the scores, the analysis to determine what learners showed the largest change in pre-course and post-course scores was completed. This was determined by subtracting the post-course score from the pre-course score at the aggregate and factor

level. The author calculated the standard deviation for all learners, and only learners with aggregate or factor scores above the standard deviation were chosen for an interview.

Qualitative. The second phase of data analysis began with the qualitative data, where the multiple streams of data were coded and themed using the methodology outlined in Braun and Clarke (2006). The author conducted the analysis manually using Microsoft Excel spreadsheets, where the initial data collection protocol tables resided. The author developed a summary table of the code and theme results for each “high change” topic (see Table 3.7). Triangulation occurred once the data from the observation, interviews, and documentation were coded and grouped into themes according to thematic analysis best practices (e.g., audit trail, reflexivity, coding framework; Nowell et al., 2017). Codes for the respective data collection tools were pre-established and defined.

Mixed Methods. The third phase of the data analysis focused on how the qualitative data streams explain the quantitative data. The author interpreted the quantitative data and qualitative data together to come to a coherent determination of what was driving the largest changes in LSE. The author compiled the results from the LSE survey, observations, interviews, and document reviews using an integration matrix tool (see Table 3.7), aligning the largest changes in the survey to supporting evidence in the qualitative data sources. The assignment of content to the *a priori* open codes required constant comparative analysis (Glaser, 1965) of qualitative data in order to achieve interpretive rigor (Ivankova, 2014; Ivankova et al., 2006; Teddlie & Tashakkori, 2010).

Table 3.7

Integration Matrix for LSE

Pre-Course and Post-Course Score Difference	High Change Topics	Observation Themes	Interview Themes	Document Themes
Quantitative Data	Topic	Magnitude of Support	Magnitude of Support	Magnitude of Support
Quantitative Data	Topic	Magnitude of Support	Magnitude of Support	Magnitude of Support
Quantitative Data	Topic	Magnitude of Support	Magnitude of Support	Magnitude of Support

Data Representation

Quantitative. The author summarized the quantitative data in tables showing the mean (*M*) and standard deviation (*SD*) of the change in LSE scores and the *t*-test results. The author visualized the results from the *t*-test using histograms showing the distribution of differences in scores. The author used SPSS 27 to develop the histograms.

Qualitative. The author conducted a thematic analysis by summarizing the qualitative data in three different formats. The semi-structured interview results included both overall themes identified, along with supporting quotes, to provide a rich and thick description. The author then summarized the course observation and course material results using tables, providing the code and theme results. The integration matrix tool (see Table 3.7) provided a comprehensive view of both streams of data and the connections between the LSE themes.

Data Interpretation

The author interpreted the quantitative and qualitative data in terms of their support for the respective research questions for each stream of data, using a matrix that

identified each research question and the data's response to the inquiry. As recommended by Creswell and Clark (2017), the author interpreted the qualitative results within the context of the study's research questions, prior research findings within the literature, and the researcher's personal experiences, taking positionality into account. The author identified limitations and opportunities for future research, using the theoretical framework and past research to support the findings.

Data Validation

Quantitative. The researcher used a psychometrically valid survey instrument to measure the construct of LSE. Hannah and Avolio's (2013) survey is psychometrically reliable, with a Cronbach's alpha above .70 in multiple studies (Hannah et al., 2012). The survey also demonstrated discriminant, predictive, and convergent validity (Hannah et al., 2012). The researcher determined that the survey instrument produced valid results for the study's test participants, with a high Cronbach's alpha during both the pre-course and post-course instances, scoring at .91 and .88, respectively. In addition, each factor demonstrated high Cronbach's alpha scores (LAE = .94; LME = .78; LSRE = .81).

Qualitative. As recommended by Creswell and Clark (2017), at least three data validation strategies were used for the qualitative data in this study: triangulation, member checking, and reporting disconfirming evidence. The author used method triangulation (using the self-efficacy framework protocols) to verify initial findings. Method triangulation has been used in past research to "converge [data] into a coherent interpretation" (Paul, 1996, p. 148). The researcher and a research assistant reviewed the course and interview recordings for the purpose of reviewing the initial coding decisions

and coming to an agreement on coding and thematic consistency. The researcher utilized member checking to ensure that the conclusions drawn regarding the feedback received from learners are an accurate depiction of their perceptions. Member checking is a critical part of ensuring data quality in the qualitative stage of a mixed method study (Ivankova, 2014) and thematic analysis (Nowell et al., 2017). Krippendorff's alpha (Krippendorff, 2004) was also used to determine the inter-coder reliability of the codes and themes developed for qualitative analysis. Codes were converted to numeric values and ReCal (OIR; Freelon, 2017) was used to calculate agreement between the researcher and assistant. The researcher calculated Krippendorff's alpha scores for the course and interview recordings which ranged from 0.738 to 0.847, which is above the threshold of reliability according to Krippendorff (2004).

Ethical Considerations

As Creswell and Creswell (2017) state, researchers need to be aware of ethical issues that are present at every stage of the research process, with a focus on ensuring that participants are protected and that trust is established through the actions taken and procedures established by the researcher. All these principles were addressed through project controls, agreements, and methods when requesting permission to work with the research study stakeholders. Permission to observe, interview, and question leadership learners was granted by the Baylor University Institutional Review Board (IRB). The Department of Defense, Indianapolis, Indiana site Learning and Development Division (LDD) and the HR Director also granted approval for the study. As suggested by Miles et al. (2018), formal written agreements were developed that explicitly state the scope of the study, methods that were used, the anticipated risks, and the expectations for how

participants and their data were protected. LDD and the HR Director emphasized the need to ensure the protection of employees' data and anonymity.

As Applebaum and Steed (2005) determined, the success of research relationships with stakeholders is largely dependent on clear deliverable expectations, strong partnerships/communication, respecting organizational readiness levels for new approaches, and the ability to prototype new approaches. A presentation on these topics, in addition to the research objective, primary research questions, and sub-questions, was provided to the Department of Defense stakeholders to create an environment of transparency. As recommended by Creswell and Creswell (2017), the researcher was sensitive to how disruptive the study was to the day-to-day operations of the organization and communicated with the stakeholders to address disruptions in a satisfactory manner.

From a respect for persons and concern for welfare perspective, the researcher requested each individual learner to complete the surveys through a formal invitation (Appendix E), and interviewees received an informed consent request (Appendix F). As mentioned by Creswell and Creswell (2017), the researcher was cognizant of potential power imbalances that were present during the interview stage and the importance of learners validating their responses and being comfortable with the consequences of their answers.

The researcher was cognizant of their personal competency limitations in terms of data analysis required for the study and, as suggested by Miles et al. (2018), utilized doctorate-level mentors to assist in the interpretation and development of advanced analysis techniques. The researcher also leveraged these mentors to avoid the ethical risk

of reporting only positive findings that either support the organizational interests or the researcher's interests (Creswell & Creswell, 2017).

Limitations and Delimitations

There are several limitations to this study. First, the author limited the sample size to 17 individuals for the total course, leaving a limited number of learners to interview for the qualitative follow-up stream of the mixed methods design. Second, the author reviewed only one course as part of the sample. A larger sample size and multiple courses may offer additional power to the quantitative analysis and additional credibility to the qualitative analysis, with more opportunity to triangulate and saturate the results. In addition, NST 2.0 is a mandatory leadership development course. Mandatory leadership development courses are viewed differently by learners with different levels of work experience (Baker et al., 2018) and are typically not as valued as courses pursued by learners through self-initiated efforts (Sankey & Machin, 2014). While the NST 2.0 course is limited to new supervisors, the range of work experience between learners can be substantial; and thus, the value that mandatory courses have in the minds of learners can vary.

There are several delimitations to this study. The study focuses solely on the LSE construct. However, research has shown that motivation to lead (MTL) has an interactive effect on LSE in leadership development environments (Chan & Drasgow, 2001; Hendricks & Payne, 2007; Karriker & Hartman, 2019). Individuals that have both high motivation to lead and high LSE may lose interest in leadership development activities (Karriker & Hartman, 2019), which could impact the post-course survey scores for LSE. Additionally, the study focused on a single geographic region and organization. This is a

common delimitation that impacts the generalization of findings (Ross & Bibler Zaidi, 2019). The study is also delimited by the use of a pre-course and post-course survey that may introduce practice effect, sensitization effect, and interference effect (Dutilh et al., 2009; Lam & Bengo, 2003; Willson & Putnam, 1982) into the measurement of LSE. The author considered the use of retrospective pre-course surveys to mediate practice effect; however, due to the prior leadership experience of the participants and their ability to self-assess their LSE, the author determined that retrospective pre-course surveys may introduce more bias into the study, as has been found in previous research (Hill & Betz, 2005). The author did not deliver the post-course survey later due to time constraints.

Conclusion

Gaps exist in defining LSE and understanding how leadership development impacts LSE. Due to the interactive relationship between these gaps, the author addressed both concurrently. The theoretical framework and research design for this study provided a unique approach to addressing the identified gaps by utilizing factor-level definitions of LSE, followed by both a quantitative and qualitative analysis of the development drivers of LSE. The use of the Bandura self-efficacy framework and a validated survey instrument that aligns with that framework accommodated a congruent data collection and analysis structure. The quantitative approach for this study provided the guiding framework to focus the in-depth qualitative review on those topics where empirical changes in LSE occurred, while also incorporating the overarching theoretical self-efficacy framework from Bandura (1977). The qualitative approach for this study organized the gathering of development experience data around both Bandura's (1977) self-efficacy framework and the LSE survey to complete the congruency of the study.

The use of mixed methods provided both empirical and rich and thick data to better understand what leadership development activities improve LSE. As suggested by Hannah et al. (2012), “by empirically distinguishing the rich and complex structuring of leaders’ perceived capabilities...we may enhance our understanding of [LSE] development” (p. 158). While site selection, sample size, and a lack of measuring related measures to LSE (like MTL) limit the generalizability of the study, researchers can use the results as a platform from which to initiate future studies.

CHAPTER FOUR

Results and Implications

Introduction

Researchers have shown leader self-efficacy (LSE) positively influences leadership effectiveness (Anderson et al., 2008; Avolio et al., 2009; Carleton et al., 2018; Chan & Drasgow, 2001; Chemers et al., 2000; Dvir et al., 2002; Hannah et al., 2008; Hendricks & Payne, 2007; Luthans & Peterson, 2002; Susan E. Murphy & Ensher, 1999; Robertson & Sadri, 1993; Seibert et al., 2017; Semadar et al., 2006; Shamir et al., 1993; van Knippenberg et al., 2004; Walumbwa et al., 2008; Yost et al., 2019) and that organizational leaders can cultivate LSE through training and development (Evans et al., 2016; Gist, 1989; Gist et al., 1989; Holmberg et al., 2016; Latham & Saari, 1979; Seibert et al., 2017). However, it is critical to understand exactly what components of training and development contribute to improved LSE to optimize future leadership training. This study sought to answer five total research questions. The quantitative research question asks, “What is the magnitude of change in LSE scores between the pre-course and post-course assessments?” The qualitative research questions are comprised of three parts. The primary qualitative research question asks, “How do learners in the new supervisors training (NST) 2.0 course experience LSE?” The qualitative research sub-questions ask, “What course learning events are leadership development learners engaged in that are related (positively or negatively) to LSE;” and “What pre-course learning events are leadership development learners engaged in related (positively or negatively) to LSE?”

Lastly, the mixed methods research question asks, “How do the interviews with learners help explain LSE changes from pre-course and post-course assessments?”

The results showed that course topics where learners spent the most time in performance mastery tasks (e.g., scenarios, simulations, assessments, etc.), both in the online and live environments, the level of LSE increased most significantly. This finding was further supported through interviews with those learners that demonstrated the largest change in pre-course and post-course LSE.

The researcher presents the results in the following sections using the order of the explanatory sequential mixed methods design. First, the researcher presents the results for the quantitative stream of the study. Second, the researcher presents the results for the qualitative stream of the study. Lastly, the researcher integrates the quantitative and qualitative results to provide the mixed methods perspective. By answering these questions, the researcher offers a more comprehensive understanding of how a leadership development course influences LSE, providing practitioners with a blueprint to develop more effective leadership development courses in the future.

Data Cleaning and Assumption Checking

There were four steps in preparing the data for analysis. First, the data were cleaned, removing all participant identities and confidential information from the Qualtrics response download. Second, participants that did not complete the post-course survey were removed from the analysis, leaving a final sample size of 10 participants. Third, descriptive statistics for the pre-course, post-course, and the difference between pre-course and post-course scores were developed for the total LSE score and LAE, LME, and LSRE (see Tables 4.1, 4.2, and 4.3). No significant outliers existed and so all

10 participants were included in the study. Fourth, the assumption of normality was assessed using a Shapiro-Wilk test. The results of the Shapiro-Wilk test were insignificant (see Table 4.7), suggesting that normality of the data could be assumed.

Quantitative Data Findings

The goal of the quantitative study stream was to determine the level of LSE both prior to the course and after the course's conclusion. To understand the significance of the difference between the pre-course and post-course scores, the author performed *t*-tests on the total LSE score as well as the three factors of leader action efficacy (LAE), leader means efficacy (LME), and leader self-regulation efficacy (LSRE). Additional descriptive statistics and correlation analyses were conducted to understand how differences in the pre-course and post-course scores differed across groups of participants and to understand what specific topics of LSE experienced the largest changes.

Quantitative Research Question

The researcher explored one quantitative research question for the study: What is the magnitude of change in LSE scores between the pre-course and post-course assessments? Table 4.1 provides the results of the pre-course LSE survey results for the three factors of LSE and the total LSE score.

Table 4.1

Descriptive Statistics for Pre-Course LSE Survey

Statistic	LME	LSRE	LAE	Total LSE Score
N	10.0	10.0	10.0	10.0
Mean	79.1	82.4	74.6	78.9
Standard deviation	11.3	8.59	10.7	9.1
Minimum	60.0	70.0	57.1	65.0
Maximum	92.9	97.5	90.0	90.0

The mean pre-course LSE scores for participants that completed both the pre-course and post-course surveys ($n = 10$) across all 22 survey items was 78.9 ($SD = 9.1$) on a scale from 0 to 100. Table 4.2 provides the results of the post-course LSE survey results for the three factors of LSE and the total LSE score. The mean post-course LSE scores for participants ($n = 10$) across all 22 survey items was 90.3 ($SD = 5.9$) on a scale from 0 to 100.

Table 4.2

Descriptive Statistics for Post-Course LSE Survey

Statistic	LME	LSRE	LAE	Total LSE Score
N	10.0	10.0	10.0	10.0
Mean	88.6	92.2	90.0	90.3
Standard deviation	8.46	6.43	8.10	5.90
Minimum	71.4	78.8	74.3	79.1
Maximum	100.0	100.0	100.0	100.0

The net change between the pre-course and post-course LSE survey is outlined in Table 4.3. LAE realized the largest change of all the factors, with LME and LSRE realizing similar magnitudes of change.

Table 4.3

Descriptive Statistics for Difference in Pre-Course and Post-Course LSE Survey

Statistic	LME	LSRE	LAE	Total LSE Score
N	10.0	10.0	10.0	10.0
Mean	9.4	9.9	15.4	11.5
Standard deviation	14.9	8.8	14.2	10.4
Minimum	-18.6	-9.4	-0.7	-1.4
Maximum	29.7	23.8	34.3	27.5

Additional descriptive statistics show the change in scores from pre-course survey to post-course survey by those participants with gender, team leadership experience, and pre-course leadership training experience (see tables 4.4, 4.5, and 4.6). The researcher did not note any large differences in the mean change of LSE between females ($M = 11.6$, $SD = 6.9$) and males ($M = 11.0$, $SD = 1.8$), as has been found in the literature (see Table 4.4 and Hoyt, 2005).

Table 4.4
Mean Change in LSE Score by Gender

Statistic	Gender	Total LSE	LAE	LME	LSRE
N	F	8.00	8.00	8.00	8.00
	M	2.00	2.00	2.00	2.00
Mean	F	11.60	16.1	9.79	9.30
	M	11.00	12.9	7.93	12.10
Standard deviation	F	6.87	9.80	6.29	8.51
	M	1.77	2.02	4.95	1.24

However, the researcher did note differences in the mean change in LSE between those with team leadership experience ($M = 9.4$, $SD = 2.8$) and those without ($M = 12.9$, $SD = 7.5$; See Table 4.5). The researcher also noted differences in mean change in LSE between those with above-average pre-course leadership training experience ($M = 6.9$, $SD = 5.1$) and those without ($M = 13.4$, $SD = 5.8$). This aligns with research on behavioral plasticity (Machida & Schaubroeck, 2011; McCormick & Tanguma, 2007) that finds that those with more opportunities to practice performance in leadership duties tend to have higher pre-course scores in LSE and less measured growth at the post-course stage.

Table 4.5

Mean Change in LSE Score by Team Leadership Experience

Statistic	Lead Exp	Total LSE	LAE	LME	LSRE
N	No	6.00	6.00	6.00	6.00
	Yes	4.00	4.00	4.00	4.00
Mean	No	12.90	18.70	10.60	9.77
	Yes	9.42	10.50	7.64	10.00
Standard deviation	No	7.52	10.00	7.03	9.92
	Yes	2.76	3.27	3.60	3.09

The amount of leadership training that an individual completed prior to the NST 2.0 course correlated with a lower net change in the total LSE score from pre-course to post-course measurement, as well as a lower net change in LAE, LSRE, and LME (see Table 4.6). The researcher determined that there existed a strong negative correlation between the total leadership training hours prior to the NST 2.0 course and the difference in LSE score ($r(8) = -0.661, p = .037$). As hours of leadership training prior to the course increased, the LSE net change score decreased.

Table 4.6

Mean Change in LSE Score by Pre-Course Training Experience

Statistic	Above Avg Training	Total LSE	LAE	LME	LSRE
N	No	7.00	7.00	7.00	7.00
	Yes	3.00	3.00	3.00	3.00
Mean	No	13.40	18.40	11.10	11.20
	Yes	6.94	8.52	5.48	6.83
Standard deviation	No	5.67	8.76	5.87	7.60
	Yes	5.11	3.86	4.10	8.22

Somewhat related, the researcher determined that there existed a strong positive correlation between the total number of months that a supervisor spent in their current

supervisory job and the LSE net change score ($r(8) = 0.745, p = .013$). As months of time on the job increased, the LSE net change score increased as well. These results suggest that those with more hands-on experience may have a more accurate pre-course LSE assessment, which would align with research that indicates that overconfidence in leadership ability (via lack of specific supervisory experience) may lead to biased estimates of LSE (Karriker & Hartman, 2019).

The seeming contradiction between team lead experience, leadership training, and supervisory experience may be explained by the inherently different experiences gained in each domain. The key distinction between supervisors and team leads is that supervisors plan, schedule, and direct the work of a team, and team leaders perform supporting duties and are responsible to supervisors for the execution of a team's work (OPM, 1998). Given that LSE is a specific self-efficacy (SSE), the more realistic experience that a person has, the more accurate their assessment is. Bandura (1982) seems to support the explanation above, noting that people increase their self-efficacy when they gain new skills; but if their self-efficacy is in a transitional status (such as with new supervisors) and "they discover something that appears intimidating about the undertaking or suggests limitations to their mode of coping, they register a decline in self-efficaciousness" (pp. 125–126). Supervisors with more time on the job may have had more time to experience intimidating situations than those fresh to the assignment (or those with training experience only) and thus realized a decline in their pre-course LSE. This could also be explained by the strength, magnitude, and generality of self-efficacy in each domain, as described by Bandura (1977). Those learners with experiences limited to leadership training may have interpreted the LSE survey questions through the lens of

that training experience. Those with more supervisory experience may have interpreted the survey questions through the lens of more complex and nuanced experiences of on-the-job supervisory work. The researcher did not assess the strength, magnitude, and generality of overall LSE or the three LSE factors. Not assessing LSE using varying levels of complexity and situations limited the depth of the analysis and the ability to determine the actual vigor of the participants' LSE.

Large Changes in LSE Score

The researcher conducted an item-by-item analysis of the survey and determined that the topic of utilizing rewards and punishments (under LAE) realized the largest change in pre-course and post-course survey scores, with a mean difference of 23.4 ($SD = 17.1$) between the pre-course and post-course score. Other high change topics related to knowing what leadership styles to use (under LSRE) and relying on leadership to provide ways to stimulate creativity (under LME). The smallest change in pre-course and post-course survey scores was on the topic of ethical components of leadership situations (under LSRE), which was high at 90 for the pre-course survey and 93.4 (on average) for the post-course survey. A table of net mean changes by survey item is provided in Appendix G.

Examining Significant Pre-course to Post-course Changes in LSE

Even with a small sample size, Meek et al. (2007) suggest that if the normality of the data is not an issue, conducting a t -test is appropriate to determine the difference between two sample means. Results of the Shapiro-Wilk test (see Table 4.7) indicated that neither the total LSE score ($p = .792$), LAE ($p = .433$), LME ($p = .265$) or LSRE ($p =$

.136) had a p score less than .05, which suggests the data is normal (Ghasemi & Zahediasl, 2012).

Table 4.7

Normality Test (Shapiro-Wilk) for Difference Between Pre-Course and Post-Course LSE Survey

LSE Factor	W	p
LAE	0.929	0.433
LME	0.908	0.265
LSRE	0.881	0.136
Total LSE Score	0.961	0.792

Note. A low p -value suggests a violation of the assumption of normality. The test shows normality for the difference between pre-course and post-course survey scores.

After conducting a Shapiro-Wilk test to confirm the normality of the difference between the pre-course and post-course results, the author conducted a dependent t -test to determine the significance of the difference between the pre-course and post-course results.

Results suggest that the difference was significant for the total LSE score as well as LAE, LME, and LSRE (see Table 4.8).

Table 4.8

Dependent Samples t -Test for the Difference Between Pre-Course and Post Course LSE Survey

LSE Factor	t statistic	df	p	d
LAE	5.55	9.00	< .001	1.76
LME	5.10	9.00	< .001	1.61
LSRE	4.10	9.00	0.003	1.30
Total LSE	5.96	9.00	< .001	1.89

The effect size was large for all the LSE factors, exceeding a d of .80, suggesting there was a 1.89 standard deviation difference between mean pre-course and post-course scores. The results remain significant even when accounting for family-wise error. Using the Bonferroni correction (VanderWeele & Mathur, 2019), the significance level (p) would be 0.0125. All the factors and the total LSE score have p scores below this adjusted significance level. The net change in total LSE mean scores from pre-course to post-course were significantly different, $t(9) = 5.96$, $p < 0.001$, $d = 1.89$, CI [7.13, 15.8]. The net change in LAE mean scores from pre-course to post-course were also significantly different, $t(9) = 5.55$, $p < 0.001$, $d = 1.76$, CI [9.14, 21.7]. The net change in LME mean scores from pre-course to post-course were significantly different, $t(9) = 5.10$, $p < 0.001$, $d = 1.61$, CI [5.24, 13.6]. Lastly, the net change in LSRE mean scores from pre-course to post-course were significantly different, $t(9) = 4.10$, $p = 0.003$, $d = 1.30$, CI [4.42, 15.3].

Summary of Quantitative Findings

The researcher gleaned the results from the pre-course and post-course LSE survey to answer research question one. Table 4.9 outlines the findings. The survey was designed to determine specific forms of LSE so that potential influences on overall LSE could be derived. The results showed that a significant increase from pre-course to post-course survey occurred. This increase was significant for the total LSE score, LAE, LME, and LSRE. LAE realized the largest mean increase in scores, comprised of topics such as rewards and punishments, employee engagement, employee development, and performance management.

Table 4.9

Quantitative Research Question: What Is the Magnitude of Change in LSE Scores Between the Pre-Course and Post-Course Assessments?

LSE Factor	<i>M</i>	<i>SD</i>	<i>d</i>
Overall LSE	11.5	6.1	1.89
LAE	15.4	8.8	1.76
LSRE	9.9	7.6	1.30
LME	9.4	5.8	1.61

Note. Topics with largest changes include rewards and punishments for LAE ($M = 23.4$; $SD = 18.1$); relying on leaders for ideas for LSRE ($M = 18.7$; $SD = 17.5$); and use of leadership styles for LME ($M = 17.9$; $SD = 11.7$).

The researcher observed interesting score variations between different groups of participants at different points in the quantitative measurement process. Those with team leader experience tended to have smaller differences in total LSE scores as well as LAE, LME, and LSRE scores compared to those that did not have team leader experience. Additionally, as total hours of prior leadership training increased, the difference in pre-course and post-course LSE decreased. Proportionally, those participants with smaller differences in their pre-course and post-course LSE scores tended to have prior team leader experience; but those with more current supervisory experience tended to have larger differences in their pre-course and post-course LSE scores.

Qualitative Data Findings

The goal of the follow-up, qualitative study stream was to elaborate on the quantitative survey results in more depth and obtain a more detailed understanding of how students experienced LSE through online courses, live-virtual courses, and course documentation. The researcher conducted a framework analysis to explore potential drivers of the outcomes of the quantitative stream of the study, such as influences on the

increase in LAE and its associated topics (i.e., performance management, awards, and punishments, etc.), as well as influences on the increases in LME and LSRE for specific topics.

The researcher asked one primary qualitative research question, “How do learners in the NST 2.0 course experience LSE?” The qualitative research sub-questions are, “What course learning events are leadership development learners engaged in that are related (positively or negatively) to LSE;” and “What pre-course learning events are leadership development learners engaged in related (positively or negatively) to LSE?” The researcher applied a modified TDOP (Wisconsin Center for Education Research, 2014) to identify themes of instruction and interaction in both the online and live-virtual courses and stratified the results by course topic. The researcher also conducted a framework analysis using Bandura’s (1977) theory of self-efficacy for the course documentation and the course instruction. The researcher used the self-efficacy framework and the modified TDOP to develop codes and themes for the course instruction data.

Qualitative Research Question One

The researcher explored the first qualitative research question, “How do learners in the NST 2.0 course experience LSE?” by looking at the delivery of the three courses that learners attend as part of the NST 2.0 course requirements. Two online courses were completed prior to attending the live-virtual course. Each one of those courses were evaluated separately, identifying the course topics covered by each and the method by which each course topic was delivered to learners. An evaluation was made as to how the

content and medium of delivery supported the LSE survey findings and aligned with the LSE factors of LAE, LSRE, and LME from the Hannah and Avolio (2013) survey.

Online course content overview. There were two online courses that learners completed prior to completing the pre-course LSE survey and attending the live-virtual course: Basic Employee Relations and New Supervisors Training (Online). Tables 4.10 and 4.11 outline the content for each course. The content of these two courses focused on topics that supervisors need to understand in order to perform effectively on the job and that they have experienced (to some degree) in the short time that they have served in their official roles as a supervisor. Research suggests that web-based instruction is most effective at improving self-efficacy when the content relates to learners' prior knowledge (Azevedo et al., 2016; Moos & Azevedo, 2009; Quintana et al., 2005).

Additionally, based on the number of slides or screens that were dedicated to each topic, the researcher determined that there was significant content dedicated to areas focused on the topics of performance management, discipline, and basic employee relations.

Table 4.10

Basic Employee Relations Online Course Content

Topic	Number of Slides	LSE Survey Factor
Course Overview and Navigation	8	n/a
Fundamentals of Personnel Management Practices	12	LME
Probationary and Trial Periods	10	LAE
Leave Administration	28	LAE
Medical Issues	19	LAE
Disciplinary and Adverse Action	24	LAE
Performance Management	17	LAE
Labor Relations	29	LME

These align with topics measured by the LAE factor within the LSE survey, which had the largest change in pre-course and post-course results. However, during the pre-course LSE survey, LAE had the lowest mean score ($M = 74.6$, $SD = 10.7$) of the three LSE factors. In the framework alignment section, the researcher explores how the other two factors, LME and LSRE, had more cognitively engaging content which may explain their higher pre-course LSE score.

Lastly, the content was delivered through direct instruction and arranged by primary topics of mastery, but did not include an overtly obvious learning strategy and was not ordered by level of complexity to optimize performance mastery, as suggested by research (Ali et al., 2018; Margolis & McCabe, 2006; Stajkovic & Luthans, 1998).

Table 4.11

New Supervisor Training Online Course Content

Topic	Number of Screens	LSE Survey Factor
Getting Started	1	n/a
Welcome to New Supervisor Training	1	n/a
Critical Roles	1	LSRE
Managing Your Workforce	10	LSRE
Analyzing & Planning Your Workforce	1	LSRE
Recruiting	8	LSRE
Selecting & Onboarding the Right Candidate	14	LSRE
Sustain Your Workforce Overview	1	LAE
Probation & Trial Periods	1	LAE
Labor Relations/Union	1	LME
Security – Continuous Evaluation	2	LAE
Performance Management	1	LAE
Mentoring Program	3	LAE
Annual Leave	1	LAE
Sick Leave	1	LAE
Reasonable Accommodation	1	LME
Anti-harassment/Diversity & Inclusion	4	LME
Telework	2	LME
Discipline & Adverse Actions	1	LAE

Topic	Number of Screens	LSE Survey Factor
Leadership Basics	14	LSRE
Employee Development	2	LAE
Career Roadmaps	2	LAE
Collaboration	1	LME
Innovation	1	LSRE

Live-Virtual course content overview. There was one live-virtual course that learners completed as the final element of the NST 2.0 course package: New Supervisors Training (Live-Virtual). The course was hosted through the Adobe Connect environment. Table 4.12 outlines the content for the course. Based on the number of slides or screens that were dedicated to each topic, the researcher determined that there was significant content dedicated to areas focused on the topics of performance management, discipline, and basic employee relations. These align with topics measured by the LAE factor within the LSE survey, which saw the largest change in pre-course and post-course results.

Table 4.12

New Supervisor Training Live-Virtual Course Content

Topic	Number of Slides	LSE Survey Factor
Housekeeping	1	n/a
Welcome	1	n/a
Introductions	1	n/a
Objectives & Purpose	1	n/a
Employee Development	14	LAE
Employee Performance Management	23	LAE
Equal Employment Process	22	LME
Diversity and Inclusion	5	LSRE
Executive Presentation	1	LME
Mentoring & Coaching	8	LAE
Agency Core Values	1	LSRE
Innovation & Collaboration	5	LSRE
Time & Attendance	8	LAE
Telework	8	LME
Reasonable Accommodation	12	LME
Employee Discipline	11	LAE

As with the online courses, the topics were arranged by primary topics of mastery, but did not include an overtly obvious learning strategy and were not ordered by level of complexity to optimize performance mastery, as suggested by research (Ali et al., 2018; Margolis & McCabe, 2006; Stajkovic & Luthans, 1998).

Online course instruction overview. In addition to evaluating course topics, the researcher evaluated the medium and method by which topics were delivered to students through the online courses. The online instruction for the employee relations course was delivered through an online platform hosted by the Office of Personnel Management (OPM).

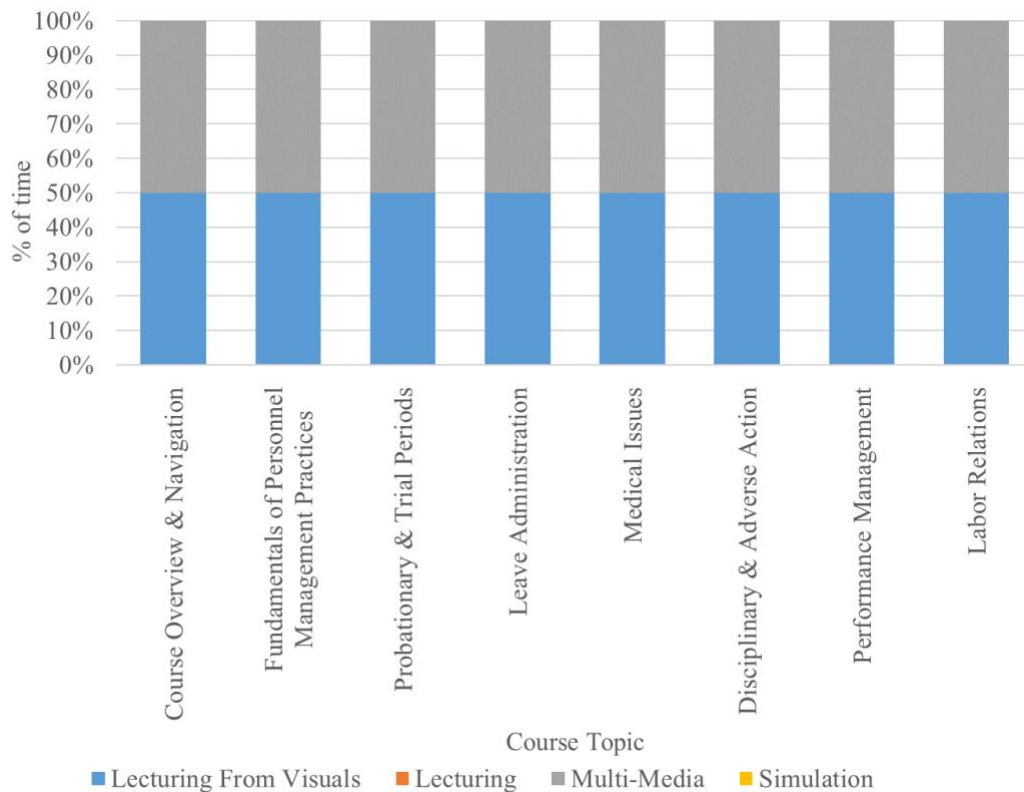


Figure 4.1. Employee relations online course delivery.

The course was self-paced, but approximately 50% of the content was dedicated towards multi-media videos featuring virtual actors (or pedagogical agents for learning (PAL; Kim & Baylor, 2006) playing the roles of employee relations advisors, managers, and employees. The remaining content was text accompanied by a voice-track instruction (see Figure 4.1). The use of PALs (or peer models) has shown a positive impact on learner self-efficacy through simulation of vicarious experiences (Hodges, 2008; Y. Kim & Baylor, 2006; Margolis & McCabe, 2006).

The new supervisors training (online) course was delivered through the internal learning management platform of the Agency.

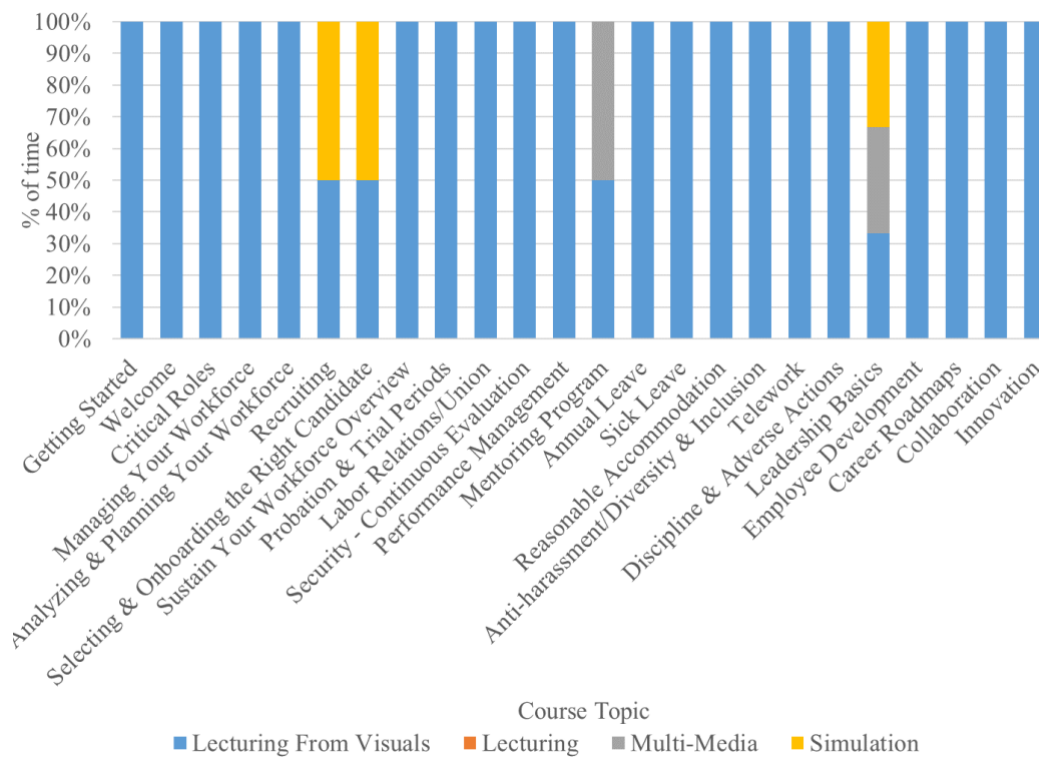


Figure 4.2. New supervisors online course delivery.

The course was self-paced, and the majority was text-based content that learners navigated on their own (without voice-over narration). The modules focused on

recruiting, onboarding, and leadership basics used simulations to deliver the content (see Figure 4.2). According to research (Bandura, 1977; Lester et al., 2011; Paglis, 2010), the use of simulations is an effective method to increase self-efficacy.

Live-virtual course instruction overview. Much of the live-virtual course was presented to learners through slide presentations of the content via Adobe Connect. The modules focused on mentoring and coaching used multi-media streaming video to deliver the content (see Figure 4.3). Learners viewed the instructor through an online streaming camera alongside the slide content.

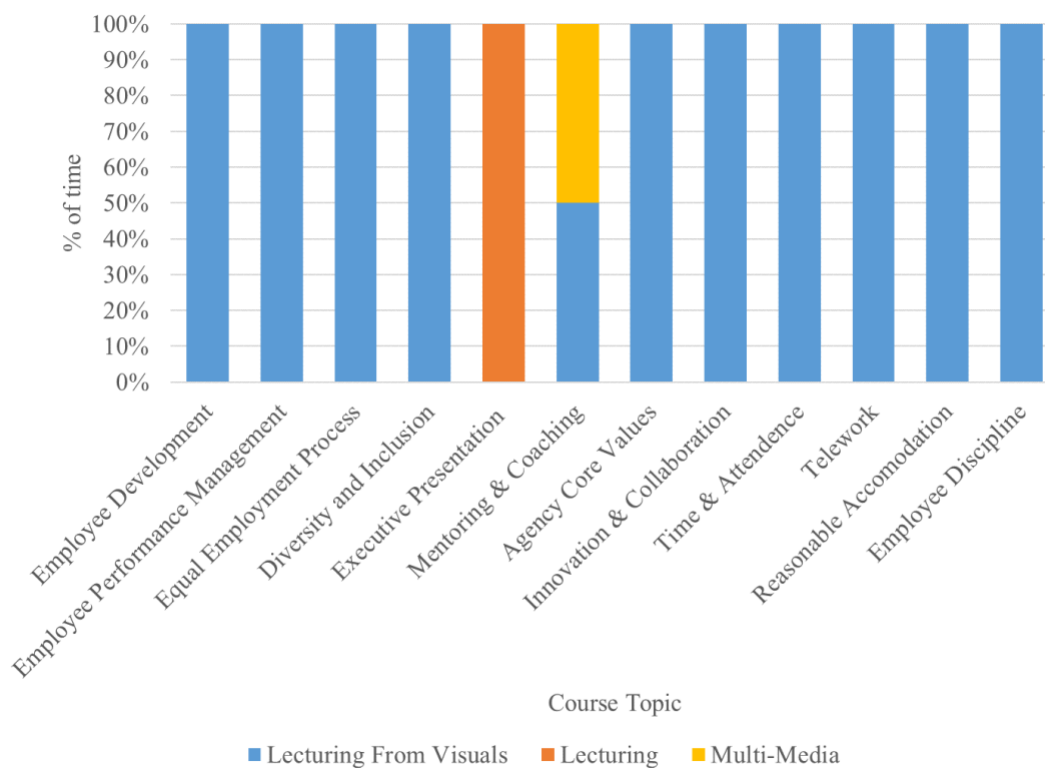


Figure 4.3. New supervisors live-virtual course delivery.

Learners could not see each other; and for the most part, verbal interaction between learners was limited to chat messages and polls. The researcher documented one instance

where a learner asked a question over the phone or voice over internet protocol. Research suggests that feedback, peer communication, and peer support are important predictors of self-efficacy in online learning environments (Peechapol et al., 2018). While somewhat constrained, learners were able to interact with each other and instructors within the Adobe Connect platform. The extent of those interactions are explored in the next section.

Summary of Qualitative Research Question One. The researcher reviewed course content and documented course delivery methods for the online and live-virtual courses to answer the first qualitative research question. Table 4.13 outlines the findings.

Table 4.13

Qualitative Research Question One: How Do Learners in the NST 2.0 Course Experience LSE?

Instructional Approach	LSE Factor Influenced
Direct Instruction Model	LAE
	LSRE
	LME
Problem Based Learning	LAE
	LSRE
	LME
Lecture with Visuals	LAE
	LSRE
	LME
Use of PALs	LAE

Elements of the course delivery and content design were aligned with research that supports optimal methods for improvements in self-efficacy, such as using problem-based learning to improve performance mastery and vicarious experience vehicles such as PALs. However, the majority of the course did not fully leverage these instructional techniques, and the course content was not organized using any particular learning

strategy that would optimize self-efficacy, such as moving from simple to complex topics (Margolis & McCabe, 2006).

Qualitative Research Question Two

The researcher explored the second qualitative research question, “What course learning events are leadership development learners engaged in that are related (positively or negatively) to LSE?” by looking at the learning activities of the live-virtual course that learners attended as part of the NST 2.0 course requirements. The researcher used the modified TDOP (Hora, 2015; Wisconsin Center for Education Research, 2014) during the course observation to code and group learning activities into three categories. The first category focused on how students engaged with the course instructor and each other during the course. The second category focused on the types of learning activities that the course instructors used during the course. The third category focused on the type of cognitive learning activity that took place during the course. Each category was stratified by course topic. An evaluation was made as to how the learning activity supported the LSE survey findings by integrating the modified TDOP results with the LSE factors of the Hannah and Avolio (2013) survey and Bandura’s (1977) self-efficacy framework.

Live-virtual course learning activities. The researcher observed the live-virtual course over a span of three days and used the modified TDOP tool to document the number and type of student interactions that occurred by course topic. Figure 4.4 shows that learners had the most questions and responses to topics related to employee discipline, time and attendance, and performance management. These topics are also where most of the peer interactions occurred. Peer interactions in the live-virtual course

occurred through back-and-forth chat messages between students versus one-directional response or question messages from the students to the instructor.

The high amount of student interaction around the topics of employee discipline, time and attendance, and performance management align with the LSE pre-course and post-course survey findings which show an increase in LAE. Additionally, communication in online environments is believed to be a source of increased self-efficacy (Peechapol et al., 2018).

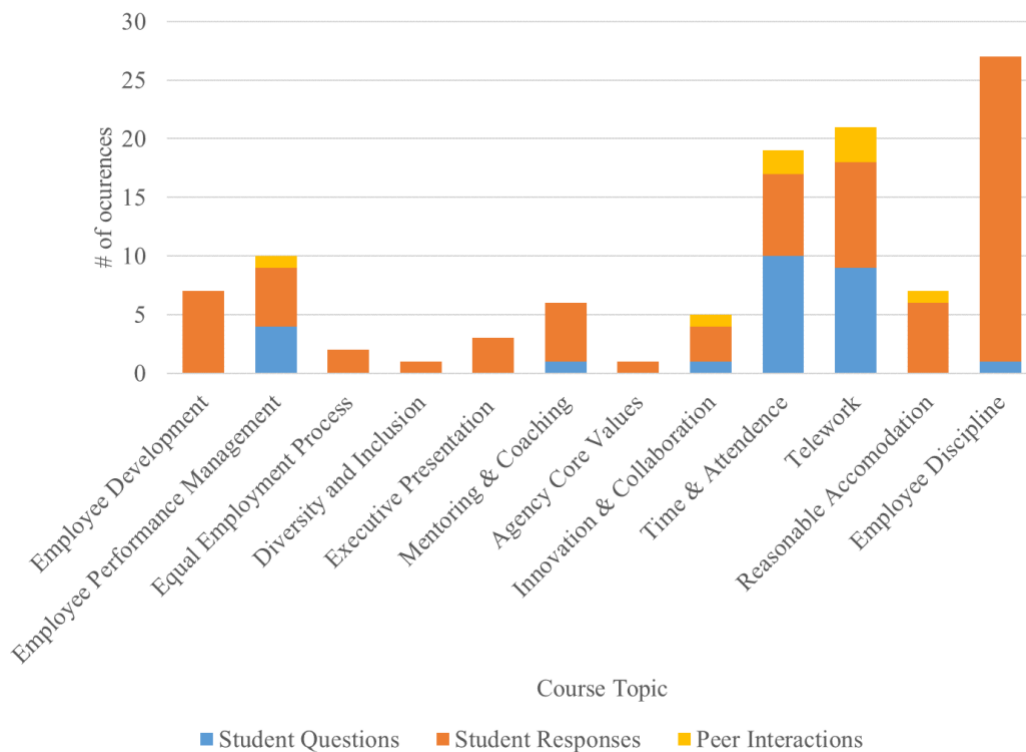


Figure 4.4. New supervisors live-virtual course student engagement.

Figure 4.5 shows that instructors had the most learning activities (outside of the course lecture) on topics related to employee discipline, telework, and employee development. These topics are also where most of the formative assessments occurred. Assessments in the live-virtual course occurred through live poll questions or chat

response requests where the correct answer was revealed after all responses were received. The high amount of instructor learning activities and assessments around the topics of employee discipline and telework align with the LSE pre-course and post-course survey findings which show an increase in LAE. Additionally, frequent feedback in online and live environments is believed to be a source of increased self-efficacy (Margolis & McCabe, 2006; Peechapol et al., 2018).

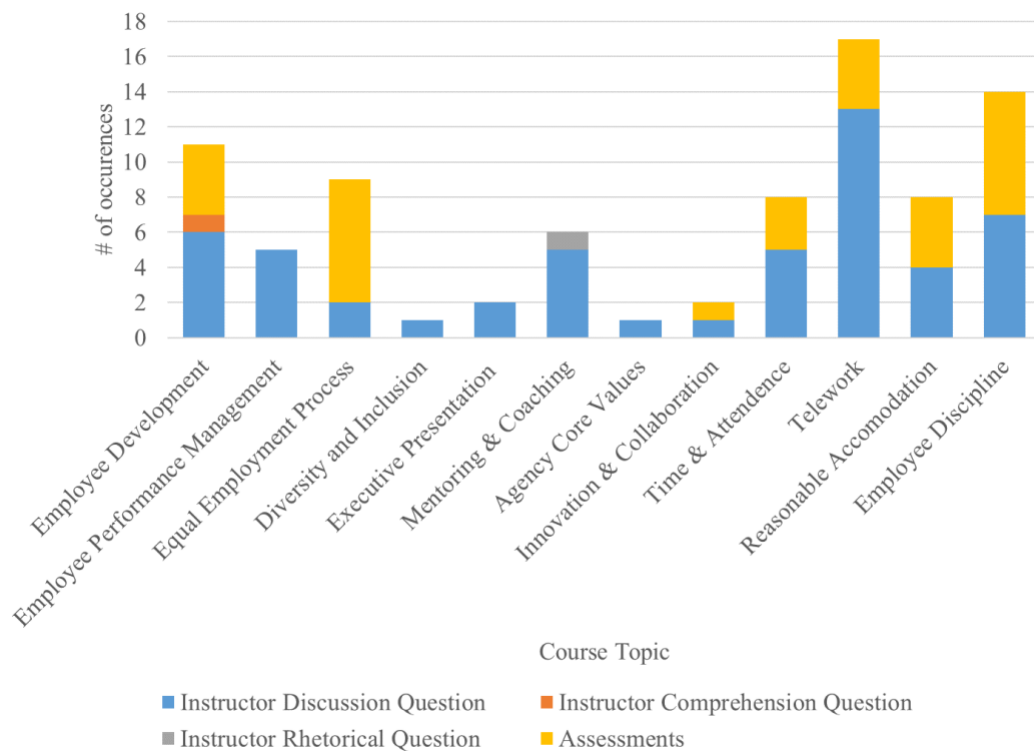


Figure 4.5. New supervisors live-virtual course instructor approaches.

Figure 4.6 shows that learners engaged in the most cognitive learning activities in topics related to employee discipline, telework, reasonable accommodation, employee development, and equal employment process. The researcher documented assessments as

problem-solving exercises. Other exercises included creating employee development plans and providing responses to specific case examples.

The high number of cognitive exercises around the topics of employee discipline, reasonable accommodation, employee development, and telework align with the LSE pre-course and post-course survey findings which show an increase in LAE.

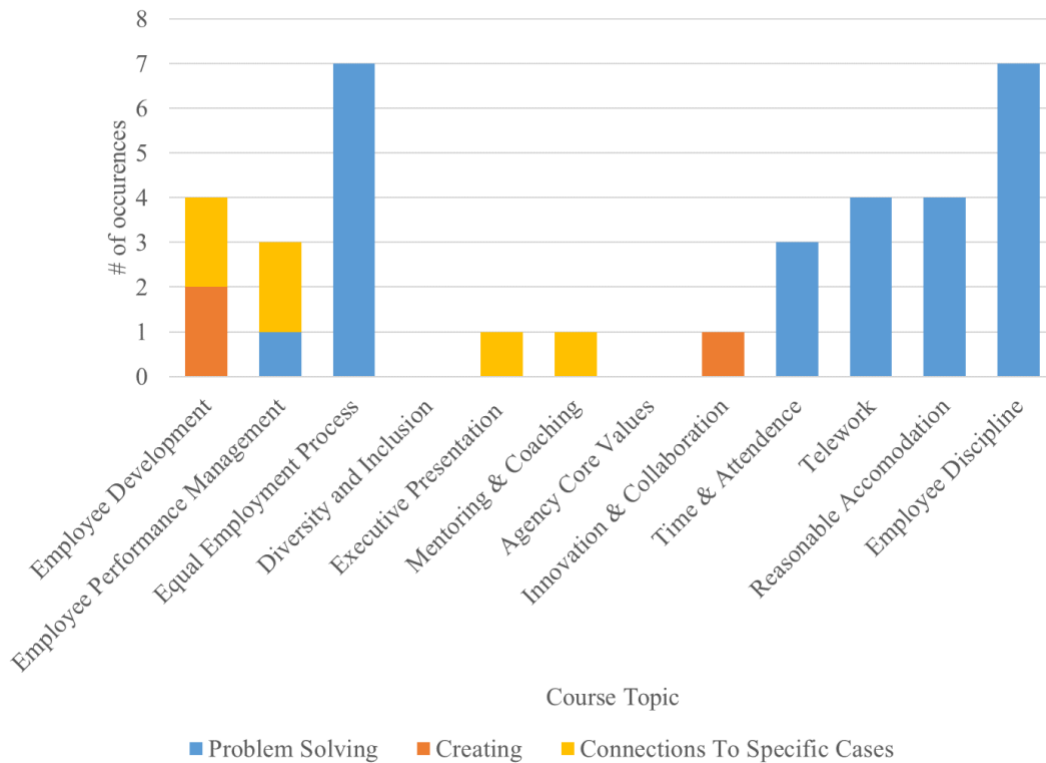


Figure 4.6. New supervisors live-virtual course cognitive approaches.

The high number of exercises surrounding equal employment process does not align with the survey findings; however, this may have been influenced by the fact that three of the seven assessment questions were focused on content that was not covered by the instructor in the course presentation. Leadership innovation was a topic of large change from pre-course to post-course survey scores in the LME factor. While there was not a

large degree of activity in this topic in the course, learners did engage in creating innovation strategies versus answering assessment questions. This level of cognitive engagement is believed to be a better source of self-efficacy according to research (Peechapol et al., 2018).

LSE framework analysis. The researcher combined the results of the modified TDOP analysis into Bandura's self-efficacy framework based on the theoretical level of support each course factor contributes to self-efficacy according to research (Bandura, 1977; Lester et al., 2011; Paglis, 2010; Peechapol et al., 2018). Table 4.14 outlines the connections between the two.

Table 4.14

New Supervisors Training Live Content and LSE Framework Alignment

Topic	Performance Mastery			Vicarious Experience			Verbal Persuasion			Emotional Arousal		
	H	M	L	H	M	L	H	M	L	H	M	L
Employee Development	8	6	7									
Employee Performance Management	3	8	5				1					
Equal Employment Process	4	2	5									
Diversity and Inclusion		1	1									
Executive Presentation		2	3				1					
Mentoring & Coaching		6	6									
Agency Core Values		1	1									
Innovation & Collaboration	3	2	3									
Time & Attendance	5	14	7									
Telework	7	21	9									
Reasonable Accommodation	5	3	6									
Employee Discipline	7	7	26									

The cross-walk between the modified TDOP codes and level of LSE support on a high (H), medium (M), and low (L) scale are included in Appendix B. The majority of high self-efficacy supporting activities took place in topic areas falling under LAE, which saw the largest increase from pre-course to post-course scores. Additionally, course documentation provided during the course was aligned with the LSE framework and is included in Appendix H. The majority of documents were focused on LAE topics. However, the documents were not utilized during course instruction. The instructor referred to the documents as tools available for learner reference.

Table 4.15

Qualitative Research Question Two: What Course Learning Events Are Leadership Development Learners Engaged In That Are Related (Positively or Negatively) to LSE?

Learning Events	LSE Factor Influenced
Realistic Scenarios	LAE
	LSRE
Instructor Question Prompts	LAE
	LSRE
	LME
Peer Interactions	LAE
	LME
Formative Assessments	LAE
	LSRE
	LME
Problem Solving Exercises	LAE

Summary of Qualitative Research Question Two. The researcher reviewed course content and documented course delivery methods for the online and live-virtual courses to answer the second qualitative research question. Table 4.15 outlines the findings. Those topics falling under the LAE factor of LSE had 116 instances of supportive learning events for self-efficacy. Those topics falling under the LME factor of LSE had

68 instances of supporting learning events for self-efficacy. Those topics falling under the LSRE factor of LSE had 12 instances of supporting learning events for self-efficacy.

Qualitative Research Question Three

The researcher explored the third qualitative research question, “What pre-course learning events are leadership development learners engaged in related (positively or negatively) to LSE?” by looking at the learning activities of the two online courses that learners attended prior to completing the live-virtual NST 2.0 course. Because there were no student or instructor interactions as part of the online courses, the researcher only used the third category of the modified TDOP (Hora, 2015; Wisconsin Center for Education Research, 2014) which focuses on cognitive learning activities used during the course and aligned them to their contribution to factors improving self-efficacy according to research (Bandura, 1977; Lester et al., 2011; Paglis, 2010; Peechapol et al., 2018). The framework was stratified by course topic.

Employee relations course framework analysis. The researcher combined the results of the modified TDOP analysis into Bandura’s self-efficacy framework based on the theoretical level of support each course factor contributes to self-efficacy according to research (Bandura, 1977; Lester et al., 2011; Paglis, 2010; Peechapol et al., 2018). Table 4.16 outlines the connections between the two. The cross-walk between the modified TDOP codes and level of LSE support on a high (H), medium (M), and low (L) scale are included in Appendix B. Additionally, course documentation provided during the course was aligned with the LSE framework and is included in Appendix H. The majority of documents were focused on LAE topics. The majority of high self-efficacy supporting activities took place in topic areas falling under LAE, which saw the largest increase

from pre-course to post-course scores. However, as noted, LAE received the lowest mean pre-course LSE survey score. This is worthy of mentioning, as the pre-course LSE survey should have captured learners' feelings of LSE after completing the online courses. But without a comparative measure of LSE prior to the online course, the researcher is unable to determine what, if any, influence the online courses had on learner LSE levels.

Table 4.16

Employee Relations Online Content and LSE Framework Alignment

Topic	Performance Mastery			Vicarious Experience			Verbal Persuasion			Emotional Arousal		
	H	M	L	H	M	L	H	M	L	H	M	L
Overview and Navigation									1			
Fundamentals of Personnel Management Practices	3								1			
Probationary and Trial Periods				1					1			
Leave Administration	5								1			
Medical Issues	3								1			
Disciplinary and Adverse Action	4								1			
Performance Management	2								5			
Labor Relations	5			1					1			

New supervisors' course (online) framework analysis. The researcher combined the results of the modified TDOP analysis into Bandura's self-efficacy framework based on the theoretical level of support each course factor contributes to self-efficacy according to research (Bandura, 1977; Lester et al., 2011; Paglis, 2010; Peechapol et al., 2018). Table 4.17 outlines the connections between the two.

Table 4.17

New Supervisors Online Content and LSE Framework Alignment

Topic	Performance Mastery			Vicarious Experience			Verbal Persuasion			Emotional Arousal		
	H	M	L	H	M	L	H	M	L	H	M	L
Welcome									1			
Critical Roles									1			
Managing Your Workforce			1						1			
Analyzing & Planning Your Workforce									1			
Recruiting	6			1					1			
Selecting & Onboarding the Right Candidate	6			1					1			
Sustain Your Workforce Overview									1			
Probation & Trial Periods									1			
Labor Relations/Union Security - Continuous Evaluation									1			
Performance Management									1			
Mentoring Program									1			
Annual Leave									1			
Sick Leave									1			
Reasonable Accommodation									1			
Anti-harassment/Diversity & Inclusion									1			
Telework									1			
Discipline & Adverse Actions									1			
Leadership Basics	1			1					1			
Employee Development									1			
Career Roadmaps									1			
Collaboration									1			
Innovation									1			

The crosswalk between the modified TDOP codes and level of LSE support on a high (H), medium (M), and low (L) scale are included in Appendix B. Additionally, course documentation provided during the course was aligned with the LSE framework and is included in Appendix H. The majority of documents were focused on LAE and LSRE topics.

The majority of high self-efficacy supporting activities took place in topics associated with LSRE, which had the highest pre-course LSE survey score of the three factors ($M = 82.4$, $SD = 8.59$). This is worthy of mentioning, as the pre-course LSE survey should have captured learners' feelings of LSE after completing the online courses. This finding was further explored in the mixed methods section of the study.

Summary of Qualitative Research Question Three. The researcher reviewed course content and documented course delivery methods for the online courses to answer the third qualitative research question. Table 4.18 outlines the findings.

Table 4.18

Qualitative Research Question Three: What Pre-Course Learning Events Are Leadership Development Learners Engaged In That Are Related (Positively or Negatively) to LSE?

Learning Events	LSE Factor Influenced
Simulations	LAE
	LSRE
	LME
Scenarios	LAE
	LSRE
	LME
Assessments	LAE
	LSRE
	LME

Those topics falling under the LAE factor of LSE had 34 instances of supportive learning events for self-efficacy, 15 of which were categorized as high supporters of LSE. Those topics falling under the LME factor of LSE had 16 instances of supporting learning events for self-efficacy, 9 of which were categorized as high supporters of LSE. Those topics falling under the LSRE factor of LSE had 24 instances of supporting learning events for self-efficacy, 16 of which were categorized as high supporters of LSE. LSRE had the highest pre-course LSE survey score, which corresponds to the large number of high LSE supporting learning activities for this topic area. While LAE had the lowest pre-course LSE survey score, it did not have the lowest number of high LSE supporting learning activities. This could be explained by the complexity of the topics covered by that topic area, which is known to influence feelings of LSE, with highly complex topics requiring more instruction to obtain higher scores of LSE (Ali et al., 2018).

Summary of Qualitative Findings

The researcher gleaned results from reviews of two online courses and an observation of the live-virtual course to answer the three qualitative research questions. The researcher used frameworks (TDOP and self-efficacy) to identify where changes in pre-course and post-course survey results occurred and why those changes took place. The results showed that the significant increase in LAE survey results aligned with a significant presence of related live-virtual course content in the form of volume, learner engagement, instructor activity, and type of cognitive activities used. Additionally, the LME factor had the second-largest number of high supporting LSE content and resulted in the second-highest LSE change score according to the pre-course and post-course survey results. Lastly, prior to the live-virtual course, the type of instruction used during

the online course seemed to align with pre-course LSE survey results, where the presence of high supporting LSE content for LSRE aligned with the high mean pre-course LSE score for that factor.

In summary, the researcher determined that the more highly supportive instructional content used for each topic area, the higher the LSE would be in most cases. However, this did not materialize in every instance. Prior to the live-virtual course, LAE while having the second highest amount of high supporting LSE content in the online courses, received the lowest pre-course LSE score. Additionally, while there was a high degree of recruitment and onboarding cognitive engagement under the LSRE factor in the online course, that did not seem to be reflected in the post-course LSE survey result increases. These areas are explored in the next section.

Mixed Method Data Findings

The goal of the mixed methods stream was to integrate the quantitative survey data and qualitative course review and observation data, aided by interviews with NST 2.0 course participants that experienced significant changes in pre-course and post-course LSE survey scores. The researcher explored outcomes of the quantitative and qualitative streams of the study, such as influences on the increase in LAE and its associated topics (i.e., performance management, awards and punishments, etc.); potential demographic drivers of differences in LSE scores; how the course influenced an increase in determining leadership styles under LSRE; how (or if) efficacy around recruitment and onboarding new employees were impacted; why learners recorded an increase in the level of comfort that their leaders will provide them creative ideas under LME; and demographic differences in LSE levels.

Mixed Methods Research Question

To integrate the quantitative and qualitative research questions above, the researcher asks one mixed methods research question, “How do the interviews with learners help explain LSE changes from pre-course and post-course assessments?” The researcher applied Bandura’s (1977) self-efficacy framework to identify themes associated with what participants believed to be most effective for their efficacy in both the online and live-virtual courses.

The objective of the mixed methods approach was to explain the quantitative results with qualitative data. The researcher invited a total of six participants for interviews who scored above the group standard deviation for the net change in total LSE, as well as LAE, LME, and LSRE. A small sample ($n = 3$) agreed to the interview.

Table 4.19

Participant Interview Results and LSE Framework Alignment

Topic	Performance Mastery			Vicarious Experience			Verbal Persuasion			Emotional Arousal		
	1	2	3	1	2	3	1	2	3	1	2	3
Performance Management ^a	3	1	2			1						
Employee Onboarding ^c	1						1					
Employee Development ^a			1									
Discipline ^a			1									
All Topics				1			3	2	1			
Recruiting ^c							1					
Labor Relations ^b								1				
Employee Relations ^a			1						2			

Note. Interviewees provided comments that applied to multiple LSE factors. These were captured as All Topics.

^a Topic associated with LAE

^b Topic associated with LME

^c Topic associated with LSRE

The results of the interviews showed that most of the interviewees emphasized LSE enhancing experiences in topics associated with the LAE factor, which aligns with the quantitative results that showed the largest net change in LAE. Table 4.19 outlines the instances of drivers of self-efficacy that the participants mentioned during the interviews by course (online or live-virtual) topic.

Interview results by self-efficacy factor. The codes used in this section were derived from the semi-structured interviews with three participants. The researcher derived three of the primary codes from the Hannah and Avolio (2013) LSE survey, aligning with the three factors of LSE (i.e., LAE, LME, and LSRE). The sub-codes are derived from Bandura's self-efficacy framework, aligning with performance mastery, vicarious experience, verbal persuasion, and emotional arousal. Quotes from each participant are used to provide thick and rich descriptions of their LSE experiences and to help explain the quantitative results. The researcher explored the increase in LAE and its associated topics (i.e., performance management, awards and punishments, etc.); potential demographic drivers of differences in LSE scores; how the course influenced an increase in determining leadership styles under LSRE; why how (or if) efficacy around recruitment and onboarding new employees was impacted; and why learners recorded an increase in the level of comfort that their leaders will provide them creative ideas under LME. To distinguish quotes and potential themes, the researcher referred to individual participants as participant one (P1), participant two (P2), and participant three (P3) in this section.

Leader Action Efficacy (LAE). In general, participants regularly stated that they felt they had, or would have had, a better learning experience when they could engage in a scenario or simulation with the content. This aligns with the performance mastery driver of self-efficacy as defined by Bandura (1977). Most of those scenarios were offered for the topics under the LAE factor.

P1: I did like the one that kind of had a lot of examples of working with employees and giving feedback to them related to performance reviews and things like that...I like that section with a lot with all the examples and suggestions.

P3: I think one of the modules that really stood out to me on that, or just primarily the basic employee relations modules. I think it's more the scenarios. I definitely get more out of scenarios than I do just "here's the policy, here's the reg[ulation]", because I am terrible about remembering which reg[ulation], which policy.

P3: I like the different scenarios that were that were given throughout the training because they were realistic.

P3: I think it helped me understand, like especially in the scenarios, again, I like all the scenarios that we had in there as well, it helped me determine, was I really going on the right path with what my thoughts were, even if I didn't provide an answer, or response in the chat. I knew what my response would have been, and then when I see here's how it's recommended to follow or what you should do in this scenario, I liked that aspect of it.

Learners believed that scenarios and timely feedback were effective ways for them to gain confidence in areas of instruction associated with LAE. This aligns with research that finds large effect sizes (d) for scenarios and feedback on learning (Hattie, 2008) and their high impact on self-efficacy (Margolis & McCabe, 2006). Additionally, the quantitative phase of this study showed that LAE had the largest change from pre-course to post-course results ($M = 15.4$, $SD = 8.8$), suggesting that the use of scenarios and feedback were effective in improving LSE for this factor.

Where individuals felt they lacked in the LAE area is where there were not as many simulations and scenarios based on the live-virtual course audit and online course

reviews. Suggestions from at least one participant to improve in these areas was to simply increase the number of scenarios.

P3: The areas that I feel that I need, I don't feel as confident, is motivating the team to do their part. And I struggle with determining what are good motivators for the individuals on the team. And I've asked them, but some people don't want to tell you. So, it's just trying to pick up on the cues that I'm hearing.

P3: More scenarios, more examples. I mean, I probably would have liked it to even be more than just the three hours each day, and I know some people would probably tell you the opposite, but there's just so much involved.

Where the content lacked scenarios, much of the instruction was delivered through lectures or through online content that required little to no interaction from the learners. These sorts of learning experiences score lower on their effect on self-efficacy (Margolis & McCabe, 2006) and learning (Hattie, 2008) according to research.

Vicarious experience, another powerful driver of self-efficacy according to Bandura (1977), was also a driver for improvement in LAE. Participants found comfort in being able to hear and see how other supervisors would handle a workplace situation before they offered their own views.

P1: I thought it was nice, the way the live course went, where you had presenters on the line presenting the topics. But there were always, you know, spots for people to either type in or chime in orally to kind of provide examples of things that they had done.

P1: It's just really good to see the different ideas that people have and all of the different ways they can interpret how to make, you know, the job easier for themselves and for their employees, you know, to make sure that we're kind of keeping everyone, you know, engaged and to try to keep them positive in the workforce.

In many cases, the vicarious experience was an outcome of the instructor's prompting. However, in some instances, the vicarious experience was organic and spontaneous, offered by learners when they had an experience or scenario to share.

Vicarious experience learning experiences score high in their effect on self-efficacy (Margolis & McCabe, 2006) and learning (Hattie, 2008) according to research.

Lastly, verbal persuasion, one of the weaker drivers of self-efficacy according to Bandura (1977), played a role in improving self-efficacy. While there was little direct encouragement coming from other participants, instructors did offer advice to participants on how they could approach workplace situations or challenges in a novel way.

P1: Like the Bravo Zulu award, you know, that was the first time I'd ever heard that term before, so that was interesting. You know, I'll definitely be looking that up to kind of help keep my employees engaged and rewarded.

P1: It's very interesting to see how that program [mentoring] works and how much of an influence it positively impacted so many different employees. That's a topic that is pretty important and should be looked into a lot more across the teams.

Verbal persuasion has the smallest impact on self-efficacy of all the drivers (Bandura, 1977). Additionally, the nature of the online and live-virtual courses may have constrained the amount of encouragement or constructive feedback that learners provided to each other.

Leader Self-Regulation Efficacy (LSRE). One of the modules of the new supervisors' training (online) had an extensive simulation concerning employee onboarding and a corresponding high pre-course LSE survey score for the LSRE factor. However, confusion still arises as to how supervisors should approach that process in their environment. Though the course leveraged an approach supportive of performance mastery, it appears that a lack of realism or completeness in the online scenarios may still lead to confusion in complex topics (Ali et al., 2018).

P1: There's a lot of checklists out there [pertaining to employee onboarding] that I'm seeing from the training, but I feel like I'm still struggling to keep up and I may have additional questions of what each step really pertains to or how I go about completing it.

While the online scenarios or information in relation to onboarding were designed to provide learners a real-world application experience, the content did not align exactly with how employee onboarding is conducted by supervisors. In addition, the live-virtual course provided no follow-up instruction on how to conduct employee onboarding. The quantitative results showed that LSRE had the highest pre-course mean score ($M = 82.4$, $SD = 8.6$). Additionally, the online content for LSRE which learners took prior to completing the pre-course LSE survey had the most scenarios and simulations of all the factors. However, since no baseline LSE score was gathered prior to completion of the online course, the researcher could not determine if the presence of extensive scenarios and simulations were the drivers of the high LSRE score.

Leaders with previous leadership experience found the course valuable in that it enabled them to recall previous training they had received and some of the lessons they learned during those events. This aligns with research from Baker et al. (2018) that showed those with different levels of work experience value different aspects of training content.

P2: It got me thinking of a lot of the training I had prior, the classroom management training some of the management courses that the Air Force gave me and I also had management courses through [college] too. A lot of it was refresher but, but it was good to have it was good to know.

Learners with prior leadership experience suggested that some of the course content served more as a memory cue than an introduction to new learning and that aspect of the training was valuable to them. This aligns with results from the quantitative

phase of the study which showed that those with past leadership experience had distinctly different scores from those without leadership experience. This also aligns with theory associated with the positive effect of spaced learning (Hattie, 2008) and past experience's effect on LSE (Margolis & McCabe, 2006).

In the quantitative phase of this study, the LSRE topic with the largest change from pre-course to post-course assessment was associated with selecting the right leadership style to apply in the workplace. The NST Online course (completed prior to the LSE pre-course survey) included a scenario dedicated to leadership styles. However, the NST live-virtual course did not include a topic dedicated to this topic. However, learners seemed to be incorporating lessons from related topics (e.g., performance management) and associating them with their evolving schema for a personal leadership style.

P3: I want to come across as sincere... I don't want the recognition or the thank you or the motivation to come across as being insincere.

P2: When you've got 35 different people out there, they're not all the same...and you've got to be flexible, you've got to adjust your style. One style's not going to work for all.

This may align with theory associated with the positive effect of spaced learning (Hattie, 2008) and using learning strategies that break complex tasks into manageable pieces so that learners gain mastery through a constructive approach (Margolis & McCabe, 2006).

Leader Means Efficacy (LME). Verbal persuasion was an important driver of means efficacy. Though generally understood as the weakest among the self-efficacy drivers (Bandura, 1997; Howardson & Behrend, 2015), verbal persuasion from

supervisors may be associated with supportive work environments and this sort of support may aid in supporting another driver of self-efficacy (emotional arousal) which was completely lacking as an instructional tactic in the NST 2.0 course.

P2: What I did like about the live course, it gave me guidance. I kind of had somewhat doubts as for reference for instance with the union, who to contact, and where to go. Because I had contacted other supervisors and they really didn't have a clue.

P1: All of them [previous supervisors] have been a great resource to me and, you know, just kind of helping me and guiding me in the right direction when I feel like I'm drowning sometimes. So it's been great to have their support. And, you know, even if they just share their experience of when they first started, you know, it just helps to make me feel a little better and know that I'm not alone.

P3: Knowing that we're not out there by ourselves either, I think was the big thing for me, too. It's that we do have resources. We have other supervisors. We have our chain [of command]. We have MER/LER to reach out to.

In the quantitative phase, the LME topic of reliance on leaders for creative ideas realized the largest change from the pre-course to the post-course survey. The supportive environment that supervisors provide (or do not provide) through verbal support seems to be an important determinant in LME. In instances where supervisors lack the knowledge to provide informed guidance or support, learners gained confidence in their means through the content shared by subject matter experts during the course.

Integration of qualitative and quantitative results

The researcher generated findings of this study from the quantitative outcomes of the Hannah and Avolio (2013) survey and then further explored those results through qualitative assessments of the course content as well as interviews with three leaders who had completed the courses (see Table 4.20). The quantitative results suggest that changes in LSE were most significant in the factors of LAE, followed by LSRE, and LME.

Table 4.20

Integrated Quantitative and Qualitative Results Matrix

	Quantitative Results		Qualitative Results				
	Pre-Course & Post-Course Difference, M (SD)	Topics With Largest Mean Change	Employee Relations Online Course	NST Online Course	NST Live-Virtual	Documentation	Interviews (Exemplar Quote)
LAE	15.4 (8.8)	Rewards and Punishments	High	High	High	High	P3: I definitely get more out of scenarios [in performance management] than I do just “here’s the policy, here’s the reg.”
LME	9.4 (5.8)	Rely on Leaders for Creative Ideas	n/a	High	High	High	P1: [Supervisors] have been a great resource to me ... helping me and guiding me in the right direction when I feel like I’m drowning sometimes.
LSRE	9.9 (7.6)	Select Leadership Styles	n/a	High	n/a	Low	P2: Everyone has different needs, different lifestyles, and you’ve got to be very flexible.

Note. High, Medium, and Low ratings for the qualitative results are based on the number of instances where LSE supportive practices were used in each topic. Those with above average number of instances scored high, those with average instances scored medium, and those with below average instances scored low.

The qualitative results suggest that most of the course content was focused on topics that addressed issues related to LAE. Additionally, most of the course engagement from learners and instructors was focused on topics that addressed issues related to LAE. Where there were increases in the factors of LSRE and LME, there were traceable instances of course activity that support self-efficacy, such as extensive simulations that support performance mastery of significant verbal persuasion experiences outside of the course from trusted supervisors.

Summary of Mixed Methods Findings

The researcher gleaned results from the Hannah and Avolio (2013) survey, reviews of two online courses, observation of the live-virtual course, and interviews with participants that had large changes in LSE to answer the mixed methods research question. The results are outlined in Table 4.21. The researcher used an integrated results matrix (see Table 4.20) to identify the largest changes in LSE by total score, LAE score, LSRE score, and LME score; and then identified how those changes were supported by qualitative data. The results showed that each significant change in the Hannah and Avolio (2013) survey could be traced back to the amount of focus that the instructor gave to each leadership topic, how engaged participants were in that content, and the type of instruction strategy that was used for that topic. The interviews with participants confirmed that content delivery in the form of scenarios and assessments was most effective in their increase in LSE. Where there were topics that utilized highly engaging content that did not result in a large increase in LSE, the participants indicated that the scenarios used were not realistic enough given the complexities of the process or the uniqueness of their organizational processes.

During the interviews, one participant, who indicated that they had significant past leadership experience (outside of the agency in which they now work), indicated that the value of the course was primarily to reinforce prior learning and to give them the means to execute their duties more effectively using human resource points of contact and reference material.

Table 4.21

Mixed Methods Research Question: How Do the Interviews with Learners Help Explain LSE Changes from Pre-Course and Post-Course Assessments?

Influential Learning Methods	LSE Factor Influenced
Peer Interactions	LAE
Supervisory Support	LME
Realistic and Thorough Scenarios	LAE
Spaced Learning / Constructive Learning	LSRE

Discussion

In the quantitative portion of this study, the researcher used the Hannah and Avolio (2013) survey to determine specific forms of LSE so that drivers and root causes of the construct could be examined. The results showed that a significant increase from pre-course to post-course survey occurred for the total LSE score and each factor of LAE, LSRE, and LME. The factor of LAE realized the largest increase in scores, comprised of topics such as rewards and punishments, employee engagement, employee development, and performance management. Participants with leadership experience (as a Department of Defense civilian or with prior military experience) tended to lower net changes in their LSE score. These results align with behavioral plasticity research (Machida & Schaubroeck, 2011; McCormick & Tanguma, 2007), suggesting that those with more

opportunities to practice leadership duties may have higher LSE during the pre-course or pre-test phases, leading to less room for growth at the post-course or post-test phase. Those with more time in their current supervisor role tended to have larger net changes in their LSE score. These results align with research by Karriker and Hartman (2019) that suggests those with more hands-on experience in the specific task for which self-efficacy is being assessed may have a more accurate assessment of their self-efficacy than those with no knowledge or cursory knowledge via training or past experience.

In the qualitative phase of this study, the results showed that the significant increase in LAE survey results aligned with a significant presence of related course content, in the form of volume, learner engagement, instructor activity, and type of cognitive activities used. Research (Hodges, 2008; Y. Kim & Baylor, 2006; Margolis & McCabe, 2006) suggests that frequent feedback, peer models, problem-solving, and content focused on learner interests are key to improving self-efficacy. Other significant changes in survey results were also partially explained by the qualitative findings, such as the large change in being able to determine leadership styles under LRSE and the comfort that leaders will provide creative ideas under LME. Both topics included content that utilized scenarios and problem-solving during course instruction. While the course content was not designed around a specific learning strategy, the content was focused on topics that new supervisors are interested in, which aligns with research from Margolis and McCabe (2006).

The mixed methods phase of this study leveraged an integrated results matrix to identify the largest changes in LSE by total score, LAE score, LSRE score, and LME score; and then identified how those changes were supported by qualitative data. The

results showed that each significant change in the Hannah and Avolio (2013) survey could be traced back to the amount of focus that the instructor gave to each leadership topic, how engaged participants were in that content, and the type of instruction strategy that was used for that topic. The interviews with participants confirmed that content delivery in the form of scenarios and assessments was most effective in their increase in LSE. This is supported by research that suggests that being able to safely demonstrate performance mastery is key to improving self-efficacy (Bandura, 1977; Lester et al., 2011; Paglis, 2010). Where there were topics that did not result in a large increase in LSE but did utilize approaches designed to improve performance mastery, the participants indicated that the scenarios used were not realistic enough given the complexities of the process or the uniqueness of their organizational processes. Those with more leadership experience valued the courses more for the impact they had on their ability to effect change (through process understanding and points of contact) than leadership know-how. This aligns with findings from Baker et al. (2018). One glaring omission in the course instructional design as it aligns with drivers of self-efficacy according to Bandura (1977) was the lack of exercises or experiences focused on controlling emotional arousal. Though this omission could not be traced to any specific outcomes from the survey results, the researcher determined in the interviews that participants lacked self-efficacy in areas that might require stressful conversations or conversations where they would need to influence participants to take paths that they might not initially buy-in to, such as performance improvement or development.

Implications

The purpose of this study was to understand the influence of development on LSE and to provide practitioners with a blueprint to develop more effective leadership development courses. Results of the study suggest (in alignment with the literature) that simulations, scenarios, and feedback are key in improving LSE (Bandura, 1977; Lester et al., 2011; Paglis, 2010) with an emphasis on performance mastery and vicarious experience as key components.

Human resource, as well as learning and development practitioners, can utilize this understanding to focus on better leadership development design and customization. Practitioners can provide courses that focus heavily on providing participants with opportunities to practice each leadership topic, observe others performing the topics, and providing regular and recurring feedback on their understanding of the topic. Human resource and learning and development practitioners can also consider customizing course designs or instructional strategies to account for the past leadership experiences of their participants. Behavioral plasticity (Machida & Schaubroeck, 2011; McCormick & Tanguma, 2007) and varying levels of accuracy in assessing initial LSE due to the specificity of hands-on experience (Karriker & Hartman, 2019) may provide practitioners with an opportunity to shape more realistic pre-course learning exercises and assign those with more experience to be peer models to fully leverage vicarious experience opportunities.

Future Research

Other variables that are known to influence LSE can be researched within the context of instructional design's impact on LSE. Key variables such as motivation to lead

(MTL) and learning goal orientation (LGO) are chief among these variables. As research suggests (Chan & Drasgow, 2001; Hendricks & Payne, 2007), MTL and LGO can have a reciprocal relationship with LSE. Those higher in LGO tend to have higher LSE, which then leads to higher MTL. Higher MTL then can lead to improved LSE through more leadership experiences (Chan & Drasgow, 2001; Hendricks & Payne, 2007). The author did not measure MTL or LGO for this study, but the study results suggest they could have an influence on LSE results based on the various past leadership experiences of the participant population and the varying hours of past training engagement.

Additionally, the author did not measure the strength, magnitude, or generality of LSE, which are key elements of variation in the self-efficacy construct according to Bandura (1977). The results suggested that measuring the vigor of LSE through these factors may help practitioners understand under what specific scenarios and situations leaders' LSE is strongest.

Lastly, future research can look at how LSE is defined for learning environments. While the Hannah and Avolio (2013) survey tool was empirically derived and designed to measure various factors of LSE, the author found that determining the impact of specific course content on the factors and items within the survey was imprecise in some instances. How LSE is defined and measured determines what elements of leadership are considered important for performance and development (Anderson et al., 2008). LSE is a form of specific self-efficacy (SSE), which is constrained to a particular situation and determined by an individual's assessment of their talents, know-how, and resources in a particular domain (Eden & Kinnar, 1991). Since LSE is a specific measure of the self-efficacy construct, organizations may be well served to develop customized measures of

LSE using their specific leadership development curriculum, organizational values, and organizational priorities.

This study, due to its constrained scope of one agency and a single course instance, is not generalizable to other leadership development settings (Ross & Bibler Zaidi, 2019); however, the outcomes do align with past research. Future studies with larger sample sizes that span different industries or multiple offerings of development courses may aid in refining the understanding of how course instruction influences LSE.

Conclusion

Practitioners and researchers do not have an adequate understanding of what the psychological construct of LSE entails (Anderson et al., 2008; Hannah et al., 2012), and there are few studies with direct descriptive data regarding how leadership development course content and exercises support the development of LSE (Dwyer, 2019). Due to this dearth in research, Seibert et al. (2017) indicate that organizations “lack an evidence-based understanding” (p. 358) of how to design their formal development programs to train more effective leaders. Given the multitude of methods to deliver training content and those options only growing with technology, understanding how to influence LSE through instructional design positively is critical. The purpose of this study was to understand the influence of development on LSE and to provide practitioners with a blueprint to consistently develop more effective leadership development courses.

The author used an explanatory sequential mixed methods design and Bandura’s self-efficacy framework (Bandura, 1977) to understand the experiences of leadership development learners and the factors influencing LSE emergence. Quantitative results showed a significant increase in LSE after a live-virtual course, with the largest changes

occurring under the LAE factor. Qualitative results demonstrated that those leadership topics where the volume and intensity of content were greatest for learners aligned with the increase in LAE in the survey. Interviews with participants supported the quantitative and qualitative results, further emphasizing the value of realistic and applicable learning scenarios.

Human resource and learning and development practitioners can utilize the results of this study to design more effective leadership development courses, focusing on the use of scenarios and regular feedback to improve LSE in key topics of knowledge critical to leadership success in the organization. Measuring LSE effectively is a vital element of developing it in leaders. Organizations may benefit from the development of customized measures of LSE using their specific leadership development curriculum, organizational values, and organizational priorities.

CHAPTER FIVE

Distribution of Findings

Executive Summary

Leaders that are high in leader self-efficacy (LSE) are more effective in their jobs (Hannah et al., 2008, 2012; Paglis & Green, 2002; Seibert et al., 2017). Evidence suggests that individual development can increase LSE, but there is a gap in the literature in what development activities lead to that increase (Dwyer, 2019), particularly for formal development (Dwyer, 2019). Research in informal development and general self-efficacy (GSE) development provides a foothold in what activities may be most effective in improving LSE formal development (Baron & Morin, 2009; Grant, 2014; Lester et al., 2011). However, defining and measuring LSE with more specificity is a critical first step in understanding what antecedents are most effective (Anderson et al., 2008; Crawford & Kelder, 2019).

Performance outcomes for leadership development programs have mixed results, even with billions of dollars being spent each year on course delivery (Lacerenza et al., 2017; Packard & Jones, 2015). When organizations invest resources in development programs without a coherent understanding of what pedagogical practices are most effective, this negatively impacts organizations and the learner. This lack of a coherent understanding of what leadership development practices are most effective stems from two problems. The first problem is that practitioners and researchers do not have an adequate understanding of what the psychological construct of LSE entails (Anderson et al., 2008; Hannah et al., 2012). The second problem is that there are few studies with

direct descriptive data regarding how leadership development course content and exercises support the development of LSE (Dwyer, 2019). The purpose of this study was to understand the influence of formal development on LSE and to provide practitioners with a blueprint to develop more effective leadership development courses.

Overview of Data Collection and Analysis Procedures

An explanatory sequential mixed methods design and Bandura's self-efficacy framework (Bandura, 1977) were used to understand the experiences of leadership development learners and the factors influencing LSE emergence. Quantitative pre-course and post-course tests assessed levels of LSE for 14 learners. To understand how leadership development influences LSE, learners who experienced the largest changes in LSE were interviewed. In addition, to determine what connection course content had with a learner's LSE levels, the author observed course instruction and audited classroom materials using Bandura's (1977) self-efficacy framework as a guide.

The author used Bandura's (1977) self-efficacy theory framework to determine if the course content aligned with empirically derived antecedents of LSE. The theoretical framework and research design for this study provided a unique approach to addressing the identified gaps by utilizing factor-level definitions of LSE, followed by both a quantitative and qualitative analysis of the development drivers of LSE. The use of the Bandura self-efficacy framework and a validated survey instrument that aligns with that framework provided for a congruent data collection and analysis structure. The quantitative approach for this study provided the guiding framework to focus the in-depth qualitative review on those learners where empirical changes in LSE have occurred, while also incorporating the overarching theoretical self-efficacy framework from

Bandura (1977). The qualitative approach for this study organized the gathering of development experience data around both Bandura's (1977) self-efficacy framework and the LSE survey to complete the congruency of the study. As suggested by Hannah et al. (2012), "by empirically distinguishing the rich and complex structuring of leaders' perceived capabilities...we may enhance our understanding of [LSE] development" (p. 158). The use of mixed methods provided both empirical and rich and thick data to better understand what leadership development activities improve LSE.

Summary of Key Findings

The results showed that a significant increase from pre-course to post-course survey occurred for the total LSE score and each factor of leader action efficacy (LAE), leader self-regulation efficacy (LSRE), and leader means efficacy (LME). The factor of LAE realized the largest increase in scores, comprised of topics such as rewards and punishments, employee engagement, employee development, and performance management.

In the qualitative phase of this study, the results showed that the significant increase in LAE survey results aligned with a significant presence of LAE related course content in the form of volume, learner engagement, instructor activity, and type of cognitive activities used. Research (Hodges, 2008; Y. Kim & Baylor, 2006; Margolis & McCabe, 2006) suggests that frequent feedback, peer models, problem-solving, and content focused on learner interests are key to improving self-efficacy. Other significant changes in survey results were also partially explained by the qualitative findings, such as the large change in being able to determine leadership styles under LRSE and the comfort that leaders will provide creative ideas under LME. Both topics included content that

utilized scenarios and problem-solving during course instruction. While the course content was not designed around a specific learning strategy, the content was focused on topics that new supervisors are interested in, which aligns with research from Margolis and McCable (2006).

The mixed methods phase of this study leveraged an integrated results matrix to identify the largest changes in LSE by total score, LAE score, LSRE score, and LME score and then identified how those changes were supported by qualitative data. The results showed that each significant change in the Hannah and Avolio (2013) survey could be traced back to the amount of focus that the instructor gave to each leadership topic, how engaged participants were in that content, and the type of instruction strategy that was used for that topic. The interviews with participants confirmed that content delivery in the form of scenarios and assessments was most effective in their increase in LSE. This is supported by research that suggests that being able to safely demonstrate performance mastery is key to improving self-efficacy (Bandura, 1977; Lester et al., 2011; Paglis, 2010). Where there were topics that did not result in a large increase in LSE but did utilize approaches designed to improve performance mastery, the participants indicated that the scenarios used were not realistic enough given the complexities of the process or the uniqueness of their organizational processes.

The NST 2.0 course integrated multiple drivers of LSE to deliver an introductory supervisory training course. This integration was key to achieve the significant change in LSE from pre-course to post-course surveys. As Wood and Bandura (1989) state, “there is a difference between possessing skills and being able to use them well and consistently under difficult circumstances” (p. 364). The use of realistic scenarios, peer interaction,

feedback, and a loose learning strategy (bolstered by supervisory support) was key to the course's success in improving learner's LSE.

Informed Recommendations

The purpose of this study was to understand the influence of development on LSE and to provide practitioners with a blueprint to develop more effective leadership development courses. Results of this study suggest (in alignment with the literature) that simulations, scenarios, and feedback are key in improving LSE in a course setting (Bandura, 1977; Lester et al., 2011; Paglis, 2010) with an emphasis on performance mastery and vicarious experience as key components.

Human resource, as well as learning and development practitioners, can utilize this understanding to focus on better leadership development design and customization. Practitioners can provide courses that focus heavily on providing participants with opportunities to practice each leadership topic, observe others performing the topics, and providing regular and recurring feedback on their understanding of the topic. Human resource and learning and development practitioners can also consider customizing course designs or instructional strategies to account for the past leadership experiences of their participants. Behavioral plasticity (Machida & Schaubroeck, 2011; McCormick & Tanguma, 2007) and varying levels of accuracy in assessing initial LSE due to the specificity of hands-on experience (Karriker & Hartman, 2019) may provide practitioners with an opportunity to shape more realistic pre-course learning exercises and assign those with more experience to be peer models to fully leverage vicarious experience opportunities.

Additionally, future research can look at how LSE is defined for learning environments. While the Hannah and Avolio (2013) survey tool was empirically derived and designed to measure various factors of LSE, the author found that determining the impact of specific course content on the factors and items within the survey was imprecise in some instances. How LSE is defined and measured determines what elements of leadership are considered important for performance and development (Anderson et al., 2008). LSE is a form of specific self-efficacy (SSE), which is constrained to a particular situation and determined by an individual's assessment of their talents, know-how, and resources in a particular domain (Eden & Kinnar, 1991). Since LSE is a specific measure of the self-efficacy construct, organizations may be well served to develop customized measures of LSE using their specific leadership development curriculum, organizational values, and organizational priorities.

Findings Distribution Proposal

Target Audience

The researcher intends for the primary audience of this research to be Human resource (HR) and learning and development (LD) practitioners. These practitioners are tasked with developing or procuring leadership development courses that are expected to yield a measurable impact on organizational performance and readiness for future challenges. The more that HR and LD professionals understand what contributes to effective leadership development, the more successful they can be in their roles as talent development experts.

It is the researcher's hope that the results of this study can be used by HR and LD practitioners as a blueprint to structure more effective leadership development courses by

focusing on developing LSE through a focus on performance mastery and vicarious experience exercises. HR and LD practitioners can also leverage the results of the study to thoughtfully measure how LSE is impacted by their own leadership development programs through the development of customized LSE surveys.

Proposed Distribution Method and Venue

The researcher will target three distribution methods and venues for the study. The first distribution method and venue are focused on the agency where the study was conducted. Briefing slides of the study's purpose and results will be provided to agency leadership stakeholders. The presentation will be approximately 30 minutes long and will be comprised of nine slides with the following content: overview, purpose, method, quantitative results, qualitative results, mixed-methods results, course enhancement recommendations, future research, and questions.

The second distribution method and venue are focused on HR and LD professionals and where they go to obtain industry information. Currently, the Society of Human Resources Management (SHRM) boasts a membership roster of over 300,000 (SHRM, 2021) and is a key credentialing body for HR professionals. SHRM has a robust social media presence, with regular outreach to its members on Twitter, LinkedIn, Instagram, Facebook, YouTube, and RSS feeds. The researcher will leverage Twitter, LinkedIn, Facebook, and RSS feeds to distribute short written summaries of the research, along with weblinks to the full study. The researcher will use Instagram and YouTube to provide video-oriented summaries of the research that link to the full study.

The third distribution method and venue will be focused on the academic arena. The primary topic of the researcher's study is focused on LSE and may be of most

interest to those who are researching topics focused specifically on leadership. The *Leadership Quarterly* (Elsevier, 2021) is a journal that the researcher has used frequently in this study. The *Leadership Quarterly* has an impact factor of 6.6, which is in the top quartile of the 12,838 journals tracked by Clarivate (Clarivate, 2020). The author will submit a publication manuscript to the *Leadership Quarterly* for consideration.

Distribution Materials

To align with the three avenues of distribution listed in the previous section, three primary materials will be developed to communicate the findings of this study to the desired audience. The first distribution channel is focused on communicating the study results to the stakeholders within the agency where the study took place. A set of presentation slides will be developed to provide an overview of the study purpose, framework, findings, and future application. The second distribution channel is focused on social media through SHRM, where the author will develop an easy to consume white paper, summarizing the study purpose, framework, findings, and utility for practitioners. For those social media channels that are video-oriented, the researcher will create voice-over video presentations that walk through the content of the white paper. The third distribution channel is focused on communicating the study to leadership researchers. A publication manuscript will be developed and submitted to Elsevier, the publisher of The *Leadership Quarterly*, to consider the study for publication.

Given the dearth of research on the impact of types of leadership instruction on LSE (Dwyer, 2019), it is important to build a body of literature that documents the findings of different instructional approaches on LSE, given its prominent role as a predictor of leadership performance. While the researcher acknowledges the limited

generalizability of this study, it serves as a contribution to the scholar's and practitioner's growing understanding of what development approaches improve LSE.

APPENDICES

APPENDIX A

Approval to Utilize LSE Survey

For use by James Hylton only. Received from Mind Garden, Inc. on September 25, 2020



www.mindgarden.com

To Whom It May Concern,

The above-named person has made a license purchase from Mind Garden, Inc. and has permission to administer the following copyrighted instrument up to that quantity purchased:

Leader Efficacy Questionnaire

The three sample items only from this instrument as specified below may be included in your thesis or dissertation. Any other use must receive prior written permission from Mind Garden. The entire instrument may not be included or reproduced at any time in any other published material. Please understand that disclosing more than we have authorized will compromise the integrity and value of the test.

Citation of the instrument must include the applicable copyright statement listed below.

Sample Items:

As a Leader I can...

Energize my followers to achieve his/her best.

Rely on my organization to provide the resources needed to be effective.

Determine what leadership style is needed in each situation.

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Sincerely,



Robert Most
Mind Garden, Inc.
www.mindgarden.com

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APPENDIX B

Observational Protocol for NST 2.0

Date: _____ Time: (start) / (end) _____

Course: _____ Number of Learners: _____

Segment	1	2	3	4
Minute	0-14:59	15:00-29:59	30:00-44:59	45:00-59:59
Instructional Method				
Self-Efficacy Driver				
Notes				
Instructor/Student Interactions				
Self-Efficacy Driver				
Notes				
Cognitive Engagement				
Self-Efficacy Driver				
Notes				
Instructional Technology				
Self-Efficacy Driver				
Notes				

Observational Codes and Definitions

Adapted from Wisconsin Center for Education Research. (2014). TDOP. Teaching Dimensions Observation Protocol. <http://tdop.wceruw.org/Document/TDOP-2.1-Users-Guide.pdf>

Overview: High items are supportive of LSE according to research (Dwyer, 2019; Gilbert et al., 2018; Hannah et al., 2012; Paglis, 2010; Versland, 2016).

Instructional Methods

Method	Level of Support for LSE
(L) Lecturing: The instructor is talking to the students and not using visuals, demonstration equipment, actively writing, or asking more than 2 questions in a row in a Socratic manner.	Low
(LVIS) Lecturing from pre-made visuals: The instructor is talking to the students while referencing visual aids, such as slides, transparencies, posters, or models (e.g., a plastic model of molecular structure, examples of sedimentary rocks, multi-media).	Medium
(LDEM) Lecturing with demonstration of phenomena: The instructor actively uses equipment (e.g., lab equipment, computer simulation) to convey course content.	High
(SOC-L) Socratic lecture: The instructor is talking to the students while asking multiple, successive questions to which the students are responding. A minimum of 2 relevant student responses is required to use this code.	High
(WP) Working out problems: This code refers to the instructor working out computations or problems. The code's intent is to capture the working through of some sort of problems in front of students.	Medium
(MM) Multimedia: The instructor plays a video or movie (e.g., Youtube or documentary) without speaking while the students watch. If the instructor is talking over a video, movie, or simulation, then co-code with LVIS.	Medium
(A) Assessment: The instructor is explicitly gathering student learning data in class (e.g., tests, quizzes, or clickers).	High

Student-focused instruction (students are the primary actor)

Method	Level of Support for LSE
--------	--------------------------

(SGW) Small group work/discussion: Students form into groups of 2+ for discussion and/or to complete a task.	Medium
(DW) Deskwork: Students complete work alone at their desk/chair.	Low
(SP) Student presentation: Groups or individual students are giving to the class or are otherwise acting as the primary speaker or instructor in the classroom. In this instance, only select this code and no others if the primary instructor is not actively taking the lead in teaching the class.	High

Instructor-Student Interactions

Teacher-led dialogue

Method	Level of Support for LSE
(IRQ) Instructor rhetorical question: The instructor asks a question without seeking an answer and without allowing students to answer the question.	Low
(IDQ) Instructor display question: The instructor poses a question seeking information. These questions can: seek a fact, a solution to a closed-ended problem, or involve students generating their own ideas rather than finding a specific solution.	Medium
(ICQ) Instructor comprehension question: The instructor checks for understanding (e.g., “Does that make sense?”) and pauses for at least five seconds, thereby indicating an opportunity for students to respond.	Medium

Student-led dialogue

Method	Level of Support for LSE
(SQ) Student question: A student poses a question to the instructor that seeks new information (i.e. not asking to clarify a concept that was previously being discussed) and/or clarification of a concept that is part of the current or past class period.	Medium
(SR) Student response to teacher question: A student responds to a question posed by the instructor, whether posed verbally by the instructor or through digital means (e.g., clicker, website).	Low
(PI) Peer interactions: Students speaking to one another (often during SGW, WCD, or SP).	High

Instructional Technology

Method	Level of Support for LSE
(CB) Chalkboard/whiteboard/SmartBoard	Low
(PP) PowerPoint or other digital slides	Low
(CL) Clicker response systems	Low
(DT) Digital tablet: This refers to any technology where the instructor can actively write on a document or graphic that is being projected onto a screen. This includes document cameras as well as software on a laptop that allows for writing on PDF files.	Low
(M) Movie, documentary, video clips, or Youtube video	Medium
(SI) Simulation: Simulations can be digital applets or web-based applications.	High
(WEB) Website: Includes instructor interaction with course website or other online resources (besides Youtube videos). This can include using a website for student responses to questions (instead of clickers).	Low

Cognitive Engagement

Method	Level of Support for LSE
(CNL) Making connections to own lives/specific cases: Students are given examples (either verbally through illustrative stories or graphically through movies or pictures) that clearly and explicitly link course material to popular culture, the news, and other common student experiences. Students may also be given specific cases or incidents to link an abstract principle or topic (e.g., flooding) with a more readily identifiable instance (e.g., 2013 floods in Boulder, Colorado).	High
(PS) Problem-solving: Students are asked to actively solve a problem (e.g., balance a chemical equation, work out a mathematical equation/algorithm). This is evident through explicit verbal (e.g., "Please solve for X") or written requests (e.g., worksheets) to solve a problem. This is coded concerning closed-ended exercises or problems where the instructor has a specific solution or end-point clearly in mind.	High
(CR) Creating: Students are provided with tasks or dilemmas where the outcome is open-ended rather than fixed (e.g., students are asked to generate their own	High

ideas and/or products rather than finding a specific solution).	
-----------------------------------------------------------------	--

Self-Efficacy Drivers

Performance Mastery

- (PM-H) Performance Mastery High: Provides extensive opportunity to practice their leadership skills, observe their achievements, and master requirements of the course.
- (PM-M) Performance Mastery Medium: Provides some opportunity to practice their leadership skills, observe their achievements, and master requirements of the course.
- (PM-L) Performance Mastery Low: Provides limited opportunity to practice their leadership skills, observe their achievements, and master requirements of the course.

Vicarious Experience

- (VE-H) Vicarious Experience High: Provides extensive opportunity to observe other leaders perform leadership duties, observe leaders manage difficult situations, and hear leaders they respect conduct the training
- (VE-M) Vicarious Experience Medium: opportunity to observe other leaders perform leadership duties, observe leaders manage difficult situations, and hear leaders they respect conduct the training
- (VE-L) Vicarious Experience Low: opportunity to observe other leaders perform leadership duties, observe leaders manage difficult situations, and hear leaders they respect conduct the training

Verbal Persuasion

- (VP-H) Verbal Persuasion High: Provides extensive opportunity to receive feedback from leaders or colleagues on leadership performance
- (VP-M) Verbal Persuasion Medium: Provides some opportunity to receive feedback from leaders or colleagues on leadership performance
- (VP-L) Verbal Persuasion Low: Provides limited opportunity to receive feedback from leaders or colleagues on leadership performance

Emotional Arousal

- (EA-H) Emotional Arousal High: Provides extensive opportunity to experience situations that provoke anxiety and discomfort
- (EA-M) Emotional Arousal Medium: Provides some opportunity to experience situations that provoke anxiety and discomfort
- (EA-L) Emotional Arousal Low: Provides limited opportunity to experience situations that provoke anxiety and discomfort

APPENDIX C

Interview Protocol for LSE

Date:

Time:

Learner Code:

Self-Efficacy Driver	Question Link – Development Action	Notes
Performance Mastery		
Verbal Persuasion		
Vicarious Experience		
Emotional Mastery		

Interview Questions

1. Was there anything that happened in your online training that affected your confidence to perform effectively as a leader – such as:
 - a. Energize my followers to achieve their best
 - b. Utilize the forms of rewards and punishments that work best with each follower
 - c. Get followers to identify with the central focus of our mission?
 - d. Determine what leadership style is needed in each situation
 - e. Develop detailed plans to accomplish complex missions
 - Probe: Please share the thing or things that affected your confidence and how they affected it.
2. Was there anything that happened in your NST 2.0 training that affected your confidence to perform effectively as a leader – such as:
 - a. Energize my followers to achieve their best

- b. Utilize the forms of rewards and punishments that work best with each follower
 - c. Get followers to identify with the central focus of our mission?
 - d. Determine what leadership style is needed in each situation
 - e. Develop detailed plans to accomplish complex missions
 - Probe: Please share the thing or things that affected your confidence and how they affected it.
3. Do you have aspects of leadership where you do not feel confident?
- Probe: Did the online training help address these in any way?
 - Probe: Did the NST training help address these in any way?
 - Probe: Did anything that occurred at NST make you feel less confident in your ability to lead?
 - Probe: Is there anything that NST might have done differently that might have changed this?
4. Are there any external development activities or experiences that affected your confidence to perform effectively as a leader?

APPENDIX D

Course Documents LSE Rating Criteria

Course:

Date:

Self-Efficacy Driver Rating Criteria:

- i. Performance Mastery:
 - a. High: Provides extensive opportunity to practice their leadership skills, observe their achievements, and master requirements of the course.
 - b. Medium: Provides some opportunity to practice their leadership skills, observe their achievements, and master requirements of the course.
 - c. Low: Provides limited opportunity to practice their leadership skills, observe their achievements, and master requirements of the course.
 - d. Not Applicable: Provides no support to this factor
- ii. Vicarious Experience:
 - a. High: Provides extensive opportunity to observe other leaders perform leadership duties, observe leaders manage difficult situations, and hear leaders they respect conduct the training
 - b. Medium: opportunity to observe other leaders perform leadership duties, observe leaders manage difficult situations, and hear leaders they respect conduct the training
 - c. Low: opportunity to observe other leaders perform leadership duties, observe leaders manage difficult situations, and hear leaders they respect conduct the training
 - d. Not Applicable: Provides no support to this factor
- iii. Verbal Persuasion:
 - a. High: Provides extensive opportunity to receive feedback from leaders or colleagues on leadership performance
 - b. Medium: Provides some opportunity to receive feedback from leaders or colleagues on leadership performance
 - c. Low: Provides limited opportunity to receive feedback from leaders or colleagues on leadership performance
 - d. Not Applicable: Provides no support to this factor
- iv. Emotional Arousal:
 - a. High: Provides extensive opportunity to experience situations that provoke anxiety and discomfort
 - b. Medium: Provides some opportunity to experience situations that provoke anxiety and discomfort

- c. Low: Provides limited opportunity to experience situations that provoke anxiety and discomfort
- d. Not Applicable: Provides no support to this factor

Adapted from Pfitzner-Eden, F. (2016). Why do I feel more confident? Bandura's sources predict preservice teachers' latent changes in teacher self-efficacy. *Frontiers in psychology*, 7, 1486.

Course Documents Rating Matrix

Course	Document	Self-Efficacy Driver			
		Performance Mastery	Vicarious Experience	Verbal Persuasion	Emotional Arousal
Online Course 1					
Online Course 2					
Virtual Course 1					

APPENDIX E

Survey Invitation to Learners

NST 2.0 Learners! Help us understand what makes for a better leadership development course! I am conducting a study to learn more about what leadership development approaches are most effective in preparing leaders for their demanding jobs. This survey is a critical part of that study. Your responses to this survey will remain confidential. You may be contacted after the course has been completed to provide additional information regarding your course experiences. Thanks in advance for your time and consideration in completing this survey.

Taking this survey is optional. You are free not to take part or to stop at any time for any reason. No matter what you decide, there will be no penalty or loss of benefit to which you are entitled.

James Hylton

APPENDIX F

Informed Consent to Interviewees

Informed Consent Baylor University Curriculum & Instruction Learner Consent Form for Research

Study Title: Leadership Development Influence on Leader Self-Efficacy (LSE): An Explanatory Sequential Mixed Methods Study with Civilian Federal Employees in the Department of Defense

Principal Investigator: James Hylton

Supported By: Baylor University

Purpose of the research: The purpose of this study is to better understand what leadership development methods used in the NST 2.0 course are most effective in improving leader self-efficacy (LSE). We ask that you take part in this study because you are a supervisor who participated in the training and demonstrated a significant change in your pre-course and post-course LSE score.

Study activities: If you consent to be in the study, agree to be interviewed by the researcher.

Risks and Benefits: To the best of our knowledge, there are no risks to you for taking part in this study. Others may benefit in the future from the information that is learned in this study.

Confidentiality: A risk of taking part in this study is the possibility of a loss of confidentiality. Loss of confidentiality includes having your personal information shared with someone who is not on the study team and was not supposed to see or know about your information. The researcher plans to protect your confidentiality. We will make every effort to keep your records confidential. However, there are times when federal or state law requires the disclosure of your records. Authorized staff of Baylor University may review the study records for purposes such as quality control or safety.

Compensation: There is no compensation for participating in this study.

Questions or concerns about this research study: You can email or call me with any concerns or questions about the research. Our information is listed below: James Hylton, James.Hylton1@baylor.edu, [REDACTED]. If you want to speak with someone not

directly involved in this research study, you may contact the Baylor University IRB through the Office of the Vice Provost for Research at [REDACTED]
You can talk to them about:

- Your rights as a research subject
- Your concerns about the research
- A complaint about the research

Taking part in this study is your choice. You are free not to take part or to stop at any time for any reason. No matter what you decide, there will be no penalty or loss of benefit to which you are entitled. If you decide to withdraw from this study, the information that you have already provided will be kept confidential. Information already collected about you cannot be deleted. By signing below, you are providing consent.

Signature:

Date:

APPENDIX

Table of Survey Score Net Change by Survey Item

Table G.1

Net Change in Score by Survey Item

Item	<i>M</i>	<i>SD</i>	Minimum	Maximum
1	13.6	16.25	0	54
2	16.2	15.40	-5	50
3	18	16.78	0	64
4	16	9.02	-5	26
5	12.8	10.44	-4	30
6	23.4	17.13	-15	50
7	7.9	10.99	-14	20
8	11.3	18.52	-17	50
9	2.9	8.83	-15	20
10	6.9	10.39	-13	20
11	4.6	7.66	-6	20
12	18.7	16.61	-3	61
13	12.3	13.21	-6	30
14	9.2	18.65	-30	51
15	17.9	11.14	0	40
16	9.2	12.07	0	40
17	9.9	5.75	0	20
18	10	14.42	-12	40
19	12.2	15.34	-11	50
20	5	7.39	-6	20
21	13.3	17.18	-11	51
22	1.4	9.52	-20	20

APPENDIX H

Course Documents by Course, LSE Factor, and Self-Efficacy Driver

Table H.1

Course Document Alignment to LSE Framework

Course Documents by Course, LSE Factor, and Self-Efficacy Driver

Course	Document/Topic	Factor	Self-Efficacy Drivers			
			PM	VE	VP	EA
Live-Virtual Course	Day 1 Presentation Slides	LAE	Low	N/A	Low	N/A
	Day 2 Presentation Slides	LAE	Low	N/A	Low	N/A
	Day 3 Presentation Slides	LAE	Low	N/A	Low	N/A
	LER Information Handout	LME	Low	N/A	Low	N/A
	Collaboration Tools Handout	LSRE	Low	N/A	Low	N/A
	EAP Manager Support Handout	LME	Low	N/A	Low	N/A
	Exiting Employee Job Aid/Scenario	LSRE	Med	N/A	Low	N/A
Employee Relations Online Course	The Nine Merit System Principles Handout	LME	Low	N/A	Low	N/A
	Prohibited Personnel Practice Handout	LME	Low	N/A	Low	N/A
	Merit System Principles (Web Link)	LME	Low	N/A	Low	N/A
	Prohibited Personnel Practice (Web Link)	LME	Low	N/A	Low	N/A
	USC Title 5, Part 1 (Web Link)	LME	Low	N/A	Low	N/A
	USC Title 5, Part 2 (Web Link)	LME	Low	N/A	Low	N/A
	USC Title 5, Part 3 (Web Link)	LME	Low	N/A	Low	N/A
	OPM Operating Manuals (Web Link)	LAE	Low	N/A	Low	N/A

OPM Guide to Processing Personnel Actions (Web Link)	LAE	Low	N/A	Low	N/A
OPM Notice and Posting System (Web Link)	LAE	Low	N/A	Low	N/A
OPM Classification and Qualification Standards (Web Link)	LAE	Low	N/A	Low	N/A
Probationary and Trial Periods: FAQs	LAE	Low	N/A	Low	N/A
Restoration of Annual Leave (Web Link)	LAE	Low	N/A	Low	N/A
OPM Administrative Leave Fact Sheet (Web Link)	LAE	Low	N/A	Low	N/A
Medical Issues: FAQs	LME	Low	N/A	Low	N/A
Rehabilitation Act of 1973 (Web Link)	LSRE	Low	N/A	Low	N/A
Americans with Disabilities Act (ADA) of 1990 (Web Link)	LSRE	Low	N/A	Low	N/A
Executive Order 13164 (Web Link)	LSRE	Low	N/A	Low	N/A
Americans with Disabilities Act Amendments Act (ADAAA), P.L. 110-35 (Web Link)	LSRE	Low	N/A	Low	N/A
Work at Home/Telework as a Reasonable Accommodation (Web Link)	LME	Low	N/A	Low	N/A
Guidance for Fact-Finders Conducting Administrative Inquiries Handout	LME	Low	N/A	Low	N/A
Employee Assistance Programs Handout	LME	Low	N/A	Low	N/A
The Douglas Factors Handout	LME	Low	N/A	Low	N/A
Fundamentals of Performance Management Handout	LAE	Low	N/A	Low	N/A
Addressing and Resolving Poor Performance Handout	LAE	Low	N/A	Low	N/A
Performance Management: FAQs	LAE	Low	N/A	Low	N/A
Addressing and Resolving Poor Performance Course (Web Link)	LAE	Low	N/A	Low	N/A
Labor Relations: FAQs	LME	Low	N/A	Low	N/A

NST 2.0 Online Course	Supplemental Labor Relations Glossary Handout	LME	Low	N/A	Low	N/A
	Federal Service Labor- Management Relations Statute (Web Link)	LME	Low	N/A	Low	N/A
	5 U.S.C. §7131 (Web Link)	LME	Low	N/A	Low	N/A
	5 U.S.C. §7102 (Web Link)	LME	Low	N/A	Low	N/A
	FLRA Guides and Manuals Handout	LME	Low	N/A	Low	N/A
	SES Rating Process - Initial Summary Rating Handout	LAE	Low	N/A	Low	N/A
	SES Rating Process - Higher Level Review Handout	LAE	Low	N/A	Low	N/A
	SES Rating Process - Performance Review Board Handout	LAE	Low	N/A	Low	N/A
	SES Rating Process - Annual Summary Rating Handout	LAE	Low	N/A	Low	N/A
	Removal of SES Probationers for Unacceptable Performance Handout	LAE	Low	N/A	Low	N/A
	Removal of SES Probationers for Disciplinary Reasons Handout	LAE	Low	N/A	Low	N/A
	Options for Removal of Post- Probationers for Performance Reasons Handout	LAE	Low	N/A	Low	N/A
	SES Adverse Actions Handout	LAE	Low	N/A	Low	N/A
	SES Assessment Handout	LAE	Low	N/A	Low	N/A
	Sustain Workforce Job Aid/Scenario	LAE	Med	N/A	Low	N/A
	Recruiting Job Aid/Scenario	LSRE	Med	N/A	Low	N/A
	Critical Roles Job Aid/Scenario	LME	Med	N/A	Low	N/A
	Position Description Job Aid/Scenario	LAE	Med	N/A	Low	N/A
	Managing Workforce Job Aid/Scenario	LSRE	Med	N/A	Low	N/A

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