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Seeing the Tress For the Forest: An Analysis of Novice and Experienced Teachers' Self-Efficacy and Stress

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DEDICATION

I dedicate this accomplishment to the most important people in my life, my husband, John, and our three beautiful daughters, Alyssa, Rachel, and Meghan. You are always the center of my world and when I needed support or encouragement through this process you were always there for me, every step of the way, you especially, John, my soul mate. I love you all more than words can express.

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ABSTRACT

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An Analysis of Novice and Experienced Teachers' Self-Efficacy and Stress

by Allison A. Serceki

The purpose of this study was to better understand the relationship between novice teachers' context-specific self-efficacies and stresses and whether these constructs differed from the self-efficacies and stresses of experienced teachers in middle school and early high school. Novice teachers, or teachers in their first 5 years of teaching, are most susceptible to attrition and turnover, which research indicated is sometimes brought on by stress. Research also showed self-efficacy consistently had a negative correlation to stress. This study used the second-hand dataset obtained from the Teaching and Learning International Survey, focusing on 2560 responses obtained from teachers in the United States from 220 public and private schools during the 2018 school year. The findings indicated several differences between novice teachers and their experienced coworkers. The findings indicated workplace well-being and stress—a unique stress construct—was significantly correlated with almost all context-specific efficacies: (a) classroom management, (b) instruction, and (c) student engagement. Although the self-efficacy and stress findings were consistent with the literature, other findings varied among novice and experienced teachers and provided insight into other nuances such as gender and the subject matter taught. These nuances call on future researchers to examine these subgroups of teachers more thoroughly. A limitation of this study was its cross-sectional data which limited the ability to draw inferences between novice teachers and their more experienced peers.

Keywords: *novice teachers, experienced teachers, context-specific self-efficacy, stress*

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Chapter 1: Introduction

The teaching profession is known globally as a high-stress occupation (Johnston et al., 2005a; Markow et al., 2013), ranking as one of the most stressful jobs, negatively affecting physical health, psychological well-being, and job satisfaction (Johnston et al., 2005b). Markedly, stress levels can be exceptionally high for novice teachers with less than 3 years of experience (Harmsen et al., 2018) and attrition is highest among novice teachers with 5 years or less experience (Guha et al., 2017; Ingersoll et al., 2018; Sutcher et al., 2016). Numerous studies indicated that although stress varies among teachers of all experience levels, stress is related to attrition (Harmsen et al., 2018; Hester et al., 2020; Ryan et al., 2017) or intent to leave the profession (Lambert et al., 2019). Stress is one reason teachers leave the profession, referred to as attrition, or migrate between schools, referenced as turnover (Billingsley & Cross, 1992; Cancio et al., 2013; Lambert et al., 2019; Liu & Onwuegbuzie, 2012). Notably, the two most common sources of stress for teachers are workload and student behavior stress (Ainley & Carstens, 2018).

Klassen and Chiu (2011) also found that teachers' stress had a significant inverse relationship to teachers' commitment to the profession, which was true for both practicing and pre-service teachers. Their analysis of teachers with varying levels of experience indicated "occupational commitment is directly influenced by classroom stress and self-efficacy for instructional strategies" (Klassen & Chiu, 2011, p. 124). Furthermore, a 2019 survey of public K-12 teachers in the United States (PDK International, 2019) indicated teacher stress, pressure, and burnout (chronic and prolonged stress) were the second most common reason teachers considered leaving the profession, second only to inadequate pay and benefits. Thus, stress impacts teacher attrition and turnover.

Although attrition and turnover vary among teachers such as math, science, and special educators (Carver-Thomas & Darling-Hammond, 2017; Sutcher et al., 2016), both attrition and turnover were consistently highest among novice teachers (Sutcher et al., 2016). Ingersoll et al. (2018) estimated more than 44% of novice public and private teachers leave the profession in the first 5 years. Other studies estimated 19% to 30% of novice teachers leave the profession in the first 5 years (Guha et al., 2017; Sutcher et al., 2016). Furthermore, high attrition levels continue to plague novice teachers and have done so since the early 1980s (Ingersoll et al., 2018). Notably, the percentage of attrition for novice teachers was even higher in high poverty schools (Ingersoll et al., 2018; Johnson et al., 2005a; Podolsky et al., 2016), where attrition rates climb to 50% or more (Guha et al., 2016; Podolsky et al., 2016).

Attrition among teachers of various experience levels at high poverty schools leads to less experienced teachers at these schools (Johnson et al., 2005a; Podolsky et al., 2016), and it is well documented that teacher inexperience negatively impacts student achievement (Rivkin et al., 2005; Rockoff, 2004; Ronfeldt et al., 2013). For example, attrition and lack of experience among teachers negatively impacted students' achievement, with higher teacher turnover attributing to lower test scores in English language arts and math (Ronfeldt et al., 2013). Conversely, research also illustrated how teacher qualifications and experience improved student learning opportunities, well-being, and academic outcomes (Cardichon et al., 2020).

Teacher attrition and turnover also impacted negatively on school initiatives and disrupted collegiality, collaboration, and institutional knowledge (Carver-Thomas & Darling-Hammond, 2017). Markedly, researchers found teacher turnover can be as detrimental to a school environment and students as teacher attrition (Sutcher et al., 2016), which is significant when one considers teacher attrition and turnover are at 16% nationally (Carver-Thomas &

Darling-Hammond, 2017). Furthermore, the cost of teacher attrition and turnover to districts can be enormous with urban schools spending approximately $20,000 to replace each teacher who leaves the school (Carver-Thomas & Darling-Hammond, 2017). The estimated educational costs amount to $2.2 billion dollars annually in the United States (Haynes, 2014).

It is essential to find ways to stem the attrition and turnover among novice teachers. Stress, as previously indicated, is a precursor to both, and finding factors that mitigate or reduce stress are worth exploring for the purpose of teacher well-being. Studies indicated self-efficacy negatively correlated with stress and may also mediate stress (Klassen & Chiu, 2010; Klassen & Chiu, 2011; Tran, 2015). Self-efficacy is people's judgment of their capabilities to attain certain levels of performance (Bandura, 1989; Woolfolk Hoy & Burke Spero, 2005), persevere in challenging situations (Bandura, 1977; 1997), and initiate coping behaviors (Bandura, 1977). Research indicates teacher self-efficacy negatively correlated with stress and increased with experience (Klassen & Chiu, 2010; 2011). Therefore, if novice teachers' self-efficacy mitigates or correlates negatively with stress, this may be an area in which districts can support novice teachers.

Support for novice teachers could be further refined and targeted at context-specific efficacies. Context-specific efficacies are factors that "both facilitate and impede teaching in a particular teaching context" and are "likely to produce more powerful instruments" (Tschannen-Moran et al., 1998, p. 240) than scales using an overall teacher efficacy composite score. Examples of context-specific factors include self-efficacy in instruction and student engagement. Over the years, various self-efficacy scales were developed (e.g., Emmer & Hickman, 1991; Gibson & Dembo, 1984) and what emerged was an identification of the power of context-specific teacher self-efficacy constructs (Bandura, 1977; Tschannen-Moran et al., 1998) and the

need to identify teacher self-efficacies that best capture specific teacher tasks (Tschannen-Moran et al., 1998). Bandura (1997), a seminal researcher in this field, advocated that self-efficacy scales "should be linked to the various knowledge domains" and not "omnibus measures [that] sacrifice predictive power" (p. 243). Tschannen-Moran and Woolfolk Hoy (2001) developed the Teacher Self-Efficacy Scale (TSES), focusing on various knowledge domains in the specific contexts of classroom management, instruction, and student engagement. Researchers still widely use Tschannen-Moran and Woolfolk Hoy's (2001) scale (e.g., Collie et al., 2012; Herman et al., 2020; von der Embse et al., 2016). Such context-specific self-efficacy constructs may indicate specific areas in which novice teachers need more support and these areas may differ from their more experienced peers. However, only four of the studies (Klassen & Chiu, 2010; Klassen & Chiu, 2011; Tran, 2015; von der Embse et al., 2016) used all three of the context-specific self-efficacy options in the TSES. Furthermore, context-specific self-efficacies for novice teachers were explored in only a few studies (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015).

Despite this need to examine the relationship between self-efficacy and stress for novice teachers, few studies explored these variables (Helms-Lorenz et al., 2012; Helms-Lorenz & Mauna, 2015). Furthermore, no studies located in this literature examined the relationship between novice teachers' self-efficacy and stresses with those of experienced teachers. There was also a gap in the research literature surrounding content area instruction, such as literacy—an area in classroom teachers' instruction scrutinized extensively since No Child Left Behind (NCLB; 2001)—and its potential influence on self-efficacy and stress. The implementation of NCLB (2001) resulted in extensive scrutiny on 'highly qualified' teachers with particular

emphasis placed on teachers of core subjects such as reading and programs initiated by the policy such as Reading First (United States Department of Education, 2009).

Literacy is of particular interest because the first known study (Armor et al., 1976) to query teachers about self-efficacy found powerful results between teacher self-efficacy in literacy instruction and student academic gains. Furthermore, little is known of middle school and early high school teachers in the United States and how these variables impact them. Only two extant studies reviewed in chapter 2 specifically sampled middle school teachers in the United States and these two only queried teachers about their classroom management self-efficacy (Bottiani et al., 2019; Herman et al., 2020).

For these reasons, the questions in this study explored potential differences between these subgroups, novice and experienced teachers. Understanding how self-efficacy and context-specific self-efficacies interrelate with various stresses may be an important variable to consider among novice and experienced teachers. These differences may pinpoint areas of focus for novice middle school and early high school teachers' development and support, a group of teachers underrepresented in the literature, as will be explained in the next section. The purpose of the study was multidimensional for this reason.

Purpose of the Study

This study aimed to better understand the relationship between novice teachers' context-specific self-efficacy and stresses and whether they differ from the self-efficacy and stresses of experienced teachers in middle school and early high school. The majority of prior research in this area focused on teachers of varying experience levels and grade levels and how self-efficacy mitigated stress among them or how self-efficacy and stress negatively correlated with each other (Betoret, 2009; Bottiani et al., 2019; Collie et al., 2012; Doménech-Betoret, 2006; Gilbert

et al., 2014; Gonzalez et al., 2017; Klassen & Chiu, 2010; Klassen & Chiu, 2011; McCormick et al., 2005; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; Tran, 2015; von der Embse et al., 2016; Yu et al., 2015).

Few studies explored a stress and self-efficacy relationship with novice teachers (Helms-Lorenz et al., 2012; Helms-Lorenz & Mauna, 2015). None of the studies compared novice and experienced teachers. Additionally, only two studies looked specifically at middle school teachers in the United States and these two studies only looked at context-specific classroom management self-efficacy (Bottiani et al., 2019; Herman et al., 2020).

Given the lack of research exploring context-specific self-efficacy and stress variables among middle and early high school teachers in the United States, as explained earlier, this study proposed to examine these variables. The study attempted to determine the association between novice teachers and their more experienced peers' self-efficacy and stresses while parceling out various, context-specific self-efficacies and stresses. Parceling out these relationships allowed for an examination of the relationship of self-efficacy from a context specific perspective (Bandura, 1977; Tschannen-Moran et al., 1998) and a variety of stresses teachers experience, both as novice teachers and more experienced teachers. This parceling anticipated an ability to target context-specific support for novice teachers, the most vulnerable to attrition and turnover. The researcher then applied these constructs to a theoretical framework developed by Bandura (1978).

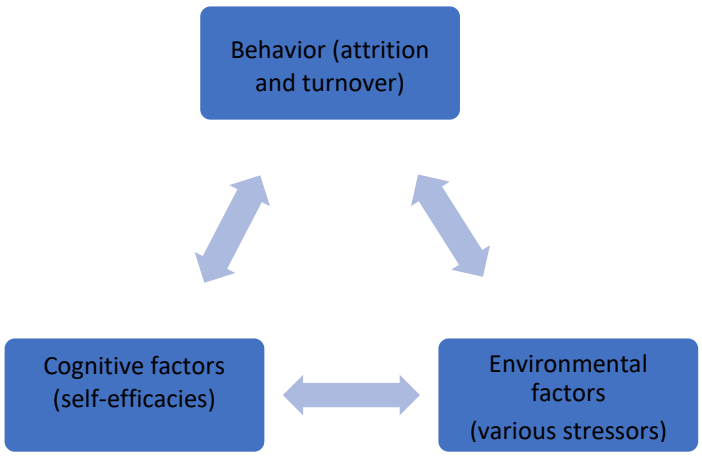
Theoretical Framework

Teacher self-efficacy emerged from social cognitive theory studies, a theory that went beyond the previously accepted behaviorists' theory that behavior was solely a result of one's environment and the person (Bandura, 1978). Bandura's (1978) seminal work determined a

person can exert themselves to impact the environment and their behavior and is still used extensively today in research (e.g., Collie et al., 2012; Doménech-Betoret, 2006; Gilbert et al., 2013; Herman et al., 2020; Klassen & Chiu, 2010; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; Tran, 2015; von der Embse et al., 2016). This concept was considered a positive approach to psychology (Bandura, 2008; Luthans et al., 2004). Research surrounding these concepts led Bandura (1978) to develop the construct of triadic reciprocal determinism. Bandura's concept proposed that not only environment influenced behavior, but the behavior also influenced personal cognitive factors, such as self-efficacy. Thus, this model included three elements: (a) behavior, (b) cognitive factors, and (c) environmental factors. These elements were reciprocal, meaning they could influence each other in either direction, as illustrated in Figure 1. This triadic reciprocal determinism allowed for a more complex way to examine people's experiences and behaviors and provided a template in which to frame this study's factors. Figure 1 presents Bandura's model with the three factors in this study to portray their interrelatedness.

Figure 1

Bandura's Triadic Reciprocal Determinism Model with Current Study's Factors



Note. Adapted from 1997 Self-Efficacy: The Exercise of Control by A. Bandura, 1997 (https://sites.google.com/site/erfduyirf4387rfure4wr8943/pdf-download-self-efficacy-the-exercise-of-control-ebook-epub-kindle-by-albert-bandura). Copyright 1997 by W. H. Freeman and Company.

The researchers analyzed the impact of teacher self-efficacy, a cognitive factor in the model, and its relationship to teacher stress, an environmental factor, which can be associated with behavior including, but not limited to, attrition and turnover (Harmsen et al., 2018; Hester et al., 2020, Lambert et al., 2019; Ryan et al., 2017). Although these factors are not exhaustive, they are most salient to this study. In the cognitive factors of this triadic model, Bandura (1997) explained how self-efficacy influences individuals:

> Such beliefs [as self-efficacy] influence the courses of action people choose to pursue, how much effort they put forth in given endeavors, how long they will persevere in the face of obstacles and failures, their resilience to adversity, whether their thought patterns are self-hindering or self-aiding, how much stress and depression they experience in coping with taxing environmental demands, and the level of accomplishments they realize. (p. 3)

These efficacious beliefs impacted behavior and determined whether a person initiated coping strategies to deal with challenging situations and whether they persevered (Bandura, 1977). Thus, self-efficacy is a salient personal factor to investigate for novice teachers in particular who may be the most influenced by the factors often experienced by teachers, including stress (Harmsen et al., 2018), a precursor to teacher attrition (Harmsen et al., 2018;

Hester et al., 2020, Lambert et al., 2019; Ryan et al., 2017) and teacher turnover (Billingsley & Cross, 1992; Cancio et al., 2013; Lambert et al., 2019; Liu & Onwuegbuzie, 2012).

This study focused on the cognitive factors used in the Teaching and Learning International Survey (TALIS, 2018) of various self-efficacies including a composite score which averaged all the survey's self-efficacy constructs into one variable. Additionally, TALIS used context-specific self-efficacies that examined teachers' beliefs in their ability to provide classroom management, instruction, and student engagement. These self-efficacies, composite and context-specific, were examined in relation to the environmental factors that teachers experienced of different stress types. These varied stress types included teachers' workplace well-being and stress and teachers' workload stress. Although teacher attrition was the model's anticipated behavior, attrition was not a focus of this study as prior research suggested that self-efficacy and stress can lead to attrition or intent to leave the profession (Harmsen et al., 2018; Hester et al., 2020; Lambert et al., 2019; Ryan et al., 2017). Therefore, this study used two out of the three components of Bandura's (1997) triadic reciprocal determinism model and these variables derived from the TALIS (2018).

Measurement Tool

This study used secondary data from the TALIS (2018) questionnaire for teachers produced by the Organization for Economic Cooperation and Development (OECD; 2019). The international survey offers teachers and administrators information and comparisons in and across 48 countries/economies. The study focused on teachers' responses in the United States from the "core" (Ainley & Carstens, 2018, p. 75) or main study conducted among seventh, eighth, and ninth-grade teachers. Approximately 2560 teachers in the United States responded, indicating a 68% response rate among the selected public and private schools. The TALIS (2018)

was the first year OECD queried teachers about stress, explained Ainley and Carstens (2018). The TALIS governing board included stress as a construct following deliberations by the TALIS governing board's examination of the 2013 TALIS findings. The board determined workplace stress would add to the understanding of teacher job satisfaction. The governing board determined workload and student behavior stress were the two most identified sources of stress for teachers. The governing board also included workplace well-being and stress as a stress construct in the 2018 questionnaire. Notably, the TALIS 2018 had only a binary choice for gender, male and female. More detailed descriptions of the validity and reliability of TALIS 2018 and further descriptions of the constructs are included in Chapter 2.

Definitions of Terms

Multiple terms and phrases are used repeatedly throughout the study. Therefore, a definition for each of these terms and phrases is provided here to clarify the meaning. The definitions include:

Self-efficacy is a person's judgment of their capabilities to attain certain levels of performance (Bandura, 1989; Woolfolk Hoy & Burke Spero, 2005), persevere in challenging situations (Bandura, 1977; 1997), and initiate coping behaviors (Bandura, 1977).

Novice teacher refers to a teacher who indicated being in their first year (zero year) through teaching in their fourth year, thereby reaching 5 years of experience at the end of the school year. This timeframe was noted as a significant time for attrition and turnover for teachers entering the profession (Guha et al., 2017; Sutcher et al., 2016).

Experienced teacher refers to a teacher who has taught for 5 years or more. Less than 5 years' experience was a significant time for attrition and turnover for teachers entering the

profession; therefore, experienced teachers were denoted as having 5 or more years' experience (Guha et al., 2017; Sutcher et al., 2016).

Composite scores for stress and self-efficacy were "computed by taking a simple average of the corresponding standardised scores of the subscales" (Stancel-Piątak et al., 2019, p. 212-213).

Context-specific self-efficacy is self-efficacy that "both facilitate and impede teaching in a particular teaching context" (Tschannen-Moran et al., 1998, p. 240).

Attrition refers to teachers who leave the profession (Ingersoll, 2002).

Teacher turnover refers to teachers who move or migrate between schools (Ingersoll, 2002).

Literacy refers to teachers instructing in reading, writing, and literature (TALIS, 2018). This variety of terms for reading allowed TALIS to capture the concept of reading across international borders (Ainley & Carstens, 2018) and is best captured with the term literacy.

Middle school in the United States refers to grades seven and eight, and sometimes sixth grade. The TALIS (2018) queried teachers teaching students in seventh, eighth, and ninth grades.

Early high school in the United States refers to students who are enrolled in ninth grade or Freshman year. The TALIS (2018) queried teachers of students seventh, eighth, and ninth grade.

Research Questions

The overarching goal for this research was to better understand novice teachers' self-efficacies and stresses and their relation to experienced teachers in middle school and early high school. Due to the attrition and turnover rates among novice teachers, this subgroup in the TALIS sample of surveyed teachers in the United States will be of particular interest. The

majority of variables, both self-efficacy and stress-related, are scale variables. The following are the research questions for this study.

1. Do self-efficacies (composite, classroom management, instruction, and student engagement) differ for novice versus experienced teachers?

   H_0: There is no difference in efficacies for novice versus experienced teachers.

2. Does self-reported stress (workplace well-being and stress and workload stress) differ for novice teachers versus experienced teachers?

   H_0: There is no difference in the self-reported stress for novice teachers versus experienced teachers.

3. What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for novice teachers?

   H_0: There is no relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for novice teachers.

   3a. What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for experienced teachers?

   H_0: There is no relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for experienced teachers.

   3b. Are the correlation coefficients different between experience levels?

   H_0: The correlation coefficients are not different between experience levels.

4. Is there a relationship between years of experience (novice and experienced) and teachers' efficacies?

   H_0: There is no relationship between years of experience (novice and experienced) and teachers' efficacies.

   4a. Are the correlation coefficients different between novice and experienced? teachers' self-efficacies?

   H_0: There is no difference between correlation coefficients of novice and experienced teachers' self-efficacies.

5. Is there a difference between male and female novice teachers' self-efficacies (composite, classroom management, instruction, student engagement)?

   H_0: There is no difference between the male and female novice teachers' self-efficacies (composite, classroom management, instruction, student engagement).

6. Is there a difference between male and female novice teachers' stress (workplace well-being and stress and workload stress)?

   H_0: There is no difference between the male and female novice teachers' stress (workplace well-being and stress and workload stress).

7. Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and stress and workload stress) for novice teachers who teach a literacy course when compared to novice teachers who do not teach a literacy course?

   H_0: There is no difference between self-efficacy and stress for novice teachers who teach a literacy course and those that do not.

   7a. Is there a difference between self-efficacies (composite, classroom management,

instruction, and student engagement) and stress (workplace well-being and stress and workload stress) for experienced teachers who teach a literacy course compared to experienced teachers who do not teach a literacy course?

H_0: There is no difference between self-efficacy and stress for experienced teachers who teach a literacy course and those that do not.

Conclusion

Teacher attrition and turnover are serious issues facing the teaching profession, most specifically among novice teachers (Ingersoll et al., 2018). One factor that impacts teacher attrition and turnover is stress (Billingsley & Cross, 1992; Cancio et al., 2013; Lambert et al., 2019; Liu & Onwuegbuzie, 2012). Finding factors that can help mitigate stress or offset it, thereby potentially reducing attrition and turnover, is a worthwhile endeavor. Self-efficacy appears to be one factor that can reduce or correlate negatively with stress (e.g., Klassen & Chiu, 2010; von der Embse et al., 2016). The TALIS 2018 dataset was used to examine these variables. The literature informed the selection of these variables, as found in Chapter 2.

Chapter 2 explores the literature surrounding teacher self-efficacy and whether it mitigates or offsets stress for novice teachers and more experienced teachers. Chapter 2 develops more fully the theoretical framework used for this study. Then, Chapter 3 examines the TALIS scale, its validity and reliability, and the constructs, scales, and variables used in this study. Moreover, Chapter 3 defines the specific statistical analyses used in each question and the procedure for interpretation of each analyses. Chapter 4 includes a description of the sample analyzed along with the analyses of each research question and the acceptance or rejection of the null hypothesis. Finally, Chapter 5 explains the significance of these results, identifies limitations of this study, and suggests next steps in future research surrounding this topic.

Chapter 2: Literature Review

The teaching profession is a high-stress occupation (Johnston et al., 2005a; Markow et al., 2013), especially among novice teachers who experience exceptionally high stress levels (Harmsen et al., 2018). Novice teachers also experience higher attrition and turnover than their peers (Sutcher et al., 2016), specifically in the first 5 years of entering the field (Guha et al., 2017; Sutcher et al., 2016). For this reason, teachers in their first 5 years of teaching will be the metric for novice teachers in this study. Consequently, finding factors that help novice teachers mitigate stress or factors that correlate negatively with teachers' stress is a worthwhile endeavor for teacher well-being. Self-efficacy is one factor that has a mitigating effect or negative correlation to teacher stress (Betoret, 2009; Collie et al., 2012; Doménech Betoret, 2006; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; Tran, 2015; von der Embse et al., 2016). Although multiple studies indicated there was a negative correlation between teacher self-efficacy and stress (e.g., Doménech Betoret, 2006; Gonzalez et al., 2017; McCormick et al., 2005), little is known about the relationship between self-efficacy and stress of novice teachers (Helms-Lorenz & Maulana, 2015; Helms-Lorenz et al., 2012) and experienced teachers in middle and early high school, the teacher sample targeted in the Teaching and Learning International Survey (TALIS). The analysis of self-efficacy and stress concerning teacher attrition aligns with the social cognitive theory which framed this study. The literature review and the themes that emerged from the literature follow a description of the theoretical framework.

Theoretical Framework

The theoretical framework used in this study was social cognitive theory, in which Bandura (1977, 1978, 2006) is a prominent influence. The social cognitive theory promotes the

idea of a person being an interactive agent wherein the person is not simply impacted by their environment and cognitions but also contribute to these components (Bandura, 1989). One model developed to represent this social cognitive theory was the theory of triadic reciprocal determinism, which analyzes the relationship between three constructs: cognitive factors, environmental factors, and behavior (Bandura, 1978). This notion went beyond the dominant behaviorists' theory (Bandura, 1977) that focused only on one's response or behavior stemming from the environment (Bandura, 1977; Watson, 1994). In contrast to behaviorism, Bandura's (1978) triadic reciprocal determinism added a third component, cognitive or personal factors. These three factors, cognitive or personal factors, environmental factors, and behavior, are reciprocal, meaning they can influence one another in either direction (see Chapter 1, Figure 1). The psychology field eventually labeled these concepts as a positive approach to psychology.

Triadic reciprocal determinism was the idea that individuals' cognitive or personal factors could influence people's behavior and environment (Bandura, 1978; Pajares, 2002). The study described in this dissertation explored two of these factors, cognitive and environmental. The cognitive, personal factor in this study was self-efficacy, another concept developed in Bandura's (1978) social cognitive theory. Self-efficacy is a person's judgment of their capabilities to attain certain levels of performance (Bandura, 1989; Woolfolk Hoy & Burke Spero, 2005). Self-efficacy can influence people's actions, determine the amount of effort they put into an endeavor and their willingness to persevere in challenging situations. Additionally, self-efficacy influences self-hindering or self-aiding thought patterns and the amount of stress and depression people experience in overtaxing situations, and the sense of accomplishment they derive from such conditions. Therefore, self-efficacy was a valid cognitive factor to consider in triadic reciprocal determinism. This study applied these factors, various self-efficacies (cognitive

factor) and various stressors (environmental factor), to Bandura's model. These two factors, stress and self-efficacy, were the primary factors under investigation in this study as self-efficacy, as explained previously, can have a negative association with stress. Therefore, definitions for self-efficacy and stress—the two salient constructs in the triadic reciprocal determinism—will be defined more thoroughly.

Self-Efficacy

In the field of education**,** the concept of teacher efficacy emerged from the inclusion of two efficacy questions in the research and development (RAND) organization's 1976 questionnaire for teachers (Armor et al., 1976). Armor et al.'s (1976) study resulted in robust findings between teachers' self-efficacious feelings toward the teaching of reading and its association with observed gains in reading performance for sixth-grade inner-city Black students in Los Angeles, California. Since Amor et al.'s (1976) study, extensive self-efficacy studies in educational settings repeatedly found teacher self-efficacy impacted instructors' actions (Bottiani et al., 2019; Tschannen-Moran et al., 1998), such as asking more open-ended questions (Bottiani et al., 2019). Research also found self-efficacy increased teachers' interactive instruction in their classrooms when self-efficacy was high (Tschannen-Moran et al., 1998).

Researchers found teacher self-efficacy, a teachers' sense of their competence, was not an objective measure of their capabilities (Tschannen-Moran et al., 1998), but a multidimensional construct (Skaalvik & Skaalvik, 2007), coinciding with Bandura's (1997) call for the use of self-efficacy in context or situation-specific ways. Tschannen-Moran and Woolfolk Hoy (2001) found three task-specific constructs to be present in teachers' self-efficacy beliefs in their teacher self-efficacy scale: (a) classroom management, (b) instructional practices, and (c) student engagement. Numerous researchers used one (e.g., classroom management; Bottiani et al., 2019;

Herman et al., 2020), two (e.g., classroom management and instruction; Betoret, 2009; Doménech-Betoret, 2006), or all three constructs (Collie et al., 2012; Klassen & Chiu, 2010; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; Tran, 2015; von der Embse et al., 2016) in the literature. The TALIS (2018) also used these same three constructs for their self-efficacy subscales. Of these studies examining context-specific self-efficacies, only Bottiani et al. (2019) and Herman et al. (2020) used middle school teachers in the United States as their sample. Furthermore, these two research teams only examined self-efficacy in classroom management. These context-specific self-efficacy constructs may vary among individual teachers and situated events because teachers evaluate their competencies based on the demands required to master the task or situation (Bandura, 1997; Goddard, 2001).

Besides the influence of context that may yield different scores for self-efficacy, environmental effects and hurdles can also impact self-efficacy (Bandura, 2006). Bandura (1997) explained people's belief in their effectiveness impacts their desire to cope with difficult situations, affects the amount of effort they put into their work, and influences how long they will endeavor to persevere. Zee and Koomen (2016) found these self-efficacy concepts in their literature review of 165 articles spanning 40 years of teacher self-efficacy research. They found only three studies that examined teacher stress and self-efficacy in the teachers' well-being category (Gilbert et al., 2013; Doménech-Betoret, 2006; Robertson & Dunsmuir, 2013). Therefore, researchers have not extensively researched self-efficacy and stress variables. Stress was the second variable of interest and corresponded to the environmental factor of interest in the triadic reciprocal determinism model.

Teacher Stress

In the field of education, one definition of stress is "a negative emotional experience being triggered by the teachers' perception their work situation constituted a threat to their self-esteem or well-being" (Kyriacou, 2001, p. 28). Although occasional stress is normal and expected, constant or excessive stress is not (Nelson, 2015). Research on teacher stress began in the 1960s, stemming from psychologist Selye's (1956) early work. However, specific references to teacher stress did not appear in the literature until the 1970s by Kyriacou and Sutcliffe (1977) who believed they were the first to use the phrase 'teacher stress' as a research paper title. Rapid growth in this area of research soon followed.

The definitions of stress in this research explosion varied. Over the years, teacher stress research focused on environmental characteristics, perceptions, judgments of a given situation, or a stress response individuals had to a given situation (Kyriacou & Sutcliffe, 1977). Some researchers defined teacher stress as strain teachers felt due to pressure and demands of their job. Other definitions included a disparity between the teacher's expectations and the teacher's ability to cope with the expectations, according to Kyriacou (2001). Researchers used these definitions and various constructs surrounding teacher stress alongside the previously described teacher self-efficacy constructs. These constructs and definitions guided the literature search.

The literature search focused on two factors of the triadic reciprocal determinism model, cognitive and environmental. As presented in this study, the cognitive factors included various teacher context-specific self-efficacies of classroom management, instruction, and student engagement. Meanwhile, as presented in this study, the environmental factors explored different stress types such as teachers' workplace well-being and stress and workload stress. Although teacher attrition was the triadic reciprocal determinism model's anticipated behavior, it was not a

construct under scrutiny in this study. Therefore, two out of the three components of Bandura's (1997) triadic reciprocal determinism model, as applied to this study, included the cognitive factor of self-efficacy and the environmental aspect of various stress types. Thus, self-efficacy and stress were key terms that guided the literature search.

Literature Search of Self-Efficacy and Stress

The literature search's purpose was to better understand teacher self-efficacy (TSE) and teacher stress among seventh-, eighth-, and ninth-grade teachers in the United States. Therefore, the search included terms for "middle school" or "junior high or 6th or 7th or 8th grade", "high school or secondary education," and "teachers or educators" to be in line with the middle school and early high school population under study in TALIS (2018). A total of 45 articles remained of the original 78 articles after removing duplicates. A second search applied only the search terms "high school or secondary education", although the third search used only "middle school" or "junior high or 6th or 7th or 8th grade", keeping all other search terms constant. This second search yielded 432 articles, with 217 remaining after removing duplicates. The third search netted 135 articles, with 81 remaining after eliminating duplicates. Lastly, a search conducted with the terms "self-efficacy", "beginning teachers or novice teachers or first-year teachers", "stress", and "not elementary school or primary school or grade school" retrieved 143 articles. After removing duplicates, a total of 72 studies remained. The search engine used was Discover, a meta-search tool hosted by EBSCO, using the filters of peer-reviewed empirical studies written in English between 2000 and 2020. Table 1 contains an overview of these searches.

Table 1

Literature Search Overview

Search	Search terms	Initial number	Number after duplicates removed	Repeats from previous searches	Remaining original, relevant articles
1	stress and self-efficacy, middle school or junior high or 6th or 7th or 8th grade, and high school or secondary education, and teachers or educators	78	45	33	12
2	stress and self-efficacy, high school or secondary education, and teachers or educators	432	217	10	7
3	stress and self-efficacy, middle school or junior high or 6th or 7th or 8th grade, and teachers or educators	135	81	8	0
4	stress and self-efficacy, beginning teachers or novice teachers or first-year teachers, stress, not elementary school or primary school or grade school	143	72	4	1
5	ancestral, hand-search	2			1
Totals		790	415	22	21

Of the 415 total articles retrieved in the four searchers, 20 pieces of literature remained after reading the abstract. That is, studies only referencing teacher burnout (no stress) or job satisfaction (not stress) or correlating the findings with health issues (e.g., alcoholism)—which is beyond this study's scope—were not included. Another criteria for inclusion was the research must have analyzed some relationship between self-efficacy and stress, not just include these two concepts as separate, unassociated variables. Adhering to a strict definition of stress was also part of the analysis for inclusion. For instance, although chronic stress can lead to burnout (Maslach, 2017), the phenomenon of burnout is more complex and was not under study. However, the inclusion of studies occurred if self-efficacy was a mediating factor between stress and burnout.

Also, coping, which is one's "purposeful actions to handle life situations" (Rice & Liu, 2016, p. 325), was not included as this related to how people respond to stress. Hence, some studies' elimination occurred due to their analysis of factors outside the interest of this query (e.g., student self-efficacy, elementary teachers, burnout, and coping) or the studies were written in a language other than English. Furthermore, one article was retrieved through an ancestral hand-search. The literature search resulted in a total of 21 viable studies.

Due to nearly half of the papers using the structured equation modeling statistical method (Betoret, 2009; Bottiani et al., 2019; Collie et al., 2012; Klassen & Chiu, 2010; Klassen & Chui, 2011; McCormick et al., 2005; Park et al., 2016; Putwain & von der Embse, 2019; von der Embse et al., 2016; Yu et al., 2015), there was not always a designated independent and dependent variable. For this reason, this review reported on any association or mediation found between TSE and stress. The use of self-efficacy and stress had four themes based on the various perspectives that surfaced from the literature. These four themes, based on the perspective from which they viewed teacher self-efficacy and stress, included: (a) a classroom perspective, (b) a school-wide perspective, (c) an external factors perspective, and (d) personal and demographic perspectives. These studies used various self-efficacy and stress constructs. An explanation of these self-efficacy and stress constructs ensues, followed by the literature categorized in the previously noted four themes.

Types of Self-efficacy Examined

The studies applied several different self-efficacy variables, either as one composite score or as context-specific constructs. Multiple studies (Collie et al., 2012; Doménech-Betoret, 2006; Gilbert et al., 2014; Gonzalez et al., 2017; Klassen et al., 2009; Park et al., 2016; Robertson & Dunsmuir, 2013; Troesch & Bauer, 2017) employed a composite teacher self-efficacy score to

determine teachers' overall feelings of efficacy. Of these seven studies using an overall composite score, six (Collie et al., 2012; Gilbert et al., 2014; Klassen et al., 2009; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013) used the Teachers' Self-Efficacy Scale (TSES), developed by Tschannen-Moran and Woolfolk Hoy (2001). The TSES notably has subscales to determine three context-specific self-efficacy scores (i.e., classroom management, instruction, and student engagement) but went unused in these studies.

Although six studies (Collie et al., 2012; Gilbert et al., 2014; Gonzalez et al., 2017; Klassen et al., 2017; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013) made use of the TSES (Tschannen-Moran & Woolfolk Hoy, 2001) as a composite score, four articles (Klassen & Chiu, 2010; Klassen & Chiu, 2011; Tran, 2015; von der Embse et al., 2016) examined the context-specific self-efficacy scores of classroom management, instruction, and student engagement derived from the TSES (Tschannen-Moran & Woolfolk Hoy, 2001). Meanwhile, two studies used other classroom management and instruction self-efficacy scales (Betoret, 2009; Doménech-Betoret, 2006). Bottiani et al. (2019) and Herman et al. (2020) used one context-specific self-efficacy scale, examining teachers' self-efficacy in classroom management for the only middle school teacher examination in the United States. The various self-efficacy constructs included several organizational categories (see Table 2).

Table 2

Self-Efficacy Constructs Used in Studies by Category

Classroom management, instruction, and student engagement	Classroom management and instruction	Classroom management	Composite TSE score	General self-efficacy or other teacher self-efficacy scores
Klassen and Chiu (2010)[a]	Betoret (2009)	Bottiani et al. (2019)	Collie et al. (2012)[a]	Helms-Lorenz et al. (2012) [b]
Klassen and Chiu (2011) [a]	Doménech-Betoret (2006)	Herman et al. (2020) [a]	Gilbert et al. (2014) [a]	Helms-Lorenz and Maulana (2015)[b]

Classroom management, instruction, and student engagement	Classroom management and instruction	Classroom management	Composite TSE score	General self-efficacy or other teacher self-efficacy scores
Tran, 2015 [a]			Gonzalez et al. (2017)	Love et al. (2020)
von der Embse et al. (2016) [a]			Klassen et al. (2009) [a]	McCormick et al. (2005)
			Park et al. (2016) [a]	Troesch and Bauer (2017)
			Putwain and von der Embse (2019) [a]	Yu et al. (2015)
			Robertson and Dunsmuir (2013) [a]	

[a] Teacher Self-Efficacy Scale (TSES) developed by Tschannen-Moran and Woolfolk Hoy (2001) and includes classroom management, instruction, and student engagement constructs. [b] Study's sample was novice teachers.

Other studies that used context-specific self-efficacy scores as constructs were Helms-Lorenz and Maulana's (2015) and Helms-Lorenz et al.'s (2012) research. The researchers in these studies derived a school self-efficacy score and classroom self-efficacy score for their novice teachers' sample. The school self-efficacy score prompted teachers to rate themselves on such five-point Likert queries as, "To what extent are you actively involved in the decision-making process in your school?" (Helms-Lorenz & Maulana, 2015, p. 8). This query was similar to a school climate query. In contrast, they queried teachers on classroom self-efficacy questions such as, "Are you capable to resolve order disturbances in the classroom without raising your voice?" (Helms-Lorenz et al., 2012, p. 195). These questions were in-line with classroom management self-efficacy constructs developed by Tschannen-Moran and Woolfolk Hoy (2001).

Two studies employed context-specific self-efficacy constructs explicitly related to the type of stress they examined in their research. McCormick et al. (2005) conducted one such examination. The researchers examined 'new teaching' and technology self-efficacy scale variables concerning stress from new curricula and the related technology as part of the new curriculum. Love et al. (2020) also researched context-specific self-efficacy scale scores related to the type of stress. This research team used the Autism Self-Efficacy Scale for Teachers (ASSET) developed by Ruble et al. (2013). This self-efficacy scale determined teachers' "efficacy to carry out several different assessment, intervention, and classroom-based practices relevant to the needs of students with [Autism Spectrum Disorder] ASD" (Love et al., 2020, p. 50). Love et al. then examined this context-specific self-efficacy against teachers' stress working with students with ASD.

In contrast to teacher self-efficacy scores examining both context-specific and overall composite scores, Yu et al.'s (2015) and Troesch and Bauer's (2017) studies used general life self-efficacy scores. Yu et al. queried teachers on their ability to cope with various life experiences outside of teaching, as did Troesch and Bauer. However, Troesch and Bauer also queried teachers on handling difficulties in teaching situations to determine a teacher self-efficacy score. Table 3 includes the various self-efficacy scales and constructs analyzed in each study. Overall, classroom management self-efficacy was the most used context-specific construct in eight studies (Betoret, 2009; Bottiani et al., 2019; Doménech-Betoret, 2006; Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Tran, 2015; von der Embse et al., 2016), and a composite self-efficacy score was the second most common in seven studies (Collie et al., 2012; Gilbert et al., 2014; Gonzalez et al., 2017; Klassen et al., 2009; Park et al., 2016). However, none of these studies analyzed novice teachers' context-specific self-efficacies. Thus,

such nuances were left unexamined. Table 3 displays the variety of self-efficacy constructs researchers used.

Table 3

Self-Efficacy Constructs and Scales Used in Studies

Authors	Self-efficacy scale used	Teacher self-efficacy construct(s) examined in study unless noted otherwise
Betoret (2009)	Ten item instructional scale (Schwarzer, Schmitz and Daytne, n.d.); four-item scale for classroom management (Betoret, 2006)	Classroom management and instruction
Bottiani et al. (2019)	Efficacy scale (Hoy & Woolfolk, 1993)	Classroom management
Collie et al. (2012)	TSES[a]	Composite score
Doménech-Betoret (2006)	Seven item scale author developed	Classroom management and instruction
Gilbert et al. (2014)	TSES[a]	Composite score
Gonzalez et al. (2017)	The High-Stakes Testing and Self-Efficacy on Teacher Stress Survey (Christian, 2010)	Composite score
Helms-Lorenz et al. (2012)	Dutch translation of the Classroom and School Context teacher self-efficacy questionnaire (Friedman & Kass, 2002)	School and classroom
Helms-Lorenz and Maulana (2012)	Dutch translation of the Classroom and School Context teacher self-efficacy questionnaire (Friedman & Kass, 2002)	School and classroom
Herman et al. (2020)	TSES[a]	Classroom management
Klassen and Chiu (2010)	TSES[a]	Classroom management, instruction, and student engagement
Klassen and Chiu (2011)	TSES[a]	Classroom management, instruction, and student engagement
Klassen et al. (2009)	TSES[a]	Composite score
Love et al. (2020)	ASSET (Ruble et al., 2013)	"Measure of teachers' beliefs about their ability to implement appropriate teaching strategies when working with students with ASD" (Love et al., 2020, p. 50)

Authors	Self-efficacy scale used	Teacher self-efficacy construct(s) examined in study unless noted otherwise
McCormick et al. (2005)	Derived self-efficacy questionnaire from earlier focus group study results (Ayres et al., 2003) and factor analysis confirmation	New teaching self-efficacy and technology self-efficacy
Park et al. (2016)	TSES[a]	Composite score
Putwain and von der Embse (2019)	TSES[a]	Composite score
Robertson and Dunsmuir (2013)	TSES[a]	Composite score
Tran, 2015	TSES[a]	Classroom management, instruction, and student engagement
Troesch and Bauer (2017)	General self-efficacy scale (Schwarzer & Jerusalem, 1999) and the teacher self-efficacy scale (Schwarzer and Schmitz (1999)	General self-efficacy and teacher self-efficacy
von der Embse et al. (2016)	TSES[a]	Classroom management, instruction, and student engagement
Yu et al. (2015)	General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995)	General self-efficacy, not teacher-specific

[a]The Teacher Self-Efficacy Scale (TSES) developed by Tschannen-Moran and Woolfolk Hoy (2001) includes classroom management, instruction, and student engagement constructs

As shown in Table 3, researchers used 10 different self-efficacy scales. The variety and groupings of efficacies spanned more than six combinations of composite and context-specific self-efficacies. Notably, the most frequently used self-efficacy scale was the TSES developed by Tschannen-Moran and Woolfolk Hoy (2001), a scale with self-efficacy constructs that mirror those used in TALIS (2018). Additionally, only four of the studies (Klassen & Chiu, 2010; 2011; Tran, 2015; von der Embse et al., 2016) used all three context-specific subscales of classroom management, instruction, and student engagements in their analysis. Thus, researchers minimally examined these self-efficacy nuances in the literature. Furthermore, this array of self-efficacy

constructs made comparison between studies difficult and inappropriate at times. This array of constructs was even more evident in the multiple stress variables and constructs.

Types of Stress Variables Examined

The stress variables considered in the literature mirrored, in some instances, the variety of self-efficacy variables. For example, three studies applied an overall stress composite score encapsulating overall job-related stress (Bottiani et al., 2019; Gonzalez et al., 2017; von der Embse et al., 2016), and three derived an overall job stress variable from a one-item response (Herman et al., 2020; Klassen & Chiu, 2010, 2011; Klassen et al., 2009). These single-item stress queries prompted teachers to respond to such questions as, "I find teaching to be very stressful" (Klassen et al., 2009, p. 394). Notably, two studies employed a general life stress score in their research (Park et al., 2016; Yu et al., 2015), not stress specific to teaching.

Meanwhile, several studies used numerous stress scales. For instance, two of the studies that used overall stress scores (Klassen & Chiu, 2010; Klassen et al., 2009) also queried teachers' workload and student behavior stress. Likewise, Collie et al. (2012) and Tran (2015) queried teachers about workload and student behavior stress. Klassen and Chiu's (2011) study also used an overall stress score and student behavior stress. Other studies scrutinized stress in stress-specific contexts such as instruction and curriculum stress (Putwain & von der Embse, 2019), student-specific stress (Love et al., 2020), and test stress (von der Embse et al., 2016). Furthermore, multiple researchers used multifaceted stress constructs (Betoret, 2009; Doménech-Betoret, 2006; Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2012; McCormick et al., 2005; Roberston & Dunsmuir, 2013; Troesch & Bauer, 2017).

These multifaceted components of stress ranged from such factors as student misbehavior, time pressures, working conditions, and poor staff relations (Robertson &

Dunsmuir, 2013) to student, school, external to the school, personal, and curriculum stressors (e.g., McCormick et al., 2005). Notably, Troesch and Bauer (2017) derived one composite score from dissatisfaction with work, excessive demands, and feelings of being monitored. However, dissatisfaction with work seemed to be more in line with job satisfaction than stress. The researchers also mentioned how the 'feeling of being monitored' had a low Cronbach's alpha (0.44), which led them to use a composite score instead of using the three separate stress constructs. Also, Betoret (2009) added student diversity at the class level to the questions in the stress scale due to the "immigration phenomenon" (p. 53) in his country, Spain.

Overall, the analysis of teachers' student behavior stress (Betoret, 2006; Collie et al., 2012; Doménech-Betoret, 2006; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Klassen et al., 2009; McCormick et al., 2005; Robertson & Dunsmuir, 2013) and workload stress (Collie et al., 2012; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015) were the most frequently referenced context-specific stress constructs found in the literature. Like the self-efficacy constructs, these stress variables were minimally analyzed concerning novice teachers (Helms-Lorenz & Maulana, 2015; Helms-Lorenz et al., 2012), nor did any of the studies examine teacher well-being and stress, a TALIS (2018) construct. Table 4 contains the multifaceted stress constructs used in the research. Besides the previously noted most frequently referenced stress constructs, six studies used overall job-related stress (Bottiani et al., 2019; Gonzalez et al., 2017; Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Klassen et al., 2009). Markedly, several of the overall job-related stress studies derived this construct of stress from one item in the teachers' questionnaire (Klassen & Chiu, 2010; Klassen & Chiu, 2011, Klassen et al., 2009). Additionally, the workplace well-being and stress construct used in TALIS (2018) was unique and not directly replicated in other studies.

Table 4

Stress Scales and Constructs Used in Studies

Authors	Stress scale used	Stress construct(s) examined in study
Betoret (2009)	Stressor multilevel context scale, 31 items (revised from Doménech-Betoret, 2006 scale)	Classroom level: students' misbehavior-demotivation, student diversity; School level: lack of shared decision-making, workload; Administration level: ambiguity of demands; Parents level: insufficient involvement
Bottiani et al. (2019)	Five items from the Exposure to Job Stress measure (Hurrell & McLaney, 1988)	General, overall job-related stress
Collie et al. (2012)	Nine items from the Teacher Stress Inventory (Boyle et al., 1995)	Student behavior and discipline, and workload stress
Doménech-Betoret (2006)	Stressor multilevel context scale, 34 items (based on Kelchtermans', 1999; Lens & Neves de Jesus', 1999; Woods', 1999 work)	State/district framework context (educational policy, workload/lack of rewards), school context (guidelines from school authorities, relationships with other teachers), classroom context (classroom learning environment, student interactions), personal Context (lack of teaching strategies), and parental context (family relationships)
Gilbert et al. (2014)	"Eight items from focus group feedback about sources of teachers' stress and Boyle, Borg, Falzon, and Baglioni's (1995) Teacher Stress Inventory" (Gilbert et al., 2014, p. 884)	Classroom stress
Gonzalez et al. (2017)	The High-Stakes Testing and Self-Efficacy on Teacher Stress Survey (Christian, 2010)	Overall, job-related stress
Helms-Lorenz et al. (2012)	Used 19 of 30 subscales of Monitor at Work (Van Veldhoven et al., 2002) to generate six dimensions, four of which were stress causes	Stress causes: high psychological job demands, lack of learning opportunities, lack of regulating possibilities, poor social-organizational job aspects
Helms-Lorenz and Maulana (2015)	Used four subscales of the Monitor at Work (Van Veldhoven et al., 2002) questionnaire	Stress causes: high psychological job demands, learning opportunities, regulating possibilities, social-organizational job aspects
Herman et al. (2020)	Single-item rating of teacher stress	Overall, job-related stress
Klassen and Chiu (2010)	Overall stress with a single item; six items from Teacher Stress Inventory (Boyle et al., 1995) plus a class size question	Overall, job-related stress (one item) and workload and classroom stress from student behavior (seven items)

Authors	Stress scale used	Stress construct(s) examined in study
Klassen and Chiu (2011)	Overall stress with a single item; four items from Teacher Stress Inventory (Boyle et al., 1995) measuring classroom stress	Overall, job-related stress (one item) and student behavior stress
Klassen et al. (2009)	Single-item rating of teacher stress, and two factors derived from seven items from the Teacher Stress Inventory (Boyle et al., 1995)	Overall, one-item job-related stress score and workload stress and student behavior stress scores
Love et al. (2020)	Part B of the Index of Teaching Stress (ITS; Abdin et al., 2004) "measured teacher stress when working with a particular student" (p. 51) and derived from four subscales, described in the next column	Self-doubt/needs support, loss of satisfaction from teaching, disrupts the teaching process, and frustration working with parents.
McCormick et al. (2005)	Used four stress domains: student, school, external to the school, personal, and a High School Certificate (HSC) stress factors for the new curriculum being implemented	Student domain: student misbehavior or poor student work attitudes; school domain: lack support of peers and administration, unfriendly atmosphere; external to the school domain: government or policy demands unreasonable; personal domain: personally inadequate for a job; and HSC factors: student success and accountability
Park et al. (2016)	Perceived Stress Scale (Cohen et al., 1983)	"Measure the degree to which situations in one's life are appraised as stressful" (Park et al., 2016, p. 567) or general life stress
Putwain and von der Embse (2019)	Three items from a scale developed by von der Embse et al. (2016) for the English Context	Instruction and curriculum stress: "stress perceived by teachers specifically relating to the use of tests and examinations used for accountability purposes" (Putwain & von der Embse, 2019, p. 54)
Robertson and Dunsmuir (2013)	Four subscales from a scale developed by Borg and Riding (1991)	Student misbehavior, poor working conditions, poor staff relations, and time pressures
Tran, 2015	Six items from the Teacher Stress Inventory (Boyle et al., 1995) plus a class size question	Workload and classroom stress
Troesch and Bauer (2017)	A job stress scale (Enzmann & Kleiber, 1989)	One composite score from these constructs: dissatisfaction with work; excessive demand, feeling of being monitored
von der Embse et al. (2016)	Educator Test Stress Inventory (von der Embse et al., 2015)	'est stress sources, manifestations of test stress, and a general stress factor
Yu et al. (2015)	Perceived Stress Scale (Cohen et al., 1983; 14 items)	Overall, general life stress

The constructs of stress varied considerably among the research and spanned 15 different scales, with only five of the studies using the same scale (Boyle et al., 1995). Consequently, the researchers' stress variable constructs differed considerably among the research, much more so than the self-efficacy constructs. Additionally, although six studies (Betoret, 2009; Collie et al., 2012; Doménech-Betoret, 2006; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015) used workload stress as a construct, none of the researchers used a stress construct similar to workplace well-being and stress, as was available in the TALIS (2018) dataset. This was a gap in the literature. As with self-efficacy constructs, this array of constructs for stress made comparisons between studies difficult and inappropriate at times. Additionally, the viewpoints used to analyze the stress and self-efficacy constructs varied considerably and resulted in four themes around the differing perspectives researchers employed to analyze teacher self-efficacy and stress.

Perspectives From Which to View Teacher Self-Efficacy and Stress

The categorization of the literature surrounding teacher self-efficacy and stress fell in four different themes based on the perspective taken by the researchers. These themes included: (a) classroom perspective, (b) classroom and school-level perspective, (c) external factors perspective, and a (d) personal and demographic factors perspective. These themes evolved from various vantage points from which the researchers examined teachers' self-efficacy and stress variables. The first theme of teacher self-efficacy and stress was from a classroom perspective (Gilbert et al., 2014; Gonzalez et al., 2017; Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Love et al., 2020; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; von der Embse et al., 2016; Yu et al., 2015). The second theme of teacher self-efficacy and stress was from a classroom and school-level perspective (Betoret, 2009; Bottiani et

al., 2019; Klassen et al., 2009; Tran, 2015). The third theme went beyond the classroom and school-level factors to include an external factors perspective impacting stress and self-efficacy (Doménech-Betoret, 2006; Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015; Klassen et al., 2009) such as policy and community factors. Lastly, the fourth theme encompassed various personal and demographic perspective (Bottiani et al., 2019; Collie et al., 2012; Doménech-Betoret, 2006; Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Love et al., 2020; McCormick et al., 2005; Tran, 2015; Troesch & Bauer, 2017) from which to view self-efficacy and stress such as race, gender, teaching experience, grade level, and courses taught. Descriptions of each of these perspectives and the related literature follows.

Classroom Perspectives of Teacher Self-Efficacy and Stress

The first theme included literature that explored factors impacting teacher self-efficacy and stress from a classroom perspective (Gilbert et al., 2014; Gonzalez et al., 2017; Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Love et al., 2020; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; von der Embse et al., 2016; Yu et al., 2015), and, in a few instances, collective efficacy as well (Gilbert et al., 2014; Klassen et al., 2009). There were two subthemes in this broader theme. One subtheme was overall stress and self-efficacy related to specific classroom factors (Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Klassen et al., 2009; Love et al., 2020; Robertson & Dunsmuir, 2013; Yu et al., 2015). The other subtheme in the classroom perspectives theme related to external pressures that impacted the classroom (Gilbert et al., 2014; Gonzalez et al., 2017; Putwain & von der Embse, 2019; von der Embse et al., 2016). These subthemes will be discussed and explored more in depth.

Specific Classroom Factors Related to Teacher Stress and Self-Efficacy

The specific classroom factors explored various self-efficacy constructs concerning the stress teachers experienced in the classroom. Some researchers employed a composite self-efficacy score (Herman et al., 2020; Robertson & Dunsmuir, 2013; Yu et al., 2015), three separate self-efficacy constructs (Klassen & Chiu, 2010; Klassen & Chiu, 2011), or classroom and student-specific variables (Love et al., 2020). Each of these different perspectives yielded information about teacher self-efficacy concerning stress.

Yu et al. (2015) found general life stress had a strong, negative, and significant correlation to overall self-efficacy. Similarly, Robertson and Dunsmuir (2013) determined low self-efficacy predicted high teacher stress levels, and increased teacher self-efficacy positively influenced students' behavior. In contrast, Herman et al. (2020) looked at overall stress but grouped teachers into categories concerning their stress levels and coping skills. Coping skills had a positive relationship with self-efficacy. This research team intended to organize teachers into four categories, but their final analysis resulted in three types. They determined stress and coping scores from querying teachers on one question for each of these constructs. Although they did not include these single question prompts in their study, they did explain coping can buffer negative environmental stressors, either tolerating the stress more successfully or directly addressing the stress.

Herman et al. (2020) found 66% of the teachers were in the high stress, high coping category and 28% were in the high stress, low coping group. This 28% group had the lowest self-efficacy scores, and 6% of teachers were in a low stress, high coping category, the most adaptive and desirable category, and the highest self-efficacy levels. Therefore, Herman et al.'s study found teachers with high self-efficacy were better able to cope with stress and reported lower

overall stress. Notably, Herman et al. employed only the classroom management portion of the TSES (Tschannen-Moran & Woolfolk Hoy, 2001). Hence, Herman et al. limited the context-specific self-efficacy factors at play among the teachers in the study, unlike research done by Klassen and Chiu (2010; 2011).

Klassen and Chiu (2010; 2011) used the three constructs in the TSES (Tschannen-Moran & Woolfolk Hoy, 2001), including: (a) classroom management, (b) instruction, and (c) student engagement self-efficacy. Klassen and Chiu (2010) found classroom management self-efficacy had twice as negative of an association with classroom stress than instructional or student engagement self-efficacy. Furthermore, they found all three teacher self-efficacies mediated the association between the classroom and workload stress on job satisfaction. Similarly, Klassen and Chiu's (2011) study found when practicing teachers' stress exceeded 10% of the mean for the sample, their classroom management self-efficacy correlated negatively, explaining 23% of the variance. Thus, as self-efficacy went up, stress went down (Klassen & Chiu, 2011), and self-efficacy mediated the influence of stress on job satisfaction (Klassen & Chiu, 2010). Although Klassen and Chiu examined context-specific self-efficacy constructs, other researchers (Love et al., 2020) examined classroom-specific and student-specific constructs.

Love et al. (2020) studied teachers of students with ASD. In their study, they used a self-efficacy scale, ASSET (Ruble et al., 2013). This self-efficacy scale measured "teachers' beliefs about their ability to implement appropriate teaching strategies when working with students with ASD" (Love et al., 2020, p. 50). Meanwhile, their stress scale "measured teacher stress when working with a particular student" with or without ASD (Love et al., 2020, p. 51). Love et al.'s (2020) results determined teacher stress negatively correlated with self-efficacy. Self-efficacy for teaching students with ASD also had a significant and positive association with teacher

engagement and students' Individual Education Plan (IEP) outcomes. Additionally, Love et al. determined teachers participating in an instructor consultation intervention training reported higher self-efficacy levels. Love et al.'s study was very specific, from the type of teachers analyzed (teachers of students with ASD) to the kinds of self-efficacy (knowledge of ASD strategies) and the student-specific stress they examined.

Even though each of these classroom consideration studies (Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Love et al., 2020; Robertson & Dunsmuir, 2013; von der Embse et al., 2016; Yu et al., 2015) looked at different constructs of stress and self-efficacy, all found when teacher self-efficacy was high, teacher stress was lower. However, only one of the studies (Klassen & Chiu, 2011), considered teachers' years of experience in their analysis by comparing preservice teachers to practicing teachers. Although these studies (Herman et al., 2020; Klassen & Chiu, 2010; Love et al., 2020; von der Embse et al., 2016; Yu et al., 2015) looked at factor influences from the perspective of the classroom, other studies examined external pressures on the classroom.

External Pressures on the Classroom

Multiple studies looked at external pressures applied to the classroom settings to determine the impact these pressures had on teachers' stress and self-efficacy (Gilbert et al., 2014; Gonzalez et al., 2017; Putwain & von der Embse, 2019; von der Embse et al., 2016) and in one instance, collective efficacy as well (Gilbert et al., 2014). These pressures included subjects linked to high-stakes testing and accountability (Gonzalez et al., 2017; von der Embse et al., 2016). High-stakes testing subjects refers to subjects that are part of the standardized testing imposed on schools since No Child Left Behind (NCLB; 2001), and accountability refers to pressures placed on teachers in relation to their students' test scores and may impact such

considerations as annual school funding or teacher evaluations or both (von der Embse et al., 2016). Additionally, other researchers scrutinized other external pressures impacting classrooms, such as curricula expectations (Putwain & von der Embse, 2019) and expectations of teaching a content class to students in English, a second language for the students (Gilbert et al., 2014). These external classroom pressures had varying impacts on teacher stress and self-efficacy, as explained next.

High-Stakes Testing and Accountability. One type of stress examined was related to high-stakes testing due to testing pressures following the adoption of NCLB (2001) (Gonzalez et al., 2017) and accountability (Gonzalez et al., 2017; von der Embse et al., 2016). Gonzalez et al. (2017) scrutinized the subject matter teachers taught and whether the subject fell in the 'high-stakes' category of standardized testing. Their findings indicated subject matter did not impact teachers' overall self-efficacy, yet their classification as a teacher in 'high-stakes' testing subjects increased their stress. Overall, job-related stress explained 17%–25% of the variation in teacher self-efficacy. Although the study looked at subject-specific teachers, Gonzalez et al. did not distinguish the type of self-efficacy as context-specific, such as instructional self-efficacy. Such a context-specific analysis may have provided a more nuanced understanding of the teachers' efficacy in delivering effective instruction and how it may have impacted their stress levels.

Besides testing stress, Gonzalez et al. (2017) theorized teacher stress increased in high-stakes testing content classes due to their accountability for all students. The findings from Gonzalez et al.'s focus group portion of this mixed-methods study found teachers' self-efficacy was affected by educational triage, or the ability to meet all the students' needs in their class. However, self-efficacy in instruction, which delves into teachers' feelings toward teaching a

wide range of diverse learners, was not a variable analyzed in the study's quantitative portion. Instead, the researchers used an overall self-efficacy scale score derived from survey questions and did not use a context-specific analysis.

Although Gonzalez et al. (2017) looked at the subject matter taught to determine if stress varied among 'high stakes' subject teachers, von der Embse et al. (2016) explored how test-related stress and accountability impacted teachers between fall and spring in one school year. The von der Embse et al. study was one of only two studies (Helms-Lorenz & Maulana, 2015; von der Embse et al., 2016) to examine self-efficacy and stress in a longitudinal manner. A longitudinal examination of these constructs beyond a survey given at one point in time, referred to as cross sectional data collection, was unique in the literature. Through this longitudinal research, von der Embse et al. discovered self-efficacy in classroom management and student engagement mediated test stress to job satisfaction across the school year, but self-efficacy in instruction was not significant. The researchers analyzed these context-specific self-efficacy constructs only because the larger model they initially proposed had model-fit issues. However, by doing this more specific self-efficacy analysis, they discovered only two of the three self-efficacy constructs (classroom management and student engagement) were significant in mediating test stress for teachers.

Thus, these studies' results concerning external testing and accountability pressures on the classroom (Gonzalez et al., 2017; von der Embse et al., 2016) impacted teachers' self-efficacy and stress in nuanced ways. Teachers in high-stakes subjects, such as literacy, had similar overall self-efficacy levels as other teachers yet had a large shared variance with stress (Gonzalez et al., 2017). Additionally, researchers found classroom management and student engagement self-efficacy but not instructional self-efficacy significantly impacted test-related stress over the

course of a school year (von der Embse et al., 2016). Besides high-stakes testing and accountability, other researchers examined curricula changes and delivery of content and their impact on the classroom.

Curricula Changes and Delivery of Content. The external pressures scrutinized from a classroom perspective included significant curricula changes mandated at a national level (McCormick et al., 2005; Putwain & von der Embse, 2019) and the language, English or Spanish, teachers used to deliver content to their students (Gilbert et al., 2014). Researchers (Gilbert et al., 2014; McCormick et al., 2005; Putwain & von der Embse, 2019) examined self-efficacy and stress from these perspectives. Each of these studies indicated that these external pressures had an impact on teacher self-efficacy and stress.

The curriculum pressures scrutinized included significant curricula changes mandated by implementing the National Curriculum in the United Kingdom (Putwain & von der Embse 2019) and a national curriculum initiative in Australia (McCormick et al., 2005). Putwain and von der Embse (2019) explored the nature of teachers' self-efficacy and stress when implementing significant curricula changes as outlined in the National Curriculum. These changes held teachers accountable for substantial curriculum changes. Putwain and von der Embse's findings indicated pressures from curriculum changes positively correlated with stress and teacher self-efficacy negatively correlated with stress. Markedly, when pressure from imposed curriculum changes was low, teachers with high self-efficacy experienced less stress than teachers with low self-efficacy. However, as pressure from curriculum changes increased, the differential between stress for low and high self-efficacy teachers diminished. Thus, self-efficacy mediated the stress experienced from curriculum changes only to a certain degree, and as pressures grew stronger, self-efficacy no longer mediated stress. Putwain and von der Embse never examined context-

specific self-efficacies such as instructional self-efficacy, which may have provided more nuanced insights.

McCormick et al.'s (2005) study provided more nuanced self-efficacy insights. McCormick et al.'s survey of teachers in Australia revealed the more awareness teachers had of the significance of the curriculum shifts instituted in a national curriculum initiative, the more stress and lower self-efficacy they reported. Notably, McCormick et al. examined context-specific self-efficacy constructs other than the three dominant ones (classroom management, instruction, and student engagement). Their study used technology self-efficacy and new teaching self-efficacy constructs directly related to the curriculum shifts teachers implemented. Their research also disclosed technology self-efficacy bolstered teachers' 'new teaching' self-efficacy and this analysis of one self-efficacy improving another self-efficacy was unique in the literature. Although Putwain and von der Embse (2019) and McCormick et al. examined significant curriculum shifts, Gilbert et al. (2014) explored differences in the curriculum content delivery.

Gilbert et al. (2014) examined teachers' self-efficacy in two different classroom delivery systems of Spanish and English in content area classes in the Dominican Republic. One group of teachers taught content in students' second language (English-medium teachers), and the other group of teachers instructed in the students' first language (Spanish-medium teachers). They found English-medium teachers had lower self-efficacy and job satisfaction and more significant stress than their Spanish-medium teaching peers who were teaching in students' first language. This study also examined collective teacher efficacy or a communal belief among teachers to impact student achievement (Donohoo, 2017). Markedly, Gilbert et al.'s study found the collective efficacy for both teachers' groups (English-medium and Spanish-medium) was

marginally insignificant. Commitment to stay in the profession was not substantially different for the two types of teachers.

Gilbert et al. (2014) speculated these unexpected findings of similar teacher collective efficacy and their pledges to remain in the field might stem from the prestige of teaching at a private school with wealthier families, such as the schools that offer content classes taught in English. One notable gap in their research was that they did not distinguish context-specific teacher self-efficacy such as instruction even though they used the short-form of the TSES (Tschannen-Moran & Woolfolk Hoy, 2001). This context-specific component may have exposed more nuanced differences between the two groups of teachers that Gilbert et al. studied. Self-efficacy in instruction may have yielded some thought-provoking results because this component was the most salient difference examined between English-medium and Spanish-medium teachers. Furthermore, although Gilbert et al. included collective teacher efficacy in their analysis, there was no significant difference between them, as explained earlier.

In all, these three researchers (Gilbert et al., 2014; McCormick et al., 2005; Putwain & von der Embse, 2019) added to the subtheme of external influences that impacted teacher self-efficacy and stress from the classroom perspective by examining curricula changes (McCormick et al., 2005; Putwain & von der Embse, 2019) and delivery of content (Gilbert et al., 2014). These studies informed the broader theme of classroom considerations. Putwain and von der Embse's 2019 findings illuminated the potential that as pressure for curricula changes increased and reached a certain point, self-efficacy was not effective in offsetting stress. Adding to the understanding of curriculum pressures, McCormick et al. (2005) found that as teachers' understanding of the curricula significance increased, it induced more stress and lowered self-efficacy (McCormick et al., 2005). Meanwhile, Gilbert et al. (2014) found that teachers

delivering instruction in a second language experienced more stress and less self-efficacy. Yet, job satisfaction was offset by teaching at a prestigious school offering this second language option. These findings added to the understanding of external pressures of the overall classroom perspective.

In summary of these studies exploring the classroom from various perspectives (Gilbert et al., 2014; Gonzalez et al., 2017; Herman et al., 2020; Klassen & Chiu, 2010; Love et al., 2020; McCormick et al., 2005; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; von der Embse et al., 2016; Yu et al., 2015), the researchers found a negative correlation between self-efficacy and stress. As teachers' self-efficacy increased, their stress decreased. Self-efficacy's effectiveness to offset stress did seem to diminish as stress increased past an unspecified point (Putwain and von der Embse, 2019). Therefore, the researchers speculated that the impact self-efficacy has on stress may have limits past a certain point. Klassen and Chiu (2010; 2011) and von der Embse et al. (2016) were the only researchers to examine context-specific self-efficacy constructs of classroom management, instruction, and student engagement. Classroom management self-efficacy had the most significant impact on stress (Klassen & Chiu, 2010; 2011) and was the only construct to mediate stress to job satisfaction (von der Embse et al., 2016).

Additionally, none of the studies aggregated the teachers to determine if a difference existed among novice and experienced teachers. Although all of these researchers examined self-efficacy and stress from a classroom perspective (Gilbert et al., 2014; Gonzalez et al., 2017; Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Love et al., 2020; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; von der Embse et al., 2016; Yu et al., 2015), other researchers examined self-efficacy and stress from a classroom and school-level

perspective. This additional perspective allowed researchers to examine teacher self-efficacy and stress in another way.

Classroom and School-Level Perspectives of Teacher Self-Efficacy and Stress

The second theme examined teacher self-efficacy and stress from the perspective of the classroom and school-level factors. The range of self-efficacy constructs from this perspective were similar to the classroom perspectives of the last section. One researcher used a composite self-efficacy score (Collie et al., 2012), others a context-specific construct of student behavior (Bottiani et al., 2019; Klassen et al., 2009) or instruction (Betoret, 2009) score. Still other researchers used both classroom management and instructional self-efficacy (Doménech-Betoret, 2006) or the three TSES (Tschannen-Moran & Woolfolk Hoy, 2001) constructs of classroom management, instruction, and student engagement (Tran, 2015). Therefore, the range of self-efficacy constructs in this one area of the literature was broad.

The school-level factors investigated included: (a) administrative support (Betoret, 2009; Bottiani et al., 2019), (b) student misbehavior and teacher relations (Betoret, 2009; Bottiani et al., 2019), (c) social-emotional learning and school climate (Collie et al., 2012), and (d) environmental factors (Klassen et al., 2009; Tran, 2015). The environmental factors included collective efficacy (Klassen et al., 2009) and such variables as remote versus urban settings (Klassen et al., 2009), low socioeconomic (SES) schools (Bottiani et al., 2019), and induction programs (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015). Helms-Lorenz et al. (2012) and Helms-Lorenz and Maulana (2015) were the only studies to investigate various school-level factors' impact on novice teachers' stress and self-efficacy. Unlike the perspectives from the classroom, the findings among school-level perspectives varied and had conflicting results in some instances.

Administrator support was one such school-level consideration with conflicting results in the studies. Betoret (2009) found ambiguous administrative demands to be a stressor with a negative relationship to self-efficacy. In contrast, Bottiani et al. (2019) determined the principal's leadership approach did not affect their model, which included stress and self-efficacy. Dissimilarities also existed in the student misbehavior analysis these researchers conducted.

Both Betoret (2009) and Bottiani et al. (2019) had dissimilar findings for student misbehavior and its impact on teacher stress and self-efficacy. Betoret (2009) found stressors from student misbehavior and diversity negatively associated with teacher self-efficacy. In contrast, Bottiani et al.'s (2019) findings among teachers at low SES schools indicated teacher affiliation or relationships among staff (a school-level factor) offset any influence negative student behavior had on their model. Additionally, Bottiani et al. used one context-specific self-efficacy construct, classroom management, and Betoret applied an overall self-efficacy score. Therefore, these researchers potentially limited the nuances they may have found in their analysis. However, Betoret, Bottiani et al., and Yu et al. (2015), found self-efficacy mediated stress's impact on job burnout. Similarly, Tran (2015) found self-efficacy partially mediated work stress to job burnout. Although some researchers (Betoret, 2009; Bottiani et al., 2019) paired student misbehavior with teacher relations, a school climate component (Betoret, 2009; Bottiani et al., 2019), another group of researchers (Collie et al., 2012) examined social-emotional learning and school climate.

Collie et al.'s (2012) study explored how social-emotional learning and school climate perceptions impacted the outcome variables of stress, teacher self-efficacy, and job satisfaction. They also examined the interrelationships of these outcome variables. These interrelationships revealed stress from student misbehavior had a negative association with teacher self-efficacy,

measured by a composite score. These findings mirrored Klassen and Chiu's (2010) findings surrounding student misbehavior. Besides social-emotional learning and school climate, several researchers took environmental factors such as location into consideration.

Two studies (Klassen et al., 2009; Tran, 2015) analyzed school-level environmental factors. Notably, Tran (2015) did not investigate school-level environment factors concerning self-efficacy or stress but instead the differences between male and female teachers. This gender concept is covered more thoroughly later in this literature review. Tran's school-level elements comprised seven factors: (a) student support, (b) affiliation, (c) professional interest, (d) mission consensus, (e) innovation, (f) resource adequacy, and (g) principal leadership. Unfortunately, Tran did not analyze these variables with self-efficacy or stress.

Even though multiple researchers (Betoret, 2009; Bottiani et al., 2019; Collie et al., 2012; Klassen et al., 2009; Tran, 2015) included school-level considerations in their studies, Klassen et al. (2009) were the only researchers to use a collective efficacy construct. Their research revealed both TSE and collective efficacy had similarly robust, negative, and statistically significant ($p < .01$) correlations with workload stress and student behavior stress. Klassen et al.'s collective efficacy construct included questions regarding the school's ability to convey behavior expectations, instruct, and engage students. Thus, their collective efficacy constructs had a similar three-factor component as the TSES (Tschannen-Moran & Woolfolk Hoy, 2001), but through an investigation of these components at a joint, school-level.

Another unique component of Klassen et al.'s (2009) study was their analysis of TSE, collective efficacy, and stress in two disparate school settings, one in a remote Yukon location and the other in a more urban environment. They found TSE, collective efficacy, and workload stress was lower for teachers in a more isolated area, yet overall stress and job satisfaction were

similar in both settings. Notably, they did not distinguish the types of TSE concerning stress. Klassen et al. used a 12-item version of the TSES (Tschannen-Moran & Woolfolk Hoy, 2001), summing these 12 items to create a composite TSE score.

Bottiani et al. (2019) was the only researcher group to query teachers specifically identified as teaching at a low socioeconomic school. The researchers reported teachers with more self-efficacy and more resources such as collegial affiliations and "perceptions of students' emphasis on academics" (Bottiani et al., 2019, p. 39) indicated lower stress. The qualitative observation portion of Bottiani et al.'s mixed-methods study revealed teachers with more self-reported stress were less likely to engage students in rigorous dialogue. Additionally, teachers who were warm-demanders or caring teachers with high expectations were more likely to indicate significant burnout. The researchers equated this to other findings that showed the implementation of desirable teaching practices resulted in elevated emotional exhaustion (e.g., Berg et al., 2017), a component of burnout (Maslach, 2017).

The last two studies in the environmental category of external factors perspective were written by Helms-Lorenz et al. (2012) and Helms-Lorenz and Maulana (2015). These studies were the only two studies to query novice teachers. The two studies examined the same school and classroom self-efficacy constructs and the same array of stress causes and outcomes, some at the classroom level and others at the school level. The stressors or 'stress causes' examined included high psychological job demands (e.g., "Do you have to work hard?"), lack of learning opportunities (e.g., "Do you have opportunities to learn new things?"), lack of regulating possibilities (e.g., "Does your job situation enable you to decide for yourself how you carry out your work?"), and inadequate social-organizational job aspects (e.g., "Do you receive sufficient

information about your function as a member of the organization?"; Helms-Lorenz & Maulana, 2012, p. 196).

Helms-Lorenz et al.'s (2012) and Helms-Lorenz & Maulana's (2015) findings varied. For instance, the Helms-Lorenz et al.'s (2012) study examined 28 novice teachers participating in induction who completed the entire survey in one sitting. Their results indicated stress causes for novice teachers in the Netherlands had a strong relationship to stress outcomes, one of which was job dissatisfaction. Self-efficacy in the school negatively correlated with stress but was not valid for self-efficacy in the classroom. Helms-Lorenz et al. found that although school self-efficacy reduced stress causes and stress outcomes (e.g., job dissatisfaction), classroom self-efficacy did not.

Contradicting these findings, Helms-Lorenz and Maulana (2015) conducted an experimental study over 3 years where they compared teacher induction candidates to teachers not in an induction program. The induction program included: (a) workload reduction, (b) school enculturation, (c) professional development, and (d) effective teaching behavior support. Helms-Lorenz and Maulana found the "perceived self-efficacy and stress causes variables to explain about 35% of the total variance in perceived job tension and 31% of the total variance in perceived job discontent" (p. 31). Their results also disclosed that a higher level of both classroom and school self-efficacy for novice teachers corresponded longitudinally with lower levels of stress responses, which included a job dissatisfaction factor. These findings contrasted with their previous study (Helms-Lorenz et al., 2012) that found novice teachers' school self-efficacy in an induction program had a more significant impact on stress and classroom self-efficacy did not have an effect. Notably, Helms-Lorenz and Maulana (2015) found classroom self-efficacy's impact on job tensions was 10 times greater for the induction teachers than their

non-induction peers. However, the link between school self-efficacy and stress for the induction teachers was weaker.

Although both studies (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015) looked at multiple nuances in stress causes, the analysis of self-efficacy at a classroom level was a composite score of an array of classroom considerations, not context-specific. Additionally, their school self-efficacy score was in-line with a collective efficacy construct: (a) lack of learning opportunities, (b) lack of regulating possibilities, and (c) poor social-organizational job aspects. These correlations ranged from -.45 to -.55. Therefore, Helms-Lorenz et al.'s (2012) and Helms-Lorenz and Maulana's (2015) analyses of a composite self-efficacy score and multiple stress constructs at a classroom and school-level added nuances to understanding how these factors impacted novice teachers. However, this limited the potential distinctions that may have existed between context-specific self-efficacy constructs and different types of stress teachers experience.

In summary, these self-efficacy and stress studies explored factors beyond the classroom by including school-level elements that impacted teachers' self-efficacy and stress. The findings were not as consistent as the classroom perspective findings, and were even contradictory. However, the contradictions may have been due to the inclusion of certain constructs such as the teacher affiliation construct that Bottiani et al. (2019) included in their analysis that Betoret (2009) did not. Similar to the classroom considerations theme, most researchers did not use context-specific self-efficacy (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015; Klassen et al., 2009; Tran, 2015) and those who did (Betoret, 2009; Bottiani et al., 2019) only used one context-specific construct, classroom management (Bottiani et al., 2019), or two constructs, classroom management and instruction (Betoret, 2009).

Additionally, the perspectives pertaining to teacher self-efficacy and stress at a school-level were varied and included: (a) administrative support (Betoret, 2009; Bottiani et al., 2019), (b) student misbehavior and teacher relations (Betoret, 2009; Bottiani et al., 2019), (c) social-emotional learning and school climate (Collie et al., 2012), and (d)environmental factors (Klassen et al., 2009). Thus, these varied perspectives limited the ability to make comparisons between studies. Additionally, the only studies to query novice teachers (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015) used a classroom and school self-efficacy scale, not the more common context-specific self-efficacy components. Therefore, the researchers potentially missed distinctions among these novice teachers, such as classroom management, instruction, and student engagement self-efficacy may reveal. The absence of a more nuanced study of the various types of self-efficacy may have missed some salient influences at a classroom and school level. The third perspective went beyond the classroom and school-level factors to include external factors that impacted teacher self-efficacy and stress.

External Factors Perspective of Teacher Self-Efficacy and Stress

The external factors perspective included factors that impacted teacher self-efficacy and stress beyond the classroom and school. Two studies explored factors beyond the classroom and school. One study examined a wide array of stressors (Doménech-Betoret, 2006), some of which were outside the schoolroom and school, and delved into policy issues. The other study examined community factors (Klassen & Chiu, 2010) that impacted teachers' stress and self-efficacy.

Doménech-Betoret (2006) examined a broad array of stressors stemming from the classroom, school, or policy influences. Doménech-Betoret explored eight stressors that included: (a) education policy, (b) workload or lack of rewards, (c) guidelines from school

authorities, (d) relationships with other teachers, (e) classroom learning environment, (f) teacher-student interaction, (g) lack of teaching strategies, and (h) teacher-family relationships. He determined education policy, workload or lack of rewards, teacher-student interaction, lack of teaching strategies, and teacher-family relationships were statistically different between low and high classroom management and instruction self-efficacy scores for teachers. The study also revealed self-efficacy and coping strategies had a significant impact on stress but not burnout.

Meanwhile, Klassen et al.'s (2009) study revealed several community factors that impacted teachers' stress. The qualitative portion of Klassen et al.'s mixed-methods study found location-specific differences in stress and job satisfaction affecting the teachers instructing in Yukon's remote areas. Location-specific differences included geography factors (e.g., number of hours of sunlight and recreational hours, isolation), challenges of building local community connections, and tensions between cultural and academic differences, noting differences with the First Nation people. Thus, Klassen et al.'s study went beyond the school-level factors to stress influences deriving from the community in which the teachers lived, as revealed in the qualitative interview portion of their mixed research. Klassen et al. were the only researchers to look at community factors such as these but did not analyze them with self-efficacy.

In summarizing the third theme from an external factors' perspective, researchers found multiple external factors that impacted teachers' self-efficacy and stress (Doménech-Betoret, 2006; Klassen et al., 2009). These influences included such factors as policy demands (Doménech-Betoret, 2006) and remote locations (Klassen et al., 2009), both negatively impacted teachers' stress levels (Doménech-Betoret, 2006; Klassen et al., 2009) and classroom management and instruction self-efficacy (Doménech-Betoret, 2006). However, novice teachers as a subset of the teacher sample were not examined. Additionally, only Doménech-Betoret

(2006) used context-specific self-efficacy constructs of classroom management and instruction, and Klassen et al. (2009) used a composite score. Although the analyses of these external factors offered differing perspectives of and insights into teachers' self-efficacy and stress, personal and demographic considerations offered another perspective and different insights. Thus, individual and demographic perspectives of teacher self-efficacy and stress were the final theme found in the literature.

Personal and Demographic Perspectives of Teacher Self-Efficacy and Stress

The fourth and final category in the literature encompassed teachers' self-efficacy and stress from various personal and demographic perspectives. Although classroom, school, and external influences were the more prominent themes in the literature, multiple studies also included analysis of personal or demographic factors (Bottiani et al., 2019; Klassen, 2010; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Tran, 2015). Personal and demographic variables included: (a) gender and race (Bottiani et al., 2019; Klassen & Chiu, 2010; Tran, 2015), (b) teaching experience (Klassen & Chiu, 2010; Klassen & Chiu, 2011), (c) career path (Troesch & Bauer, 2017), and (d) grade levels and subject taught (Klassen & Chiu, 2011). All these personal or demographic perspectives impacted teachers' stress, self-efficacy, or both, and these perspectives included an analysis of gender and race.

Gender and Race

Gender and race were two demographic factors examined by researchers (Bottiani et al., 2019; Klassen & Chiu, 2010; Tran, 2015). Conspicuously, although the studies found in this literature review included gender statistics in their basic descriptive statistics of the sample, only five of the studies included gender as a factor in their reported findings concerning stress, self-efficacy, or both (Bottiani et al., 2019; Helms-Lorenz & Maulana, 2015; Klassen & Chiu, 2010;

Tran, 2015; Troesch & Bauer, 2017; von der Embse et al., 2016). Additionally, Klassen and Chiu (2011) did not report gender findings in their model because they were not significant. Meanwhile, Helms-Lorenz and Maulana (2015) stated a negative and significant correlation between gender and school self-efficacies. However, gender in their study did have a small, positive, and significant correlation with the stressor, tension. Notably, they never distinguished gender as female and male in their results, just reported on gender.

Although most of the studies found female teachers reported more significant stress (Bottiani et al., 2019; Klassen & Chiu, 2010; Tran, 2015; Troesch & Bauer, 2017), von der Embse et al. (2016) did not find a gender difference. Tran's (2015) and Klassen and Chiu's (2010) studies found female teachers self-reported more significant classroom and workload stress levels. Tran (2015) also found female teachers reported lower self-efficacy in all three commonly used self-efficacy constructs (classroom management, instruction, and student engagement). In contrast, Klassen and Chiu (2010) found female teachers reported more significant workload and classroom stress. Klassen and Chiu also found teachers indicating greater classroom management self-efficacy reported more workload stress but did not distinguish this finding between female and male teachers. Therefore, these studies illustrated how analysis of the various types of stress and self-efficacy might have multiple nuances between genders (Klassen & Chiu, 2010; Tran, 2015) and the potential for cultural influences (Tran, 2015).

Tran (2015) speculated the gender difference might be due to women's more significant family role in the Korean culture (Tran, 2015), where the study took place. Klassen and Chiu (2010) also speculated whether gender differences with stress might be due to nonwork domains or other potential outside of teaching factors as family responsibilities. For this reason, Tran

(2015) and Klassen and Chiu called on future studies to analyze these gender nuances more thoroughly.

Although the majority of the studies indicated females reported greater stress than their male counterparts (Bottiani et al., 2019; Klassen & Chiu, 2010; Tran, 2015; Troesch & Bauer, 2017), it was not consistent throughout all the studies (von der Embse et al., 2015). Additionally, there was no examination of novice teachers to determine if their potentially lesser role in family responsibilities differed from their more experienced peers, as speculated as a reason for the female teachers' higher stress levels (Klassen & Chiu, 2010; Tran, 2015). Besides gender, another demographic factor examined was race in one investigation.

Bottiani et al. (2019) were the only researchers to examine race as a variable in their study. They found White teachers reported higher levels of stress and burnout than teachers of color teaching at the low SES schools in which they conducted their research. Bottiani et al. noted the significance of the race variable given the disproportionately large White female teacher representation in the profession. Experience in the vocation also revealed noteworthy findings.

Teaching Experience

Klassen and Chiu (2010; 2011) examined teacher self-efficacy and stress from the perspective of teaching experience. One relationship examined years of teaching experience and teachers' self-efficacy levels. They found all teacher self-efficacies in classroom management, instruction, and student engagement increased throughout their careers. Additionally, Klassen and Chiu (2011) determined practicing teachers' self-efficacy in instruction grew the most over the years, followed by student engagement. All three context-specific self-efficacies grew until the 23rd year, then tapered off (Klassen & Chiu, 2010; 2011). Therefore, novice teachers' self-

efficacy was less established in the first few teaching years, making it particularly salient to understand its impact on novice teachers. Researchers did not examine these nuances in the literature.

The researchers also scrutinized teacher self-efficacy and stress from the perspective of teaching experience. Klassen and Chiu (2011) found when teachers' stress exceeded the mean by 10%, they averaged lower self-efficacy in instruction and student engagement. They reported teachers' years of experience had an overall negative relationship to classroom stress. Therefore, as the number of years of experience increased, stress decreased. Though differing years of experience with overall teaching stress indicated significance, it was not substantial (< 1%). Thus, although the researchers examined stress in relation to years' experience, they did not explore novice teachers in comparison to experienced teachers.

In summary, the researchers (Klassen & Chiu, 2010; 2011) found all three context-specific self-efficacies, classroom management, instruction, and student engagement, increased as teachers gained experience. Klassen & Chiu (2011) also found stress declined as teachers gained experience. However, the novice teacher was not a subgroup explored and given the accumulation of self-efficacy during this timeframe, it may be a nuanced factor in the teaching sample to examine more closely. Another nuance of teacher factors explored in the literature was the path by which teachers entered the profession.

Career Path

Troesch and Bauer (2017) examined differences between first and second career teachers. First career teachers are those who began their career directly as a teacher. Second career teachers are teachers beginning their career after first being employed in another profession. Troesch and Bauer examined self-efficacy and stress for both sets of teachers by career path.

Their (Troesch & Bauer, 2017) findings revealed second career teachers reported higher job satisfaction and lower stress than their first career peers. Moreover, second-career teachers' self-efficacy had a more significant impact on stress. Therefore, Troesch and Bauer's findings indicated the teacher's path into the profession as a first or a second career choice impacted teacher stress and how effective self-efficacy was in combating stress. Other researchers explored teacher self-efficacy and stress from the perspective of grade level and subjects taught.

Grade Level and Subjects Taught

Klassen and Chiu's (2011) examined teacher self-efficacy and stress from the perspective of grade level taught while Klassen and Chiu's and Gonzalez et al.'s (2017) examined these self-efficacy and stress constructs from the perspective of the subjects in which teachers taught. The research team (Klassen & Chiu, 2011) found differences in grade levels taught. They found practicing teachers' self-efficacy in student engagement was lower among middle and senior high teachers than among elementary teachers. However, practicing teachers in combined elementary and middle school settings averaged 25% higher self-efficacy than teachers in elementary schools. Similarly, preservice teachers in elementary schools also averaged 14% more self-efficacy in student engagement than teachers in seventh, eighth, or ninth grade.

Furthermore, Klassen and Chiu (2011) found practicing kindergarten teachers averaged 11% more self-efficacy in classroom management than teachers in first, second, third, fourth, seventh, eighth, and ninth grade. In contrast, Klassen and Chiu did not report a difference among the preservice teachers by grade level concerning classroom management. However, they found that preservice teachers who experienced 10% more classroom stress averaged 2% less self-efficacy in classroom management.

In all, researchers (Klassen & Chiu, 2011) found grade level taught impacted teachers' student engagement and classroom management self-efficacies. Overall, teachers in younger grades scored themselves higher. Therefore, Klassen and Chiu revealed how grade level taught appears to be a salient factor in self-efficacy and may vary by the grade level in which teachers instruct. Notably, as stress increased for preservice teachers, self-efficacy in classroom management decreased. Classroom management also had a relationship with subjects taught for both practicing and preservice teachers.

Klassen and Chiu (2011) and Gonzalez et al. (2017) found a link between preservice teachers' classroom stress and subject taught. Gonzalez et al., as described previously, did not find differences in teachers' self-efficacy by subjects taught but did find that teachers instructing in a high stakes subject, such as literacy, reported higher stress levels. Meanwhile, Klassen and Chiu found teachers instructing in "Computer Technology Studies (CTS)/Business and Technology/Foods/Human ecology" (Klassen & Chiu, 2011, p. 121-122) averaged 13% less self-efficacy in classroom management and higher stress. Additionally, preservice teachers in these same subjects also had lower self-efficacy in instruction. Therefore, the researchers revealed a relationship between subject taught and self-efficacy for both experienced and preservice teachers. These perspectives of grade level taught and subject taught each revealed nuances among Klassen and Chiu's sample of preservice and practicing teachers and among Gonzalez et al.'s examination of teachers' stress when instructing in a high stakes subject.

In all, teachers' personal and demographic perspectives added additional factors that may influence teachers' self-efficacy and stress. These perspectives gave details to the samples of teachers examined in these studies. These details, however, did not include splitting the sample

to analyze novice and experienced teachers concerning gender, race, career path, or grade level and subject taught. This was a gap in the literature.

In summary, the literature included self-efficacy and stress from four perspectives and included: (a) a classroom perspective, (b) classroom and school-level perspective, (c) an external factors perspective, and (d) personal and demographic perspectives. However, missing from the literature was how these various perspectives impacted novice teachers' context-specific self-efficacy and various types of stress and how these perspectives may vary from experienced teachers. Also, researchers only examined middle school teachers in the United States in two instances (Bottiani et al., 2019; Herman et al., 2020). Therefore, this is an underrepresented sample in the literature.

Furthermore, researchers did not discuss the gender of new teachers, and only two studies examined content-specific instruction (Gonzalez et al., 2017; Klassen & Chiu, 2011), one of which examined reading or literacy (Gonzalez et al., 2017). The one study examining reading, described as a high-stakes content subject (Gonzalez et al., 2017), included a sample of teachers of varying experience levels and did not examine novice teachers. The TALIS (2018) teacher questionnaire included a query of subject matter taught, which included 'reading, writing and literature,' heretofore referenced as literacy. By using literacy as a reference for this subject matter, the term encapsulated literacy more broadly, as was necessary in an international survey such as TALIS (2018). The TALIS attempted to capture this content area across countries by encapsulating these domains (reading, writing, and literature), finding these terms to be most consistent with reading (Ainley & Carstens, 2018). This construct of literacy as a subject area was unexplored in the literature but was addressed in this study.

Conclusion

The literature encompassed teacher self-efficacy and stress from multiple nuances and perspectives. The various self-efficacy and stress perspectives informed the triadic reciprocal determinism model's cognitive component, represented in this study as teachers' self-efficacy and environmental factors (Bandura, 1978), signified in this study by teachers' stress constructs. The array of constructs for self-efficacy and stress varied in the various perspectives from which researchers analyzed these concepts. Although this variety of perspectives gave a sense of the enormity of factors impacting teachers' self-efficacy and stress, this array of perspectives also minimized the ability to synthesize results between studies. However, consistently throughout the literature, self-efficacy had a significant negative correlation with stress or mitigated stress to job satisfaction or burnout among teachers of varying experience levels. Although the overall findings were consistent among the studies, the specific self-efficacy and stress results varied greatly. This variety was in large part due to the assortment of constructs utilized for self-efficacy and stress and the many perspectives researchers employed.

These perspectives informed the themes by which the literature was organized. These perspectives included looking at teacher self-efficacy and stress from the perspective of the classroom, classroom and school-level, external factors beyond the classroom and school, and personal and demographic considerations. However, only four researchers (Klassen & Chiu, 2010; Klassen & Chiu, 2011; Tran, 2015; von der Embse et al., 2016) employed all three of the commonly referenced, context-specific self-efficacy constructs of classroom management, instruction, and student engagement, thereby limiting nuanced findings in other studies. Meanwhile nuanced results were more prevalent in the stress findings, which had an even greater variety of constructs. However, this variety of stress constructs greatly impacted the ability to

make comparisons between studies. The most commonly used stress constructs were student behavior stress (Betoret, 2006; Collie et al., 2012; Doménech-Betoret, 2006; Klassen & Chiu, 2010; Klassen & Chiu, 2011; Klassen et al., 2009; McCormick et al., 2005; Robertson & Dunsmuir, 2013) and workload stress (Betoret, 2009; Collie et al., 2012; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015), and the two stressors most often identified by teachers (Ainley & Carstens, 2018). Additionally, none of the studies analyzed a construct similar to the TALIS's (2018) workplace well-being and stress construct which considers teachers' well-being.

Besides the variety of self-efficacy and stress constructs, only two research teams (Bottiani et al., 2019; Herman et al., 2020) analyzed middle school students in the United States, both of which only examined the context-specific self-efficacy of classroom management and a general, overall stress construct. By limiting these constructs, Bottiani et al. and Herman et al. potentially missed nuances in the other context-specific self-efficacy constructs such as self-efficacy in instruction and student engagement and stress constructs such as workload stress and workplace well-being and stress. Therefore, more nuanced self-efficacy and stress among teachers in the underrepresented middle school grade teachers in the United States was elusive.

Another elusive construct was the impact subjects taught might have on teachers' self-efficacy and stress. There were two studies (Gonzalez et al., 2017; Klassen & Chiu, 2011) that examined self-efficacy and stress from the perspective of subjects taught. Gonzalez et al. (2017) found high stakes subject teachers, such as those teaching literacy, and Klassen and Chiu (2011) found teachers in "Computer Technology Studies (CTS)/Business and Technology/Foods/Human ecology" (p. 121-122) reported more significant stress. Klassen and Chiu found self-efficacy was not the same for these teachers. Additionally, only Klassen and Chiu used all three of the context-specific self-efficacy constructs of classroom management,

instruction, and student engagement. This research team used an overall, one item job-related stress and student behavior stress score. Gonzalez et al. used a composite TSE score and overall job-related stress score. Therefore, exploring the missing self-efficacy (i.e., instruction, student engagement) and stress (i.e., workplace well-being and stress and workload stress) nuances for their relation to middle school and early high school teachers of literacy was missing in the literature, as was the perspective of novice teachers.

Only two of the studies (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015) examined how self-efficacy impacted novice teachers' stress. These studies focused on the teachers engaged in an induction program in which novice teachers were supported during their transition into the teaching profession. Induction programs provide "ongoing professional learning for beginning teachers, monthly formative observations and feedback on beginning teachers' practice, release time for observation of accomplished teachers, and professional learning for mentors" (Espinoza et al., 2018, p. 33). Consequently, analyzing potential differences between novice and experienced teachers' self-efficacy and stress is a worthwhile endeavor and was missing in the literature. Such differences may pinpoint areas in which districts and schools can focus support to build novice teachers' self-efficacies and potentially reduce stress. To examine these variables, this study used the TALIS (2018) dataset. Chapter 3 explores the TALIS (2018) teacher questionnaire, the research questions developed for this study, and the proposed analyses to answer these questions.

Chapter 3: Research Methodology

The literature surrounding teacher self-efficacy and stress indicated self-efficacy mitigated or negatively correlated with stress or mediated stress concerning job satisfaction or burnout (Betoret, 2009; Collie et al., 2012; Doménech Betoret, 2006; Klassen & Chiu, 2010, 2011; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; Tran, 2015; von der Embse et al., 2016) and stress is a precursor to attrition (Harmsen et al., 2018; Hester et al., 2020; Ryan et al., 2017) and impacts teachers' commitment to stay in the profession (Lambert et al., 2019).

This commitment to stay in the profession and its impact on institutional knowledge was vividly apparent in my personal experiences as an instructional coach at a Title I school wherein the turnover and attrition over three years in primary grade teachers was 33% one year and 50% or more the two subsequent years. This turnover impacted institutional knowledge of a school-wide literacy initiative I helped implement at the school and limited my ability to expand beyond the initial plan since so much of my time was spent getting the primary team 'up to speed' on our initiatives. However, by spending this time in training the teachers throughout the building, the teachers' self-efficacy (as shared in testimonials) increased and student achievement improved (as indicated in standardized testing).

According to the literature, self-efficacy increased for teachers as they progress through their careers, until the 23rd year (Klassen & Chiu, 2010, 2011). Therefore, an exploration of novice teachers' self-efficacy to stress is particularly salient because prior research indicated teachers with less than 5 years of teaching experience were at the highest risk for attrition and turnover (Sutcher et al., 2016). Exploring various self-efficacy and stress factors for novice

teachers was a minimally explored concept in the literature (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015) and was an important concept to understand more thoroughly.

As previously explained, the purpose of this study was to better understand the relationship between novice teachers' self-efficacy and stress as compared to self-efficacy and stress of experienced teachers and subgroups within these teacher samples. This study used descriptive statistics: (a) Pearson correlation, (b) Mann-Whitney U, and (c) independent samples *t*-test to analyze these relationships. The sample of 2560 teachers in the United States included seventh-, eighth-, and ninth-grade teachers of various experience levels. The secondary data from the 2018 Teaching and Learning International Survey (TALIS) dataset, developed by the Organization for Economic Cooperation and Development (OECD; 2019a), was used to analyze these relationships. The OECD administered the TALIS 2018 to teachers and principals in 48 countries/economies internationally. The TALIS 2018 was the 1st year the OECD queried teachers about stress. The survey results examined in this study derived from anonymous and random samples of teachers across the United States.

Measurement: TALIS Dataset

The OECD, an international forum, developed the inaugural TALIS in 2008 (Technical Report, 2018). The overarching purpose of TALIS was to provide analysis and open dialogue between countries by identifying similar challenges and learn about other countries'/economies' policies (Technical Report, 2018). The survey included information about "teachers, teaching, and learning environments" (NCES, n.d.a, first paragraph). TALIS is unique because it was the only comparative international survey of teachers (NCES, n.d.a). The instrument had two questionnaires, one for principals and one for teachers. This study focused on the responses provided by teachers in the United States.

The OECD launched TALIS in 2008 to survey teachers and principals about their work, as explained by Knoll and Carstens (2019). The TALIS survey included three options, with most countries, including the United States choosing to participate only in the lower secondary survey or the 'core' survey. This 'core' survey is identified in TALIS as the International Standard Classification of Education (ISCED) level two or lower secondary level (NCES, n.d.a). TALIS 2018 comprised separate questionnaires for teachers and principals working with students in Grades 7, 8, and 9, and the United States first participated in the TALIS 2013 survey (Knoll & Carstens, 2019).

The other two versions of TALIS were given to primary (ISCED level one, primary level) teachers and principals and upper secondary (ISCED level three, upper secondary level) teachers and principals (NCES, n.d.a). For the first time in 2018 countries had the option to administer both TALIS and Programme for International Student Assessment (PISA) in the same school for analysis (Knoll & Carstens, 2019). This TALIS-PISA link was an option chosen by nine countries/economies. The United States was not one of the nine countries.

However, the United States did participate in the core TALIS 2018 study. Teachers and administrators received the TALIS every 5 years since 2008 (i.e., 2013 and 2018) and responded to questions about their work conditions and learning environments with a slightly different theme for each survey (Ainley & Carstons, 2018). For example, the 2008 survey was an "ongoing large-scale survey of teachers, school leaders, and their learning environments" (Ainley & Carstons, 2018, p. 4). The 2013 TALIS included a more extensive analysis, although the 2018 TALIS had 11 themes, including previous concepts and new concepts such as school leadership, innovation, and teacher stress (Ainley & Carstons, 2018).

With each cycle of TALIS, the number of participating countries increased with the 2018 core survey administered in 48 countries/economies worldwide compared to 37 in the 2013 process and 24 in the 2008 (OECD, 2019). In all, the 2018 TALIS surveyed about 260,000 teachers in 15,000 schools across 48 countries/economies (Ainley & Carstons, 2018). This study focused on the responses garnered from teachers in the United States, including 2560 teachers in 165 schools with an overall teacher participation rate of 68.8%, which met TALIS's standards (Dumais et al., 2019). TALIS identified this participation rate as 'fair.' The TALIS also reported developing the questions' instrument and validity.

Development of Instrument and Validity of Questions

According to the TALIS Technical Report (Carstens, 2019), the inception and agenda-setting for TALIS 2018 began in September of 2015 to be ready for data collection. OECD scheduled the Southern Hemisphere countries' data collection between September and December of 2017, although Northern Hemisphere countries planned to collect data from March to May of 2018. The OECD developed its surveys in three phases, a novice pilot phase wherein a small number of TALIS participants responded to initial versions of the survey in May 2016. Adjustments to the questionnaire and field testing followed the pilot from February to March 2016.

During this field-testing phase, TALIS tested and evaluated questions, item formats, and survey proctoring and data collection methods (Carstens, 2019). The OECD also addressed language translation issues. Following these evaluations, researchers conducted descriptive statistics and psychometric analysis of the responses. Based on these analyses, items not meeting the established measurement criteria were removed from the survey, resulting in the retention of 48 items for the teacher questionnaire.

Lastly, an organization in each country took on the production, distribution, and administration of the survey's final version. This organization in each country served as a liaison to disseminate the survey, ensure participants, and maintain the sampling protocol established by OECD (NCES, n.d.b). The National Center for Education Statistics (NCES) in the Institute of Educational Sciences, as part of the United States Department of Education (NCES, n.d.c), coordinated efforts in the United States with advice from the contracted research organization Westat (NCES, n.d.b). This attention to detail was evident in the sampling process as well.

Sampling

The TALIS Technical Report (Ainley & Carstons, 2019) indicated TALIS's 2018 sample design used a cross-sectional approach. A cross-sectional approach means sampling of the target population took place at a particular point in time (MacInnes, 2016). TALIS used a two-stage random sample, following "recognized probability sampling theory and practices" (Technical Standards, 2017, p. 15), thereby representing the corresponding populations. TALIS's consortium member, Statistics Canada (StatCan), derived a sample of schools for the survey for each education system (Ainley & Carstons, 2019). The United States chose to sample 220 schools—a number greater than the TALIS requirement of 200—to avoid a repeat of nonresponse issues, as happened in 2013. The United States was the only country not included in the international dataset due to nonresponse issues in 2013.

In the schools in the United States participating in the survey, as second stage random sampling, TALIS provided software that randomly generated, through an equal probability sample, a total of 20 teachers to complete the survey in each school or all the teachers if less than 20 teachers were in the school. Distribution of the surveys in the United States took place in January or February of 2018 (NCES, n.d.c). Countries also had to identify replacement schools

when the initial school selection took place (Technical Standards, 2017). Identification of the replacement schools occurred so that if a selected school did not participate, the identified replacement school then took its place, thereby ensuring adequate response rates.

The TALIS 2018 required a 50% teacher participation rate among those 20 teachers for participating schools (Dumais & Morin, 2019). However, TALIS also expected a minimum response rate of 75% of the schools and 75% of teachers across all participating schools. This 75% of schools included replacement schools selected during the initial sampling process but had to have 50% of the responses from the original list of schools selected, not replacement schools. The United States met all of the requirements set by TALIS, ensuring inclusion in the international dataset.

TALIS 2018 sampled 4000 teachers from 200 schools with 20 teachers each in each country who taught at least one lower secondary level (seventh, eighth, or ninth grade) class throughout the school day in any subject area (Dumais & Morin, 2019). The NCES (n.d.b) reported stratification of the U.S. sample included five specific groups. These groups had public or private school control factors and middle/junior high schools, including grades six through eight or seven through nine, high schools, or schools with other grade structures that included one of the lower secondary grades (grade structure). In this stratum, schools were also "sorted by census region (Northeast, Midwest, South, and West), locale (urban/suburban/town-rural), percent minority students, state, and number of ISCED 2 students" (NCES, n.d.b, paragraph 1).

The TALIS Technical Report stated OECD intended to have the survey be optional (Dumais & Morin, 2019). However, some countries made it mandatory but TALIS did not publish the countries who made the survey mandatory. The technical report also noted many countries found it difficult to find enough voluntary respondents. To promote voluntary

completion of the survey, TALIS encouraged extensive public relations efforts to raise survey awareness through such venues as teachers' unions and principal organizations and local, regional, and state authorities. All countries ensured teachers' and principals' data privacy. The OECD published notes for each country, including the United States (OECD, 2018). Additionally, TALIS (2018) results were analyzed here in the United States at a national level by the National Center for Education Statistics (NCES). The NCES did the analysis in the Institute of Educational Sciences as part of the United States Department of Education (NCES, n.d.d).

TALIS Scales and Subscales

Stancel-Piatak et al. (2019), in the TALIS Technical Report, provided scales and subscales derived from the TALIS questionnaire constructs. Tables 5 and 6 contain all the scales and subscales of interest for this study. The researchers used confirmatory factor analysis (CFA) to evaluate their conception of theoretical, latent constructs in the questionnaire to

Table 5

Self-Efficacy Scales: Composite Scale and Subscales with Context-Specific Constructs

Composite	Composite and Subscale Descriptions	Stratified Cronbach's alpha	
T3SELF	Teacher self-efficacy (composite)	0.911	
Subscale		Omega Coefficient	CFA Model-Data Fit
T3SECLS	Self-efficacy in classroom management	0.845	CFI: 0.993
TT3G34	In your teaching, to what extent can you do the following?		
Response options	"Not at all" (1), "To some extent" (2), "Quite a bit" (3), "A lot" (4)	Factor Loadings	Unstandardized Intercepts
TT3G34D	Control disruptive behavior in the classroom	0.758	3.224
TT3G34F	Make my expectations about student behavior clear	0.660	3.473
TT3G34H	Get students to follow classroom rules	0.845	3.309
TT3G34I	Calm a student who is disruptive or noisy	0.747	3.124

Subscale		Omega Coefficient	CFA Model-Data Fit
T3SEINS	Self-efficacy in instruction	0.821	CFI: 0.902
TT3G34	In your teaching, to what extent can you do the following?		
Response options	"Not at all" (1), "To some extent" (2), "Quite a bit" (3), "A lot" (4)	Factor Loadings	Unstandardized Intercepts
TT3G34C	Craft good questions for students	0.567	3.219
TT3G34J	Use a variety of assessment strategies	0.722	3.118
TT3G34K	Provide an alternative explanation, for example when students are confused	0.727	3.458
TT3G34L	Vary instructional strategies in my class	0.808	3.284

Subscale		Omega Coefficient	CFA Model-Data Fit
T3SEENG	Self-efficacy in student engagement	0.801	CFI: 1.000
TT3G34	In your teaching, to what extent can you do the following?		
Response options	"Not at all" (1), "To some extent" (2), "Quite a bit" (3), "A lot" (4)	Factor Loadings	Unstandardized Intercepts
TT3G34A	Get students to believe they can do well in school work	0.709	3.229
TT3G34B	Help students value learning	0.724	3.068
TT3G34E	Motivate students who show low interest in school work	0.783	2.862
TT3G34G	Help students think critically	0.705	3.101

Note. Adapted from "Validation of Scales and Construction of Scale Scores," by A. Stancel-Piątak J. Wild, M. Chen, M. Rozman, P. Mirazchiyski, H. Cigler, 2020, *TALIS 2018 Technical Report*, p. 283-300 (https://www.oecd.org/education/talis/TALIS_2018_Technical_Report.pdf). Copyright 2020 by OECD.

Table 6

Stress Scales: Workplace Well-Being and Stress, Workload Stress, and Student Behavior Stress

Subscale	Subscale Description and Variables	Omega Coefficient	CFA Model-Data Fit
T3WELS	Workplace well-being and stress	0.867	CFI: 0.989
TT3G53	In your experience as a teacher at this school, to what extent do the following occur?		
Response options	"Not at all" (1), "To some extent" (2), "Quite a bit" (3), "A lot" (4)	Factor Loadings	Unstandardized Intercepts
TT3G51A	I experience stress in my work	0.632	2.757
TT3G51B*	My job leaves me time for my personal life	0.286	2.494
TT3G51C	My job negatively impacts my mental health	0.887	1.862
TT3G51D	My job negatively impacts my physical health	0.818	1.711

Subscale		Omega Coefficient	CFA Model-Data Fit
T3WLOAD	Workload stress	0.797	CFI: 0.984
TT3G52	Thinking about your job at this school, to what extent are the following sources of stress in your work?		
Response options	"Not at all" (1), "To some extent" (2), "Quite a bit" (3), "A lot" (4)	Factor Loadings	Unstandardized Intercepts
TT3G52A	Having too much lesson preparation	0.729	2.093
TT3G52B	Having too many lessons to teach	0.775	1.896
TT3G52C	Having too much marking	0.682	2.211
TT3G52D	Having too much administrative work to do (e.g., filling out forms)	0.472	2.064
TT3G52E	Having extra duties due to absent teachers	0.397	1.586
Subscale		Omega Coefficient	CFA Model-Data Fit
T3STBEH	Student behavior stress	**	**
TT3G52	Thinking about your job at this school, to what extent are the following sources of stress in your work?		
Response options	"Not at all" (1), "To some extent" (2), "Quite a bit" (3), "A lot" (4)	**Factor Loadings**	**Unstandardized Intercepts**
TT3G52F	Determining course content	0.291	2.233
TT3G52G	Selecting teaching methods	1.095	2.163
TT3G52H	Assessing students' learning	0.489	1.496

Note. Adapted from "Validation of Scales and Construction of Scale Scores," by A. Stancel-Piątak, J. Wild, M. Chen, M. Rozman, P. Mirazhiyki, H. Cigler, 2020, TALIS 2018 Technical Report, p. 283-300 (https://ww.oecd.org/education/talis/TALIS_2018_Technical_Report.pdf). Copyright 202 by OECD.

[a]Item was reverse coded. [b]Reliability coefficient estimation failed in the final scale model due to a negative residual variance for one or more items that could not be corrected; these countries/economies have untrustworthy scale scores for the corresponding IECD level.

develop these scales and subscales. The researchers conducted separate CFAs for the population in each country/economy.

Because all the scales of interest were continuous response options, TALIS reported the Omega coefficient for reliability for each scale or subscale (Stancel-Piatak et al., 2019). Higher Omega values suggest a more reliable scale. TALIS recommended an Omega Coefficient cut-off of 0.600-0.699 for an acceptable reliability level and >0.700 as indicating good reliability. All scales and subscales of interest (see Tables 5 and 6) except one demonstrated good reliability.

The one exception to the 'good' reliability score was the student behavior stress subscale. The student behavior stress subscale for the United States data "failed in the final scale model due to a negative residual variance for one or more items that could not be corrected; these countries/economies have untrustworthy scale scores for the corresponding ISCED level" (Stancel-Piatak et al., 2019, p. 321). For this reason, this subscale will not be used in this study.

TALIS also reported on model-data goodness of fit indices by reporting the comparative fit index (CFI) for each scale or subscale (Stancel-Piatak et al, 2019). The CFI compared the baseline model with the targeted factor structure model with relationships fixed at zero. The higher the CFI value, the better the fit. TALIS recommends CFI cut-offs being set at >0.900, indicating such a value was an acceptable model-fit. All scales and subscales in Tables 5 and 6 being used in this study exceeded 0.900. Lastly, TALIS included individual, standardized factor loadings, and unstandardized intercepts for each variable in the scale. Tables 5 and 6 include an organization of the constructs used in the study. Additionally, Appendix A contains a copy of the TALIS 2018 teacher questionnaire. Multiple of these scales and subscales in the teachers' responses are variables of interest.

Analysis

This study posed multiple research questions. A splitting of the data allowed for comparisons of means and comparisons of correlations between subgroups of teachers: (a) novice versus experienced teachers, (b) female versus male teachers, and (c) literacy teachers versus non-literacy teachers. The sample used novice (n = 460) and experienced (n = 2100) teachers. Although the sample represented all teachers, both full-time and part-time, the number of teachers not designated as full-time was small enough not to impact the analyses (novice, n = 25, experienced, n = 178). A composite self-efficacy score was used, along with context-specific self-efficacies in hopes of being able to compare results to extant literature. The types of variables used and statistical analyses employed are delineated in Table 7. Also included is an explanation of variables, analyses, and subsequent explanation of statistics for each research question.

Table 7

Research Questions, Hypothesis, Variables, Type of Variables, and Statistical Analysis

RQ#	RQ	Variables	Type of Variable	Statistical Analysis
1	Do self-efficacies (composite, classroom management, instruction, and student engagement) differ for novice versus experienced teachers?	T3SELF, T3SECLS, T3SEINS, T3SEENG	Scale	Mann Whitney U (due to disparate sample sizes)
2	Does self-reported stress (workplace well-being and stress and workload stress) differ for novice teachers versus experienced teachers?	T3WELS, T3WLOAD	Scale	Mann Whitney U (due to disparate sample sizes)
3	What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for novice teachers?	T3SELF, T3SECLS, T3SEINS, T3SEENG, T3WELS, T3WLOAD	Scale	Pearson correlation

RQ#	RQ	Variables	Type of Variable	Statistical Analysis
3a	What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for experienced teachers?	T3SELF, T3SECLS, T3SEINS, T3SEENG, T3WELS, T3WLOAD	Scale	Pearson correlation
3b	Are the correlation coefficients different between experience levels?	Correlation coefficients and sample sizes		http://vassarstats.net/rdiff.html
4	Is there a relationship between years of experience (beginning and experienced) and teachers' efficacies?	T3SELF, T3SECLS, T3SEINS, T3SEENG	Scale	Pearson correlation
4a	Are the correlation coefficients significantly different between the two experience levels?	Correlation coefficients and sample sizes		http://vassarstats.net/rdiff.html
5	Is there a difference between male and female novice teachers' self-efficacies (composite, classroom management, instruction, and student engagement)?	T3SELF, T3SECLS, T3SEINS, T3SEENG	Scale	Mann Whitney U (due to disparate sample sizes)
6	Is there a difference between male and female novice teachers' stress (workplace well-being and stress and workload stress)?	T3WELS, T3WLOAD	Scale	Mann Whitney U (due to disparate sample sizes)
7	Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress for novice teachers who teach literacy when compared to teachers who do not teach literacy?	T3SELF, T3SECLS, T3SEINS, T3SEENG, T3WELS, T3WLOAD	Scale	Independent samples *t*-test
7a	Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and stress and workload stress) for mid- and late-career experienced teachers who teach a literacy course compared to mid- and late-career experienced teachers who do not teach a literacy course?	T3SELF, T3SECLS, T3SEINS, T3SEENG, T3WELS, T3WLOAD	Scale	Independent samples *t*-test

Research Question 1

Do self-efficacies (composite, classroom management, instruction, and student engagement) differ for novice versus experienced teachers?

H_0: There is no difference in efficacies for novice versus experienced teachers.

Variables

The variables used to answer this question included the composite self-efficacy score (T3SELF), and the subscales of self-efficacy in classroom management (T3SECLS), self-efficacy in instruction (T3SEINS), and self-efficacy in student engagement (T3SEENG) for novice and experienced teachers.

Analysis

A Mann-Whitney U analysis was conducted due to the disparate sample sizes of novice (n = 460) and experienced (n = 2100) teachers. This disparity exceeded the recommended limit of a ratio of 1.5, as proposed by Pituch and Stevens (2016).

Research Question 2

Does self-reported stress (workplace well-being and stress and workload stress) differ for novice teachers versus experienced teachers?

H_0: There is no difference in the self-reported stress for novice teachers versus experienced teachers.

Variables

The variables used to answer this question included the workplace well-being and stress (T3WELS) and workload stress (T3WLOAD) subscales, each a continuous variable.

Analysis

A Mann-Whitney U analysis was conducted due to the disparate sample sizes of novice (n = 460) and experienced (n = 2100) teachers. This disparity exceeded the recommended limit of a ratio of 1.5, as proposed by Pituch and Stevens (2016).

Research Question 3

What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for novice teachers?

H_0: There is no relationship between teacher efficacies and stressors for novice teachers.

Research Question 3a.

What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for experienced teachers?

H0: There is no relationship between teacher efficacies and stressors for experienced teachers.

Variables

The variables used to answer this question included all scale variables, the composite T3SELF, and the subscales of self-efficacy in classroom management (T3SECLS), self-efficacy in instruction (T3SEINS), T3SEENG, T3WELS, and T3WLOAD subscales for novice and experienced teachers.

Analysis

The composite and subscale scores are continuous and have acceptable normality for each construct of interest. Therefore, the analysis used Pearson correlation.

Research Question 3b.

Are the correlation coefficients different between experience levels?

H_0: The correlation coefficients are not different between experience levels.

Variables

The variables used to answer this question were the correlation coefficient scores (*r*) generated in research question three and sample size (*n*).

Analysis

The calculator provided a z value (Lowry, 2021) to determine statistical significance between the two samples.

Research Question 4

Is there a relationship between years of experience (novice and experienced) and teachers' efficacies?

H_0: There is no relationship between years of experience (novice and experienced) and teachers' efficacies.

Variables

The variables used to answer this question included all scale variables, the composite T3SELF, and the subscales T3SECLS, T3SEINS, and T3SEENG subscales for novice and experienced teachers.

Analysis

The composite and subscale scores are continuous and have acceptable normality for each construct of interest. Therefore, Pearson correlation was used in the analysis.

Research Question 4a.

Are the correlation coefficients different between novice and experienced teachers' self-efficacies?

H_0: There is no difference between correlation coefficients of novice and experienced teachers' self-efficacies.

Variables

The variables used to answer this question were the correlation coefficient scores (*r*) generated in research question four and sample size (*n*).

Analysis

The calculator provided a z value (Lowry, 2021) to determine statistical significance between the two samples.

Research Question 5

Is there a difference between male and female novice teachers' self-efficacies (composite, classroom management, instruction, student engagement)?

H_0: There is no difference between the male and female novice teachers' self-efficacies (composite, classroom management, instruction, student engagement).

Variables

The variables used included composite T3SELF, and the subscales T3SECLS, T3SEINS, and T3SEENG for novice and experienced teachers.

Analysis

A Mann-Whitney U analysis was conducted due to the disparate sample sizes of female (n = 316) and male (n = 144) novice teachers. This disparity exceeded the recommended limit of a ratio of 1.5, as proposed by Pituch and Stevens (2016).

Research Question 6

Is there a difference between male and female novice teachers' stress (workplace well-being and stress and workload stress)?

H_0: There is no difference between the male and female novice teachers' stress (workplace well-being and stress and workload stress).

Variables

The variables used to answer this question included the T3WELS and T3WLOAD subscales, each a continuous variable.

Analysis

A Mann-Whitney U analysis was conducted due to the disparate sample sizes of female (n = 316) and male (n = 144) novice teachers. This disparity exceeded the recommended limit of a ratio of 1.5, as proposed by Pituch and Stevens (2016).

Research Question 7

Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and stress and workload stress) for novice teachers who teach a literacy course when compared to novice teachers, who do not teach a literacy course?

H_0: There is no difference between self-efficacy and stress for novice teachers who teach a literacy course and those that do not.

Research Question 7a.

Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and stress and

workload stress) for experienced teachers who teach a literacy course compared to experienced teachers who do not teach a literacy course?

H_0: There is no difference between self-efficacy and stress for experienced teachers who teach a literacy course and those that do not.

Variables

The variables used to answer question 7 included composite T3SELF and the subscales T3SECLS, T3SEINS, T3SEENG, T3WELS, and T3WLOAD for novice and experienced teachers of literacy. Each of these scales and subscales was a continuous variable. The variables used to answer question 7a included T3WELS and T3WLOAD subscales, each a continuous variable.

Analysis

An independent samples *t*-test was employed for both analyses because the sample sizes (novice literacy teachers, $n = 208$; novice non-literacy teachers, $n = 246$; and experienced literacy teachers, $n = 913$; experienced non-literacy teachers, $n = 1135$) were in the recommended limit of a ratio of 1.5 (Pituch & Stevens, 2016). To verify that a type 1 error did not impact results, a factorial ANOVA was run and can be found in Appendix B.

The next section describes each of the proposed statistical analyses to answer each of the research questions. The reason each analysis was chosen along with the assumptions are noted. According to the sequence of use, the descriptions for each analysis follow. Therefore, an explanation of the Mann-Whitney U is first.

Mann Whitney U

The Mann-Whitney U test or Wilcoxon-Mann-Whitney test is a rank-based, nonparametric test technique used to compare two groups (Pallant, 2016). The test compares two

groups by ranking the scores of two independent groups on a continuous variable and evaluates if the group ranks differ significantly. The Mann-Whitney U test is employed when the parametric test assumptions, independent samples *t*-test, fail. For instance, researchers use a Mann-Whitney U test if the sample data are not normally distributed or the dependent variable is nominal instead of continuous, as required by the independent samples *t*-test (Laerd, 2015; Pallant, 2016).

Additionally, sample size disparity warrants the use of the Mann-Whitney U technique (Pallant, 2016). The Mann-Whitney U technique is used to determine differences in the distributions or medians of two groups by comparing the two categories' distribution shape. Statisticians use the mean to determine if the distribution of the two variables being compared has different shapes. If the distribution of scores has the same shape, the medians are used to determine if there are differences between the two groups. Several assumptions were required and checked to utilize the Mann-Whitney U test.

Assumptions

There are several assumptions for nonparametric techniques. One assumption is one dependent variable is either nominal or continuous (Laerd, 2015), and another is the sample is random (Pallant, 2016). Also, the independent variable must be categorical or dichotomous, and no relationship between the groups being compared, according to Laerd (2015). This lack of relationship between groups is known as an independence of observation (Pallant, 2016). Lastly, the distribution of the scores for the two groups being compared should be determined as this is needed in the interpretation of the results, as explained previously.

Output

The output for the Mann-Whitney produced a chart indicating if the null hypothesis should be rejected or accepted (Laerd, 2015). Additionally, a population pyramid for the two groups being compared was generated. Upon visual inspection of the population pyramid, the determination of whether the distributions were similar ensued. If the distributions were visually similar, the Mann-Whitney U test was used to determine if there was a statistically significant difference between the two subgroups in the sample. Therefore, the Mann-Whitney U allowed comparison of the subgroups of interest between groups of disparate size.

Then, to determine a median and mean score for each subgroup, a comparison of means analysis was run and median and mean were the selected 'cell statistics.' This produced a chart with all median and mean values for the subgroups of interest, novice and experienced, and female and male among novice teachers. These median and mean values determined which subgroup was statistically different from the other if the *p*-value indicated significance. Although the Mann-Whitney U allowed comparison between groups, the Pearson product-moment correlation allowed for a different type of analysis.

Pearson Product-Moment Correlation

Correlation allows a researcher to determine the relationship or association between two variables or bivariates (Leech et al., 2015). Pearson product-moment correlation, often referenced as Pearson correlation, is the most frequently chosen measure to determine associations between two variables that are continuous and have a linear relationship (Leech et al., 2015; Tabachnick & Fidell, 2013; Urdan, 2017).

Urdan (2017) explained a correlation coefficient has two main functions. One function is to determine if the two variables being analyzed move in the same direction (positive correlation;

both go up or both go down) or opposite directions (negative correlation; one goes up while the other goes down). A scatterplot can visually display a positive versus negative correlation by the direction of the slope.

The other function of a correlation coefficient (*r*) is to indicate the magnitude and strength of the relationship between the variables with a coefficient between +1 and -1 with .00 indicating no correlation. A correlation coefficient (*r*) of +1 indicates a perfect positive correlation, and -1 indicates a perfect negative correlation, although in social sciences, most correlation coefficients fall in a range of +.07 and -.07. Researchers suggest a strong correlation is indicated when a correlation coefficient of .05 or greater (positive or negative), moderate between .20 and .50 (positive or negative) and weak between +.20 and -.20 (Pallant, 2016; Urdan, 2017). There are several different formulas for determining the correlation coefficient, but Tabachnick and Fidell (2013) consider this one to be the most interpretable: $r = \Sigma Z_X Z_Y / N - 1$, where Z_x is the z score of the *X* variable and Z_y is the z score for the *Y* variable and *N*-1 is the sample size minus one. Tabachnick and Fidell (2013) explained how the "Pearson *r* is independent of scale of measurement size (because both x and y are converted to standard scores, [*z* scores]) and independent of sample size (because of dividing by *N*)" (p. 56). Pearson's correlation must meet several assumptions to be considered for use with data.

Assumptions

According to Pallant (2016), assumptions for Pearson correlation include the variables be: (a) continuous, (b) interval or ratio, and (c) paired and independent. The conditions were met for the variables in this study using the Pearson correlation for analysis. Three more assumptions must be met to verify the use of a Pearson correlation. These three assumptions are: (a) a check for normality, (b) a linear relationship between the variables, and (c) no significant outliers.

Normality

The first assumption was both continuous variables were approximately normally distributed (Leech et al., 2015). The normality assumption and determination of outliers were checked by analyzing q-q plots, histograms, boxplots, and the skewness for both variables. If the skewness fell above a +1 or below a -1, it indicated that it deviates from normality and is extremely skewed (Leech et al., 2015). A check for the assumption of normality was important because a distribution that is not normal can inflate Type 1 errors and reduce power (Bishara & Hittner, 2012). All proposed variables had acceptable normality and are described more fully in chapter 5.

Linearity

Another assumption was linearity (Leech et al., 2015). Linear relationships between the two variables of interest were assessed visually with a scatterplot output. If the scatterplot indicated a nonlinear relationship, such as a curved line, transformations or a nonparametric option such as Spearman rho were considered. One last assumption checked was homoscedasticity, wherein the scatterplot should resemble a "cigar shape along its length" (Pallant, 2016, p. 130). If it did not, it indicated the data may be violating the assumption of homoscedasticity. The scatterplots for the proposed variables were acceptable.

Outliers

The last assumption checked was for outliers and was visually determined by analyzing a scatterplot (Pallant, 2016) or boxplots (Leech et al., 2015). Leech et al. (2015) explained dealing with the outliers should begin with an inspection of the data to ensure the data entered is accurate. If the outliers are determined to be valid, the researcher may decide to transform the data or do the analysis with the data included (non-transformed) or remove the data point, which

is a controversial option. With each transformation, a recheck of the assumptions is in order. Any of these decisions for handling the outliers should also be noted in the write up for the analysis.

A check of outliers and the influence they may have on the mean was also checked by a statistic referred to as the 5% Trimmed Mean (Pallant, 2016). When performing this analysis, "SPSS removes the top and bottom 5% of the cases and calculates a new mean value," (Pallant, 2016, p. 63). Then, a comparison of the original mean and the trimmed mean reveals whether the extreme scores or outliers are having a strong influence on the mean (means are very different) or not (means are close to each other). The variables of interest did not have significant outliers.

Output

Output for the Pearson correlation coefficients was a matrix entitled 'Correlations' with duplicate information above and below the diagonal line that runs through the middle of the matrix, as explained by Leech et al. (2015). As mentioned previously, the strength of the correlation can be determined by the correlation coefficient (r) found in the correlation matrix output, a larger number indicating a stronger relationship, whether it is positive or negative.

The correlation output also indicates whether the coefficient was statistically significant by reporting the p-value. Pallant (2016) suggested caution for significance tests with large sample sizes because it is common to produce a significant result with large data samples. Hence, the correlation coefficient (r) and coefficient of determination (r^2) should be considered in the analysis. The coefficient of determination squares the correlation coefficient and indicates the amount of shared variance between the two variables and, if small, the results may not be as meaningful as statistical significance may lead one to believe.

Another way to determine how practical the significance of the results may or may not be is to calculate the confidence interval. Although the software, Statistical Package for the Social

Sciences (SPSS), does not provide this in the output, Pallant (2016) explained there are online resources to conduct such an analysis (Lowry, 2021), and Urdan (2015) provided an equation. The third and final statistical analysis used to answer the research questions was an independent samples *t*-test.

Independent Samples *t*-Test

The independent samples *t*-test was used to compare the means of two independent or unrelated groups of an independent, categorical variable, on a continuous, dependent variable (Leech et al., 2015; Pallant, 2016). There are several assumptions that must be met to run this parametric test.

Assumptions

According to Pallant (2016), the assumptions include: (a) a continuous dependent variable, (b) a categorical independent variable, (c) a random sample of the population, and (d) observations are independent. The sample of novice and experienced literacy teachers both met this assumption. Independence of observations indicated the categories in the independent variable were independent of one another. Urdan (2017) explained there must be no overlap between these two categories (literacy teacher and non-literacy teacher) and this was true for the sample under study. Additionally, normal distribution is assumed although with a sample size greater than 30, violation of this assumption does not cause major issues (Pallant, 2016). Both the novice (n = 208) and experienced (n = 913) teachers of literacy in this study met this suggested sample size and indicated acceptable normality, as stated previously.

Homogeneity of Variance

The last assumption checked was homogeneity of variance. Homogeneity of variance was assessed since parametric tests, such as the independent samples *t*-test, required the sample be

obtained from a population of equal variances (Pallant, 2016). The dependent stress and self-efficacy variables were analyzed (T3SELF, T3SECLS, T3SEINS, T3SEENG, T3WELS, T3WLOAD) with novice and experienced teachers of literacy and teachers not teaching literacy. The homogeneity of variance was not violated. The significance levels for Levene's Test of Equality of Variances ranged from $p = .451$ to $p = .985$ for novice literacy teachers and $p = .098$ to $p = .908$ for experienced literacy teachers. Therefore, the assumption of homogeneity of variance was met, indicating the two groups' variance was approximately equal. Thus, independent sample *t*-tests were used.

Sample Size of Groups Being Compared

Although independent sample *t*-tests are reasonably robust to violation of homogeneity, this depends on the sample size of the groups being compared (Pallant, 2016). The sample sizes must be reasonably similar, and the ratio of largest to smallest equals 1.5 (Pituch & Stevens, 2016). The sample sizes (novice literacy teachers, $n = 208$; novice non-literacy teachers, $n = 246$; and experienced literacy teachers, $n = 913$; experienced non-literacy teachers, $n = 1135$) were well in this recommended ratio.

Output

The output generated for an independent sample *t*-test included the previously mentioned Levene's test for equality of variances (Pallant, 2016). If Levene's test result is nonsignificant ($p > .05$), the 'equal variances assumed' will be the data to analyze, and if the result is significant ($p \leq .05$), the 'equal variances not assumed' will be the data analyzed. Additionally, the effect size, Cohen's d, was investigated. Assessing the effect size was particularly important because the sample size is large, which typically results in a significant *p*-value. The effect size determined the magnitude of differences between groups and whether the effect is small (.20 and below),

moderate (between .20 and .50), or large (over .80; Cohen, 1988). These effect size guidelines are used in group comparisons (Pallant, 2016).

Conclusion

This chapter overviewed the TALIS, research questions, and corresponding analysis methods. Due to the violation of an assumption, disparate sample sizes, this study used nonparametric methods (Mann-Whitney U) to answer some research questions and parametric methods (Pearson's correlation and independent samples *t*-test) to answer other research questions. These analyses used the TALIS dataset. The TALIS (2018) dataset is extensive, well-validated, and thoroughly researched, providing a reliable measurement tool to do this work, as previously explained. The statistical analysis was conducted with SPSS statistical software, version 27, and included Pearson correlation, Mann-Whitney U tests, and independent samples *t*-test. Chapter 4 describes these analyses and an acceptance or rejection of the null hypothesis for each hypothesis question posed and descriptions of relationships between variables.

Chapter 4: Findings

The purpose of this study was to examine the relationship between a variety of self-efficacy and stress variables for novice teachers as compared to experienced teachers and subgroups within these teacher samples. Such an analysis of relationships determined if self-efficacy mitigates or correlates negatively with stress for novice teachers as the literature showed it does for teachers of varying experience levels (Betoret, 2009; Collie et al., 2012; Gilbert et al., 2014; Gonzalez et al., 2017; Herman et al., 2020; Klassen & Chiu, 2010; Love et al., 2020; McCormick et al., 2005; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; von der Embse et al., 2016; Yu et al., 2015). This information may inform how schools and districts can bolster novice teachers' self-efficacy to mitigate the effects of stress. A review of the research questions is next. The remainder of the chapter provides analyses of the sample including descriptive statistics and the results of each research question.

Research Questions

1. Do self-efficacies (composite, classroom management, instruction, and student engagement) differ for novice versus experienced teachers?
2. Does self-reported stress (workplace well-being and stress and workload stress) differ for novice teachers versus experienced teachers?
3. What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for novice teachers?

   3a. What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for experienced teachers?

3b. Are the correlation coefficients different between experience levels?

4. Is there a relationship between years of experience (novice and experienced) and teachers' efficacies?

   4a. Are the correlation coefficients different between novice and experienced? teachers' self-efficacies?

5. Is there a difference between male and female novice teachers' self-efficacies (composite, classroom management, instruction, student engagement)?
6. Is there a difference between male and female experienced teachers' stress (workplace well-being and stress and workload stress)?
7. Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and stress a workload stress) for novice teachers who teach a literacy course compared to novice teachers, who do not teach a literacy course?

   7a. Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and stress and workload stress) for experienced teachers who teach a literacy course compared to experienced teachers who do not teach a literacy course?

Analysis

This study used secondary data from the TALIS 2018 questionnaire responses queried from seventh, eighth, and ninth grade teachers from across the United States, as previously described in Chapter 3. The analysis plan included descriptive statistics, Mann-Whitney U, Pearson correlation, and independent samples *t*-test. This variety of statistics facilitated a better understanding of novice and experienced teachers' nuances and multiple constructs in self-

efficacy and stress. First, the descriptive statistics for the sample and scale variables , normality checks for the scale variables, and the scale variables' correlations are reviewed. Following the descriptive statistics are the research question results with a description of the analyses.

Descriptive Statistics of Sample

Descriptive statistics depict members represented in the data collected in a sample or population (Urdan, 2017). In this study, the data derived from a sample of seventh, eighth, and ninth grade teachers in public and private schools from across the United States (see Table 8). Although these descriptive statistics gave an overview of the teachers in the sample and subsample, descriptive statistics also gave a snapshot of the teachers' responses, as explained next.

Table 8

Descriptive Statistics for Novice, Experienced, and All Teachers

	Novice		Experienced		All teachers	
	(*n*)	%	(*n*)	%	(N)	%
Gender						
Female	316	68.7	1401	66.6	1717	67.2
Male	144	31.3	693	33.1	837	32.8
Missing	0	0	6	0.3	6	0.2
Total	460	100	2100	100	2560	100
Education						
High School	0	0	2	0.1	2	0.1
Short-cycle tertiary education	2	0.4	3	0.1	5	0.2
Bachelor's or equivalent	289	63.0	683	32.4	972	38
Master's or equivalent	159	34.6	1365	65.4	1524	59.5
Doctoral or equivalent	9	2.0	39	1.9	48	1.9
Omitted or invalid/not reached	1	0.2	8	0.1	9	0.4
Total	460	100.2	2100	100	2560	100
Employment						
Full-time (90% or more)	435	94.6	1947	92.7	2382	93

	Novice		Experienced		All teachers	
	(*n*)	%	(*n*)	%	(N)	%
Part-time (71%-90%)	13	2.8	48	2.3	61	2.4
Part-time (50-70%)	3	0.7	23	1.1	26	1.0
Part-time (less than 50%)	5	1.1	22	1	27	1.1
Omitted or invalid	4	0.9	60	2.9	64	2.5
Total	460	100	2100	100	2560	100
Employ Status - Contract						
Permanent employment	185	40.2	1479	71.7	1664	65.0
Fixed-term contract for more than one school year	71	15.4	201	9.7	272	10.6
Fixed-term for one school year	204	44.3	382	18.5	586	22.9
Omitted or invalid/not reached	0	0	38	1.8	38	1.5
Total	460	100	2100	100	2560	100.0
Subjects Taught						
Reading	208		913		1122	
Mathematics	158		580		738	
Science	95		413		508	
Social Studies	98		428		526	
Modern Foreign Languages	39		137		176	
Ancient Greek or Latin	19		59		78	
Technology	110		566		676	
Arts	69		318		387	
Physical Education	48		265		313	
Religion or Ethics	37		141		178	
Practical and Vocational Skills	67		248		315	
Other	129		676		805	
Total[a]	1077		4745		5822	

[a]Teachers taught more than one subject; therefore, the percentage not reported.

Descriptive Statistics of Scale Variables

Table 9 displays descriptive statistics for the teachers' responses and comprise the scale variables of interest in this study. Urdan (2017) explained the mean is a measure of central tendency and indicates the average of the responses given for each scale variable among all respondents. The standard deviation references a measure of dispersion or the average amount of variation found in the distribution. Meanwhile, the minimum (min) and maximum (max) output indicate the smallest and largest average response for each scale item.

Table 9

Descriptive Statistics for Self-Efficacy and Stress Variables

Code	Description	*n*	Mean	S.D.	Min	Max
T3SELF	Teacher self-efficacy, overall	2425	12.83	2.16	2.68	16.31
T3SEENG	Self-efficacy in student engagement	2426	12.04	2.37	4.03	15.68
T3SEINS	Self-efficacy in instruction	2425	12.74	2.18	3.53	15.44
T3SECLS	Self-efficacy in classroom management	2426	12.76	2.15	4.14	15.28
T3WLOAD	Workload stress	2387	9.21	2.01	6.34	14.81
T3WELS	Workplace well-being and stress	2395	9.47	2.06	6.75	14.89

Normality Check for Scale Variables

Table 10 contains the statistical analysis to verify the teacher sample's normality and subgroups, novice and experienced, and the stress and self-efficacy scale variables used in this study. Pallant (2016) explained the 5% trimmed mean of the variables is determined after removing the top and bottom 5% of the cases. This trimmed mean allows one to analyze if the outliers have a strong influence on the overall mean by comparing these two means. Each of these mean comparisons was small, with the output ranging in size from 0.15 to 0.51. Therefore, this output indicates any extreme values that exist did not have a strong influence on the mean.

Additionally, all variables' skewness was 0.89 or smaller, indicating acceptable normality when skewness is between ±1 (Leech et al., 2015). Lastly, a significant Kolmogorov-Smirnov statistic showed nonnormality of the distribution (Pallant, 2016), each variable's Kolmogorov-Smirnov statistic being significant (p = .0001). However, this is common when the sample size is large, as is the case in this sample.

Table 10

Normality Verifications

Code	Scale description	Mean	5% trimmed mean	Difference between means	Skewness	Kolmogorov-Smirnov statistic[b]
TT3G11B[a]	Experience as a teacher (0 to 4 years)	2.38	2.43	0.05	-0.25	0.000
TT3G11B[a]	Experience as a teacher (5 years and beyond)	16.58	16.07	0.51	0.78	0.000
TT3G11B	Experience as a teacher in total (entire sample)	13.99	13.49	0.50	0.66	0.000
T3SELF	Teacher self-efficacy, overall	12.83	12.93	0.10	-0.17	0.000
T3SECLS	Self-efficacy in classroom management	12.76	12.92	0.16	-0.56	0.000
T3SEINS	Self-efficacy in instruction	12.74	12.91	0.17	-0.45	0.000
T3SEENG	Self-efficacy in student engagement	12.04	12.13	0.09	-0.07	0.000
T3WELS	Workplace well-being and stress	9.47	9.32	0.15	0.89	0.000
T3WLOAD	Workload stress	9.21	9.11	0.10	0.55	0.000

[a] TT3G11B was split by a novice (0 to 4 years of experience) and experienced (5 years and beyond) teachers. [b] Although a nonsignificant Kolomogrov-Smirnov statistic indicates normality of distribution, it is typical for a large sample to report a significant result

In addition to the analysis indicated in Table 10, visual inspections of the histograms, Q-Q plots, and boxplots revealed an overall acceptable normality level (Leech et al., 2015) for each scale variable. Each scale variable is listed next, along with the Normal Q-Q Plot output. A Normal Q-Q Plot, also known as a normal probability plot, plots observed values along a line representing an "expected value from the normal distribution," and a "reasonably straight line suggests a normal distribution" (Pallant, 2016, p. 63). Figures 2–8 represent an acceptable, normal distribution. Thus, an acceptable level of normality allowed for the use of Pearsons' correlation (see Figures 2–8).

Figure 2

Normal Q-Q Plot for Experience as a Teacher in Total (Entire Sample)

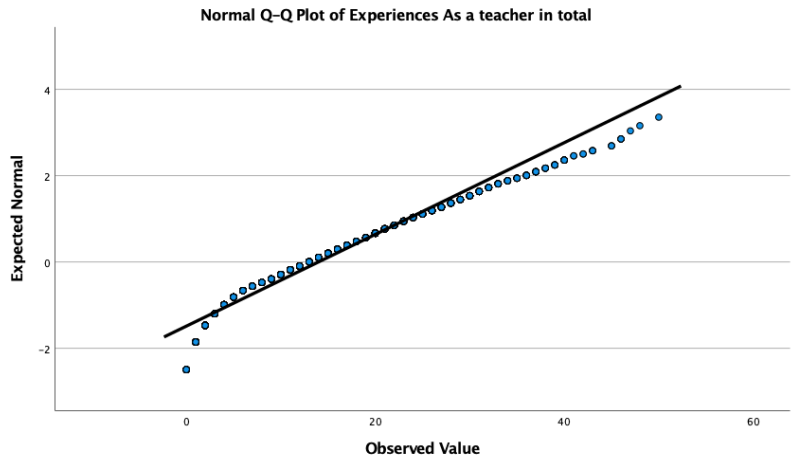


Figure 3

Normal Q-Q Plot for Teachers Self-Efficacy, Overall

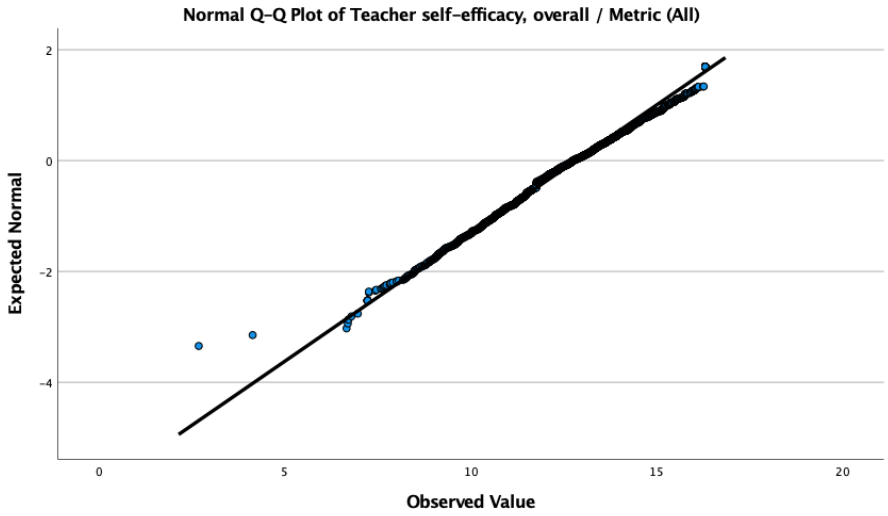


Figure 4

Normal Q-Q Plot for Self-Efficacy in Classroom Management

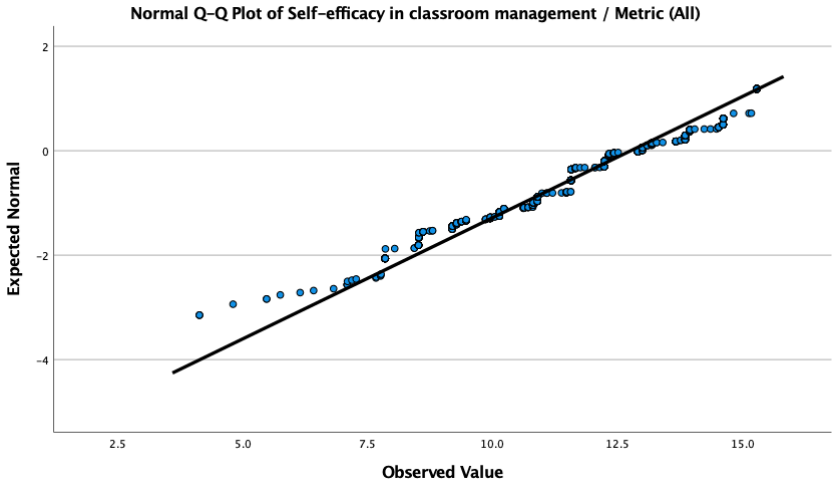


Figure 5

Normal Q-Q Plots for Self-Efficacy in Instruction

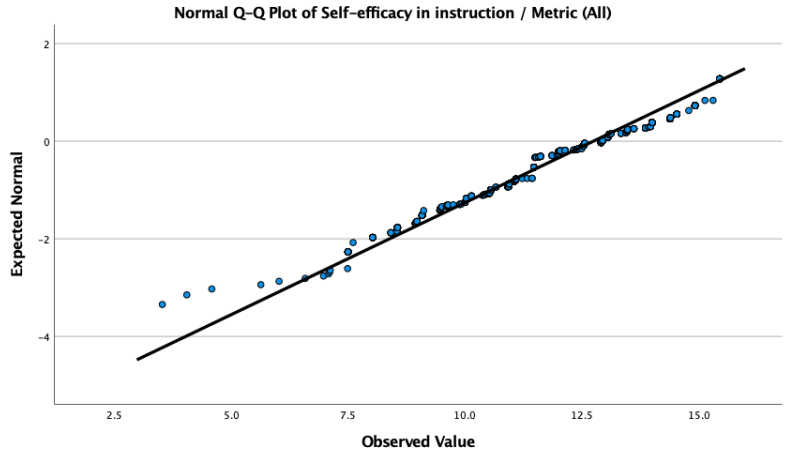


Figure 6

Normal Q-Q Plot for Self-Efficacy in Student Engagement

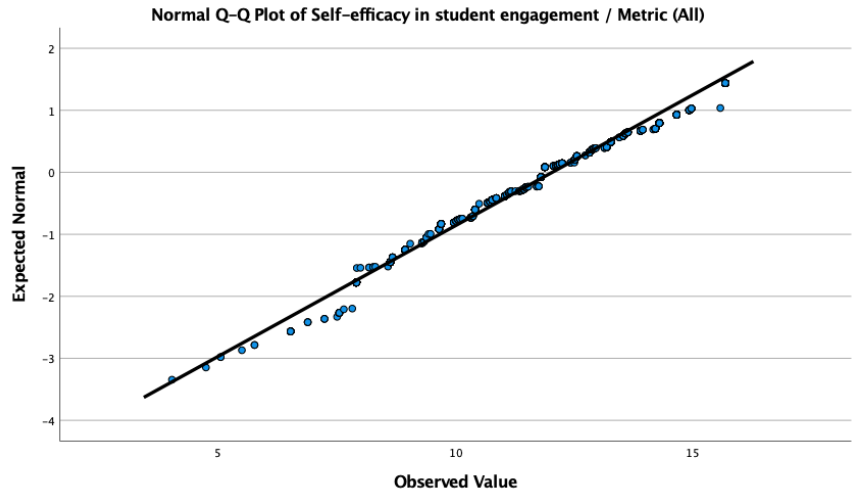


Figure 7

Normal Q-Q Plot for Workplace Well-Being and Stress

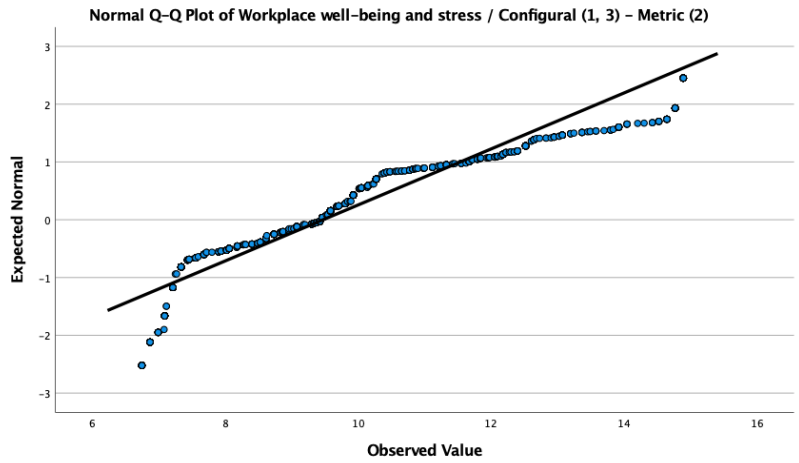
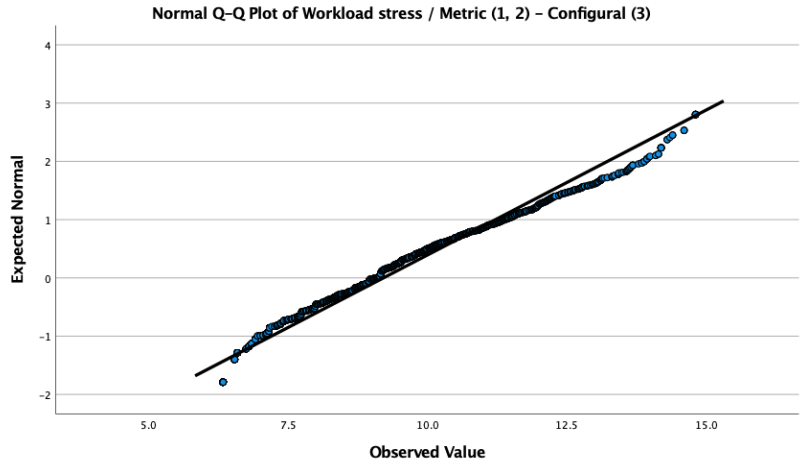


Figure 8

Normal Q-Q Plot for Workload Stress



Pearson's Product Moment Correlation

Because all the scale variables for the efficacies and two types of stress were all an acceptable level of normal, Pearson's product moment correlations were used for the analysis (Leech et al., 2015). The Pearson coefficient determines if one variable's values has an

association with another variable: thus, indicating a correlation (Urdan, 2017). Several different correlation analyses follow.

Correlations Between All Scale Variables

Table 11 reports the correlation coefficients between each of the efficacies and the workload stress and workplace well-being and stress for all teachers. A negative correlation indicates as self-efficacy increases, stress decreases and vice versa (Leech et al., 2015; Urdan, 2017). A negative correlation is the anticipated relationship for each self-efficacy and stress variable based on prior research results, as indicated in Chapter 2. However, only workplace well-being and stress had consistent, significant, negative correlations with each type of efficacy: overall or composite self-efficacy (r = -.128, p = 0.01), self-efficacy in classroom management (r = -.126, p = 0.01), self-efficacy in instruction (r = -.051, p = 0.05), and self-efficacy in student engagement (r = -.128, p = 0.01). Meanwhile, workload stress only had a statistically significant correlation with self-efficacy in classroom management (r = -.050, p = .05) and self-efficacy in student engagement (r = -.049, p = .05).

However, these results should be viewed with caution because large sample sizes more readily yield statistically significant results (Leech et al., 2015; Pallant, 2016; Urdan, 2017). In any correlation output, it is essential to also consider the strength of the relationship by inspecting the correlation coefficient's size (r). Using Cohen's (1988) guidelines, all of the relationships were small (below .29), and the amount of variance the two variables shared was very small. The greatest variance shared was only 2% for student engagement self-efficacy and workplace well-being and stress. Additionally, because the correlations were so high between the various self-efficacies, these correlation coefficients indicated regression analysis would not be feasible because the constructs were too similar and multicollinearity issues would arise (Leech

et al., 2015). Although these correlations looked at the sample, including all teachers, novice and experienced, the research questions posed for this study analyzed potential differences that may exist between these two groups.

Table 11

Correlations Between Stress and Self-Efficacy Variables for All Teachers

	Overall teacher self-efficacy	Student engage-ment self-efficacy	Self-efficacy in instruc-tion	Self-efficacy in classroom manage-ment	Work-load stress	Workplace well-being and stress
Overall teacher self-efficacy	1					
Student engagement self-efficacy	.849**	1				
Self-efficacy in instruction	.820**	.560**	1			
Self-efficacy in classroom management	.794**	.505**	.471**	1		
Workload stress	-0.035	-.049*	0.014	-.050*	1	
Workplace well-being and stress	-0.128**	-.137**	-.051*	-.126**	.468**	1

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

Results

This portion of the chapter will reiterate each of the research questions. The results indicate the statistical analyses used in answering the question and an acceptance or rejection of the null hypothesis.

Research Question 1

Do self-efficacies (composite, classroom management, instruction, and student engagement) differ for novice versus experienced teachers?

H_0: There is no difference in efficacies for novice versus experienced teachers.

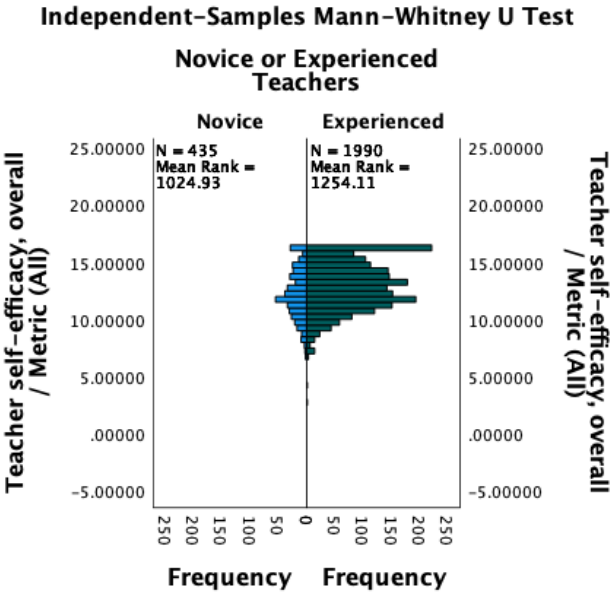
As described in the literature review of Chapter 2, researchers extensively studied teachers' self-efficacies of varying experience levels. However, few researchers examined context-specific self-efficacy variables and only two studies examined novice teachers (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015) although none of the studies compared novice to experienced teachers. Thus, research question one examined the various self-efficacy constructs offered in TALIS to compare novice teachers' levels to more experienced teachers. The results were consistent across all types of self-efficacies, with experienced teachers consistently exhibiting higher levels than their novice peers, except for self-efficacy in student engagement. Notably, although the results were significant for student engagement self-efficacy, the median scores for both were identical; however, the means differed. The novice teachers had lower means than experienced teachers. Therefore, based on the results, the null hypothesis was rejected in all instances. Described next are the specific results for each type of self-efficacy.

Composite Self-Efficacy

A Mann-Whitney U test determined statistically significant differences in composite self-efficacy scores for novice and experienced teachers. Distributions of the composite self-efficacy scores for novice and experienced teachers were visually inspected and found to be similar between both subgroups (see Figure 9) thereby indicating that differences in medians of the two groups be evaluated (Laerd Statistics, 2013). Median composite self-efficacy scores were statistically significantly different between novice (Mdn = 12.05, M = 12.24) and experienced (Mdn = 12.98, M = 12.96) teachers, U = 514636.5, z = 6.19, r = 0.13; $p < 0.001$, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was rejected.

Figure 9

Distributions of the Composite Self-Efficacy Scores, Novice and Experienced

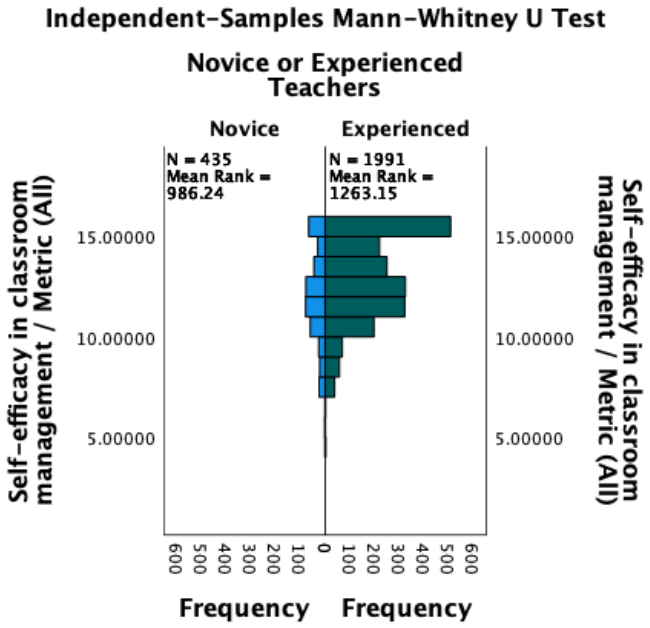


Classroom Management Self-Efficacy

A Mann-Whitney U test determined statistically significant differences in classroom management self-efficacy scores for novice and experienced teachers. Distributions of the classroom management self-efficacy scores for novice and experienced teachers were visually inspected and found to be similar between both subgroups (see Figure 10) thereby indicating that differences in medians of the two groups be evaluated (Laerd Statistics, 2013). Median classroom management self-efficacy scores were statistically significantly different between novice (*Mdn* = 12.23, *M* = 12.03) and experienced (*Mdn* = 13.00, *M* = 12.92) teachers, *U* = 531899.0, *z* = 7.53, *r* = 0.15l *p* < 0.001, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was rejected.

Figure 10

Distributions of the Self-Efficacy in Classroom Management Scores Novice, and Experienced

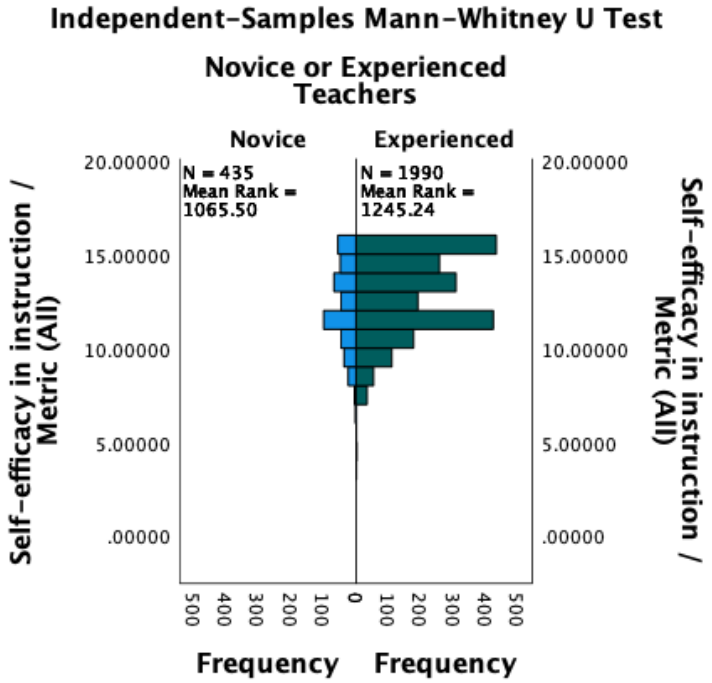


Instructional Self-Efficacy

A Mann-Whitney U determined there were significant differences in instructional self-efficacy scores for novice and experienced teachers. Distributions of the instructional self-efficacy scores for novice and experienced teachers were visually inspected and found to be similar between both subgroups (see Figure 11) thereby indicating that differences in medians of the two groups be evaluated (Laerd Statistics, 2013). Median instructional self-efficacy scores were statistically significantly different between novice (*Mdn* = 12.14, *M* = 12.30) and experienced (*Mdn* = 13.05, *M* = 12.84) teachers, *U* = 496986.0, *z* = 4.88, *r* = 0.10; $p < 0.001$, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was rejected.

Figure 11

Distributions of the Self-Efficacy in Instruction Scores, Novice and Experience

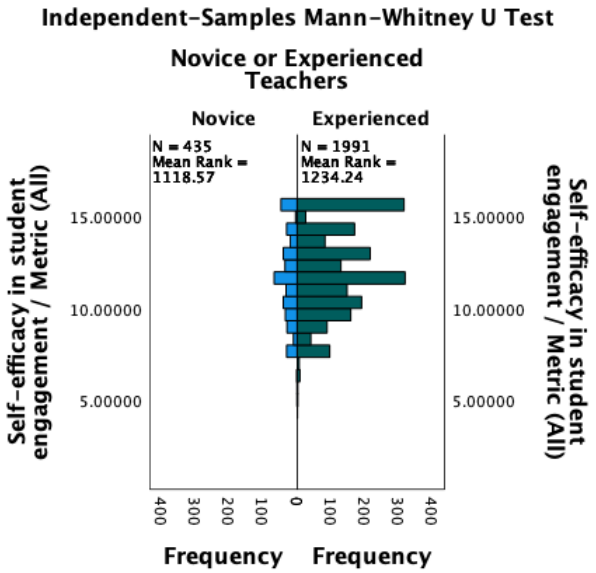


Student Engagement Self-Efficacy

A Mann-Whitney U determined there were significant differences in student engagement self-efficacy scores for novice and experienced teachers. Distributions of the student engagement self-efficacy scores for novice and experienced teachers were visually inspected and found to be similar (see Figure 12) thereby indicating that differences in medians of the two groups be evaluated (Laerd Statistics, 2013). Median instructional self-efficacy scores were statistically significantly different between novice (*Mdn* = 11.80, *M* = 11.71) and experienced (*Mdn* = 11.80, *M* = 13.18) teachers, *U* = 496986.0, *z* = 4.88, *r* = 0.10; *p* = 0.002, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was rejected.

Figure 12

Distributions of the Self-Efficacy in Student Engagement Scores, Novice and Experienced



Research Question 2

Does self-reported stress (workplace well-being and stress and workload stress) differ for novice teachers versus experienced teachers?

H_0: There is no difference in the self-reported stress for novice teachers versus experienced teachers.

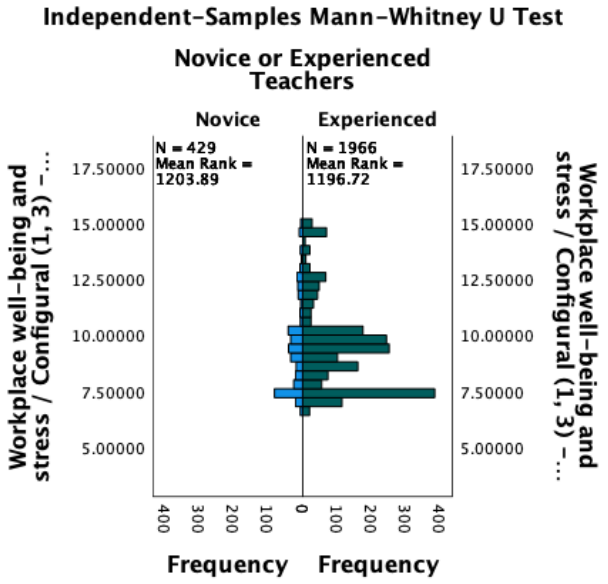
Research reviewed in Chapter 2 did not disaggregate stress for novice versus experienced teachers. Therefore, it is unknown if novice teachers identified similar stress levels to their experienced coworkers. In both types of stress, workplace well-being and stress and workload stress, the results indicated no difference between these two groups of teachers. For this reason, the null hypothesis was retained. The specific statistical results are explained next for each type of stress.

Workplace Well-Being and Stress

A Mann-Whitney U test determined no statistically significant differences in workplace well-being and stress for novice and experienced teachers. Distributions of the workplace well-being and stress for novice and experienced teachers were visually inspected and found to be similar between both subgroups (see Figure 13) thereby indicating that differences in medians of the two groups be evaluated (Laerd Statistics, 2013). Median workplace well-being and stress was not statistically significantly different between novice (*Mdn* = 9.30, *M* = 13.00) and experienced (*Mdn* = 9.46, *M* = 13.18) teachers, *U* = 419181.0, *z* = -0.20, *r* = 0.004; *p* = 0.85, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was retained, indicating no statistically significant difference between novice and experienced teachers to workplace well-being and stress.

Figure 13

Distributions of the Workplace Well-Being and Stress Scores, Novice and Experienced

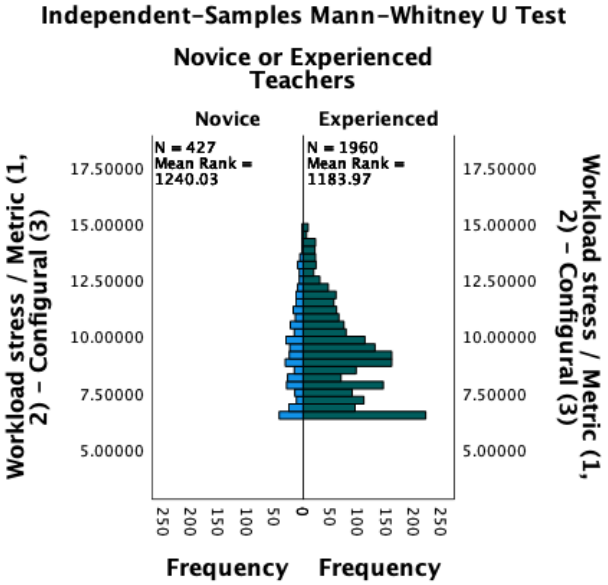


Workload Stress

A Mann-Whitney U test determined no statistically significant differences in workload stress for novice and experienced teachers. Distributions of the workload stress for novice and experienced teachers were visually inspected and found to be similar (see Figure 14) thereby indicating that differences in medians of the two groups be evaluated (Laerd Statistics, 2013). Median workload stress was not statistically significantly different between novice (*Mdn* = 9.16, *M* = 9.48) and experienced (*Mdn* = 9.04, *M* = 9.47) teachers, *U* = 419181.0, *z* = -0.20, r = 0.004; *p* = 0.85, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was retained. These results indicated no statistically significant difference in workload stress between novice and experienced teachers.

Figure 14

Distributions of the Workload Stress Scores, Novice and Experienced



Research Question 3

What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for novice teachers?

H_0: There is no relationship between various self-efficacies and the two types of stress for novice teachers.

Research Question 3a.

What is the relationship between the various self-efficacies (composite, classroom management, instruction, and student engagement) and two types of stress (workplace well-being and stress and workload stress) for novice teachers?

H_0: There is no relationship between various self-efficacies and the two types of stress for novice teachers.

Although several studies examined context-specific self-efficacies and various types of stress found in the literature review reported in Chapter 2, none of the studies examined the commonly used and context-specific self-efficacies used in most of the literature in relation to novice and experienced teachers. Therefore, this question proposed to tease out potential differences that may exist. The subsequent section describes the findings.

Correlations for Novice and Experienced Teachers

Table 12 includes the correlations between the two types of stress (workplace well-being and stress and workload stress) and each of the efficacies for novice and experienced teachers. Workplace well-being and stress for all efficacies were negative and significant, except for self-efficacy in instruction for novice teachers. This result indicated as self-efficacy increased, workplace well-being and stress decreased. Experienced teachers had similar results, although

self-efficacy in instruction was significant for experienced teachers, whereas it was not for novice teachers. Additionally, experienced teachers had the only significant correlation between workload stress and self-efficacy in student engagement, albeit a very small correlation coefficient (r = -0.047, p = 0.05). Notably, all other workload stress correlations with self-efficacy were nonsignificant.

The significant results should be viewed with caution because the sample size was large for both novice (n = 435) and experienced teachers (n = 1988), and statistical significance is easier to obtain (Leech et al., 2015; Pallant, 2016; Urdan, 2017). For this reason—and as a general practice—the strength of the relationship and shared variance need to be examined (Pallant, 2016). In each correlation the strength of the relationship was small (r < .29) or insignificant (r < .10) according to Cohen's (1988) guidelines, and the greatest shared variance was only 3% for self-efficacy in student engagement and workplace well-being and stress for novice teachers. Therefore, although the relationships were significant, they were not strong, leading to small shared variance.

Table 12

Correlations Between Stress and Self-Efficacy for Novices Versus Experienced Teachers

	Novice teachers (n = 435)		Experienced teachers (n = 1989)	
	Workload stress	Workplace well-being and stress	Workload stress	Workplace well-being and stress
Overall teacher self-efficacy	-0.063	-.163**	-0.024	-121**
Self-efficacy in classroom management	-0.079	-.167**	-0.038	-.117**
Self-efficacy in instruction	-0.024	-0.041	0.027	-.053*
Self-efficacy in student engagement	-0.046	-.179**	-.047*	-.129**

Note. The probability for each statistically significant result is noted below.

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

Research Question 3b.

Are the correlation coefficients different between experience levels for workplace well-being and stress?

H_0: The correlation coefficients are not different between experience levels for workplace well-being and stress.

The correlations were analyzed to determine if the difference between the correlation coefficients for the two groups of teachers, novice and experienced, was significantly different. The difference between the correlation coefficients for novice versus experienced teachers was not significant in any of the comparisons, which included workplace well-being and stress in relation to overall teacher self-efficacy ($p = 0.42$), classroom management self-efficacy ($p = 0.34$), instructional self-efficacy ($p = 0.80$), and student engagement self-efficacy ($p = 0.34$). These results were determined using a statistical calculator (Lowry, 2021), as recommended by Pallant (2016). The calculator was used to perform a Fisher r-to-z transformation to determine if statistical significance exists between different correlation coefficients. The calculator was used to examine the correlation coefficients for novice versus experienced teachers. The calculator used "a value of z that can be applied to assess the significance of the difference between two correlation coefficients, r_a, and r_b, found in two independent samples" (Lowry, 2020, bottom of page).

Research Question 4

Is there a relationship between years of experience (novice and experienced) and teachers' efficacies?

H_0: There is no relationship between novice and experienced teachers' efficacies.

Findings in the literature determined teachers' self-efficacies increased as they accumulated experience (Klassen & Chiu, 2010, 2011). This question established if this increase in self-efficacy as teachers gain experience was replicable with this sample, delineating between novice and experienced teachers. Table 13 displays the correlations between self-efficacies and the experience of the teacher, novice and experienced. All the correlations were significant and positive for novice and experienced teachers, except for self-efficacy in instruction for experienced teachers which was not significant. These positive associations indicated as the teachers gain experience, their self-efficacy also increased. Again, though, all the associations between variables were small ($r < .29$) or insignificant ($r < .10$), according to Cohen's (1988) guidelines. Therefore, view the results with caution. Notably, shared variance (r^2) did reach 7% for the shared variance between teacher self-efficacy in classroom management and novice teachers and was statistically different from experienced teachers' classroom management self-efficacy, as explained next. Therefore, the null hypothesis was rejected in all cases, except for self-efficacy in instruction for experienced teachers.

Table 13

Significance of Self-Efficacy and Experience Correlation

	Novice		Experienced		
	0 to 4-years' experience	*n*	5-50 years' experience	*n*	Significance of difference (2-tailed) [a]
Overall teacher self-efficacy	.218**	435	.057*	1988	0.0019
Self-efficacy in student engagement	.112*	435	.075**	1989	*ns*
Self-efficacy in instruction	.158**	435	0.012	1988	0.0001
Self-efficacy in classroom management	.260**	435	.053*	1989	0.0001

Note. Self-efficacy correlated by experience and significance determined using calculator.

[a] Used: http://vassarstats.net/rdiff.html to determine significance of the difference between correlation coefficients.

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

Research Question 4a.

Are the correlation coefficients different between novice and experienced teachers' self-efficacies?

H0: There is no difference between correlation coefficients of novice and experienced teachers' self-efficacies.

Once the correlation coefficients were determined for novice and experienced teachers, the question became whether any differences in these two subsamples were significant. The null hypothesis was rejected for all but the correlation between years of experience and instructional self-efficacy. As novice teachers' experience increased, their self-efficacy increased as well with the strongest correlation with self-efficacy in classroom management ($r = 0.260$, $p = 0.01$) followed by overall self-efficacy ($r = 0.218$, $p = 0.01$). This result differed from experienced teachers who had the strongest positive and significant correlation with student engagement ($r = 0.075$) as they accumulated experience followed by overall self-efficacy in classroom management ($r = 0.057$). Self-efficacy in instruction was not significant for experienced teachers and was the only variable to be nonsignificant concerning a comparison between years of experience. However, due to the large sample size and the small relationships between years of experience and each type of self-efficacy (largest was classroom management for novice teachers, $r = 0.26$), the results should be interpreted with caution.

Nonetheless, the difference between the correlation coefficients for novice versus experienced teachers was significant in all but one instance, self-efficacy in student engagement. The statistical significance of the difference is noted in the last column (see Table 13). A calculator (Lowry, 2021) was used to determine the significance. The results indicated the difference between novice teachers' self-efficacies and experienced teachers' self-efficacies overall (p = .002) and classroom management and instruction were statistically significant (p = 0.0001; see Table 13). However, the significant correlation between self-efficacy in instruction and years' experience should be viewed with caution because experienced teachers' correlation coefficient was not statistically significant.

Research Question 5

Is there a difference between male and female novice teachers' self-efficacies (composite, classroom management, instruction, student engagement)?

H_0: There is no difference between the male and female novice teachers' self-efficacies (composite, classroom management, instruction, student engagement).

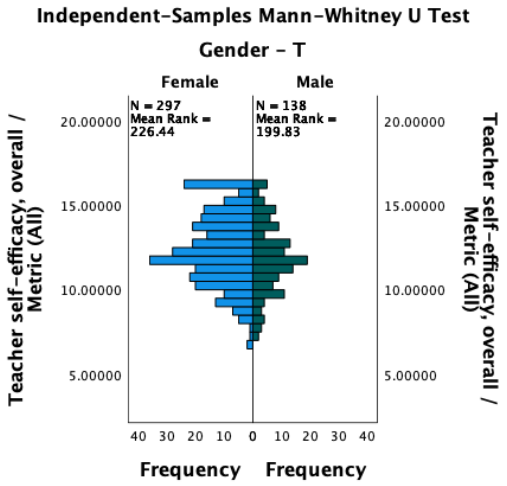
The literature reviewed in Chapter 2 did not explore whether composite self-efficacy or the various context-specific self-efficacies varied among novice female and male teachers. Hence, an analysis of these components was proposed. The findings indicated female teachers scored higher in composite self-efficacy and instructional self-efficacy than their male counterparts. However, classroom management and student engagement self-efficacy did not vary between female and male teachers. The specific results for each type of self-efficacy are reported next.

Composite Self-Efficacy

A Mann-Whitney U test determined statistically significant differences in composite self-efficacy scores for female and male teachers. Distributions of the composite self-efficacy scores for female and male teachers were visually inspected and found to be similar between both subgroups (see Figure 15). Median composite self-efficacy scores were statistically significantly different between female (*Mdn* = 12.14, *M* = 12.39) and male (*Mdn* = 11.77, *M* = 11.79) teachers, *U* =17985.0, *z* = -2.06, *r* = 0.04; *p* = 0.04, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was rejected. Female teachers scored higher in composite self-efficacy than males. Following are the results of each analyses

Figure 15

Distributions of Novice Teacher's Overall Self-Efficacy, Female and Male



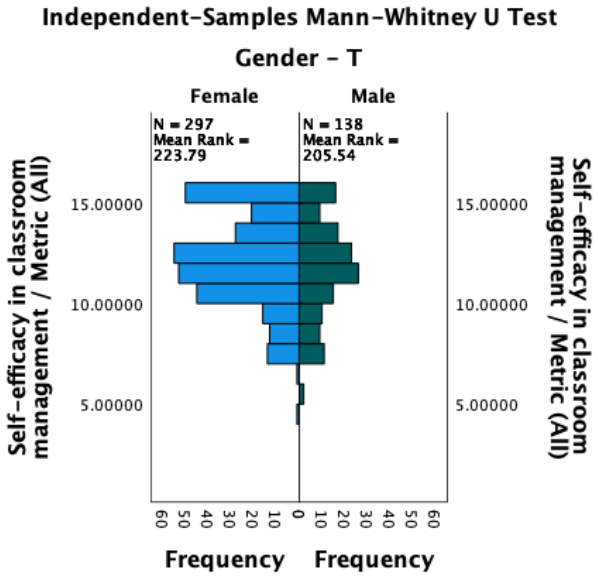
Classroom Management Self-Efficacy

A Mann-Whitney U test determined statistically significant differences in classroom management self-efficacy scores for female and male teachers. Distributions of the classroom

management self-efficacy scores for female and male teachers were visually inspected and found to be similar between both subgroups (see Figure 16). Median classroom management self-efficacy scores were statistically significantly different between female (*Mdn* = 12.24, *M* = 12.15) and male (*Mdn* = 11.57, *M* = 11.79) teachers, *U* = 18773.5, *z* = -1.41, *r* = 0.03; *p* = 0.16, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was retained. Female teachers scored similarly in classroom management self-efficacy as males.

Figure 16

Distributions of Novice Teachers' Self-Efficacy in Classroom Management, Female and Male

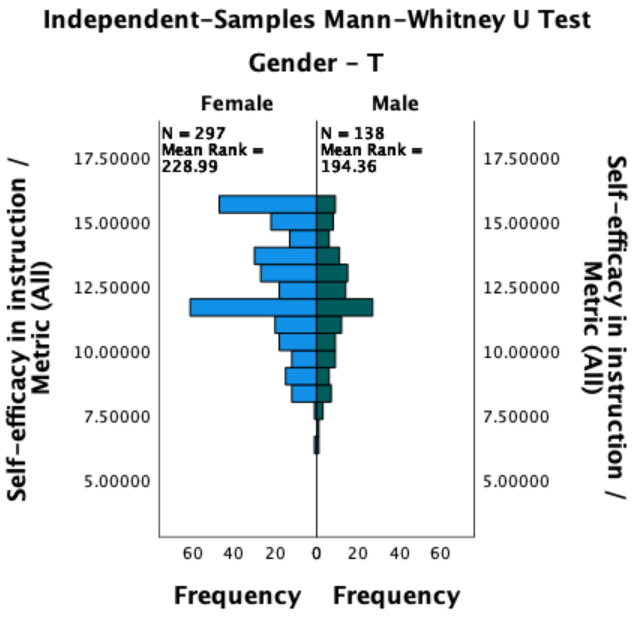


Instructional Self-Efficacy

A Mann Whitney U determined statistically significant differences in instructional self-efficacy scores for female and male teachers. Distributions of the instructional self-efficacy scores for female and male teachers were visually inspected and found to be similar between both subgroups (see Figure 17). Median instructional self-efficacy scores were statistically significantly different between female (*Mdn* = 12.53, *M* = 12.50) and male (*Mdn* = 11.47, *M* = 11.89) teachers, *U* = 17230.0, *z* = -2.68, *r* = 0.05; *p* = 0.007, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was rejected. Female teachers scored higher in instructional self-efficacy than males.

Figure 17

Distributions of Novice Teachers' Self-Efficacy in Instruction, Female and Male

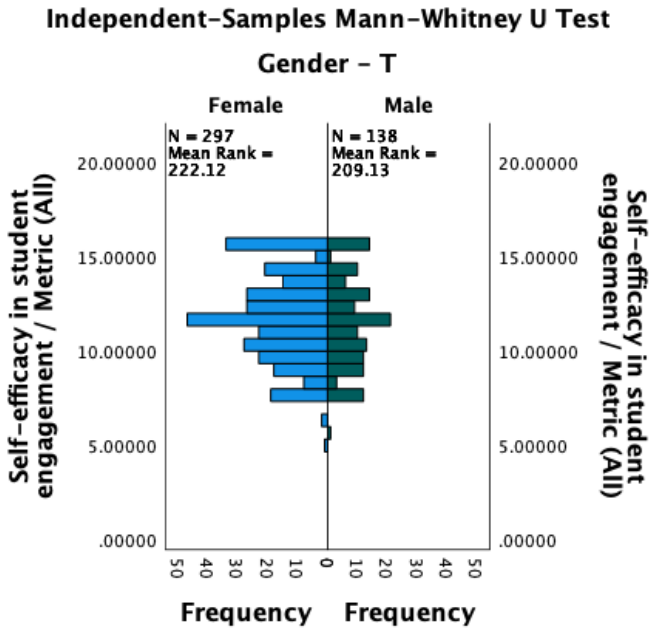


Student Engagement Self-Efficacy

A Mann-Whitney U test determined no statistically significant differences in student engagement self-efficacy scores for novice and experienced teachers. Distributions of the student engagement self-efficacy scores for female and male teachers were visually inspected and found to be similar (see Figure 18). Median instructional self-efficacy scores were statistically significantly different between female (*Mdn* =11.80, *M* = 11.78) and male (*Mdn* = 11.49, *M* = 11.54) teachers, *U* = 19269.5, *z* = -1.01, *r* = 0.02; *p* = 0.32, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was retained. Female and male teachers scored similarly in their student engagement self-efficacy scores.

Figure 18

Distributions of Novice Teachers Self-Efficacy in Student Engagement, Female and Male



Research Question 6

Is there a difference between male and female novice teachers' stress (workplace well-being and stress and workload stress)?

H_0: There is no difference between the male and female novice teachers' stress (workplace well-being and stress and workload stress).

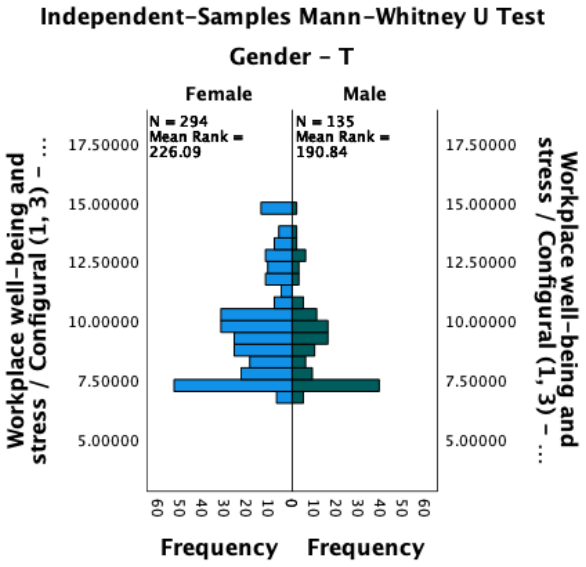
The literature reviewed in Chapter 2 indicated females consistently reported higher stress levels than their male coworkers, except in one instance (von der Embse et al., 2016). However, none of the studies determined if such a difference between gender stress were true among novice teachers. Because one reason proposed for female teachers' higher stress levels was their significant family role and responsibilities outside of the workplace (Tran, 2015), determining if novice female teachers—who may not yet have such obligations—was of interest. The results indicated female teachers experience more workplace well-being and stress than their male counterparts, but workload stress was similar between them. Following are the specific analyses and results.

Workplace Well-Being and Stress

A Mann-Whitney U test determined statistically significant differences in workplace well-being and stress for female and male teachers. Distributions of the workplace well-being and stress for female and male teachers were visually inspected and found to be similar between both subgroups (see Figure 19). Median workplace well-being and stress was not statistically significantly different between female (Mdn = 9.42, M = 9.66) and male (Mdn = 8.96, M = 9.08) teachers, U = 16584.0, z = -2.74, r = 0.06; p = 0.006, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was rejected. Novice female teachers experienced more workplace well-being and stress than males.

Figure 19

Distributions of Novice Teachers' Workplace Well-Being and Stress, Female and Male

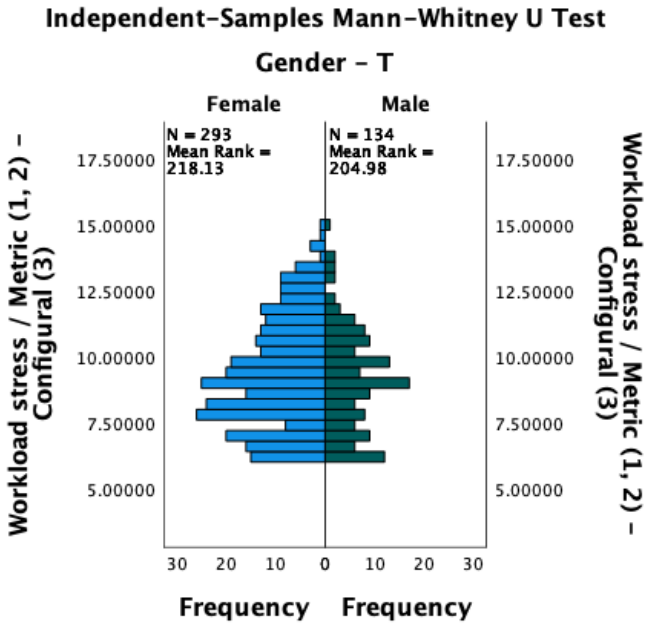


Workload Stress

A Mann-Whitney U determined significant differences in workload stress for female and male teachers. Distributions of the workload stress for female and male teachers were visually inspected and found to be similar between both subgroups (see Figure 20). Median workload stress was not statistically significantly different between female (*Mdn* = 9.16, *M* = 9.42) and male (*Mdn* = 9.14, *M* = 9.17) teachers, *U* = 18422.0, *z* = -1.02, *r* = 0.02; *p* = 0.31, using an exact sampling distribution for U (Dineen & Blakesley, 1973). Therefore, the null hypothesis was retained. Novice female teachers experience similar workload stress as compared to their male peers.

Figure 20

Distributions of Novice Teachers' Workload Stress, Female and Male



Research Question 7

Research questions 7 and 7a explored the nuances between teachers who teach literacy and their self-efficacy and stress in relation to their peers not teaching literacy. The concept of stress related to NCLB (2001) initiatives was examined in the literature (Gonzalez et al., 2017), as explained previously. However, an analysis of whether the increased professional development and teacher preparation in literacy during this same time may indicate higher self-efficacy among these teachers and lower stress scores among novice and experienced teachers of literacy (5-50 years) was of interest. Thus, research questions 7 and 7a explored these ideas.

Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and workload

stress) for novice teachers who teach literacy compared to teachers who do not teach literacy?

H_0: There is no difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and workload stress) for novice teachers who teach literacy when compared to teachers who do not teach literacy.

An independent samples t-test was used to determine if there was a difference among novice teachers who teach literacy when compared to novice teachers not teaching literacy. There were 199 novice literacy teachers and 235 novice teachers not teaching literacy who responded to each of the efficacy questions. There was homogeneity of variance for each self-efficacy construct (composite, $p = .985$; classroom management, $p = .677$; instruction, $p = .907$; student engagement, $p = .700$). The teachers of literacy had higher self-efficacy for their overall self-efficacy and context-specific self-efficacy of instruction, and student engagement self-efficacy (overall, $M = 12.48$, $SD = 2.13$; instruction, $M = 12.58$, $SD = 2.14$; student engagement, $M = 11.99$, $SD = 2.39$) than their novice teaching peers not teaching literacy (overall, $M = 12.05$, $SD = 2.17$; instruction, $M = 12.07$, $SD = 2.15$; student engagement, $M = 11.47$, $SD = 2.32$). However, classroom management self-efficacy did not produce a statistically significant difference ($M = 12.08$, SD = 2.25 for literacy teachers) compared to ($M = 12.01$, SD = 2.32), yet all other self-efficacies did produce a statistically significant difference (overall, $M = 0.43$, 95% CI [0.03, 0.84], $t(432) = 2.09$, $p = .04$; instruction, $M = 0.51$, 95% CI [0.10, 0.92], $t(432) = 2.46$, $p = .01$; student engagement, $M = 0.52$, 95% CI [0.07, 0.96], $t(432) = 2.28$, $p = .02$). The statistical significance should be viewed with caution due to the large sample size and small effect size each produced. The independent sample *t*-test results produced a Cohen's d, which

indicated an effect size, as explained by Cohen (1988), all of which were small (overall, $d = .20$; instruction, $d = .24$; student engagement, $d = .22$).

In contrast, neither of the stress variables differed between novice teachers of literacy and their novice peers not teaching literacy. There was homogeneity of variance for each stress construct (workplace well-being and stress, $p = .451$; workload, $p = .780$). The teachers of literacy had similar stress levels (workplace well-being and stress, $M = 9.57$, $SD = 2.17$ and workload stress, $M = 9.40$, $SD = 2.09$) to their peers not teaching literacy (workplace well-being and stress, $M = 9.40$, $SD = 2.04$ and workload stress, $M = 9.22$, $SD = 1.95$). Each produced nonsignificant differences (workplace well-being and stress, $M = 0.16$, 95% CI [-0.24, 0.56], $t(432) = .800$, $p = .424$; workload stress, $M = 0.26$, 95% CI [-0.13, 0.64], $t(432) = 1.31$, $p = .190$). However, the statistical significance should be viewed with caution due to the large sample size and small effect size each produced, utilizing Cohen's d as proposed by Cohen (1988; workplace well-being and stress, $d = .11$; workload stress, $d = .17$).

Research Question 7a

Is there a difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and workload stress) for experienced teachers who teach literacy compared to experienced teachers who do not teach literacy?

H0: There is no difference between self-efficacies (composite, classroom management, instruction, and student engagement) and stress (workplace well-being and workload stress) for experienced teachers who teach literacy when compared to experienced teachers who do not teach literacy.

An independent samples *t*-test was used to determine if there was a difference among experienced teachers who teach literacy when compared to teachers not teaching literacy. There were no significant outliers, as revealed through inspection of the boxplots and normal distribution was accounted for, as previously explained. There was homogeneity of variance for each self-efficacy (composite, $p = .737$; classroom management, $p = .149$; instruction, $p = .098$; student engagement, $p = .295$). The teachers of literacy had higher self-efficacy for all types (overall, $M = 13.20$, $SD = 2.13$; classroom management $M = 13.09$, $SD = 2.03$; instruction, $M = 13.11$, $SD = 2.09$; student engagement, $M = 12.28$, $SD = 2.37$) than their teaching peers not teaching literacy (overall, $M = 12.76$, $SD = 2.13$; classroom management $M = 12.78$, $SD = 2.11$; instruction, $M = 12.61$, $SD = 2.21$; student engagement, $M = 11.96$, $SD = 2.35$). Each of these produced a statistically significant difference (overall, $M = 0.44$, 95% CI [0.26, 0.63], $t(1979) = 4.62$, $p < .001$; classroom management, $M = 0.31$, 95% CI [0.13, 0.49], $t(1980) = 3.31$, $p < .001$; instruction, $M = 0.50$, 95% CI [0.31, 0.69], $t(1979) = 5.14$, $p < .001$; student engagement, $M = 0.32$, 95% CI [0.11, 0.53], $t(1980) = 2.97$, $p = .003$). However, the statistical significance should be viewed with caution due to the large sample size and small effect size each produced, utilizing Cohen's d as proposed by Cohen (1988; overall, $d = .21$; classroom management, $d = .15$; instruction, $d = .23$; student engagement, $d = .13$)

Similarly, there was homogeneity of variance for each stress construct (workplace well-being and stress, $p = .278$; workload, $p = .908$). The experienced teachers of literacy had higher stress levels (workplace well-being and stress, $M = 9.60$, $SD = 2.13$ and workload stress, $M = 9.37$, $SD = 2.00$) than their peers not teaching literacy (workplace well-being and stress, $M = 9.36$, $SD = 2.00$ and workload stress, $M = 9.02$, $SD = 2.00$). Each of these produced a statistically significant difference (workplace well-being and stress, $M = 0.24$, 95% CI [0.06, 0.43], $t(1955) =$

2.59, $p = .01$; workload stress, $M = 0.35$, 95% CI [0.17, 0.53], $t(1950) = 3.81$, $p < .001$). However, the statistical significance should be viewed with caution due to the large sample size and small effect size each produced, utilizing Cohen's *d* as proposed by Cohen (1988; workplace well-being and stress, $d = .12$; workload stress, $d = .17$).

Summary of Hypothesis Test Results

In summary, Table 14 contains the hypothesis test summaries of the Mann-Whitney U analyses alongside the median and mean output. These analyses answered Research Questions (RQs) 1, 2, 5, and 6. An overview of the hypothesis tests utilizing independent samples *t*-test to answer RQ 7 follows this initial summary.

Table 14

Mann-Whitney U Hypothesis Test Summary: RQs, 1, 2, 5, and 6

Construct	Decision	Median novice	Median experienced	Mean novice	Mean experienced
	Novice ($n = 460$) v. experienced ($n = 2100$) teachers RQs 1 and 2				
Composite teacher-self efficacy	Reject the null hypothesis	12.04	12.98	12.24	12.96
Self-efficacy in classroom management	Reject the null hypothesis	12.23	13.00	12.03	12.92
Self-efficacy in instruction	Reject the null hypothesis	12.14	13.05	12.30	12.84
Self-efficacy in student engagement	Reject the null hypothesis	11.80	11.80	11.71	12.11
Workplace well-being and stress	Retain the null hypothesis	9.30	9.46	9.48	9.47
Workload stress	Retain the null hypothesis	9.16	9.04	9.34	9.18

Construct	Decision	Median novice female	Median novice male	Mean novice female	Mean novice male
	Female (n = 316) v. male (n = 144) novice teachers RQs 5 and 6				
Composite teacher-self efficacy	Reject the null hypothesis	12.14	11.77	12.39	11.92
Self-efficacy in classroom management	Retain the null hypothesis	12.24	11.57	12.15	11.79
Self-efficacy in instruction	Reject the null hypothesis	12.53	11.47	12.50	11.89
Self-efficacy in student engagement	Retain the null hypothesis	11.80	11.49	11.78	11.54
Workplace well-being and stress	Reject the null hypothesis	9.42	8.96	9.66	9.08
Workload stress	Retain the null hypothesis	9.16	9.14	9.42	9.17

Meanwhile, Table 15 summarizes the independent samples *t*-test used to answer RQs 7 and 7a. All of the self-efficacy constructs for the entire teacher sample, novice teachers and experienced teachers, were significant and higher for literacy teachers than their peers not teaching literacy except for self-efficacy in classroom management wherein the teacher subgroups were not statistically different. Furthermore, novice literacy teachers were not statistically different from their peers not teaching literacy in either one of the stress constructs, workplace well-being, and stress and workload stress. However, the experienced teacher sample for teachers instructing in literacy was higher in all self-efficacies (overall, classroom management, instruction, and student engagement) and self-reported higher stress (workplace well-being and workload) than their peers not teaching literacy. Additionally, the largest effect size (Cohen's *d*) for each group of teachers was for self-efficacy in instruction, a self-efficacy construct less significant in the other results in this study.

Table 15

Hypothesis Test Summary for Teachers of Literacy and Teachers not Teaching Literacy RQ 7

Construct	Decision	Mean for literacy teacher	Mean for teacher not teaching literacy	t-value	Sig. (2 tail)	Cohen's *d*
	Novice literacy teachers and teachers not teaching literacy					
Composite teacher-self efficacy	Reject the null hypothesis	12.48	12.05	2.09	0.04	0.20
Self-efficacy in classroom management	Retain the null hypothesis	12.08	12.01	0.35	0.72	0.03
Self-efficacy in instruction	Reject the null hypothesis	12.58	12.07	2.46	0.01	0.24
Self-efficacy in student engagement	Reject the null hypothesis	11.99	11.47	2.28	0.02	0.22
Workplace well-being and stress	Retain the null hypothesis	9.57	9.40	0.80	0.42	0.08
Workload stress	Retain the null hypothesis	9.48	9.22	1.31	0.19	0.13
	Experienced literacy teachers and teachers not teaching literacy					
Composite teacher-self efficacy	Reject the null hypothesis	13.20	12.76	4.62	<0.001	0.21
Self-efficacy in classroom management	Reject the null hypothesis	13.09	12.78	3.31	<0.001	0.15
Self-efficacy in instruction	Reject the null hypothesis	13.11	12.61	5.14	<0.001	0.23
Self-efficacy in student engagement	Reject the null hypothesis	12.28	11.96	2.97	0.003	0.13
Workplace well-being and stress	Reject the null hypothesis	9.60	9.36	2.59	0.010	0.12
Workload stress	Reject the null hypothesis	9.37	9.03	3.81	<0.001	0.17

Conclusion

The purpose of this study was to better understand the relationship between beginning teachers' self-efficacies and stresses and whether they differed from those of experienced teachers and subgroups within these samples. This chapter contained the results from the analyses conducted to answer research questions one through seven. These findings included similarities and differences among novice and experienced teachers. For instance, novice and experienced teachers had similar negative correlations between the various self-efficacies and workplace well-being and stress (RQ 3) and similar stress levels by experience, novice and experienced (RQ2). However, all self-efficacies were more significant for experienced teachers than their novice peers (RQ 1) yet the correlation of all self-efficacies to experience except student engagement was stronger for novice teachers than their experienced coworkers (RQ 3a). Other differences were noted in subgroups of novice and experienced teachers.

The subgroup differences in novice and experienced teachers included gender differences (RQ 5 and 6) and content area differences among literacy teachers and their peers not teaching literacy (RQ 7). The gender differences included higher composite self-efficacy and instructional self-efficacy for novice female teachers than their male counterparts (RQ 5) and higher workplace well-being and stress for the female novice teachers than their male peers (RQ 6). However, novice female and male teachers were similar in their classroom management and student engagement self-efficacies (RQ 5) and their workload stress (RQ 6).

Other differences included all literacy teachers, novice and experienced, reporting higher levels for three of the four types of self-efficacy (composite, instruction, and student engagement) than their peers not teaching a literacy course (RQ 7). However, experienced literacy teachers, unlike their novice literacy coworkers, self-reported higher levels of self-

efficacy in classroom management and experienced greater stress (both types) than their peers not teaching a literacy class (RQ 7a). Additionally, although experienced literacy teachers indicated statistically significant greater stress than their experienced peers not teaching literacy, novice literacy teachers reported similar stress levels to their peers not teaching literacy.

Although this chapter summarized the results, there were some unexpected findings. Several unique characteristics emerged by analyzing the self-efficacy and stress variables from a novice versus experienced teachers' lens, with further exploration in chapter 5. Notably, these surprising results would not have surfaced had the analyses been conducted with more omnibus measures. As a result, analyzing novice teachers with experienced teachers provided some unique and intriguing findings. Hence, this study provided an opportunity to see the trees (novice teachers) for the forest (teachers of all experience levels). Chapter 5 contains a further discussion of the findings, implications, and suggested future research.

Chapter 5: Discussion and Implications

The purpose of this study was to examine differences between novice teachers, experienced teachers, and subgroups in these samples in two of the constructs of the triadic reciprocal determinism model developed by Bandura (1978). Because prior research established a relationship between teacher stress and attrition (Harmsen et al., 2018; Hester et al., 2020; Lambert et al., 2019; Ryan et al., 2017), the behavior component in the triadic reciprocal determinism model, this study focused on the other two constructs, cognitive (self-efficacies) and environmental (stresses). The cognitive component examined in this study related to teachers' various self-efficacies (composite, classroom management, instruction, and student engagement) and the environmental components related to two types of teacher stress (workplace well-being and stress and workload stress). Although these constructs for behavior (attrition and turnover), cognitive (self-efficacies), and environmental factors (stresses) were not exhaustive, the concepts of self-efficacy and stress aligned with the constructs Bandura (1998) described in the triadic reciprocal determinism model. Therefore, this study explored the relationships between various self-efficacies—both composite and context-specific—and two types of stress, workplace well-being and stress and workload stress among novice and experienced teachers, subsamples previously not examined in the literature.

Notably, constructs in this study were analyzed at a relatively finite level, using a composite self-efficacy score but also deconstructing self-efficacy into three context-specific constructs and two specific types of stress. This finite level may be, in part, why some of the results were unique and why the ability to compare these findings to other studies was limited. For example, five of the extant studies (Betoret, 2009; Collie et al., 2012; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015) used workload stress, although none of the studies defined

stress similarly to workplace well-being and stress, as explained in Chapter 2. The workplace well-being and stress construct in this study defined a work-life balance component unexamined in the extant literature. Additionally, only four studies in the literature reviewed (Klassen & Chiu, 2010; 2011; Tran, 2015; von der Embse et al., 2016) examined the three context-specific self-efficacy constructs used in this study: (a) self-efficacy in classroom management, (b) instruction, and (c) student engagement. Therefore, the multiple distinct results in this study with statistical significance between various self-efficacies and workplace well-being and stress, were noteworthy and should be explored further.

Furthermore, previous research did not examine self-efficacy and stress differences for novice and experienced in teaching samples, and limited research analyzed novice teachers as their sample (Helms-Lorenz et al., 2012; Helms-Lorenz & Maulana, 2015). Because novice teachers were the most vulnerable to attrition (Sutcher et al., 2016), this teacher subsample was inspected and compared to their more experienced peers using the Teaching and Learning International Survey (TALIS) dataset. This study also explored subgroups in the novice and experienced teacher samples, which included gender, male and female, and content area instructors of literacy and instructors not teaching literacy.

The results of this study indicated distinct differences between novice and experienced teachers in almost every measure and among analyses of the subgroups in novice and experienced teachers. These differences indicated novice teachers' self-efficacy differed from their experienced peers. Furthermore, novice teachers also experienced stress differently from their experienced coworkers, both as a group and as subgroups of female and male teachers and literacy and non-literacy teachers. The next section of this chapter explores self-efficacy and stress for novice and experienced teachers and reports on the differences in self-efficacy and

differences in stress. These differences are categorized by experience (novice and experienced), gender (female and male), and content area taught (literacy and non-literacy teachers), when applicable in each subsection. The implications, potential future research, limitations of this study, and a call to action follow the exploration of these differences. Next ensues a look at the multiple relationships between self-efficacy and stress in relation to teacher experience, novice and experienced.

Self-Efficacy and Stress in Relation to Experience

Self-efficacy and stress were analyzed with Pearson's correlation to discern if self-efficacy had a negative correlation to stress thereby indicating as self-efficacy increased, stress decreased (Research Question [RQ] 3). The study's results also informed whether these relationships varied by experience level (RQ 3a). Self-efficacy and stress correlations were similar for novice and experienced teachers. Both novice and experienced teachers had statistically significant negative correlations between all types of self-efficacy and workplace well-being and stress except for novice teachers' correlation with self-efficacy in instruction. These results were in line with the research results reviewed in Chapter 2 wherein self-efficacy correlated negatively with stress (e.g., Betoret, 2009; Yu et al., 2015). However, because the definition of workplace well-being and stress used in this study did not align with other stress constructs in the literature, a direct comparison with previous research cannot be made.

In contrast, workload stress, a stress construct found repeatedly in the literature (Betoret, 2009; Collie et al., 2012; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015) had one statistically significant correlation with experienced teachers' self-efficacy in student engagement and no significant correlations with any of the novice teachers' self-efficacy scores (RQ 3). This result was notable because the research literature reviewed consistently found self-

efficacy had a negative correlation with, and at times, mitigated workload stress (Betoret, 2006; Domenech-Betoret, 2006; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015). This finding was significant because workload stress was the second most common stress construct in the extant literature (Betoret, 2006; Domenech-Betoret, 2006; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015). The findings from this study may indicate this TALIS sample of teachers instructing Grades 7, 8, and 9—as previously noted as an underrepresented sample of teachers—may not find the workload as stressful as teachers instructing in other grades.

Also of interest, among the self-efficacy and stress correlations, the only positive correlation was between self-efficacy in instruction and workload stress for experienced teachers although it was not a significant result (RQ 3). This positive correlation indicated as self-efficacy in instruction increased for experienced teachers, so did workload stress. This finding was representative of the higher self-efficacy and higher stress reported by experienced literacy teachers (RQ 7), a concept explored in a later section of this chapter. However, as mentioned previously, this correlation between self-efficacy in instruction and workload stress for experienced teachers was not significant.

Lastly, the correlation coefficients' strength between all self-efficacies and workplace well-being and stress was stronger for novice teachers in each instance but not statistically different (RQ 3). Accordingly, as self-efficacy increased for novice teachers, stress decreased more for novice teachers than their experienced coworkers. The findings from this study also indicated differences in self-efficacy and an explanation of each of these differences ensues.

Differences in Self-Efficacy

Differences in self-efficacy spanned all analyses of teachers in relation to experience, gender, and content area taught (literacy). One difference in self-efficacy for novice and

experienced teachers was experienced teachers reported higher levels for every measure of self-efficacy than their novice coworkers (RQ 1). This finding was similar to Klassen & Chiu's (2010; 2011) studies which found as teachers' experience increased, so did their self-efficacy, up until the 23rd year of teaching. This finding also reinforced Bandura's (1997) theory that as mastery experiences accumulate, self-efficacy can increase. Mastery experience is the opportunity to practice skills thereby growing self-efficacy in those skills. Bandura reported mastery experiences to be the most salient way to increase self-efficacy.

However, the correlation between self-efficacy and years of experience was statistically stronger for novice teachers for each type of self-efficacy except self-efficacy in student engagement (RQ 4). Another finding was the strength of novice teachers' self-efficacy correlations to years of experience was statistically stronger than for their experienced peers (RQ 4a). These findings mirrored those of Klassen and Chiu (2011), who found self-efficacy grew throughout a teacher's career, but the growth was steepest in the first few years of teaching. This idea of self-efficacy increasing with experience again affirmed Bandura's (1997) theory, as mastery experiences are accumulated, self-efficacy increases. Also, the stronger correlation for novice teachers may indicate novice teachers accumulate more mastery experiences or learning by doing than their experienced coworkers in their first few years of teaching. However, experienced teachers over the years continue to accumulate mastery experiences and increased self-efficacy, as was affirmed in the results of RQ 1 and prior research (Klassen & Chiu, 2010; 2011). Differences in self-efficacy were also found between gender, female and male.

Gender differences were apparent in composite self-efficacy and self-efficacy in instruction for novice female teachers compared to their novice male counterparts (RQ 5). Novice female teachers reported statistically higher levels of composite self-efficacy and self-

efficacy in instruction. However, both women's and men's self-efficacy in classroom management and student engagement were similar. This finding was a distinct because other studies examined stress between genders (Bottiani et al., 2019; Helms-Lorenz & Maulana, 2015; Klassen & Chiu, 2010; Tran, 2015; Troesch & Bauer, 2017; von der Embse et al., 2016) but only one of the previous studies explored differences in self-efficacies among genders (Tran, 2015). Tran'sstudy found women reported lower self-efficacy than men on all three commonly used self-efficacy constructs (classroom management, instruction, and student engagement) thereby differing from the findings in this study. Besides differences in self-efficacy by gender, differences were found between literacy and non-literacy teachers.

Differences in self-efficacy among literacy teachers and teachers not teaching literacy were consistent between subjects (literacy and non-literacy subjects) by experience levels (RQ 7). For instance, all literacy teachers, novice and experienced, had higher levels of each type of self-efficacy than their non-literacy teaching peers except for classroom management among novice teachers. The research reviewed did not find self-efficacy varied by subject area but differences were found in stress by subject area (Gonzalez et al., 2017), a concept explored further in the next section. Higher self-efficacy ratings for literacy teachers, both novice and experienced, may be due the increased emphasis on professional development surrounding literacy since No Child Left Behind (NCLB, 2001) was implemented. Such a focus on literacy may increase teachers' mastery experiences (Bandura, 1997), thereby potentially increasing self-efficacy levels for novice and experienced teachers in this subject area. A relationship between increased self-efficacy through mastery experiences such as education courses and professional development aligns with Bandura's (1997) theory of accumulating self-efficacy by doing. In all, these findings offer implications for future research and suggest an examination of self-efficacy

and stress by content area. Although all these findings related to differences in self-efficacy, there were also similarities and differences found between novice and experienced teachers' stress.

Differences in Stress Findings

The differences in stress findings began with an analysis of stress by gender for novice teachers—female and male—followed by content area taught and literacy, or a class other than literacy. The stress findings by gender— female and male—for novice teachers were intriguing (RQ 5). The findings indicated females experienced more workplace well-being and stress than their male counterparts but similar levels of workload stress. This similarity between male and female novice teachers differed from most of the findings in the literature that compared gender of teachers of all experience levels (Bottiani et al., 2019; Klassen & Chiu, 2010; Tran, 2015; Troesch & Bauer, 2017). These studies determined female teachers experienced more stress than their male peers. However, only two of these studies used workload stress (Klassen & Chiu, 2010; Tran, 2015). This finding also called into question Tran's (2015) and Klassen and Chiu's (2010) supposition that female teachers experienced more stress due to family commitments outside of the school day because novice teachers may not yet have as many family commitments as their more experienced peers.

Additionally, none of the studies used workplace well-being and stress as the stress construct yet this was the salient difference in stress between genders in the novice teacher subsample of this study. The workplace well-being and stress variable the TALIS used related to balancing work and personal responsibilities and was not represented elsewhere in the stress constructs in the literature. The fact that stress constructs varied greatly between studies and none of the studies used a workplace well-being and stress construct made comparisons with

other studies difficult. Therefore, researchers should note these comparisons were unique due to the construct of stress used in this study and need further exploration.

Another comparison of groups by stress was between teachers of literacy and their peers not teaching literacy by experience levels, novice and experienced (RQ 7). As explained earlier, both novice and experienced teachers of literacy had higher levels of all queried self-efficacies (except novice teachers' self-efficacy in classroom management). Surprisingly, although stress (workplace well-being and stress and workload stress) was greater for experienced literacy teachers than their experienced peers not teaching literacy, both types of novice literacy teachers' stress was comparable to their novice peers not teaching literacy. These findings are surprising in several ways. Previous studies indicated stress did not differ by content areas taught except for those teachers instructing in a subject considered high-stakes (Gonzalez et al., 2017) or tied to accountability (Gonzalez et al., 2017; von dder Embse et al., 2016). Literacy falls into the high stakes testing category. However, the fact that experienced literacy teachers' self-efficacy was also higher than their experienced peers not teaching a literacy course may reflect similar results to McCormick et al. (2005), where teachers who were more aware of curricular expectations had higher self-efficacy and higher stress. It may also be possible the novice teachers were not as aware of the testing pressures associated with teaching literacy or that the accountability influence of NCLB is not as strong for these novice teachers.

One last noteworthy finding regarding the stress construct was the lack of significant results between any self-efficacies and workload stress for novice and experienced teachers other than self-efficacy in student engagement for experienced teachers (RQ 3). This finding was surprising given previous research (Betoret, 2009; Collie et al., 2012; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015) found a consistently significant negative correlation between

self-efficacy and workload stress. However, although workload stress was a more frequently studied construct for stress in prior research, it did not have significant results in nearly all instances in this study suggesting further research is necessary. This finding may indicate teachers of seventh, eighth, and ninth grade students do not experience workload stress the same way that teachers in other grades experience it.

These disparate findings for workload stress and the previously described multiple nuances revealed in self-efficacy and stress constructs among the subgroups of teachers, novice and experienced, female and male teachers, literacy instructors, and those not teaching literacy suggest a need for further analysis. However, because most literature used composite self-efficacy (Collie et al., 2012; Gilbert et al., 2014; Gonzalez et al., 2017; Klassen et al., 2009; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013) and the stress constructs varied significantly from study to study, as described in Chapter 2, comparison of research results was limited. Nevertheless, these findings offer implications for suggested areas in which school districts may better support teachers' self-efficacy and potentially reduce stress. This study's findings also led to several results that appear to be unique and worth further exploration. Thus, this chapter next examines the implications of this study's results followed by future research and potential limitations of this study.

Implications

Much like the extant literature, this study's findings have several perspectives for ways to potentially increase teacher self-efficacy and reduce stress. One implication is from the perspective of stress, and the other is from the perspective of teacher support. These implications are explored and explained next.

One implication of this study's findings is that work-life balance may be a more salient construct for teacher stress than is workload stress. This finding highlights some potential supports to teachers, including physical health initiatives and teachers' incentives. Additionally, schools and districts could provide self-care and social-emotional training to encourage work-life balance practices. Schools and districts could provide these social-emotional and mental health supports and encourage and incentivize novice teachers to participate early in their careers in such supports. Establishing these habits early in teachers' careers could help them build a healthier work and life balance throughout their professional careers, thereby positively influencing early and later career stress. Implications around self-efficacy were also apparent.

Self-efficacy consistently exhibited a negative correlation or was a mediating factor to stress in the extant literature (Betoret, 2009; Bottiani et al., 2019; Collie et al., 2012; Domenech-Betoret, 2006; Gilbert et al., 2014; Gonzalez et al., 2017; Helms-Lorenz et al., 2012; Helms-Lorenz and Maulana, 2015; Herman et al., 2020; Klassen & Chiu, 2010; Klassen & Chui, 2011; Klassen et al., 2009; Love et al., 2020; McCormick et al., 2005; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; Tran, 2015; Troesch & Bauer, 2017; von der Embse et al., 2016; Yu et al., 2015) and a consistent negative correlation to workplace well-being and stress in this study. Therefore, another implication from the findings of this study is the need to examine support for novice teachers to increase self-efficacy. The overall greater levels of self-efficacy among novice and experienced teachers instructing literacy may indicate the increased attention on literacy and professional development following the implementation of No Child Left Behind (NCLB, 2001) positively impacted teachers' self-efficacy. This greater self-efficacy may give credence to the theory that mastery experiences can increase self-efficacy or experiences where the teacher learns by doing or vicarious experiences where the teacher

learns by observing someone else teaching (Bandura, 1997). Induction (Espinoza et al., 2018) and residency programs (Guha et al., 2016) are two vehicles that could provide mastery experiences for early career teachers.

Induction programs double the odds of novice teachers remaining in the profession when novice teachers are well-mentored (Espinoza et al., 2018). Additionally, residency programs replicate the medical residency model wherein teacher candidates are placed in classrooms to learn the craft of teaching from skilled mentors (Guha et al., 2016). Such residency programs provide vicarious and mastery experiences and promote greater racial and gender diversity in the teacher workforce. However, only 16 states have designated funding for teacher induction programs that support novice teachers in their first few teaching years (Espinoza et al., 2018). Besides supporting novice teachers, experienced teachers would benefit from vicarious and mastery experiences as well.

As Klassen and Chiu (2010; 2011) determined teachers continue to accumulate self-efficacy until their 23rd year in teaching, teachers would benefit from ongoing vicarious and mastery experiences similar to their novice peers. One way to support experienced teachers would be to have them work alongside instructional coaches or possibly train as instructional coaches or mentors. Providing these opportunities to continue to hone their craft and work towards higher levels of mastery and subsequent self-efficacy could provide an opportunity for teachers to increase their self-efficacy and decrease stress throughout their careers.

One last implication of note is the need to examine subgroups of teachers. The extant literature studied teachers of varying experience levels (e.g., McCormick et al., 2005; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013; Tran, 2015) and minimally analyzed subgroups in them (e.g., Gilbert et al., 2014; Gonzalez et al., 2017). This study's findings

identified critical differences among subgroups in the overall teaching sample. Therefore, future studies need to examine subgroups more thoroughly to determine what differences exist between them. Such information will help schools and districts better understand and support subgroups of teachers. Although these implications suggest ways to analyze and combat stress and bolster self-efficacy among teachers, future research is also needed.

Future Research

Based on the results of this study, several areas of research are needed to explore differences between novice and experienced teachers more thoroughly and subgroups in teacher populations. The suggested areas include a more indepth examination of student engagement and instructional self-efficacy and stress constructs. Moreover, the literature reviewed in Chapter 2 highlighted a few unexplored self-efficacy constructs and inconsistent or unexplored variables worthy of further exploration. These self-efficacy and stress constructs, inconsistent or unexplored variables, and potential future research topics, including a greater variety of research methodologies, are discussed, followed by this study's limitations.

Self-Efficacy and Stress Constructs

One suggested area of future research is more thoroughly examining student engagement self-efficacy. Student engagement self-efficacy repeatedly produced significantly different results between novice and experienced teachers (RQ 1) among teachers of literacy and their nonliteracy teaching peers (RQ 7) and was statistically significant for both novice and experienced teachers in relation to stress (RQ 3). However, the self-efficacy in student engagement construct was minimally researched among the studies that analyzed context-specific self-efficacies (Klassen & Chiu, 2010, 2011; Tran, 2015; von der Embse et al., 2016). Student engagement, by definition, has behavior, emotional, and cognitive dimensions (Bloom,

1956). The TALIS replicated this construct in its student engagement self-efficacy scale. Therefore, this nuanced self-efficacy may potentially shed light on a larger construct than classroom management and instructional self-efficacies alone reveal. Thus, self-efficacy in student engagement is worthy of more thorough exploration.

Another area for further exploration of a self-efficacy construct is self-efficacy in instruction in various subgroups of content-area teachers. This study found instructional self-efficacy was greater for literacy teachers, both novice and experienced, and had the largest effect size of all the self-efficacies between teachers of literacy and their peers not teaching literacy. Therefore, both results indicated self-efficacy in instruction might be a more nuanced construct among subgroups in a sample of teachers and, therefore, worthy of further research among educators of various content areas. Additionally, an analysis of teachers by content area taught may be particularly salient because more recent policy initiatives since No Child Left Behind (NCLB; 2001) shifted the emphasis from reading to science, technology, engineering, and math or STEM instruction. Such a shift may reveal differences among literacy teachers and differences in workload stress.

Another implication to consider in future research is the impact COVID–19 had on teachers preparing for and entering the profession in the spring of 2020 to the spring of 2021. The lack of in-person instruction during this timeframe may have impacted these beginning and novice teachers' self-efficacy and stress as they return to in-person instruction. It will be an important subgroup of teachers to examine in the future.

Furthermore, workload stress was relatively insignificant in all analyses in this study except for literacy teachers compared to their peers not teaching literacy (RQ 7) and its correlation with student engagement self-efficacy for experienced teachers (RQ 3). Because

workload stress was the second most frequently cited stress construct in the literature (Betoret, 2009; Collie et al., 2012; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015), the inconsistent findings in this study bear further exploration. These inconsistent findings may be due to the underrepresented teaching sample used for this study and this population of teachers experienced workload stress differently from other teaching populations. Whatever these differences, they were not revealed in this study and due to this stress construct's repeated use in the literature bears further study. Although workload stress was inconsistent in this study, as compared to other studies, there were other inconsistent and unexplored variables in the literature that may be salient variables in future studies.

Inconsistent or Unexplored Variables

The inconsistent variables proposed for further study are the concept of gender and the influence of administrators. Meanwhile, the unexplored variables proposed for future research are the teachers' student stress variables in the TALIS and the concept of teachers' race. Each of these variables and the significance of potential future research is explained next, beginning with gender.

The inclusion of gender analysis in future research is encouraged due to the varying results in this study and somewhat inconsistent findings in previous research (Bottiani et al., 2019; Helms-Lorenz & Maulana, 2015; Klassen & Chiu, 2010; Tran, 2015; Troesch & Bauer, 2017; von der Embse et al., 2016). For instance, further research examining the differences in self-efficacy in instruction between female and male teachers of varying experience levels is a salient variable to explore. This study also found female novice teachers more inclined to experience workplace well-being and stress yet had higher levels of composite and instructional self-efficacy than their male counterparts. Analyzing the self-efficacy in instruction and stress

variables with other teacher samples by experience and gender are areas for future research to tease out potential differences between genders. Scrutinizing gender by content area taught may also reveal interesting findings because gender was not explored in the literacy teachers of this study. Furthermore, the TALIS (2018) survey only offered respondents the option of male or female for gender. Therefore, future studies should expand gender choices to be more inclusive of transgender and gender nonconforming individuals and how a more inclusive perspective on gender influences self-reported teacher stress and self-efficacy. In addition to gender, another inconsistent variable from the literature to consider in future research is administrative support.

The impact of administrators was inconclusive in the self-efficacy and stress literature. Betoret (2009) found ambiguous administrative demands created stress for teachers, yet Bottiani et al.'s (2019) model revealed no impact from principals' leadership if other supports were in place. However, other studies found administrators had a significant impact on teachers. For example, teacher job satisfaction (Tickle et al., 2011) and administrative support corresponded with intent to stay in the profession (Russell et al., 2010; Tickle et al., 2011). Therefore, administrative support may be a valuable concept to explore further in determining the administrator's influence on novice teachers' attrition, turnover intentions, and self-efficacy and stress. Such a focus on administrators could, potentially, be an area of importance in supporting novice teachers and would be a relatively cost-effective method. Although gender and administrative support were inconsistent in this study and in the literature, two other variables, teachers' student stress and teachers' race, were unexplored. The variable of teachers' student stress is examined next.

Future researchers may consider analyzing the TALIS's teachers' student stress variables as individual variables because statisticians found the student stress scale was unreliable in the

U.S. sample (Stancel-Piątak et al., 2019). The governing board for TALIS (2018) specifically included this student stress construct in the questionnaire due to its frequent reference as a stressor for teachers (Ainley & Carstens, 2019). Although the teachers' student behavior stress scale was not reliable for the results reported in the United States, the nominal variables in this scale of TALIS may be analyzed using Spearman rank correlation (Pallant, 2016). Such an analysis could determine if these variables strongly correlated to the various nominal self-efficacy variables in this study. Like the finite analysis done in this study, finite analysis may reveal more nuanced findings for novice and experienced teachers and their stressors in relation to student behavior stress. Concepts of race may also provide avenues for a specific analysis of teacher subgroups previously unexplored.

The concept of race surfaced in Bottiani et al.'s (2019) study. Bottiani et al. found stress varied by the teacher's race. Recruiting and retaining teachers of color has been an on-going endeavor with questionable success over the last few decades (Villegas et al., 2012). Given the fact 79.3% of the current teacher workforce is White (Will, 2020) and White teachers in Bottiani et al.'s study reported higher levels of stress, this is a salient factor to explore and may be a cause for the higher reported stress levels. Additionally, most of the teachers in the workforce are White females (Will, 2020), as was true in Bottiani et al.'s study. Because female teachers in this study had higher stress levels than their male peers in relation to workplace well-being and among other stress constructs in the literature (Bottiani et al., 2019; Helms-Lorenz & Maulana, 2015; Klassen & Chiu, 2010; Tran, 2015; Troesch & Bauer, 2017; von der Embse et al., 2016), these two variables, gender and race, may be worthy of further exploration. However, the publicly available TALIS dataset does not allow access to the race variable, which may reveal some thought-provoking nuances. Additionally, Bottiani et al.'s study did not add the concept of

self-efficacy to stress when analyzing race. This analysis of both self-efficacy and stress constructs with race may be another salient factor to consider.

One last unexplored variable to highlight is the need for an analysis of teachers in special education positions. This subgroup of teachers often reported higher stress levels and greater workload stress. Because this subgroup of teachers was consistently noted as a group of teachers impacted by attrition and turnover (Sutcher et al., 2016), a better understanding of these teachers' self-efficacy and stress is proposed as an area of focus in future studies. In addition to these variables to consider in future research, a greater variety of methodologies is also proposed.

Variety of Methodologies

One final suggestion for future research is to use qualitative research designs. All the studies in the reviewed literature, including the present study, used only quantitative measures except for three studies (Bottiani et al., 2019; Gonzalez et al., 2017; Klassen et al., 2009), which employed a mixed method. A qualitative study would allow researchers to pursue follow-up questions that may surface during conversations or observations. In contrast, the surveys and questionnaires used in the literature limited the respondents' choices to preselected items on the questionnaire.

Furthermore, a qualitative study would be particularly salient now that this study's quantitative results indicated differences between novice and experienced teachers. For example, interviewing literacy teachers, both novice and experienced, about their various self-efficacies in relation to their peers not teaching literacy may reveal interesting findings because differences existed between these two groups, across experience levels. A qualitative study may also illuminate where greater feelings of self-efficacy among literacy teachers originate. Also,

conducting focus groups with experienced and novice literacy teachers to tease out differences in stressors between these two groups may yield interesting findings.

Stress constructs can also be explored more thoroughly using a qualitative approach, especially because the definitions among researchers varied so much. Qualitative studies may also determine what influences teachers' differing perceptions of on-the-job stress and may reveal factors not yet examined. Additionally, focus groups may reveal some more specific nuances in the workplace well-being and stress construct and different stressors teachers experience. These more specific definitions of the stress teachers experience may aid future studies with a more specific and targeted definition of teacher stress.

This study's findings point to the need to examine subgroups of teachers more thoroughly in future examinations of self-efficacy and stress. These explorations should include a qualitative method or mixed methods to further explore some of the nuances revealed in this study's results. Although numerous concepts in the study's results suggest rich areas for future research, this study had some limitations.

Limitations

This study had several limitations researchers need to consider, several of which revolved around the types of variables used. For example, one limitation of the study was the variety of constructs attached to the terms self-efficacy and stress. Although the context-specific self-efficacies in this study allowed for a more nuanced examination of teacher subgroups and their efficacies, the use of context-specific self-efficacies also limited direct comparisons to other research. Multiple studies in the literature review used different self-efficacy constructs such as composite self-efficacy (Collie et al., 2012; Gilbert et al., 2014; Gonzalez et al., 2017; Klassen et al., 2009; Park et al., 2016; Putwain & von der Embse, 2019; Robertson & Dunsmuir, 2013), or

combination of self-efficacies (e.g., Betoret, 2009; Bottiani et al., 2019; Domenech-Betoret, 2006; Herman et al., 2020). Furthermore, the variety of stress constructs were even more significant among the literature and limited the researcher's ability to make comparisons to other results. These differences in stress constructs ranged from life stress outside of school (Park et al., 2016; Yu et al., 2015) and workload stress (Betoret, 2009; Collie et al., 2012; Klassen & Chiu, 2010; Klassen et al., 2009; Tran, 2015), to overall stress (Bottiani et al., 2009; Gonzalez et al., 2017; Herman et al., 2020; Klassen et al., 2009; Troesch & Bauer, 2017; von der Embse et al., 2016) , and stress derived from one question (Klassen & Chiu, 2010; Klassen et al., 2009). Additionally, none of the studies had a similar stress construct to workplace well-being and stress, thereby not allowing for direct comparisons with other study's findings. Another limitation was the scales and subscales.

Although a strength of this study was its use of a variety of scales and subscales, a limitation was the inability to use the teachers' student behavior stress scale. Because the United States' TALIS dataset for teachers' student behavior stress scale failed its reliability coefficient estimate (Stancel-Piątak et al., 2019), this study did not use this scale. This variable may have provided additional nuances to the overall understanding of teachers' self-efficacy and stress because it is one of the more frequently referenced sources of stress by teachers (Ainley & Carstens, 2019). Therefore, it is a salient variable to consider in future research. The TALIS also had a limitation in its design.

Even though the TALIS (2018) is well-validated and researched, a limitation is its cross-sectional design. A cross-sectional design requires researchers to be cautious in generalizing findings and references data collected at one point in time (MacInnes, 2016). For this reason, researchers advocate for longitudinal cross-replication studies to make inferences from the data.

Only two of the studies in the extant literature used longitudinal data (Helms-Lorenz & Maulana, 2015; von der Embse et al., 2016). Therefore, future studies should conduct longitudinal analysis of these concepts.

Lastly, although the TALIS dataset provided a unique examination of middle and early high school teachers' self-efficacy and stress in the United States, a sample of teachers not studied as thoroughly as elementary and high school, was also a limitation. The TALIS sample of seventh, eighth, and ninth grade teachers queried a small, unique segment of the entire teacher population in the United States. This unique sample derived from TALIS's international definition of the teachers' core study, which overlapped both typical middle school (grades 7 and 8) and first year of high school (grade 9) here in the United States. Therefore, a direct comparison of this sample and subgroups in this sample—such as middle school or high school—must be done with caution because the sample is distinct. Grade level may be another intrinsic variable to consider when analyzing teacher stress and self-efficacies, and this combination of grades is not representative of a typical teacher group in the United States.

These limitations, although noteworthy, did not detract from the findings. There was a consistent and clear finding throughout all the analyses. The analyses continually illustrated considerable differences between novice and experienced teachers. For this reason, this research concludes with a call to action.

Conclusion and a Call to Action

This study revealed four key findings. One key finding was the significance of workplace well-being and stress and its implications for work-life balance among novice and experienced teachers. The other three key findings centered around differences between novice teachers and their experienced peers and among subgroups in these teacher groups. These differences focused

on self-efficacy in relation to years' experience, gender, and the subject area taught. The difference surrounding years of experience indicated a significantly stronger, positive correlation between all self-efficacies and their years of experience for novice teachers (except student engagement self-efficacy) than their experienced coworkers. There was a difference between gender among the novice teachers as well. Novice female teachers reported higher overall self-efficacy levels, instructional self-efficacy, and workplace well-being and stress than their novice male counterparts. In contrast, the female and male novice teachers reported similar levels of workload stress.

The last key difference centered around the subject area taught, literacy. Novice and experienced literacy teachers reported higher levels of all types of self-efficacy except for classroom management self-efficacy for novice teachers than their peers not teaching literacy. However, both workplace well-being and stress and workload stress were greater only for experienced literacy teachers when compared to their experienced peers not teaching literacy, although novice teachers' stress was similar for both types of teachers. These differences must be further analyzed to reduce attrition and turnover among novice teachers yet were minimally researched in the literature (Helms-Lorenz & Maulana, 2015; Helms-Lorenz et al., 2012) and not examined at all for differences between novice teachers and their more experienced peers. For these reasons, this study concludes with several calls to action.

One call to action is to create policies to provide teachers more mastery experiences (Bandura, 1997) while in the profession, such as induction programs (Espinoza et al., 2018) or residency programs (Guha et al., 2016) for novice teachers. As previously explained, induction programs may include such things as "ongoing professional learning for beginning teachers, monthly formative observations and feedback on beginning teachers' practice, release time for

observation of accomplished teachers, and professional learning for mentors" (Espinoza et al., 2018, p. 33). A well-run and organized induction or mentoring program proved to positively impact novice teachers' retention over the years. However, only 16 states in the United States, as of 2016, provided dedicated funding for novice teacher induction programs. Therefore, schools and districts may need to concertedly seek out and offer mastery experiences to their novice teachers if induction programs are not in place. Additionally, districts should provide experienced teachers ongoing opportunities to learn and advance their skills through training and professional development or through opportunities to become instructional coaches or mentors. These opportunities will allow experienced teachers to grow in their profession and mastery experiences, thereby growing their self-efficacy.

Another call to action is the need to coordinate teacher preparation programs with the needs of novice teachers. This coordination may include a follow-up survey given to novice teachers each year of their first 5 years in the profession. Longitudinal data may indicate specific areas where teachers need more support in teacher preparation programs prior to entering the profession. It may also reveal skills not currently taught in teacher preparation programs such as organization and classroom management skills. These skills may also include inclusive teaching practices wherein the preparation programs help teachers understand an inclusive mindset (Danforth, 2014) and the idea of beginning with presumed competence and inclusion (Cosier & Ashby, 2016). Inclusion and inclusive practices have long been the touted desired environment in schools, yet the teaching programs do not necessarily build self-efficacy for this work.

An additional call to action is to provide life-work balance training for teachers of all experience levels, particularly among the most vulnerable to attrition and turnover, novice teachers. Districts and schools can encourage a healthy work-life balance by promoting physical

health initiatives and incentives for teachers. Additionally, schools and districts should offer teachers the opportunity to participate in social-emotional wellness training and mental health support. Encouraging and incentivizing novice teachers to participate early in their careers may establish a healthier work-life balance among teachers throughout their careers.

The last call to action is directed at researchers. This study indicated self-efficacy consistently exhibited a negative correlation with at least one type of stress yet varied among subgroups of teachers. These differences among subgroups is what future research must pay more attention to when doing large-scale analysis. This study's findings were made visible only by looking at the constructs and the teaching sample in a finite manner, thereby revealing more nuanced findings such as those between gender and subject matter taught. These subgroups, as explained in my personal experience at a Title I school, may be the key to finding solutions to teacher attrition and turnover. More nuanced research would allow schools and school districts to see the novice teachers amidst the teaching population overall, or, to put into other words, the ability to see the trees for the forest. Research cannot lose sight of this critical subgroup of teachers. The ability to staff schools and retain teachers may hang in the balance.

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Appendix A

TALIS 2018 Teacher Questionnaire

[Placeholder for identification label]
(105 x 35 mm)

Organisation for Economic Co-operation and Development (OECD)

Teaching and Learning International Survey (TALIS) 2018

Teacher Questionnaire

[<ISCED 2011 level x> or PISA schools]

Main Survey Version
[International English, UK Spelling]

[National Project Information]

About TALIS 2018

The third Teaching and Learning International Survey (TALIS 2018) is an international survey that offers the opportunity for teachers and principals to provide input into education analysis and policy development.

TALIS is being conducted by the Organisation for Economic Co-operation and Development (OECD). [Name of country], along with more than 40 other countries, is taking part in the survey.

Cross-country analysis of this data will allow countries to identify other countries facing similar challenges and to learn from other policy approaches. School principals and teachers will provide information about issues such as the professional development they have received; their teaching beliefs and practices; the review of teachers' work and the feedback and recognition they receive about their work; and various other school leadership, management and workplace issues.

In the TALIS study, it is our intention to draw a picture of the different educational practices in all the participating countries. Countries and individuals may differ in their educational approaches. We rely on your expertise to describe your work and opinion as accurately as possible.

Being an international survey, it is possible that some questions do not fit very well within your national context. In these cases, please answer as best as you can.

Confidentiality

All information that is collected in this study will be treated confidentially. While results will be made available by country and, for example, by the type of school within a country, you are guaranteed that neither you, this school, nor any school personnel will be identified in any report of the results of the study. [Participation in this survey is voluntary and any individual may withdraw at any time.]

About the Questionnaire

- <When questions refer to 'this school' we mean by 'school': national school definition.>
- This questionnaire should take approximately 45 to 60 minutes to complete.
- Guidelines for answering the questions are typed in italics. Most questions can be answered by marking the one most appropriate answer.
- When you have completed this questionnaire, please [National Return Procedures and Date].
- When in doubt about any aspect of the questionnaire, or if you would like more information about the questionnaire or the study, you can reach us by using the following contact details: [National centre contact information, phone number and preferably e-mail address]

Thank you very much for your participation!

Background and Qualification

These questions are about you, your education and the time you have spent in teaching. In responding to the questions, please mark the appropriate choice(s) or provide figures where necessary.

1. Are you female or male?

Please mark one choice.

☐ 1 Female

☐ 2 Male

2. How old are you?

Please write a number.

⌊_⌋⌊_⌋ Years

3. What is the highest level of formal education you have completed?

Please mark one choice.

☐ 1 Below <ISCED 2011 Level 3>

☐ 2 <ISCED 2011 Level 3>

☐ 3 <ISCED 2011 Level 4>

☐ 4 <ISCED 2011 Level 5>

☐ 5 <ISCED 2011 Level 6>

☐ 6 <ISCED 2011 Level 7>

☐ 7 <ISCED 2011 Level 8>

4. How did you receive your first teaching qualification?

A '<regular concurrent teacher education or training programme>' grants future teachers a single credential for studies in subject-matter content, pedagogy, and other courses in education during the first period of post-secondary education.

A '<regular consecutive teacher education or training programme>' requires future teachers to complete two phases of post-secondary education: university education with the focus on subject-matter and a second phase with the focus on pedagogy and practicum.

Please mark one choice.

- ☐ 1 A <regular concurrent teacher education or training programme>
- ☐ 2 A <regular consecutive teacher education or training programme>
- ☐ 3 A <fast-track or specialised teacher education or training programme>
- ☐ 4 <Education or training> in another pedagogical profession
- ☐ 5 Subject-specific <education or training> only
- ☐ 6 I have no formal qualification related to the subject I am teaching or to any type of pedagogical education. → **Please go to Question [7].**
- ☐ 7 Other

5. When did you complete the formal <education or training> that qualified you to teach?

An approximate year is sufficient.

Please write in a number.

⌊_⌊_⌊_⌊_⌋

6. Were the following elements included in your formal <education or training>, and to what extent did you feel prepared for each element in your teaching?

Please mark one choice in both part (A) and part (B) in each row.

		(A) Inclusion in <education or training>		(B) Preparedness			
		Yes	No	Not at all	Some-what	Well	Very well
a)	Content of some or all subject(s) I teach	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
b)	Pedagogy of some or all subject(s) I teach	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
c)	General pedagogy	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
d)	Classroom practice in some or all subject(s) I teach.....	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
e)	Teaching in a mixed ability setting	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
f)	Teaching in a multicultural or multilingual setting.....	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
g)	Teaching cross-curricular skills (e.g. creativity, critical thinking, problem solving)	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
h)	Use of ICT (information and communication technology) for teaching.....	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
i)	Student behaviour and classroom management	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
j)	Monitoring students' development and learning.....	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
k)	Facilitating students' transitions from <ISCED 2011 level 0> to <ISCED 2011 level 1>	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4
l)	Facilitating play	☐ 1	☐ 2	☐ 1	☐ 2	☐ 3	☐ 4

7. How important were the following for you to become a teacher?

Please mark one choice in each row.

		Not important at all	Of low importance	Of moderate importance	Of high importance
a)	Teaching offered a steady career path.	☐1	☐2	☐3	☐4
b)	Teaching provided a reliable income.	☐1	☐2	☐3	☐4
c)	Teaching was a secure job.	☐1	☐2	☐3	☐4
d)	The teaching schedule (e.g. hours, holidays, part-time positions) fit with responsibilities in my personal life.	☐1	☐2	☐3	☐4
e)	Teaching allowed me to influence the development of children and young people.	☐1	☐2	☐3	☐4
f)	Teaching allowed me to benefit the socially disadvantaged.	☐1	☐2	☐3	☐4
g)	Teaching allowed me to provide a contribution to society.	☐1	☐2	☐3	☐4

8. Was teaching your first choice as a career?

A 'career' is having a paid job that you regarded as likely to form your life's work.

Please mark one choice.

☐1 Yes

☐2 No

Current Work

9. What is your employment status as a teacher <u>at this school</u>?

Please mark one choice.

- ☐ 1 Permanent employment (an on-going contract with no fixed end-point before the age of retirement)
- ☐ 2 Fixed-term contract for a period of more than 1 school year
- ☐ 3 Fixed-term contract for a period of 1 school year or less

10. What is your current employment status as a teacher, in terms of working hours?

Please consider your employment status at this school and for all of your teaching employments together.

Please mark one choice in each row.

		Full-time (more than 90% of full-time hours	Part-time (71-90% of full-time hours)	Part-time (50-70% of full-time hours)	Part-time (less than 50% of full-time hours)
a)	My employment status at this school	☐ 1	☐ 2	☐ 3	☐ 4
b)	All my teaching employments together	☐ 1	☐ 2	☐ 3	☐ 4

11. How many years of work experience do you have, regardless of whether you worked full-time or part-time?

Do not include any extended periods of leave such as maternity/paternity leave.

Please write a number in each row. Write 0 (zero) if none.

Please round up to whole years.

a) ⌊_⌋⌊_⌋ Year(s) working as a teacher <u>at this school</u>

b) ⌊_⌋⌊_⌋ Year(s) working as a teacher <u>in total</u>

c) ⌊__⌋⌊__⌋ Year(s) working in other education roles, not as a teacher (e.g. as a university lecturer, nurse)

d) ⌊__⌋⌊__⌋ Year(s) working in other non-education roles

12. Do you currently work as a teacher of [<ISCED 2011 level x>/15-year-olds] at another school?

Please mark one choice.

☐ 1 Yes

☐ 2 No → **Please go to Question [14].**

13. If 'Yes' in the previous question, please indicate at how many other schools you currently [work as a <ISCED 2011 level x> teacher/teach to 15-year-old students].

Please write a number.

⌊__⌋⌊__⌋ School(s)

14. Across all your [<ISCED 2011 level x> classes/classes where most students are 15 years old] at this school, how many are special needs students?

<'Special needs' students are those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged. [Often they will be those for whom additional public or private resources (personnel, material or financial) have been provided to support their education.]>

Please mark one choice.

☐ 1 None

☐ 2 Some

☐ 3 Most

☐ 4 All

15. Were the following subject categories included in your formal <education or training>, and do you teach them during the current school year to any [<ISCED 2011 Level X> / 15-year-old] students in this school?

Please mark as many choices as appropriate in each row.

		Included in my formal <education or training>	I teach it to [<ISCED 2011 Level X> / 15-year-old] students this year
a)	Reading, writing and literature *Includes reading and writing (and literature) in the mother tongue, in the language of instruction, or in the tongue of the country (region) as a second language (for non-natives); language studies, public speaking, literature*.....	☐ 1	☐ 1
b)	Mathematics *Includes mathematics, mathematics with statistics, geometry, algebra, etc*...	☐ 1	☐ 1
c)	Science *Includes science, physics, physical science, chemistry, biology, human biology, environmental science, agriculture/horticulture/forestry*	☐ 1	☐ 1
d)	Social studies *Includes social studies, community studies, contemporary studies, economics, environmental studies, geography, history, humanities, legal studies, studies of the own country, social sciences, ethical thinking, philosophy*	☐ 1	☐ 1
e)	Modern foreign languages *Includes languages different from the language of instruction*	☐ 1	☐ 1
f)	Ancient Greek and/or Latin	☐ 1	☐ 1
g)	Technology *Includes orientation in technology, including information technology, computer studies, construction/surveying, electronics, graphics and design, keyboard skills, word processing, workshop technology/design technology* ..	☐ 1	☐ 1
h)	Arts *Includes arts, music, visual arts, practical art, drama, performance music, photography, drawing, creative handicraft, creative needlework*	☐ 1	☐ 1
i)	Physical education *Includes physical education, gymnastics, dance, health*	☐ 1	☐ 1
j)	Religion and/or ethics *Includes religion, history of religions, religion culture, ethics*	☐ 1	☐ 1
k)	Practical and vocational skills *Includes vocational skills (preparation for a specific occupation), technics, domestic science, accountancy, business studies, career education, clothing and textiles, driving, home economics, polytechnic courses, secretarial studies, tourism and hospitality, handicraft*	☐ 1	☐ 1
l)	Other	☐ 1	☐ 1

16. During your <u>most recent complete calendar week</u>, approximately how many 60-minute hours did you spend <u>in total</u> on tasks related to your job <u>at this school</u>?

Include time spent on teaching, planning lessons, marking, collaborating with other teachers, participating in staff meetings, participating in professional development and other work tasks. Also include tasks that took place during evenings, weekends or other out of class hours.

A 'complete' calendar week is one that <u>was not shortened by breaks, public holidays, sick leave, etc.</u>

Round to the nearest whole hour.

⌊__⌋ Hours in total

17. Of this total, how many 60-minute hours did you spend <u>on teaching at this school</u> during your <u>most recent complete calendar week</u>?

Please only count actual teaching time.

Time spent on preparation, marking, professional development, etc. will be recorded in the next question.

Round to the nearest whole hour.

⌊__⌋ Hours teaching

18. Approximately how many 60-minute hours did you spend on the following tasks during your <u>most recent complete calendar week,</u> in your job <u>at this school</u>?

Include tasks that took place during weekends, evenings or other out of class hours. Exclude all time spent teaching, as this was recorded in the previous question.

Rough estimates are sufficient.

If you did not perform the task during the most recent complete calendar week, write 0 (zero).

Round to the nearest whole hour.

a) ⌊__⌋ Hours Individual planning or preparation of lessons either at school or out of school

b) ⌊__⌋ Hours Team work and dialogue with colleagues within this school

c) ⌊__⌋ Hours Marking/correcting of student work

d) ⌊__⌋ Hours Counselling students (including student supervision, mentoring, virtual counselling, career guidance and behaviour guidance)

e) ⌊__⌋ Hours Participation in school management

f) ⌊__⌋ Hours General administrative work (including communication, paperwork and other clerical duties)

g) ⌊__⌋ Hours Professional development activities

h) ⌊__⌋ Hours Communication and co-operation with parents or guardians

i) ⌊__⌋ Hours Engaging in extracurricular activities (e.g. sports and cultural activities after school)

j) ⌊__⌋ Hours Other work tasks

Professional Development

In this section, 'professional development' is defined as activities that aim to develop an individual's skills, knowledge, expertise and other characteristics as a teacher.

Please only consider professional development you have undertaken after your initial <education or training>.

19. Did you take part in any induction activities?

'Induction activities' are designed to support new teachers' introduction into the teaching profession and to support experienced teachers who are new to a school, and they are either organised in formal, structured programmes or informally arranged as separate activities.

Please mark as many choices as appropriate in each row.

	Yes, during my first employment	Yes, at this school	No
a) I took part in a formal induction programme.	☐1	☐1	☐1
b) I took part in informal induction activities.	☐1	☐1	☐1

If you did not answer 'Yes, at this school' to either a) or b) → Please go to Question [21].

20. When you began work at this school, were the following provisions part of your induction?

Please mark one choice in each row.

	Yes	No
a) Courses/seminars attended in person	☐1	☐2
b) Online courses/seminars	☐1	☐2
c) Online activities (e.g. virtual communities)	☐1	☐2
d) Planned meetings with principal and/or experienced teachers	☐1	☐2
e) Supervision by principal and/or experienced teachers	☐1	☐2
f) Networking/collaboration with other new teachers	☐1	☐2

g) Team teaching with experienced teachers ..... ☐1 ☐2

h) Portfolios/diaries/journals ..... ☐1 ☐2

i) Reduced teaching load ..... ☐1 ☐2

j) General/administrative introduction ..... ☐1 ☐2

21. Are you currently involved in any mentoring activities as part of a formal arrangement at this school?

'Mentoring' is defined as a support structure in schools where more experienced teachers support less experienced teachers. This structure might involve all teachers in the school or only new teachers.

It does not include mentoring of student teachers doing teaching practice at this school.

Please mark one choice in each row.

		Yes	No
a)	I currently have an assigned mentor to support me.	☐ 1	☐ 2
b)	I am currently an assigned mentor for one or more teachers.	☐ 1	☐ 2

22. During the last 12 months, did you participate in any of the following professional development activities?

Please mark one choice in each row.

		Yes	No
a)	Courses/seminars attended in person	☐ 1	☐ 2
b)	Online courses/seminars	☐ 1	☐ 2
c)	Education conferences where teachers and/or researchers present their research or discuss educational issues	☐ 1	☐ 2
d)	Formal qualification programme (e.g. a degree programme)	☐ 1	☐ 2
e)	Observation visits to other schools	☐ 1	☐ 2
f)	Observation visits to business premises, public organisations, or non-governmentalorganisations	☐ 1	☐ 2
g)	Peer and/or self-observation and coaching as part of a formal school arrangement	☐ 1	☐ 2
h)	Participation in a network of teachers formed specifically for the professional development of teachers	☐ 1	☐ 2
i)	Reading professional literature	☐ 1	☐ 2
j)	Other	☐ 1	☐ 2

If you answered 'No' to all of the above → Please go to Question [27].

23. Were any of the topics listed below included in your professional development activities during the last 12 months?

Please mark one choice in each row.

		Yes	No
a)	Knowledge and understanding of my subject field(s)	☐ 1	☐ 2
b)	Pedagogical competencies in teaching my subject field(s)	☐ 1	☐ 2
c)	Knowledge of the curriculum	☐ 1	☐ 2

d) Student assessment practices ..... ☐1 ☐2

e) ICT (information and communication technology) skills for teaching ..... ☐1 ☐2

f)	Student behaviour and classroom management	☐1	☐2
g)	School management and administration	☐1	☐2
h)	Approaches to individualised learning	☐1	☐2
i)	Teaching students with special needs	☐1	☐2
j)	Teaching in a multicultural or multilingual setting	☐1	☐2
k)	Teaching cross-curricular skills (e.g. creativity, critical thinking, problem solving)	☐1	☐2
l)	Analysis and use of student assessments	☐1	☐2
m)	Teacher-parent/guardian co-operation	☐1	☐2
n)	Communicating with people from different cultures or countries	☐1	☐2
o)	Other	☐1	☐2

24. For the professional development in which you participated during the last <u>12 months</u>, did you receive any of the following?

Please mark one choice in each row.

		Yes	No
a)	Release from teaching duties for activities during regular working hours	☐1	☐2
b)	Non-monetary support for activities outside working hours (e.g. reduced teaching time, days off, study leave)	☐1	☐2
c)	Reimbursement or payment of costs	☐1	☐2
d)	Materials needed for the activities	☐1	☐2
e)	Monetary supplements for activities outside working hours	☐1	☐2
f)	Non-monetary rewards (e.g. classroom resources/materials, book vouchers, software/apps)	☐1	☐2
g)	Non-monetary professional benefits (e.g. fulfilling professional development requirements, improving my promotion opportunities)	☐1	☐2
h)	Increased salary	☐1	☐2

25. Thinking of all of your professional development activities during the last <u>12 months</u>, did any of these have a positive impact on your teaching practice?

Please mark one choice.

☐1 Yes

☐2 No → **Please go to Question [27].**

26. Thinking of the professional development activity that had the <u>greatest positive impact</u> on your teaching during the last <u>12 months</u>, did it have any of the following characteristics?

Please mark one choice in each row.

		Yes	No
a)	It built on my prior knowledge.	☐1	☐2
b)	It adapted to my personal development needs.	☐1	☐2
c)	It had a coherent structure.	☐1	☐2
d)	It appropriately focused on content needed to teach my subjects.	☐1	☐2
e)	It provided opportunities for active learning.	☐1	☐2
f)	It provided opportunities for collaborative learning.	☐1	☐2
g)	It provided opportunities to practise/apply new ideas and knowledge in my own classroom.	☐1	☐2
h)	It provided follow-up activities.	☐1	☐2
i)	It took place at my school.	☐1	☐2
j)	It involved most colleagues from my school.	☐1	☐2
k)	It took place over an extended period of time (e.g. several weeks or longer).	☐1	☐2
l)	It focused on innovation in my teaching.	☐1	☐2

27. For each of the areas listed below, please indicate the extent to which <u>you currently need</u> professional development.

Please mark one choice in each row.

		No need at present	Low level of need	Moderate level of need	High level of need
a)	Knowledge and understanding of my subject field(s)	☐1	☐2	☐3	☐4
b)	Pedagogical competencies in teaching my subject field(s)	☐1	☐2	☐3	☐4
c)	Knowledge of the curriculum	☐1	☐2	☐3	☐4
d)	Student assessment practices	☐1	☐2	☐3	☐4
e)	ICT (information and communication technology) skills for teaching	☐1	☐2	☐3	☐4
f)	Student behaviour and classroom management	☐1	☐2	☐3	☐4
g)	School management and administration	☐1	☐2	☐3	☐4
h)	Approaches to individualised learning	☐1	☐2	☐3	☐4
i)	Teaching students with special needs	☐1	☐2	☐3	☐4
j)	Teaching in a multicultural or multilingual setting	☐1	☐2	☐3	☐4

k)	Teaching cross-curricular skills (e.g. creativity, critical thinking, problem solving)	☐1	☐2	☐3	☐4
l)	Analysis and use of student assessments	☐1	☐2	☐3	☐4

m)	Teacher-parent/guardian co-operation	☐1	☐2	☐3	☐4
n)	Communicating with people from different cultures or countries	☐1	☐2	☐3	☐4

28. How strongly do you agree or disagree that the following present barriers to your participation in professional development?

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
a)	I do not have the pre-requisites (e.g. qualifications, experience, seniority).	☐1	☐2	☐3	☐4
b)	Professional development is too expensive.	☐1	☐2	☐3	☐4
c)	There is a lack of employer support.	☐1	☐2	☐3	☐4
d)	Professional development conflicts with my work schedule.	☐1	☐2	☐3	☐4
e)	I do not have time because of family responsibilities.	☐1	☐2	☐3	☐4
f)	There is no relevant professional development offered. .	☐1	☐2	☐3	☐4
g)	There are no incentives for participating in professional development.	☐1	☐2	☐3	☐4

Feedback

We would like to ask you about the feedback you receive about your work in this school.

'Feedback' is defined broadly as including any communication you receive about your teaching, based on some form of interaction with your work (e.g. observing you teach students, discussing your curriculum or students' results).

Feedback can be provided through informal discussions with you or as part of a more formal and structured arrangement.

29. In this school, who uses the following types of information to provide feedback to you?

'External individuals or bodies' as used below refer to, for example, inspectors, municipality representatives, or other persons from outside the school.

Please mark as many choices as appropriate in each row.

	External individuals or bodies	School principal or member(s) of the <school manage-ment team>	Other colleagues within the school (not a part of the <school manage-ment team>)	I have never received this feedback in this school.
a) Observation of my classroom teaching	☐1	☐1	☐1	☐1
b) Student survey responses related to my teaching	☐1	☐1	☐1	☐1
c) Assessment of my content knowledge	☐1	☐1	☐1	☐1
d) External results of students I teach (e.g. national test scores)	☐1	☐1	☐1	☐1
e) School-based and classroom-based results (e.g. performance results, project results, test scores)	☐1	☐1	☐1	☐1
f) Self-assessment of my work (e.g. presentation of a portfolio assessment, analysis of my teaching using video)	☐1	☐1	☐1	☐1

If you answered 'I have never received this feedback in this school' to all of the above → Please go to Question [32].

30. Thinking of all of the feedback that you have received during the last <u>12 months</u>, did any of these have a positive impact on your teaching practice?

Please mark one choice.

☐$_1$ Yes

☐$_2$ No → **Please go to Question [32].**

31. Thinking about the feedback you have received during the last 12 months, did it lead to a <u>positive change</u> in any of the following aspects of your teaching?

Please mark one choice in each row.

	Yes	No
a) Knowledge and understanding of my main subject field(s)	☐$_1$	☐$_2$
b) Pedagogical competencies in teaching my subject	☐$_1$	☐$_2$
c) Use of student assessments to improve student learning	☐$_1$	☐$_2$
d) Classroom management	☐$_1$	☐$_2$
e) Methods for teaching students with special needs	☐$_1$	☐$_2$
f) Methods for teaching in a multicultural or multilingual setting	☐$_1$	☐$_2$

Teaching in General

32. Thinking about the teachers in this school, how strongly do you agree or disagree with the following statements?

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
a)	Most teachers in this school strive to develop new ideas for teaching and learning.	☐1	☐2	☐3	☐4
b)	Most teachers in this school are open to change.	☐1	☐2	☐3	☐4
c)	Most teachers in this school search for new ways to solve problems.	☐1	☐2	☐3	☐4
d)	Most teachers in this school provide practical support to each other for the application of new ideas.	☐1	☐2	☐3	☐4

33. On average, how often do you do the following in this school?

Please mark one choice in each row.

		Never	Once a year or less	2-4 times a year	5-10 times a year	1-3 times a month	Once a week or more
a)	Teach jointly as a team in the same class .	☐1	☐2	☐3	☐4	☐5	☐6
b)	Observe other teachers' classes and provide feedback	☐1	☐2	☐3	☐4	☐5	☐6
c)	Engage in joint activities across different classes and age groups (e.g. projects)	☐1	☐2	☐3	☐4	☐5	☐6
d)	Exchange teaching materials with colleagues	☐1	☐2	☐3	☐4	☐5	☐6
e)	Engage in discussions about the learning development of specific students	☐1	☐2	☐3	☐4	☐5	☐6
f)	Work with other teachers in this school to ensure common standards in evaluations for assessing student progress	☐1	☐2	☐3	☐4	☐5	☐6
g)	Attend team conferences	☐1	☐2	☐3	☐4	☐5	☐6

h) Take part in collaborative professional learning ..... ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

34. In your teaching, to what extent can you do the following?

Please mark one choice in each row.

		Not at all	To some extent	Quite a bit	A lot
a)	Get students to believe they can do well in school work ..	☐ 1	☐ 2	☐ 3	☐ 4
b)	Help students value learning	☐ 1	☐ 2	☐ 3	☐ 4
c)	Craft good questions for students	☐ 1	☐ 2	☐ 3	☐ 4
d)	Control disruptive behaviour in the classroom	☐ 1	☐ 2	☐ 3	☐ 4
e)	Motivate students who show low interest in school work .	☐ 1	☐ 2	☐ 3	☐ 4
f)	Make my expectations about student behaviour clear	☐ 1	☐ 2	☐ 3	☐ 4
g)	Help students think critically	☐ 1	☐ 2	☐ 3	☐ 4
h)	Get students to follow classroom rules	☐ 1	☐ 2	☐ 3	☐ 4
i)	Calm a student who is disruptive or noisy	☐ 1	☐ 2	☐ 3	☐ 4
j)	Use a variety of assessment strategies	☐ 1	☐ 2	☐ 3	☐ 4
k)	Provide an alternative explanation, for example when students are confused	☐ 1	☐ 2	☐ 3	☐ 4
l)	Vary instructional strategies in my classroom	☐ 1	☐ 2	☐ 3	☐ 4
m)	Support student learning through the use of digital technology (e.g. computers, tablets, smart boards)	☐ 1	☐ 2	☐ 3	☐ 4

Teaching in the <Target Class>

In the following, we want to get into more detail about your teaching practices.

Within this questionnaire, we cannot cover the whole scope of your teaching.

Therefore, we use an exemplary approach and focus on the teaching of one <class>.

The following questions ask you about a particular <class> that you teach. The <class> that we would like you to respond to is the first [<ISCED 2011 Level x>] <class> [attended by 15-year-old students] that you taught in this school after 11 a.m. last Tuesday. Please note that if you do not teach a <class> [at <ISCED 2011 Level x>] / [attended by 15-year-old students] on Tuesday, this can be a class taught on a day following the last Tuesday.

In the questions below, this <class> will be referred to as the <target class>.

35. We would like to understand the composition of the <target class>. Please estimate the broad percentage of students who have the following characteristics.

<'Socio-economically disadvantaged homes' refers to homes lacking the basic necessities or advantages of life, such as adequate housing, nutrition or medical care.>

A 'refugee' is one who, regardless of legal status, fled to another country, seeking refuge from war, political oppression, religious persecution, or a natural disaster.

An 'immigrant student' is one who was born outside the country. A 'student with migrant background' has parents who were both born outside the country.

This question asks about your personal perception of student background. It is acceptable to base your replies on rough estimates.

Students may fall into multiple categories.

Please mark one choice in each row.

	None	1% to 10%	11% to 30%	31% to 60%	More than 60%
a) Students whose [first language] is different from the language(s) of instruction or from a dialect of this/these language(s)	☐1	☐2	☐3	☐4	☐5
b) Low academic achievers	☐1	☐2	☐3	☐4	☐5
c) Students with special needs	☐1	☐2	☐3	☐4	☐5
d) Students with behavioural problems	☐1	☐2	☐3	☐4	☐5
e) Students from <socio-economically disadvantaged homes>	☐1	☐2	☐3	☐4	☐5
f) Academically gifted students	☐1	☐2	☐3	☐4	☐5

g)	Students who are immigrants or with migrant background	☐1	☐2	☐3	☐4	☐5
h)	Students who are refugees	☐1	☐2	☐3	☐4	☐5

36. Is your teaching in the <target class> directed entirely or mainly to <special needs> students?

Please mark one choice.

☐ 1 Yes → **Please go to Question [44].**

☐ 2 No

37. Into which subject category does this <target class> primarily fall?

Please mark one choice.

☐ 1 Reading, writing and literature

Includes reading and writing (and literature) in the mother tongue, in the language of instruction, or in the tongue of the country (region) as a second language (for non-natives); language studies, public speaking, literature

☐ 2 Mathematics

Includes mathematics, mathematics with statistics, geometry, algebra, etc.

☐ 3 Science

Includes science, physics, physical science, chemistry, biology, human biology, environmental science, agriculture/horticulture/forestry

☐ 4 Social studies

Includes social studies, community studies, contemporary studies, economics, environmental studies, geography, history, humanities, legal studies, studies of the own country, social sciences, ethical thinking, philosophy

☐ 5 Modern foreign languages

Includes languages different from the language of instruction

☐ 6 Ancient Greek and/or Latin

☐ 7 Technology

Includes orientation in technology, including information technology, computer studies, construction/surveying, electronics, graphics and design, keyboard skills, word processing, workshop technology/design technology

☐ 8 Arts

Includes arts, music, visual arts, practical art, drama, performance music, photography, drawing, creative handicraft, creative needlework

☐ 9 Physical education

Includes physical education, gymnastics, dance, health

☐ 10 Religion and/or ethics

Includes religion, history of religions, religion culture, ethics

☐ 11 Practical and vocational skills

Includes vocational skills (preparation for a specific occupation), technics, domestic science, accountancy, business studies, career education, clothing and textiles, driving, home economics, polytechnic courses, secretarial studies, tourism and hospitality, handicraft

☐ 12 Other

38. How many students are currently enrolled in this <target class>?

Please write a number.

⌊_⌋⌊_⌋ Students

39. For this <target class>, what percentage of <class> time is typically spent on each of the following activities?

Write a percentage for each activity. Write 0 (zero) if none.

Please ensure that responses add up to 100%.

a)	⌊_⌋⌊_⌋⌊_⌋	%	Administrative tasks (e.g. recording attendance, handing out school information/forms)
b)	⌊_⌋⌊_⌋⌊_⌋	%	Keeping order in the classroom (maintaining discipline)
c)	⌊_⌋⌊_⌋⌊_⌋	%	Actual teaching and learning
	100	**%**	**Total**

40. How strongly do you agree or disagree that you have control over the following areas of your planning and teaching in this <target class>?

Please mark one choice in each row.

	Strongly disagree	Disagree	Agree	Strongly agree
a) Determining course content	☐1	☐2	☐3	☐4
b) Selecting teaching methods	☐1	☐2	☐3	☐4
c) Assessing students' learning	☐1	☐2	☐3	☐4
d) Disciplining students	☐1	☐2	☐3	☐4
e) Determining the amount of homework to be assigned	☐1	☐2	☐3	☐4

41. How strongly do you agree or disagree with the following statements about this <target class>?

Please mark one choice in each row.

	Strongly disagree	Disagree	Agree	Strongly agree
a) When the lesson begins, I have to wait quite a long time for students to quieten down.	☐1	☐2	☐3	☐4
b) Students in this class take care to create a pleasant learning atmosphere.	☐1	☐2	☐3	☐4
c) I lose quite a lot of time because of students interrupting the lesson.	☐1	☐2	☐3	☐4
d) There is much disruptive noise in this classroom.	☐1	☐2	☐3	☐4

42. Thinking about your teaching in the <target class>, how often do you do the following?

Please mark one choice in each row.

		Never or almost never	Occasion-ally	Frequently	Always
a)	I present a summary of recently learned content.	☐ 1	☐ 2	☐ 3	☐ 4
b)	I set goals at the beginning of instruction.	☐ 1	☐ 2	☐ 3	☐ 4
c)	I explain what I expect the students to learn.	☐ 1	☐ 2	☐ 3	☐ 4
d)	I explain how new and old topics are related.	☐ 1	☐ 2	☐ 3	☐ 4
e)	I present tasks for which there is no obvious solution.	☐ 1	☐ 2	☐ 3	☐ 4
f)	I give tasks that require students to think critically.	☐ 1	☐ 2	☐ 3	☐ 4
g)	I have students work in small groups to come up with a joint solution to a problem or task.	☐ 1	☐ 2	☐ 3	☐ 4
h)	I ask students to decide on their own procedures for solving complex tasks.	☐ 1	☐ 2	☐ 3	☐ 4
i)	I tell students to follow classroom rules.	☐ 1	☐ 2	☐ 3	☐ 4
j)	I tell students to listen to what I say.	☐ 1	☐ 2	☐ 3	☐ 4
k)	I calm students who are disruptive.	☐ 1	☐ 2	☐ 3	☐ 4
l)	When the lesson begins, I tell students to quieten down quickly.	☐ 1	☐ 2	☐ 3	☐ 4
m)	I refer to a problem from everyday life or work to demonstrate why new knowledge is useful.	☐ 1	☐ 2	☐ 3	☐ 4
n)	I let students practise similar tasks until I know that every student has understood the subject matter.	☐ 1	☐ 2	☐ 3	☐ 4
o)	I give students projects that require at least one week to complete.	☐ 1	☐ 2	☐ 3	☐ 4
p)	I let students use ICT (information and communication technology) for projects or class work.	☐ 1	☐ 2	☐ 3	☐ 4

43. How often do you use the following methods of assessing student learning in the <target class>?

Please mark one choice in each row.

		Never or almost never	Occasion-ally	Frequently	Always
a)	I administer my own assessment.	☐ 1	☐ 2	☐ 3	☐ 4
b)	I provide written feedback on student work in addition to a <mark, i.e. numeric score or letter grade>.	☐ 1	☐ 2	☐ 3	☐ 4
c)	I let students evaluate their own progress.	☐ 1	☐ 2	☐ 3	☐ 4
d)	I observe students when working on particular tasks and provide immediate feedback.	☐ 1	☐ 2	☐ 3	☐ 4

Teaching in Diverse Environments

The following section includes questions about school policies and practices concerned with diversity, with an emphasis on cultural diversity.

'Diversity' refers to the recognition of and appreciation for differences in the backgrounds of students and staff. In the case of cultural diversity it refers most notably to cultural or ethnic backgrounds.

44. Have you ever taught a classroom with students from different cultures?

Please mark one choice.

☐$_1$ Yes

☐$_2$ No → **Please go to Question [46].**

45. In teaching a culturally diverse class, to what extent can you do the following?

Please mark one choice in each row.

	Not at all	To some extent	Quite a bit	A lot
a) Cope with the challenges of a multicultural classroom	☐$_1$	☐$_2$	☐$_3$	☐$_4$
b) Adapt my teaching to the cultural diversity of students ...	☐$_1$	☐$_2$	☐$_3$	☐$_4$
c) Ensure that students with and without a migrant background work together	☐$_1$	☐$_2$	☐$_3$	☐$_4$
d) Raise awareness for cultural differences amongst students	☐$_1$	☐$_2$	☐$_3$	☐$_4$
e) Reduce ethnic stereotyping amongst students	☐$_1$	☐$_2$	☐$_3$	☐$_4$

46. Does this school include students of more than one cultural or ethnic background?

Please mark one choice.

☐$_1$ Yes

☐$_2$ No → **Please go to Question [48].**

47. In this school, are the following practices in relation to diversity implemented?

Please mark one choice in each row.

	Yes	No

a)	Supporting activities or organisations that encourage students' expression of diverse ethnic and cultural identities (e.g. artistic groups)	☐1	☐2
b)	Organising multicultural events (e.g. cultural diversity day)	☐1	☐2
c)	Teaching students how to deal with ethnic and cultural discrimination	☐1	☐2
d)	Adopting teaching and learning practices that integrate global issues throughout the curriculum	☐1	☐2

School Climate and Job Satisfaction

48. How strongly do you agree or disagree with these statements, as applied to this school?

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
a)	This school provides staff with opportunities to actively participate in school decisions.	☐1	☐2	☐3	☐4
b)	This school provides parents or guardians with opportunities to actively participate in school decisions. .	☐1	☐2	☐3	☐4
c)	This school provides students with opportunities to actively participate in school decisions.	☐1	☐2	☐3	☐4
d)	This school has a culture of shared responsibility for school issues.	☐1	☐2	☐3	☐4
e)	There is a collaborative school culture which is characterised by mutual support.	☐1	☐2	☐3	☐4
f)	The school staff share a common set of beliefs about teaching and learning.	☐1	☐2	☐3	☐4
g)	The school staff enforces rules for student behaviour consistently throughout the school.	☐1	☐2	☐3	☐4
h)	This school encourages staff to lead new initiatives.	☐1	☐2	☐3	☐4

49. How strongly do you agree or disagree with the following statements about what happens in this school?

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
a)	Teachers and students usually get on well with each other.	☐1	☐2	☐3	☐4
b)	Most teachers believe that the students' well-being is important.	☐1	☐2	☐3	☐4
c)	Most teachers are interested in what students have to say.	☐1	☐2	☐3	☐4
d)	If a student needs extra assistance, the school provides it.	☐1	☐2	☐3	☐4
e)	Teachers can rely on each other.	☐1	☐2	☐3	☐4

50. For how many more years do you want to continue to work as a teacher?

Please write a number.

☐☐ Years

51. In your experience as a teacher at this school, to what extent do the following occur?

Please mark one choice in each row.

		Not at all	To some extent	Quite a bit	A lot
a)	I experience stress in my work.	☐ 1	☐ 2	☐ 3	☐ 4
b)	My job leaves me time for my personal life.	☐ 1	☐ 2	☐ 3	☐ 4
c)	My job negatively impacts my mental health.	☐ 1	☐ 2	☐ 3	☐ 4
d)	My job negatively impacts my physical health.	☐ 1	☐ 2	☐ 3	☐ 4

52. Thinking about your job at this school, to what extent are the following sources of stress in your work?

Please mark one choice in each row.

		Not at all	To some extent	Quite a bit	A lot
a)	Having too much lesson preparation	☐ 1	☐ 2	☐ 3	☐ 4
b)	Having too many lessons to teach	☐ 1	☐ 2	☐ 3	☐ 4
c)	Having too much marking	☐ 1	☐ 2	☐ 3	☐ 4
d)	Having too much administrative work to do (e.g. filling out forms)	☐ 1	☐ 2	☐ 3	☐ 4
e)	Having extra duties due to absent teachers	☐ 1	☐ 2	☐ 3	☐ 4
f)	Being held responsible for students' achievement ..	☐ 1	☐ 2	☐ 3	☐ 4
g)	Maintaining classroom discipline	☐ 1	☐ 2	☐ 3	☐ 4
h)	Being intimidated or verbally abused by students ...	☐ 1	☐ 2	☐ 3	☐ 4
i)	Keeping up with changing requirements from <local, municipality/regional, state, or national/federal> authorities.....	☐ 1	☐ 2	☐ 3	☐ 4
j)	Addressing parent or guardian concerns	☐ 1	☐ 2	☐ 3	☐ 4
k)	Modifying lessons for students with special needs ..	☐ 1	☐ 2	☐ 3	☐ 4

53. We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
a)	The advantages of being a teacher clearly outweigh the disadvantages.	☐ 1	☐ 2	☐ 3	☐ 4
b)	If I could decide again, I would still choose to work as a teacher.	☐ 1	☐ 2	☐ 3	☐ 4
c)	I would like to change to another school if that were possible.	☐ 1	☐ 2	☐ 3	☐ 4
d)	I regret that I decided to become a teacher.	☐ 1	☐ 2	☐ 3	☐ 4
e)	I enjoy working at this school.	☐ 1	☐ 2	☐ 3	☐ 4
f)	I wonder whether it would have been better to choose another profession.	☐ 1	☐ 2	☐ 3	☐ 4
g)	I would recommend this school as a good place to work.	☐ 1	☐ 2	☐ 3	☐ 4
h)	I think that the teaching profession is valued in society. ..	☐ 1	☐ 2	☐ 3	☐ 4
i)	I am satisfied with my performance in this school.	☐ 1	☐ 2	☐ 3	☐ 4
j)	All in all, I am satisfied with my job.	☐ 1	☐ 2	☐ 3	☐ 4

54. How strongly do you agree or disagree with the following statements?

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
a)	I am satisfied with the salary I receive for my work.	☐ 1	☐ 2	☐ 3	☐ 4
b)	Apart from my salary, I am satisfied with the terms of my teaching <contract/employment> (e.g. benefits, work schedule).	☐ 1	☐ 2	☐ 3	☐ 4
c)	Teachers' views are valued by policymakers in this country/region.	☐ 1	☐ 2	☐ 3	☐ 4
d)	Teachers can influence educational policy in this country/region.	☐ 1	☐ 2	☐ 3	☐ 4
e)	Teachers are valued by the media in this country/region. .	☐ 1	☐ 2	☐ 3	☐ 4

55. Thinking about education <at ISCED level x / for 15-year-olds> as a whole, if the budget were to be increased by 5 %, how would you rate the importance of the following spending priorities?

Please mark one choice in each row.

		Of low importance	Of moderate importance	Of high importance
a)	Investing in ICT	☐ 1	☐ 2	☐ 3
b)	Investing in instructional materials (e.g. textbooks)	☐ 1	☐ 2	☐ 3
c)	Supporting students from disadvantaged or migrant backgrounds	☐ 1	☐ 2	☐ 3
d)	Reducing class sizes by recruiting more staff	☐ 1	☐ 2	☐ 3
e)	Improving school buildings and facilities	☐ 1	☐ 2	☐ 3
f)	Supporting students with special needs	☐ 1	☐ 2	☐ 3
g)	Offering high quality professional development for teachers	☐ 1	☐ 2	☐ 3
h)	Improving teacher salaries	☐ 1	☐ 2	☐ 3
i)	Reducing teachers' administration load by recruiting more supportstaff	☐ 1	☐ 2	☐ 3

Teacher Mobility

56. Have you ever been abroad for professional purposes in your career as a teacher o during your teacher <education or training>?

Please mark one choice in each row.

		Yes	No
a)	As a student, as part of my teacher <education or training>	☐1	☐2
b)	As a teacher in an EU programme (e.g. Erasmus+ programme/Comenius)	☐1	☐2
c)	As a teacher in a regional or national programme	☐1	☐2
d)	As a teacher, as arranged by a school or school district	☐1	☐2
e)	As a teacher, by my own initiative	☐1	☐2

If you answered 'No' to all of the above → Please go to [the end of the Questionnaire].

57. Were the following activities professional purposes of your visits abroad?

Please mark one choice in each row.

		Yes	No
a)	Studying, as part of my teacher education	☐1	☐2
b)	Language learning	☐1	☐2
c)	Learning of other subject areas	☐1	☐2
d)	Accompanying visiting students	☐1	☐2
e)	Establishing contact with schools abroad	☐1	☐2
f)	Teaching	☐1	☐2
g)	Other	☐1	☐2

58. In total, how long have you stayed abroad for professional purposes?

Please mark one choice.

☐1 For less than three months

☐2 For three to twelve months

☐3 For more than a year

This is the end of the questionnaire.

Thank you very much for your participation!

Please [National Return Procedures and Date]

Appendix B

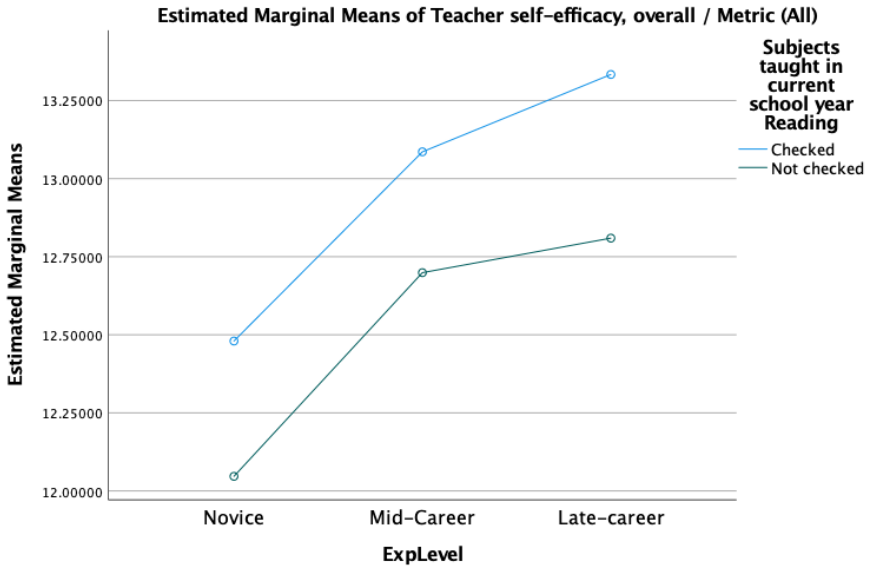
A factorial or two-way analysis of variance was analyzed to verify that type 1 errors did not impact the results (Leech et al., 2015; Urdan, 2017) reported for research questions 7 and 7a. Additionally, the experienced group of teachers was subdivided into two groups, mid-career teachers (5-15 years' experience, n = 997) and late-career teachers (16-50 years' experience, n = 984). A factorial ANOVA is used when the researcher has two or more independent variables and one continuous dependent variable (Leech et al., 2015; Urdan, 2017). The independent variables in this case were six different sets of teachers since the question was adjusted to accommodate more than one 'experienced' teacher level, as explained previously. These subgroups are represented in the following results.

Prior to running the analysis for two-way ANOVA, a check of the assumptions was done and all assumptions were met (approximately normal distribution, Levene's test was non-significant, and no significant outliers). A 2 (novice literacy, novice non-literacy teacher) x 3 (novice, mid-career, and late-career teachers) factorial ANOVA was used to examine the main effects and interaction effects of content area taught and years' experience on the self-efficacy and stress of teachers. This analysis did not find a significant interaction between any of the self-efficacies and stress with these independent variables but did have multiple significant simple main effects. A simple main effects was carried out for experience level of teacher (novice, mid-, and late-career) and a "Bonferroni adjustment was made to correct for multiple comparisons within each simple main effect separately" (Laerd, 2013, tab 14 of two-way ANOVA tutorial). The results of these analyses ensue.

The simple main effect of experience level on the composite self-efficacy score for those teaching literacy compared to those not teaching literacy was significant for all experience levels,

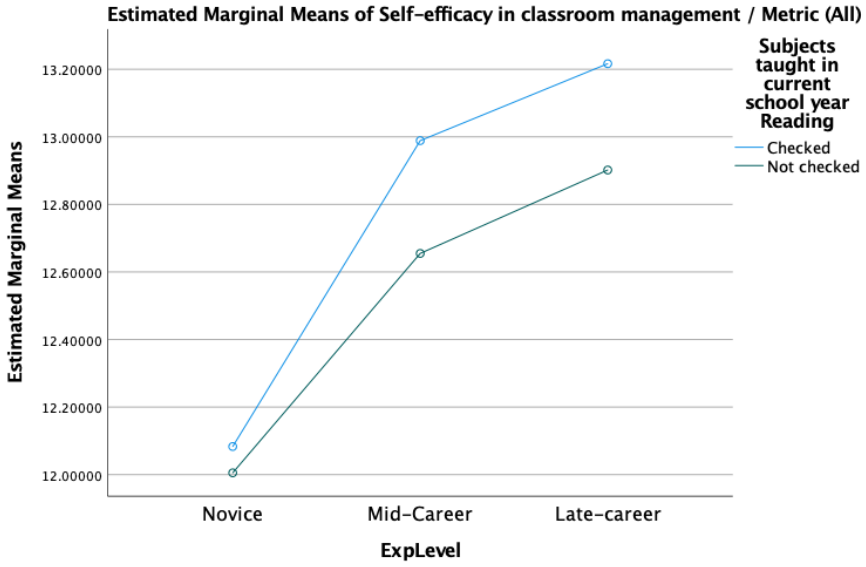
novice, $F(1, 2409) = 4.45$, $p = .035$, partial $\eta^2 = .002$; mid-career, $F(1, 2409) = 8.18$, $p = .004$, partial $\eta^2 = .003$; late-career, $F(1, 2409) = 14.46$, $p = .000$, partial $\eta^2 = .006$ although the effect sizes for each were very small. See Figure 21 for a graph of the comparisons.

Figure 21



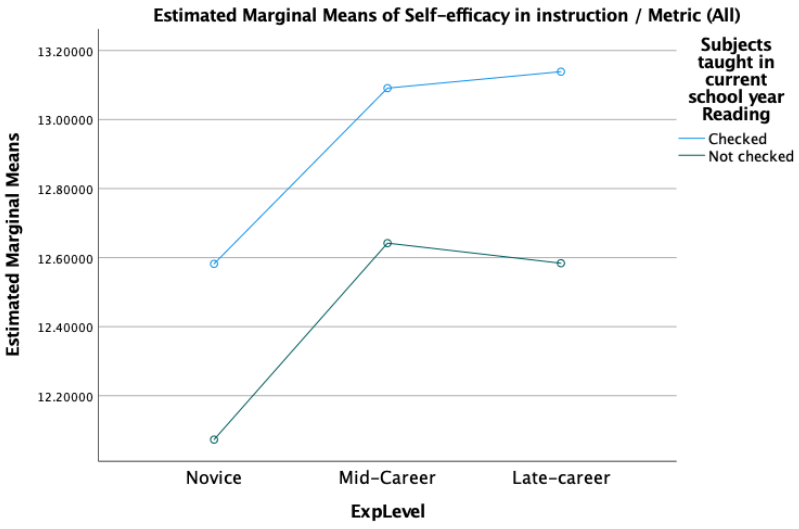
The simple main effect of experience level on the self-efficacy in classroom management score for those teaching literacy compared to those not teaching literacy was significant for all experience levels except for novice teachers, novice, $F(1, 2410) = .146$, $p = .702$, partial $\eta^2 = .000$; mid-career, $F(1, 2410) = 6.188$, $p = .013$, partial $\eta^2 = .003$; late-career, $F(1, 2410) = 5.30$, $p = .021$, partial $\eta^2 = .002$ although the effect sizes for each were, again, very small. See Figure 22 for a graph of the comparisons.

Figure 22



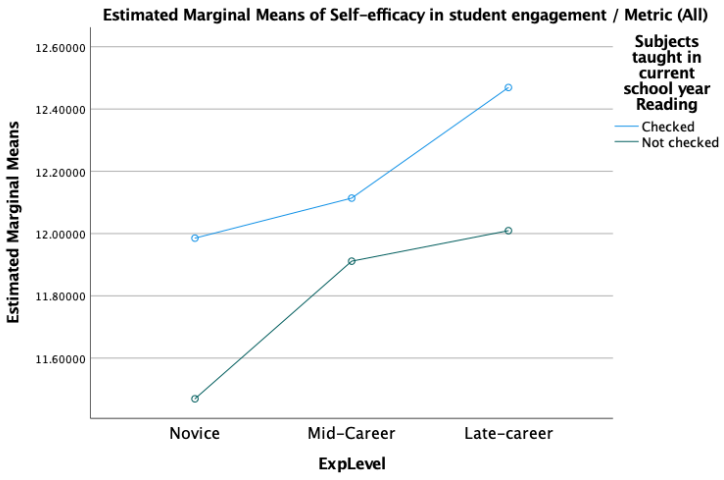
The simple main effect of experience level on the self-efficacy in instruction score for those teaching literacy compared to those not teaching literacy was significant for all experience levels, novice, $F(1, 2409) = 6.008$, $p = .014$, partial $\eta^2 = .002$; mid-career, $F(1, 2409) = 10.782$, $p = .001$, partial $\eta^2 = .004$; late-career, $F(1, 2409) = 15.86$, $p = .000$, partial $\eta^2 = .007$ although the effect sizes for each were, again, very small. See Figure 23 for a graph of the comparisons.

Figure 23



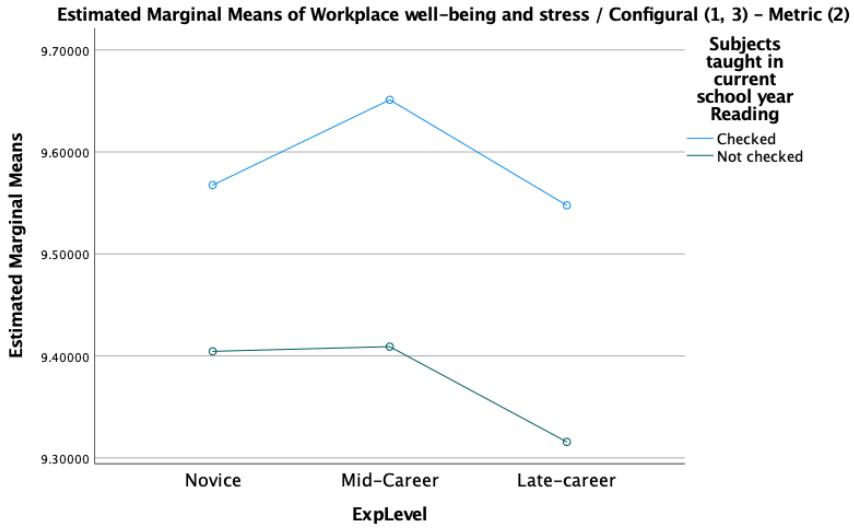
The simple main effect of experience level on the self-efficacy in student engagement score for those teaching literacy compared to those not teaching literacy was significant for all experience levels except for mid-career teachers, novice, $F(1, 2410) = 5.166$, $p = .023$, partial $\eta^2 = .002$; mid-career, $F(1, 2410) = 1.836$, $p = .176$, partial $\eta^2 = .00$; late-career, $F(1, 2410) = 9.122$, $p = .003$, partial $\eta^2 = .004$ although the effect sizes for each were, again, very small. See Figure 24 for a graph of the comparisons.

Figure 24



The simple main effect of experience level on the workplace well-being and stress for those teaching literacy compared to those not teaching literacy was not significant for any of the experience levels, novice, $F(1, 2379) = .659$, $p = .417$, partial $\eta^2 = .000$; mid-career, $F(1, 2410) = 3.368$, $p = .067$, partial $\eta^2 = .001$; late-career, $F(1, 2410) = 5.30$, $p = .084$, partial $\eta^2 = .001$. See Figure 25 for a graph of the comparisons.

Figure 25



The simple main effect of experience level on the workload stress score for those teaching literacy compared to those not teaching literacy was significant for mid- and late-career teachers but not for novice teachers, novice, $F(1, 2372) = 1.748$, $p = .186$, partial $\eta^2 = .001$; mid-career, $F(1, 2372) = 5.167$, $p = .023$, partial $\eta^2 = .002$; late-career, $F(1, 2372) = 8.622$, $p = .003$, partial $\eta^2 = .004$ although the effect sizes for each were, again, very small. See Figure 26 for a graph of the comparisons. Table 16 has all the results for each type of self-efficacy and stress when comparing novice, mid- and late-career literacy teachers to their novice, mid- and late-career peers not teaching literacy.

Figure 26

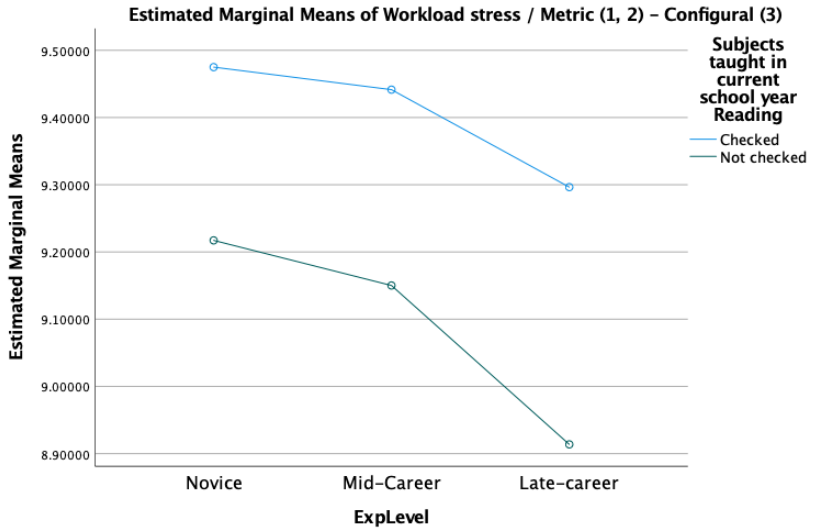


Table 16

Comparisons of Teachers of Literacy and Teachers Not Teaching Literacy in Relation to Self-Efficacy and Stress

Novice Literacy Teachers (*n* = 199) and Teachers not Teaching Literacy (n =235)						
Constructs	Decision	Mean for Literacy Teacher	Mean for Teachers not Teaching Literacy	F-value	Sig. (2 tail)	Partial Eta Squared
Composite teacher self-efficacy	Reject	12.48	12.05	4.45	0.035	0.002
Self-efficacy in classroom management	Retain	12.08	12.01	0.15	0.702	0.0000
Self-efficacy in instruction	Reject	12.58	12.07	6.01	0.014	0.002
Self-efficacy in student engagement	Reject	11.99	11.47	5.17	0.023	0.002
Workplace well-being and stress	Retain	9.57	9.41	0.659	0.417	0.000
Workload	Retain	9.48	9.22	1.75	0.186	0.001

Mid-Career Literacy (*n* = 474) Teachers and Teachers not Teaching Literacy (n = 523)						
Constructs	Decision	Mean for Literacy Teacher	Mean for Teachers not Teaching Literacy	F-value	Sig. (2 tail)	Partial Eta Squared
Composite teacher self-efficacy	Reject	12.48	12.05	8.18	0.004	0.003
Self-efficacy in classroom management	Reject	12.99	12.66	6.19	0.013	0.003
Self-efficacy in instruction	Reject	13.09	12.64	10.78	0.001	0.004
Self-efficacy in student engagement	Retain	12.11	11.91	1.84	0.176	0.001
Workplace well-being and stress	Retain	9.65	9.41	3.70	0.067	0.001
Workload	Reject	9.44	9.15	5.17	0.023	0.002

Late-Career Literacy Teachers (n = 412) and Teachers not Teaching Literacy (n = 572)						
Constructs	Decision	Mean for Literacy Teacher	Mean for Teachers not Teaching Literacy	F-value	Sig. (2 tail)	Partial Eta Squared
Composite teacher self-efficacy	Reject	13.33	12.81	14.46	<0.001	0.006
Self-efficacy in classroom management	Reject	13.22	12.90	5.30	0.02	0.002
Self-efficacy in instruction	Reject	13.14	12.58	15.86	<.001	0.007
Self-efficacy in student engagement	Reject	12.47	12.01	9.12	0.003	0.004
Workplace well-being and stress	Retain	9.55	9.32	2.98	0.084	0.001
Workload	Reject	9.23	8.91	8.62	0.003	0.004

There was essentially one difference between the results derived from the ANOVA analyses in relation to the t-test analyses reported in chapter 4. Workplace well-being and stress

was non-significant for both mid- and late-career experienced literacy teachers compared to their non-literacy teaching peers. This was different than the results found in the t-test analysis, indicating that there may have been a type 1 error. However, workload stress was still significant for both mid- and late-career teachers instructing in a literacy class compared to their non-literacy teaching peers yet was not significant for novice teachers. These workload stress findings replicate the t-test findings in chapter 4. As was true for the t-test results, all effect sizes were small (Cohen, 1988).

One other finding of interest from the ANOVA results was that mid-career teachers of literacy have similar levels of student engagement self-efficacy as do their non-literacy mid-career peers. This finding was unique to this analysis since only one 'experienced' teacher level was examined in the t-test analyses. However, this finding indicates, again, that years of experience is a salient variable that should be explored more in future studies.

Appendix C

The correlations for experienced teachers in research question 3 were very small for experienced teachers who had a much larger sample size (n = 1989) than their novice peers (*n* = 435). For this reason, a comparison of means was run after splitting the experienced teacher group into two nearly equal samples of mid-career teachers (5-15 years' experience, *n* = 1000) and later-career teachers (16 years to 50 years, *n* = 989). Table 17 for the means for each type of self-efficacy and stress for each experience level of teacher (novice, mid-career, and late-career).

Table 17

Correlations for Novice, Mid-career, and Late-career Teachers

		Overall Self-Efficacy	Classroom Management Self-Efficacy	Instructional Self-Efficacy	Student Engagement Self-Efficacy	Workplace Well-Being and Stress	Workload Stress
Novice (0-5 years)	Mean	12.23	12.03	12.30	11.71	9.48	9.34
	N	435	435	435	435	429	427
	Std. Deviation	2.16	2.29	2.16	2.36	2.09	2.02
Mid-Career	Mean	12.89	12.82	12.86	12.01	9.52	9.29
	N	1000	1000	1000	1000	987	984
	Std. Deviation	2.14	2.07	2.15	2.37	2.07	2.04
Late-Career	Mean	13.02	13.02	12.81	12.20	9.41	9.08
	N	988	989	988	989	977	975
	Std. Deviation	2.15	2.10	2.19	2.36	2.05	1.97
Total	Mean	12.83	12.76	12.74	12.04	9.47	9.21
	N	2423	2424	2423	2424	2393	2386
	Std. Deviation	2.16	2.15	2.18	2.37	2.06	2.01

Meanwhile, Table 18 has an analysis of independent samples t-test for the 'experienced' level of teachers, subdivided into mid- and late-career teachers. All analyses met assumptions for Levene's test for equal variance. Only self-efficacy in classroom management and workload stress resulted in a significant difference between mid-career and late-career teachers' means. Again, this indicates that the subgroups within teacher samples warrants further analysis and potentially subdividing the sample more than was done in this study.

Table 18

Comparison of Means: Mid-Career and Late-Career Teachers

	Mid-Career Mean	Late-Career Mean	Sig. (2-tailed)
Composite Self-Efficacy	12.89	13.02	0.16
Self-Efficacy in Classroom Management	12.82	13.2	0.28
Self-Efficacy in Instruction	12.86	12.81	0.63
Self-Efficacy in Student Engagement	12.01	12.21	0.08
Workplace Well-Being and Stress	9.52	9.41	0.23
Workload Stress	9.29	9.08	0.02