

LINKING PASSION FOR TEACHING AND SELF-  
REGULATORY MODES TO TEACHERS' GOAL  
PROGRESS, PERSEVERANCE, AND SUBJECTIVE  
WELL-BEING

By

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LINKING PASSION FOR TEACHING AND SELF-REGULATORY  
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Abstract: An alarming increase in teacher turnover and associated consequences in recent decades are well recorded. Extant research has predominately focused on the various motives that lead teachers to leave their schools or the teaching profession. Little attention has been given to possible contributors to teachers' perseverance. I sought to address this gap in teacher retention literature by investigating how passion for teaching and self-regulatory modes influence teachers' goal-directed outcomes (achievement goal progress and perseverance) as well as their subjective well-being. I conducted two cross-sectional studies on K-12 in-service teachers recruited through a public listserv. In each study, participants were provided with a link to an online Qualtrics questionnaire. In Study 1 (N = 448), harmonious passion for teaching was positively associated with achievement goal progress, which was an antecedent of teachers' perseverance. Also, harmonious passion for teaching had a direct positive association with subjective well-being. In Study 2 (N = 223), assessment had a significant moderating effect on the relationship between locomotion and achievement goal progress such that the effects of locomotion on achievement goal progress were stronger when assessment was low. Implications from the findings of this research and considerations for future research are discussed.

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## CHAPTER I

### INTRODUCTION

Few educational problems facing Oklahoma and the United States have attracted more attention than the difficulties to ensure that all K-12 classrooms are staffed with qualified teachers (Ingersoll, 2001; Sutchter et al., 2016; Sutchter et al., 2019; U.S. Department of Education, Office of Postsecondary Education, 2015). An alarming increase in teacher turnover and associated societal consequences over recent decades are well documented (Guarino et al., 2006; Ingersoll & Merrill, 2013). Teacher turnover disproportionately impacts high-poverty school districts, where teachers are at heightened risk for poor physical and mental health outcomes in relation to high stress levels and limited economic prospects (Aragon, 2016; Howard, 2003; Whipp & Geronime, 2017). Teacher turnover significantly contributes to the chronic shortages of teachers (particularly in high-poverty school districts) and limited opportunities for students with significant learning needs to access quality programming (Liu et al., 2008; Ingersoll et al., 2019).

Many researchers have investigated the various motives that lead teachers to leave their schools or teaching profession (e.g., Borman & Dowling, 2008; Guarino et al., 2006; Kelly, 2004; Ryan et al., 2017; Struyven & Vanthournout, 2014; Vekeman et al., 2017).

However, few researchers have examined the motivational or self-regulatory constructs underlying teachers' perseverance. The ability to persevere, to adapt and cope with various challenges or setbacks despite attractive alternatives, is critical for successful pursuit of long-term career goals for teachers, especially those in historically underserved communities teaching students from economically disadvantaged backgrounds. It is vital to gain an understanding of in-service teachers' unique sources of agency or motivation in a teaching career in order to understand and prepare for or prevent the large numbers leaving teaching and the various societal problems teacher shortages cause. Clarifying the antecedents advances a deeper understanding of why certain teachers persevere while others quit or change course. In this dissertation research, I sought to address the gap in teacher retention literature by investigating the role of passion for teaching and self-regulatory mechanisms in K-12 teachers' achievement goal progress, level of perseverance, and subjective well-being.

### **Teacher Attrition**

Attrition is "the gradual decrease of staff due to resignation, retirement, and so on" (Martin & Loomis, 2013, p. 403). In general, there is a distinction between leaving the profession as a teacher as a "personal decision" and exiting a career in teaching because of "natural reasons" such as retirement, temporary leave, maternal leave, etc. The former type is referred to as turnover, and the latter is usually labelled as term wastage (Macdonald, 1999).

Teacher attrition is high across the U.S. and is one of the most significant causes of teacher shortage (Cochran-Smith, 2004; Ingersoll, 2001). According to the National Commission on Teaching and America's Future (2005), nearly one out of every two teachers, or almost 50 percent, leave the classroom within five years. Researchers reported percentages of attrition ranging from 30 to 50 percent (Ingersoll, 2001; Ingersoll & Smith, 2003; Ravitch, 2012; Smethem, 2007), including those who completed a teacher-training program yet never started a job in teaching (Thomson et al., 2012), and those who started out as teachers but switched to other careers within five years (Johnson

et al., 2005). Teachers who took the 2006 National Education Association survey were asked whether they would choose a career in teaching again. In response, sixty-six percent of respondents reported that they would choose a teaching career again, however, 16 percent of respondents specified that they might or might not work as a teacher again, and 19 percent of respondents clearly indicated that teaching would no longer be their choice (National Education Association, 2010).

To date, researchers have devoted extensive efforts to explore the various motives that lead teachers to leave their schools or teaching profession (Borman & Dowling, 2008; Guarino et al., 2006; Kelly, 2004; Ryan et al., 2017; Struyven & Vanthournout, 2014; Vekeman et al., 2017). Extant research suggests an array of individual-level, job-related, school-level, and state-level factors contributing to teachers' quitting or pursuing other career options (Guarino et al., 2006; Kyricacou & Kunc, 2007; Nguyen & Redding, 2018; Ryan et al., 2017; Skaalvik & Skaalvik, 2011; Struyven & Vanthournout, 2014). For example, Kyricacou and Kunc (2007) suggested that teachers critically evaluate the degree of misalignment between what they expect and what they actually experience on the job, with regard to four key aspects: (a) supportive school administration, (b) sufficient time to do a good job at teaching, (c) good rapport with students, and (d) fulfillment of personal needs. They found that the more disappointed a teacher feels with respect to these aspects, the less likely the teacher is satisfied with the job or convinced about having chosen a promising or worthy career path (Kyricacou & Kunc, 2007). Researchers have identified four primary reasons offered by those teachers who leave the profession of teaching within the initial few years (Cockburn & Haydn, 2004; Menter et al., 2002; Ross, 2002; Spear et al., 2000). One reason is heavy workload, which includes teaching and administration, often resulting in high stress levels. Another is salary, salary levels not adequate to meet the needs for expected lifestyle or future prospects. Teachers also cite disruptive student behaviors, frequent disruptive student behaviors causing difficulty at work. Finally, the lower status: the status of a teacher is relatively low in society (Buckley et al., 2005; Cockburn & Haydn, 2004; Menter et al., 2002; Ross, 2002; Spear et al., 2000). Other job-related factors or sources within

the school context identified by researchers as causing teachers' dissatisfaction encompass working conditions such as facilities, lighting, air quality in classrooms, class size, and school size (Buckley et al., 2005), quality of relationships with students and/or parents (Macdonald, 1999) and rapport with colleagues, and support from school administration (Darling-Hammond, 2002). In terms of state-level factors, Ryan et al. (2017) found that state-level high-stakes accountability policies, which measure teacher performance by how well students perform on standardized educational assessments, significantly predicted teachers' turnover intent.

While researchers have extensively and systematically examined the possible factors, or sources of stress or discontent that impact teachers to leave the profession of teaching, it is yet unclear why certain teachers persist despite the relatively low compensation or social status, while others quit or change course. Researchers have only touched upon teachers' persistence in a career of teaching at the surface level. For example, they found that age and experience correlated with teachers' attrition. In prior studies, researchers found that the younger or less experienced a teacher is, the more likely the teacher will quit or change profession. In contrast, the more experienced a teacher is, the more likely the teacher will continue the teaching career (Borman & Dowling, 2008; Guarino et al., 2006; Hanushek et al., 2004). These researchers had a consensus that the "turning point" is five years into teaching; after a period of five years, attrition rates tend to decrease steadily (Kirby & Grissmer, 1993; Struyven & Vanthournout, 2014). However, as a caveat concerning this consensus, in a more recent study on a sample of 1,866 teachers from three different U.S. states, teachers' experience was not significantly associated with teachers' intent to quit teaching (Ryan et al., 2017).

In terms of gender, researchers reported in three studies that female teachers seemed to have higher attrition rates compared to male teachers (Gritz & Theobald, 1996; Ingersoll, 2001; Kirby et al., 1999). However, despite these findings, Ingersoll and Alsalam (1997), through multi-level analysis of a large-scale survey on a sample of over 53,000 teachers, found that the self-perceived commitment to the teaching profession was higher in female teachers than in male teachers.

Regarding ethnicity, several researchers found that minority teachers compared to White teachers had lower levels of attrition (Adams, 1996; Ingersoll, 2001; Kirby et al., 1999). However, Imazeki (2005) reported that minority teachers compared to White teachers were more likely to quit teaching. In terms of level of education (degree level), findings regarding whether teachers with graduate degrees would remain longer in the teaching profession were mixed. Two researchers found that teachers with advanced degrees (i.e., graduate degrees) were less likely to remain in a teaching career compared to those with bachelor's degrees (Ingersoll & Alsalam, 1997; Kirby et al., 1999). However, Adams (1996) reported that teachers with graduate degrees were more likely to remain in the teaching profession than those with only a bachelor's degree. In terms of specialty area, several researchers found that teachers of math, engineering, and other natural sciences were more likely to leave the teaching profession, compared to teachers of other subject areas (Henke et al., 2001; Ingersoll, 2001; Kirby et al., 1999). In contrast, drawing on data collected from 102,400 public school teachers through a multi-wave national survey from 2000 to 2012 administered by the National Center for Education Statistics (NCES), researchers reported that teachers of STEM fields were slightly less likely to move to other schools or leave the teaching profession than teachers of other specialties (Nguyen & Redding, 2018).

In summary, to examine the individual-level influence on teacher attrition, a large number of investigators attempted to explore the characteristics of those who tend to quit teaching. These characteristics, as elaborated, range from age, experience, gender, race/ethnicity, degree level, to specialty. However, few researchers have examined the motivational or self-regulatory constructs underlying teachers' perseverance. The ability to persevere, to adapt and cope with various challenges or setbacks despite attractive alternatives, is critical for the successful pursuit of long-term career goals for teachers, especially those in historically underserved communities teaching students from economically disadvantaged backgrounds. One argument could be that compensation or salary should be an important factor to consider when it comes to teachers' motivation. Indeed, there are many

studies based upon the economic model of supply and demand; and researchers found that teacher compensation (or salary) is positively associated with retention, or negatively associated with teacher turnover (Kelly, 2004; Kirby et al., 1999; Lankford et al., 2002; Stockard & Lehman, 2004).

However, some researchers have argued that the effect of raising salaries on teachers' retention as well as teacher quality is minimal or insignificant, or no effect at all. For example, Ballou and Podgursky (1997) reported that during the 1980s when teachers' salaries were increased, the quality measures of teachers (e.g., the proportion of teachers in math and science, the SAT score levels of high school graduates aspiring to teach) only rose a little. After adjusting for state-level factors (i.e., state-level average salary growth), no correlation existed between salary and quality of teachers. After all, compensation is among the external factors or incentives that influence teachers' retention.

Recently, researchers have called for careful consideration of how to examine the effects of salary on teachers' intent to remain in the profession. Rather than focusing on the absolute salary numbers, McConnell (2017) suggested it is important to examine teachers' satisfaction with salary. For instance, a teacher may earn a salary that is lower than a corporate manager does; this teacher may still be satisfied with her salary, whereas that manager may never be satisfied with his salary.

Besides these external motives, I think it is vital to gain a deeper understanding of the underlying motivational sources and self-regulation mechanisms of those in-service teachers that persist in a teaching career. The reality is that the teaching profession is associated with relatively lower economic prospects, and a lack of social status or acknowledgement in society (Akiba et al., 2012; Buckley et al., 2005). K-12 public education systems across the nation suffer from varying degrees of underfunding or budget cuts (Leachman & Figuera, 2019; Whipp & Geronime, 2017). In addition to the efforts to advocate for enhanced funding and compensation, as a researcher, I believe it is important to explore those underlying motivational and self-regulatory factors that may explain why certain teachers persevere while others quit or change course.

## **Passion for Teaching**

The construct of “passion” has attracted significant research attention across different fields including philosophy, theology, organizational studies, political science, sociology, and psychology (Cardon et al., 2009). In popular press and emerging literature relevant to passion, most authors merely argue for “finding your own passion,” “finding the work you love,” or “work with passion” without empirical studies grounded in theories (e.g., Chang, 2000; Kang & Albion, 2009). Many claim that passion drives individuals to pursue their dreams, to persist despite setbacks or challenges, and to defy the odds regardless of uncertainty, relative to their long-term goal pursuits. However, significant differences exist in relevant literature regarding the definition of passion. From a research standpoint, without a consensus on the definition of passion, or a guiding theoretical framework reflecting the sophisticated nature of passion, systematic approaches to examine the effects of passion were rare. It was not until Vallerand and his colleagues (2003) developed the dualistic model of passion and suggested the reconciliation of the conceptual underpinnings of passion that more definitive conclusions could be derived from empirical studies relative to passion across various contexts.

In this dissertation research, I emphasized passion in the teaching context -- the passion of teachers. While recognizing that a career in teaching is normally never tied to high levels of economic opportunities, or high prestige or social status (Akiba et al., 2012; Buckley et al., 2005), people often perceive persevering teachers as passionate about teaching. This perception needs careful evaluation. Particularly, funding for Oklahoma’s K-12 education was behind many other states, yet limited improvements were made. Oklahoma’s average teacher salary was \$45,276 in 2016, ranked as the third lowest nationally (National Education Association Research, 2017). In April 2018, more than 30,000 teachers or educators from across the state participated in the teachers’ walkout, and thousands of them protested at the state Capitol to request further investments in public education. In

this study, I adopted the dualistic model of passion by Vallerand and his colleagues (2003) to capture the passion for teaching of K-12 in-service teachers in Oklahoma.

Vallerand and his colleagues define passion as “a strong inclination toward a specific object, activity, concept, or person that one loves (or at least strongly likes), highly values, invests time and energy in on a regular basis, and that is part of one’s identity” (Vallerand, 2015, p. 33). Vallerand et al. (2003) proposed two types of passion: harmonious passion (HP) and obsessive passion (OP). The dualistic model of passion is derived from Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017). Harmonious passion (HP) refers to the strong tendency to engage in an activity “in harmony with other aspects of the self and the person’s life” (Vallerand, 2015, p. 33). HP reflects an individual’s autonomous drive to engage in an activity, and an internal locus of control over the activity. HP occurs as individuals voluntarily or autonomously internalizes the activity as harmonious with their fundamental psychological needs, purpose in life, or self-identity (Vallerand, 2010, 2015).

Obsessive passion (OP), on the other hand, “may conflict with aspects of the self and the person’s life” (Vallerand, 2015, p. 33). Based on Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017), OP concerns a controlled internalization of an activity with respect to an individual’s identity (Vallerand, 2003, 2010, 2015). The controlled internalization entails an internal pressure to engage in the activity (e.g., demonstrating performance, self-esteem). The pressure may also result from interpersonal pressure (e.g., social acceptance, conforming to societal norms).

The operationalization of the passion construct by Vallerand and his colleagues (2003) has enabled researchers across numerous organizational or work settings to examine the relationships between a specific type of passion (HP or OP) and outcome variables of interest (such as performance, task concentration, positive or negative affect, burnout, etc.). A sample item from the original Passion Scale is “This activity is in harmony with the other activities in my life” (Vallerand et al., 2003). If a researcher focuses on a specific activity or pursuit, then this sample item can be



adapted accordingly: “\_\_\_\_\_ (name of the specific activity or work domain) is in harmony with the other activities in my life.” Since the introduction of the dualistic model of passion, countless researchers have found support for HP leading to positive intrapersonal and interpersonal outcomes such as improved performance and occurrence of states of flow (Ho et al., 2018; Mageau et al., 2005; Vallerand et al., 2006). On the contrary, OP demonstrated associations with mixed intra- and interpersonal outcomes (positive or negative outcomes) (Forest et al., 2011; Vallerand et al., 2003; Lalande et al., 2017).

Regarding teachers, a number of writers assumed that effective teaching and learning relies on the exercise by teachers of sustained passion for teaching (e.g., Day, 2004), however, few researchers have empirically investigated whether passion for teaching may lead to positive outcomes (Carbonneau et al., 2008; Castillo et al., 2017; Moe, 2016). One of my key objectives for conducting this research was to address this gap through examining whether harmonious passion for teaching (HP for teaching) could be conducive to positive goal-directed outcomes including achievement goal progress and perseverance in teachers, as well as the subjective well-being of teachers. It was also worth exploring whether obsessive passion for teaching (OP for teaching) could impair goal-directed outcomes (achievement goal progress and perseverance) and the subjective well-being of teachers.

### **Locomotion and Assessment**

While passion fuels an individual’s energy and efforts into goal-directed pursuits, it is important to also examine self-regulatory factors that contribute to teachers’ perseverance and subjective well-being. Effective self-regulation processes foster goal-directed behaviors and improve performance for individuals across different contexts and fields (Forgas et al., 2009; Vohs & Baumeister, 2004). Regarding teachers, I sought to explore possible self-regulatory mechanisms enhancing their goal-directed outcomes (i.e., achievement goal progress and perseverance) and their subjective-welling. Results from this research add to the scholarly understanding of the relationship

between specific self-regulatory mechanisms and goal-directed outcomes (i.e., achievement goal progress and perseverance), also could allow teachers to better understand their own propensities to persevere, and take measures to guard against rigidly persevering when changing course may be the more optimal to their subjective well-being.

Whilst there are many different processes of self-regulation, the self-regulatory mechanisms examined in this research are locomotion and assessment (Kruglanski et al., 2000). Locomotion is defined as “the self-regulatory aspect concerned with movement from state to state and with committing the psychological resources that will initiate and maintain goal-directed progress in a straightforward manner, without undue distractions or delays” (Kruglanski et al., 2000, p. 794). Locomotion represents the “action” mode of self-regulation, involving cognitive and behavioral orientations to initiate goal-directed actions in a direct and swift manner. Locomotion is especially relevant to this dissertation research in that it captures the “momentum” or strong tendency to initiate actions, which is vital to make progress towards important goals. An objective of this research was to analyze the mechanisms that propel or facilitate the progress K-12 in-service teachers might make towards their achievement goals. In this sense, the self-regulatory mode of locomotion offers a potentially useful lens in that a potential barrier for teachers to make progress towards their achievement goals may be lower levels of locomotion (failure to overcome hesitation or reluctance to act, or failure to prompt actions in a timely manner).

Kruglanski et al. (2000) defined assessment as “the comparative aspect of self-regulation concerned with critically evaluating entities or states, such as goals or means, in relation to alternatives in order to judge relative quality” (p. 794). Assessment represents the “evaluative” mode of self-regulation, involving cognitive and behavioral orientations or processes for critical, deliberate evaluations. The evaluation includes comparing one’s current state to a desired state, assessing the quality or value of a specific goal or an action or measure to take to achieve a specific goal by

considering possible merits and drawbacks (or challenges) with another alternative goal or means (Carver & Scheier, 1998; Kruglanski et al., 2000).

Locomotion focuses on the initiation and maintenance of movement from one state to another, “do it now,” or “move on.” Assessment concerns the cognitive processes to critically evaluate options for action or change, to “do it right.” Researchers examined locomotion and assessment in various contexts. Optimal outcomes (e.g., successful goal attainment, academic performance) often resulted from both “doing it right” (high assessment) and “following through on desired action” (high locomotion) (Higgins et al., 2003; Kruglanski et al., 2000; Pierro et al., 2013). Based upon these findings, for teachers, I hypothesized that the orientation to “initiate action” (locomotion), coupled with the tendency to choose proper actions toward goals through critical evaluation (assessment), contributes to achievement goal progress which in turn leads to perseverance and subjective well-being.

In this research, I sought to illuminate the factors that explain why certain teachers strive more towards achievement goals and perseverance while others change or disengage from those goals. Research into teachers’ perseverance is in its infancy. To date, the constructs of locomotion and assessment have not been previously studied in teachers’ context. This research may be the first to specifically address the ways self-regulatory modes (locomotion and assessment) influence K-12 in-service teachers’ achievement goal progress, level of perseverance relative to long-term pursuits, and subjective well-being. Moreover, passion for teaching (HP for teaching and OP for teaching) has rarely been addressed in teachers’ context (Vallerand et al., in press). I also sought to contribute to teachers’ retention research through exploring the role of passion for teaching in goal-directed outcomes (achievement goal progress and perseverance) and subjective well-being.

## **Subjective Well-Being**

Subjective well-being (SWB) is a construct that is also highly relevant to explore in the teaching context. Subjective well-being (SWB) is defined as “people’s evaluations of their lives -- evaluations that are both affective and cognitive. People experience abundant subjective well-being when they feel many pleasant and few unpleasant emotions, when they are engaged in interesting activities, when they experience many pleasures and few pains, and when they are satisfied with their lives” (Diener, 2000, p. 34). Subjective well-being (SWB), a cognitive and affective evaluation of one’s life, is a key perspective within the hedonic paradigm (Diener, 1994). SWB represents a much broader, more holistic view on how an individual defines successes and achieves satisfaction and optimal states with respect to many domains in life, compared to job satisfaction which only captures one aspect in life.

Drawing upon Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017) and goal-setting theory (Latham & Locke, 1979; Locke 1968; Locke & Latham, 2002), along with findings pertinent to the effects of passion and the roles of self-regulatory modes in other organizational settings, in this research, I developed a series of hypotheses to test in the context of Oklahoma K-12 in-service teachers. These hypotheses address the inter-relationship among passion for teaching, self-regulatory modes, achievement goal progress, perseverance, and subjective well-being for teachers. Having a better understanding of unique sources of motivation (HP for teaching or OP for teaching) and self-regulatory skills (locomotion and assessment) that contribute to teachers’ positive goal pursuits, perseverance, and wellbeing may have practical diagnostic implications for why some teachers fail to persevere. This may also provide important insights on possible teaching and improvements in self-regulatory skills as a way for enhancing the likelihood of teachers’ goal attainment and perseverance.

## Research Questions

This research focused on the following questions:

- RQ1.** What is the role of harmonious passion for teaching (HP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?
- RQ2.** What is the role of obsessive passion for teaching (OP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?
- RQ3.** What is the role of locomotion in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?
- RQ4.** What is the role of assessment in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

I addressed these previously unexplored questions by investigating the interrelationships among a set of key variables through conducting two studies. In Study 1, I addressed research questions 1 and 2 (i.e., RQ1 and RQ2) through examining the interrelationships hypothesized to exist among passion for teaching, goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being.

In Study 2, I addressed research questions 3 and 4 (i.e., RQ3 and RQ4) through testing the interrelationships hypothesized to exist among self-regulatory mode, goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being.

## Definition of Key Terms

**Passion:** “a strong inclination toward a specific object, activity, concept, or person that one loves (or at least strongly likes), highly values, invests time and energy in on a regular basis, and that

is part of one's identity" (Vallerand, 2015, p. 33). Vallerand et al. (2003) proposed two types of passion: harmonious passion (HP) and obsessive passion (OP).

**Harmonious passion (HP):** the strong tendency to engage in an activity "in harmony with other aspects of the self and the person's life" (Vallerand, 2015, p. 33).

**Obsessive passion (OP):** the strong tendency to engage in an activity, however, this pursuit "may conflict with aspects of the self and the person's life" (Vallerand, 2015, p. 33).

**Passion for teaching:** a strong inclination toward teaching. This definition infers a person's strong desire to engage in a teaching career, teaching or teaching-related activities. Moreover, the passion for teaching reflects that the individual highly values, regularly invests time and energy in teaching, and teaching is part of one's identity.

**Harmonious passion for teaching (HP for teaching):** the strong tendency to engage in teaching, reflecting an autonomous internalization of teaching career in harmony with self-identity or other important aspects in life such as life purpose (Deci & Ryan, 2000; Vallerand et al., 2003; Vallerand et al., 2008).

**Obsessive passion for teaching (OP for teaching):** the strong tendency to engage in teaching, reflecting a controlled internationalization of the teaching career with respect to self-identity (Deci & Ryan, 2000; Vallerand et al., 2003; Vallerand et al., 2008).

**Self-regulatory mode:** individuals' orientation toward particular thoughts and behaviors in their pursuit of important goals (Kruglanski et al., 2000). There are two distinctive self-regulatory modes: locomotion and assessment (Kruglanski et al., 2000).

**Locomotion:** "the self-regulatory aspect concerned with movement from state to state and with committing the psychological resources that will initiate and maintain goal-directed progress in a straightforward manner, without undue distractions or delays" (Kruglanski et al., 2000, p. 794).

**Assessment:** “the comparative aspect of self-regulation concerned with critically evaluating entities or states, such as goals or means, in relation to alternatives in order to judge relative quality” (Kruglanski et al., 2000, p. 794).

**Goal:** a desired level of performance with respect to a specific task or domain (Locke & Latham, 1990).

**Goal progress:** the progress made towards specific goals (Locke 1968; Latham & Locke, 1979; Locke & Latham, 2002).

**Achievement goal:** goals that strive for achievement experiences in one’s work domain (Brunstein et al., 1998).

**Achievement goal progress:** the progress made towards achievement goals (Brunstein et al., 1998).

**Perseverance:** a future-oriented psychological strength that enables individuals to continuously devote efforts despite potential challenges (Duckworth et al., 2007, 2009). Perseverance involves continuous efforts to adapt and cope with various challenges or setbacks despite attractive alternatives for achieving long-term goals. Perseverance is best captured and measured by grit. Grit involves two aspects: (a) consistency of interests: maintaining a constant focus and interests towards a given goal or end; and (b) perseverance of effort: investing efforts despite challenges or failures (Duckworth et al., 2007; Duckworth & Quinn, 2009).

**Subjective well-being (SWB):** “people’s evaluations of their lives -- evaluations that are both affective and cognitive. People experience abundant subjective well-being when they feel many pleasant and few unpleasant emotions, when they are engaged in interesting activities, when they experience many pleasures and few pains, and when they are satisfied with their lives” (Diener, 2000, p. 34).

## **Overview**

In Chapter II, I first review research literature on passion, passion for teaching, self-regulatory modes (locomotion and assessment), achievement goal progress, grit, and subjective well-being, to provide a theoretical foundation for this research. I also present hypotheses examining the interrelationships among the variables of interest. Next, I detail the research methods including procedures of data collection and analysis, participants, and measures used in Chapter III. I then present the results for each study in Chapter IV. In Chapter V, I discuss the research findings, implications, limitations, and potential future research.



## CHAPTER II

### REVIEW OF LITERATURE AND DEVELOPMENT OF HYPOTHESES

In this chapter, I conduct a review of literature on passion, passion for teaching, self-regulatory modes (locomotion and assessment), achievement goal progress, grit, and subjective well-being. Passion is a key construct of interest in this research. Based upon the dualistic model of passion (Vallerand et al., 2003), numerous researchers examined the impact of each type of passion (harmonious passion or obsessive passion) on individuals' goal-directed behaviors, psychological adjustment, performance or achievement across various organizational or work settings. To date, few researchers have investigated how passion may influence teachers' goal-directed outcomes and subjective well-being. Does passion for teaching lead to improved goal-directed outcomes including achievement goal progress and perseverance? Specifically, how does each type of passion (harmonious passion, obsessive passion) for teaching relate to goal-directed outcomes?

Previous researchers offered evidence to support that harmonious passion leads to positive intrapersonal and interpersonal outcomes such as improved performance and occurrence of states of flow (Mageau et al., 2005; Vallerand et al., 2006). It is worth investigating the potential effects of passion (harmonious passion, obsessive passion) on teachers, to contribute to the passion research as well as teachers' retention literature.

Besides passion, another key construct that I examined is self-regulatory mode (locomotion, assessment). Passion energizes people with energy and excitement. What drives people to act on their goals, and to develop proper means towards goals? Researchers found that effective self-regulation processes foster goal-directed behaviors and improve performance for individuals across different contexts (e.g., Dent & Koenka, 2016; Forgas et al., 2009; Oriol et al., 2017; Vohs & Baumeister, 2004). Does a specific self-regulatory mode (locomotion, assessment) lead to improved goal-directed outcomes including achievement goal progress and perseverance? Self-regulatory modes are orientations individuals adopt toward particular thoughts and behaviors in their pursuit of important goals (Kruglanski et al., 2000). Kruglanski et al. (2000) introduced two distinctive self-regulatory modes: locomotion and assessment. Locomotion focuses on the initiation and maintenance of movement from one state to another, “do it now,” or “move on.” Assessment concerns the cognitive processes that critically evaluate options for action or change, or “do it right.” Locomotion and assessment are examined in various work or organizational settings. Optimal outcomes (e.g., successful goal attainment, academic performance) often resulted from both “doing it right” (high assessment) and “following through on desired action” (high locomotion) (Higgins et al., 2003; Kruglanski et al., 2000; Pierro et al., 2013). To date, the constructs of locomotion and assessment have not been previously studied in teachers’ context. In this research, I explored the ways self-regulatory modes (locomotion and assessment) influence K-12 in-service teachers’ goal-directed behaviors (achievement goal progress and perseverance) and subjective well-being. Subjective well-being (SWB) is a construct that captures individuals’ cognitive and affective evaluation of their lives. It represents a much broader and holistic view on satisfaction with life, compared to job satisfaction. Subjective well-being reflects how individuals define their success and happiness. Normally, the teaching profession does not offer promising economic benefits or high social status (Akiba et al., 2012; Buckley et al., 2005). How teachers define their happiness and success in life may be different from individuals in other professions

(e.g., business professionals). Through examining subjective well-being, this research furthers our understanding on K-12 in-service teachers' overall self-evaluations on their sense of fulfillment not only just related to work, but also other life aspects. In addition to reviewing relevant literature, in this chapter, I develop a series of hypotheses regarding the interrelationships among variables of interest including passion for teaching, self-regulatory modes, achievement goal progress, perseverance, and subjective well-being. Hypotheses are mainly based on: (a) findings from extant research including studies in other professional or organizational settings, and (b) relevant theories including Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017) and goal-setting theory (Locke 1968; Latham & Locke, 1979; Locke & Latham, 1990, 2002).

### **Passion and Passion for Teaching**

#### **Passion**

Passion is a concept that has been noted or explored in various fields, including philosophy, theology, organizational studies, political science, sociology, and psychology (Cardon et al., 2009). In the 17th century, Descartes made an effort to conceptualize passion. He defined passion as “the perceptions, sensations, or commotions of the soul which we relate particularly to the soul and are caused, maintained, and strengthened by some movement of the spirits” (Descartes, trans. 2010, p. 27). The notion of “spirits” is comparable to the central nervous system in modern biology and medicine. The “spirits” represent the complex mechanisms underlying an individual’s physiological functions (Descartes, 1649). Furthermore, Descartes enumerated six primitive passions: wonder, love, hatred, desire, joy, and sadness. In the modern era, writers often depict such conceptualizations as different categories of emotions.

The most influential Greek philosophers, Plato and Aristotle, critically studied passion. Plato explicitly distinguished between reason and passion. For him, passion was an uncontrolled,

dysregulated part of oneself, or one's energy. He saw passion as tied to impulsivity or inner forces opposing reason and generally beyond one's conscious control. In essence, Plato posited that human beings ought to be cautious of passion, because passion may potentially lead to irrational behaviors lacking reason or moral considerations. He argued for purging away excessive passion possibly through music and poetry. "The passion which is forcibly restrained, and which hungers for a proper outlet and satisfaction in tears and lamentation, finds its fulfillment and pleasure in poetry" (Plato, trans. 1895, p. 41).

Aristotle's conceptualization of passion encompassed the basic physiological needs to satisfy hunger, thirst, etc., and the distinctive states or feelings involving pleasures and pains. He identified sets of opposite types of passions such as calmness versus anger, and confidence versus fear. Aristotle's viewpoints correspond with Plato's that passions may undermine reason and morality to some extent. Nonetheless, Aristotle posited that passions are not inherently "bad" and they originate from human beings' states of affairs, or experiences. For Aristotle, human beings should not be ashamed of passions, but rather curb or control passions.

Economist Schumpeter emphasized passion as one's unique motivation, vision, and capabilities to create innovations or means of production to disrupt the equilibrium of the existing market system (Schumpeter, 1942). In the literature of modern organizational studies, many scholars suggest that passion is associated with a sense of meaningfulness and purpose in life (e.g., Rockwell, 2002). They generally view passion as an energy or source of agency with an emotional or affective component, such as feelings of "pleasure and promise" (Rockwell, 2002, p. 52). Passion enables individuals to immerse "wholeheartedly with what ... [they] love" (Belitz & Lundstrom, 1997, p. 57). Passion may drive creations and innovations, and lead goal-directed behaviors (Frijda, 2005).

In the field of psychology, the theory of flow presents elements of a state of emotion that resembles the affective component of passion (Csikszentmihalyi, 1990). Flow is defined as “a state of experience that is engrossing, intrinsically rewarding, and outside the parameters of worry and boredom” (Csikszentmihalyi & Csikszentmihalyi, 1999, p. 153). The theory of flow offers the necessary conditions that may prompt the state of flow. These conditions include clear goals, immediate feedback, and a balance of challenge and skills (Csikszentmihalyi, 1990). The state of flow is characterized by a total absorption in the goal-directed activity and a sense of control. Researchers support that flow leads to enhanced self-efficacy, self-affirmation, efforts, and intrinsic motivation (Csikszentmihalyi, 2000; Pelletier et al., 1995, 2001; Voelkl et al., 2003). Deci and Ryan (1985) suggested, “Flow represents a descriptive dimension that may signify some of the purer instances of intrinsic motivation” (Deci & Ryan, 1985, p. 29). In other words, when a state of flow occurs, one is highly interested in the activity itself, reflecting intrinsic motivation. Researchers have found support for intrinsic motivation fostering the states of flow (Csikszentmihalyi et al., 1993; Kowal & Fortier, 1999). Flow represents a positive psychological state, and contains the emotional component that is comparable to passion. However, the concept of flow differs from passion in several ways: First, flow is an emotional and cognitive state, not a motivational construct. It does not reflect the devotion of efforts, and the process leading to a state of flow. Moreover, critics of the flow theory argued that the state of flow might result in not only positive behaviors or outcomes, but also negative behaviors or outcomes (Partington et al., 2009). Without a framework to account for the duality issue, it is challenging to address any possible negative consequences of flow. Additionally, passion is conceptualized as aligning to one’s purpose, self-identity, or long-term pursuit in life; the concept of flow represents a temporary state of feelings or emotions. Lastly, the existing research has generally supported that flow is an outcome, not a determinant of intrinsic motivation. Yet passion precedes states of flow and not the other way around (Lavigne et al., 2012; Vallerand et al., 2003; Vallerand, 2015).

The characterizations or conceptualizations of passion (at least in a rudimentary sense) are generally concerned about task or work oriented situations. However, historically, most of the research involving passion has been conducted to examine social relationships. For example, researchers in social psychology viewed passion as affecting interpersonal and intimate relationships (Fletcher et al., 1994; Fuster et al., 2014; Rapaport et al., 2018; Utz et al., 2012). Bandura suggested that passion is an intrinsic motivator that drives an individual to develop competencies in order to achieve happiness and optimal functioning (Bandura, 1986, 1997; Wood & Bandura, 1989). Therefore, passion should reflect being motivated towards developing those competencies, attitudes, or skills relative to one's pursuit or domain of passion (Wakefield & Wakefield, 2016).

In the popular press and emerging literature relevant to passion, most of the authors merely argue for “finding your own passion,” “pursuing your dream,” or “work with passion” without empirical studies grounded in theories (e.g., Chang, 2000; Kang & Albion, 2009). From a research standpoint, without a consensus on the definition of passion, or a guiding theoretical framework that reflects the sophisticated nature of passion, systematic approaches to examine the effects of passion were nearly impossible. Significant discrepancies existed in relevant literature. In social psychology, researchers treated passion as a generalized construct applying to an array of different activities including sports, gaming, gambling, intimate-relationship-building, music, etc. In contrast, other researchers attempted to conceptualize passion as domain-specific, for example, entrepreneurial passion (Cardon et al., 2009). Scholars in nursing education conceptualized the passion of clinical nurse educators as involving five key qualities for success: passion for collaboration, passion for commitment, passion for achievement, passion for caring, and passion for trust (Spurr et al., 2010). It was not until Vallerand and his colleagues (2003) developed the dualistic model of passion and suggested the reconciliation of the conceptual

underpinnings of passion that more definitive conclusions could be derived from empirical studies relative to passion across various contexts.

### **Dualistic Model of Passion**

**Definition of passion.** Vallerand and his colleagues define passion as “a strong inclination toward a specific object, activity, concept, or person that one loves (or at least strongly likes), highly values, invests time and energy in on a regular basis, and that is part of one’s identity” (Vallerand, 2015, p. 33). Moreover, Vallerand et al. (2003) proposed two types of passion: harmonious passion (HP) and obsessive passion (OP).

The operationalization of the passion construct by Vallerand and his colleagues (2003) has enabled researchers across numerous work or organizational settings to examine the relationships between a specific type of passion (HP or OP) and outcome variables of interest (such as performance, task concentration, positive affect, negative affect, burnout, etc.). A sample item from the original Passion Scale is “This activity is in harmony with the other activities in my life” (Vallerand et al., 2003). If a researcher focuses on a specific activity, work domain, or pursuit, then this sample item can be adapted accordingly: “\_\_\_\_\_ (name of the specific activity or work domain) is in harmony with the other activities in my life.”

**Harmonious passion (HP) and obsessive passion (OP).** Harmonious passion (HP) refers to the strong tendency to engage in an activity “in harmony with other aspects of the self and the person’s life” (Vallerand, 2015, p. 33). HP reflects one’s autonomous drive to engage in an activity, and an internal locus of control over the activity. HP, which originally stems from Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017), occurs as one voluntarily or autonomously internalizes the activity as harmonious with one’s fundamental psychological needs, purpose in life, or self-identity.

Obsessive passion (OP), on the other hand, “may conflict with aspects of the self and the person’s life” (Vallerand, 2015, p. 33). Based on Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017), OP concerns a controlled internalization of an activity with respect to one’s identity. The controlled internalization indicates an internal pressure to engage in the activity (e.g., demonstrating performance, self-esteem). The pressure may also result from interpersonal pressure (e.g., social acceptance, conforming to societal norms, conforming to specific gender roles).

Specifically, harmonious passion (HP) mostly is associated with adaptive outcomes (e.g., positive affect), whereas obsessive passion (OP) generally causes less adaptive, or even maladaptive outcomes (e.g., rigid persistence at the expense of one’s physical well-being). Results from various studies involving over 900 participants from different populations supported the dualistic model of passion (Vallerand et al., 2003). Since Vallerand and his colleagues (2003) introduced the dualistic model of passion, numerous researchers have found evidence in their empirical studies indicating that HP could lead to positive intrapersonal and interpersonal outcomes such as improved performance and occurrence of states of flow (Mageau et al., 2005; St-Louis et al., 2018; Vallerand et al., 2006). On the contrary, OP was associated with mixed intra- and inter- personal outcomes (positive or negative outcomes). For example, Vallerand et al. (2003) found that OP corresponded to negative emotions during task engagement. In another study, Grenier and colleagues (2009) found OP to positively associate with self-related positive affect (e.g., pride), but not with the general state of emotion (e.g., enjoyment) during a purchasing episode (Grenier et al., 2009). Nonetheless, although researchers showed that sometimes OP would relate to some positive outcomes (e.g., performance), OP is typically conducive to more negative or less adaptive outcomes (e.g., deterioration in psychological well-being) (Birkeland et al., 2018; Lalande et al., 2017; St-Louis et al., 2018). In contrast, Vallerand (2015) and Vallerand et al. (2008) found that outcomes were generally more positive for those with high HP compared



to high OP. Relationships between each type of passion and intra- or inter- personal outcomes were mostly invariant across age and gender, with certain correlations moderated by specific domain as well as culture (Vallerand, 2015; Vallerand et al., 2003).

### **Passion for Teaching**

**Definition of passion for teaching.** The dualistic model of passion presents an established, useful framework that can easily be applied to analyze passion for different activities or domains. Based on the merits of the dualistic model in terms conceptualization, measurement, and applicability across domains, I adopted the dualistic model of passion in the context of teaching in this dissertation research. I define passion for teaching as a strong inclination toward teaching. This definition infers an individual's strong desire to engage in a teaching career, teaching, or teaching-related activities. Moreover, passion for teaching reflects that an individual highly values, regularly invests time and energy in teaching, and teaching is part of one's identity.

**Relevant literature.** In recent years, there has been plenty of research on teachers' effectiveness. Although various writers assumed that effective teaching and learning relies on the exercise by teachers of sustained passion for teaching (e.g., Day, 2004), few researchers have empirically tested whether passion for teaching leads to positive outcomes (Carbonneau et al., 2008; Vallerand et al., in press). A teaching career in K-12 classrooms generally is not associated with high salary and status. While people generally assume most K-12 in-service teachers as being passionate about teaching, this assumption needs to be carefully examined. For example, Carbonneau et al. (2008) empirically tested this assumption and showed that over 90% of the teachers in their study were moderately to highly passionate about teaching. As teachers' shortages continue to be a significant problem facing Oklahoma and the U.S., it is important to devote research towards those motivational characteristics of the K-12 in-service teachers. This research contributes to the teachers' retention literature through investigating passion as potential

source of achievement goal progress and perseverance. In a related vein, researchers who applied the dualistic model of passion in different workplace settings found that harmonious passion (HP) toward work (a specific work domain) is associated with sense of autonomy, competence, and relatedness in different organizational contexts (Ho et al., 2018; Houliort et al., 2013; Spehar et al., 2016). In contrast, researchers did not find obsessive passion (OP) tied to these adaptive outcomes (Houliort et al., 2013; Spehar et al., 2016).

Carbonneau and her colleagues (2008) conducted a study on passion for teaching (HP for teaching and OP for teaching). In this study, 494 teachers were measured twice over a 3-month period on passion for teaching (HP for teaching and OP for teaching) and a set of outcome variables including burnout symptoms and perceptions of student behaviors in the classroom. The researchers found: increases in harmonious passion for teaching (HP for teaching) predicted lessened burnout symptoms and enhanced work satisfaction; changes in obsessive passion for teaching (OP for teaching) appeared unrelated to these outcomes. However, increases in both HP for teaching and OP for teaching were associated with positive perceptions of student behaviors in the classroom (e.g., perceiving students as cooperative and enthusiastic).

**Harmonious passion for teaching and obsessive passion for teaching.** According to the dualistic model, harmonious passion for teaching (HP for teaching) essentially indicates that an autonomous internalization of the teaching career is in harmony with self-identity or other important aspects of life such as life purpose (Deci & Ryan, 2000; Vallerand, 2015; Vallerand et al., 2003). Teachers with a harmonious passion are able to wholeheartedly concentrate on teaching or teaching-related tasks and enjoy positive experiences both during task engagement (e.g., states of flow) and afterwards (e.g., work satisfaction) (Carbonneau et al., 2008; Vallerand, 2015; Vallerand et al., 2003). Additionally, in those situations when they are not engaged in teaching activities, they are capable of directing attention towards other life aspects, without

constantly ruminating about the teaching-related activities (Carbonneau et al., 2008; Vallerand et al., in press).

On the contrary, obsessive passion for teaching (OP for teaching) in essence suggests a controlled internalization of the teaching career with respect to self-identity (Deci & Ryan, 2000; Vallerand et al., 2003; Vallerand et al., 2008). A controlled internalization represents a not fully autonomous volition to engage in teaching or teaching-related activities. Such internalization may result from inter- or intra- personal pressures, including conscious, even unconscious factors such as self-esteem, conforming to societal norms (e.g., gender roles), social acceptance, etc. (Vallerand et al., 2008). For example, a career in teaching may not be a fully volitional, self-fulfilled choice, but rather an activity to maintain self-worth, or accepted by society as a meaningful role for one's gender or characteristics (Vallerand et al., 2003; Vallerand et al., 2008). Engaging in daily teaching activities may not be as enjoyable or internally fulfilling to those teachers with an obsessive passion for teaching (OP for teaching). Often times, having an OP for teaching may lead those teachers to feel like they are controlled by their activities related to teaching; "it is as if they cannot help but to engage in it" (Carbonneau et al., 2008, p. 978). Those with an OP for teaching have less sense of control over teaching activities, compared to those having a HP for teaching. Taking up disproportionately significant time in teaching may create potential conflict with or neglect over other aspects or domains in life such as leisure or family (Carbonneau et al., 2008).

Passion for teaching may fuel teachers' enthusiasm and energy towards their goals. What keeps teachers on course? Specifically, self-regulatory processes including locomotion and assessment may influence teachers' progress towards achievement goals. In the next section, I elaborate on two constructs of self-regulatory modes, namely, locomotion and assessment (Kruglanski et al., 2000).

## **Locomotion and Assessment**

### **Theoretical Background**

Researchers define self-regulation as various psychological processes through which individuals align their thoughts, feelings, and behaviors with specific standards, goals, or values (Baumeister et al., 1994; Carver & Scheier, 1999). Self-regulatory theories view individuals as complex goal-directed systems that consciously direct, monitor, and adjust their attitudes, thoughts, and behaviors to achieve certain goals (Vohs & Baumeister, 2004). A number of researchers found effective self-regulation processes facilitate goal-directed behaviors and improve performance for individuals across different contexts (e.g., Dent & Koenka, 2016; Forgas et al., 2009; Oriol et al., 2017; Vohs & Baumeister, 2004). For example, Chung and Yuen (2011) found that internal self-regulatory processes including self-monitoring and self-evaluation facilitate an increased awareness of progress and outcomes towards goal attainment, as well as enhanced performance. In essence, self-regulation relates to goal progress and attainment. In this research, I sought to illuminate the possible factors that explain why certain teachers strive more towards their career goals, while others disengage or quit. Researchers offered ample evidence that self-regulation processes or mechanisms are among the determinants of an individual's devotion and commitment to their goals (e.g., Dent & Koenka, 2016; Forgas et al., 2009; Oriol et al., 2017; Vohs & Baumeister, 2004). As such, by examining possible self-regulatory mechanisms that enhance teachers' achievement goal progress and eventually perseverance, this research contributes to our understanding of the internal cognitive mechanisms that influence teachers' achievement goal progress and goal striving. Effective self-regulatory processes often assist an individual to remain focused on important goals and choose adaptive strategies for achieving those goals. Researchers have identified a great number of constructs relevant to self-regulation; in this research, I focus on the distinctive constructs of locomotion and assessment

(Kruglanski et al., 2000). These two self-regulatory modes orient individuals toward particular thoughts and behaviors in their pursuit of important goals (Kruglanski et al., 2000).

## **Locomotion**

**Definition of locomotion.** Merriam-Webster Online Dictionary (2018) defines the term locomotion as “an act or the power of moving from place to place”. The psychological construct locomotion is defined as “the self-regulatory aspect concerned with movement from state to state and with committing the psychological resources that will initiate and maintain goal-directed progress in a straightforward manner, without undue distractions or delays” (Kruglanski et al., 2000, p. 794). Locomotion represents the “action” mode of self-regulation, involving cognitive and behavioral orientations to initiate goal-directed actions in a direct and swift manner.

**Significance of locomotion.** According to Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017), autonomous engagement in an activity relies upon the fulfillment of three basic psychological needs: autonomy (i.e., a sense of initiative and volition; deciding or taking actions in accordance with one’s own will, values, or interests), competence (i.e., being competent to achieve desired outcomes or to deal with potential challenges from external environment), and relatedness (i.e., feeling connected or close to, and understood by others in a given social context). In other words, the degree to which any of these three psychological needs is supported or thwarted has a robust impact on one’s experience of autonomy, competence, and relatedness. Intrinsic motivation, considered as the most self-determined, volitional and high-quality form of motivation, occurs when these three innate psychological needs are met. On the contrary, in Self-Determination Theory (Deci & Ryan, 1985, 1991), failure to act upon one’s goals is because of “lacking the intention to act” (Ryan & Deci, 2000, p. 72) or “amotivation” (Ryan & Deci, 2000). In other words, individuals fail to act when they see no value in an activity or goal, feel not capable enough to achieve satisfactory outcomes,

or feel distant to others in a specific social context (Ryan & Deci, 2000). However, Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017) does not address the situation wherein an individual fails or hesitates to take actions when he or she does attach high interest or value in specific goals, feel capable and competent towards those goals, and feel related to others. In other words, Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017) seems to overlook other possible explanations for why an individual may choose to not take actions towards specific goals or pursuits despite underlying levels of intrinsic motivation.

In a similar vein, a popular theoretical model -- the Theory of Planned Behavior -- “was developed explicitly to deal with purely volitional behaviors” (Ajzen, 1988, p. 127). The theory postulates that attitudes towards an activity or pursuit, subjective norms regarding this activity or pursuit, as well as an individual’s perceived behavioral control over performance are important constructs in predicting when the individual will act (Ajzen, 1991). While there may be more possible factors in play, these three constructs are operationalized and empirically tested antecedents to intentions to act -- the latter is viewed as a most established predictor of behavior or action, particularly when the behavior or action is narrowly defined and the time to act is fairly short (Ajzen, 1991).

Looking at these two theories, Self-Determination Theory (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017) and the Theory of Planned Behavior (Ajzen, 1988, 1991), the focus of each research stream lies in delineating the underlying psychological drive (motivation or intention) towards a certain goal, activity, or behavior. Yet there is a missing link between psychological drive (motivation or intention) and behavior. While individuals may consider a particular goal or activity as worthy of pursuing and arrive at a relatively strong motivation or intention, there is no guarantee that they will act in a manner consistent with their stated preference, intention, or motivation, particularly given various situational conditions. A real-life example could be that

when someone feels highly motivated to start learning a new language, but fails to act upon that motivation. In short, intention or motivation are important predictors of behavior or action, but they sometimes are not the most critical factors in extant research (Cairns, Elder, & Costello, 1996).

In this research, I sought to address this gap and contribute to the motivation research literature by offering ideas and insights on why individuals choose to act upon specific goals, or not act under specific circumstances. Particularly, the “momentum” aspect that reflects an individual’s inclination to take action in a swift and straightforward manner is captured in the construct -- locomotion. Locomotion entails a temporal extent -- a strong inclination to “do it now” or “do it immediately” rather than taking into account other situational conditions or alternative means or goals and waiting to ensure “doing it right”. In this research, I examined the relationship between locomotion and K-12 teachers’ goal-directed outcomes (achievement goal progress and perseverance).

The “locomotion” mode emphasizes “getting on with it” or “making things happen” -- to prompt actions, to act towards one’s goals despite any delay or distractions, rather than merely waiting and monitoring, or evaluating all possibilities (Higgins et al., 2003; Kruglanski et al., 2000). Individuals strong in locomotion prefer to “move” from their current state to act towards goals. These individuals enjoy taking actions, and may refrain from excessive critical evaluation of other possibilities or alternatives if such self-reflection hinders steady “movement” from one state to another with respect to goal pursuit. They are high-energy “doers” and “go-getters” and dislike feeling stagnant or stalled (Kruglanski et al., 2000).

**Locomotion versus impulsivity.** Some people might suspect that locomotion would bear resemblance to impulsivity. In fact, the construct of impulsivity consists of the following elements: a lack of sensitivity to negative consequences of behavior, reacting immediately for

instant gratification before processing information, and a lack of vision or goals (Barratt, 1985; Moeller et al., 2001). In contrast, it is worthy to note that locomotion involves “productive action”: action aligned with goals, not seeking immediate gratification on the basis of unconscious physiological drives (Bornovalova et al., 2008). Even though individuals with high locomotion appear to be energetic and active, impulsivity often is unproductive, and thought of as “poorly conceived, prematurely expressed, unduly risky, or inappropriate to the situation that often result in undesirable consequences” (Daruna & Barnes, 1993, p. 23). Previous researchers reported the negative correlation between locomotion and impulsivity (Bornovalova et al., 2008; Shalev & Sulkowski, 2009).

**Locomotion in extant research.** Researchers suggest that the magnitude of an individual’s orientation towards each regulatory mode (locomotion, assessment) is related to underlying dispositional factors, but is largely shaped or influenced by situational or external factors. For example, locomotion has been found to be related to conscientiousness (Kruglanski et al., 2000). Meanwhile, Higgins et al. (2003) reported that locomotion was significantly impacted by socialization factors. Thus, while there is a temperamental or dispositional component underlying locomotion, evidence suggests that it can also become a malleable, situationally inducible orientation (Avnet & Higgins, 2003; Higgins et al., 2003; Orehek et al., 2012; Pierro et al., 2006). Locomotion is especially relevant to this research in that it captures the “momentum” or strong inclination to act, to initiate actions, which is vital to make progress towards one’s important goals. One objective of this research was to analyze the mechanisms that propel the progress K-12 in-service teachers to make towards their achievement goals. In this sense, the self-regulatory mode of locomotion provides a useful lens to address potential barriers for achieving achievement goal progress such as failure to overcome hesitation or reluctance to initiate actions, or failure to prompt actions in a timely manner.



Researchers have examined the relationship between locomotion and various goal-related orientations or behaviors. Some researchers found that locomotion was positively related to the expectancy of goal attainment, goal commitment, and the efficiency in coming up with different means to achieve a specific goal (Kruglanski, et al., 2000; Scholer & Higgins, 2012). For example, Kruglanski et al. (2000) reported that high locomotion was associated with mastery or learning goal orientation (i.e., goal orientation that emphasizes developing competence or skills to achieve goals or improve performance or capability).

Further, researchers found high locomotion positively correlated with the ability to remain focused on an activity or a task, psychological vitality or energy, and optimistic thinking (Kruglanski et al. 2000; Pierro et al., 2002). High locomotion led to enhanced efforts and engagement, mediating the relationship between motivation and goal-oriented behaviors (Higgins et al., 2003). Individuals oriented towards high locomotion are characterized by being robust in facing challenges and take risks; they normally are optimistic about new experiences (Kruglanski et al., 2007). Moreover, researchers found that locomotion was positively associated with effective dealing with a variety of work or organization related changes, according to empirical studies conducted on different sample populations or in various organizational settings (Amato et al., 2016; Bélanger et al., 2015; Kruglanski et al., 2000; Pierro et al., 2012). High locomotion facilitates individuals in various work or professional settings to successfully adjust to and cope with added responsibility, job change, increased required independence, more flexible tasks or assignments, and procedural or other changes in organizations (Amato et al., 2016; Kruglanski, et al., 2007). Researchers found that high locomotion was positively associated with effective time management (Amato et al., 2014), better performance on and control over multiple tasks at work (Pierro et al., 2013). Researchers also reported that high locomotion was negatively correlated with social anxiety, depression symptoms, and positively correlated with subjective well-being (Di Santo et al., 2018; Hong et al., 2004; Lucidi et al., 2016; Kruglanski et al. 2000).

## Assessment

**Definition of assessment.** Kruglanski et al. (2000) defined assessment as “constitutes the comparative aspect of self-regulation concerned with critically evaluating entities or states, such as goals or means, in relation to alternatives in order to judge relative quality” (p. 794). Assessment represents the “evaluative” mode of self-regulation, involving cognitive and behavioral orientations or processes for critical, deliberate evaluations. The evaluation includes comparing a person’s current state to a desired state, assessing the quality or value of a specific goal or an action or measure to take to achieve a specific goal by considering possible merits and drawbacks (or challenges) with another alternative goal or means (Carver & Scheier, 1998; Kruglanski et al., 2000, 2009). High assessment indicates the preference for no action over carrying out a possibly wrong move (Higgins et al., 2003). It is important to note that these two self-regulatory modes -- locomotion and assessment -- reflect distinctive self-regulatory processes and mechanisms. Different individuals across different situations can be high in both locomotion and assessment, relatively high in one mode and low in the other, or low in both modes (Chernikova et al., 2016; Kruglanski et al., 2000; Kruglanski et al., 2009).

**Assessment in extant research.** Individuals high in assessment tend to ask themselves questions such as “Which alternative action is the most beneficial?”, “How did I do this in the past?” and “What would others do in the current situation?” These critical self-reflective evaluation processes may include comparing their own goals or means with those of others (Higgins, 1987; Kruglanski et al., 2000, 2009). As discussed earlier, locomotion mainly pertains to initiating and maintaining movement from one state to another, or “do it now,” or “move on.” Meanwhile, assessment focuses on the self-regulatory processes that critically evaluate options for action or change, rather than implement an action or change -- “do it right”. The assessment mode may propel an individual to keep searching additional information even after a temporary satisfactory state is reached. It may also drive an individual to refrain from a safe status quo to

search for other possible alternative goals or means for comparative evaluation. Assessment is “figuring out what the best action to take” or “look” prior to “act” or “leap” (Kruglanski et al., 2000, 2009).

Most importantly, the quality of outcomes or effects from these two distinctive self-regulatory modes has been found to be contingent upon the joint effects of locomotion and assessment. Optimal performance and achievement may result from both “doing it right” (high assessment) and “following through on desired action” (high locomotion) (Higgins et al., 2003; Kruglanski et al., 2000; Pierro et al., 2013). For instance, Kruglanski et al. (2000) reported that undergraduate students’ academic performance (as reflected through cumulative GPA) and soldiers’ success in completing intense military training were the most pronounced among those students or soldiers who scored high in both self-regulatory modes (locomotion and assessment). Specifically, high locomotion mattered more than high assessment in that assessment didn’t generate a main effect on performance or achievement, however, an interaction between the two self-regulatory modes (locomotion  $\times$  assessment) was conducive to positive outcomes. In other words, superior performance or achievement was found for those students or soldiers with high locomotion scores, but this effect was the greatest for those who also scored high on assessment. High assessment, by itself, did not lead to more desirable performance or achievement (Pierro et al., 2018; Vazeou-Nieuwenhuis et al., 2017). This makes sense because those individuals high in assessment but low in locomotion are inclined to engage in excessive critical evaluations, or continuously compare various possibilities or options, which hinders concrete actions towards important goals.

Furthermore, high assessment (combined with low locomotion) denotes a state during which individuals involve themselves in redundant and overtly critical self-evaluations on potential alternative goals and means. Attempting to choose an ideal “path,” individuals with high assessment (combined with low locomotion) tend to consider feedback or criticism from all

sources as they engage in excessive evaluations. This may create a suboptimal situation of continuously seeking and receiving affirmation from others or in relative to social norms (Chen et al., 2018; Higgins et al., 2003; Pierro et al., 2002).

## **Achievement Goal Progress, Perseverance, and Subjective Well-Being**

### **Goal-Setting Theory**

Goal-setting theory (Latham & Locke, 1979; Locke 1968; Locke & Latham, 1990, 2002) explains, with great parsimony, the cognitive mechanisms through which individuals express a greater propensity for progress towards goals. Motivation is considered inherently task-specific, and goal-setting theory has been largely developed and empirically applied across different disciplinary contexts including psychology, education, and organizational behavior (Locke & Latham, 2002, 2006). Goal-setting theory is particularly useful in the learning or teaching context, as it helps in explaining how students or teachers develop intentions towards engagement in learning or teaching tasks as well as persist through the potential difficulties or hurdles associated with learning or instructional processes (Barnard-Brak et al., 2010; Pintrich, 2000, 2003). Specifically, goal-setting theory has one fundamental argument at its core -- challenging goals may lead to higher performance in a variety of tasks than “do-your-best” directives. Empirical evidence that supports this notion has been found in a great number of studies (Locke & Latham, 2002, 2006). To take goal-setting theory in the context of teaching, often times inevitably, a teacher needs to attend to difficult tasks or trying to reach a challenging goal.

### **Achievement Goal Progress**

**Goal progress.** Goal progress is the progress made towards specific goals. Research based upon goal-setting theory (Latham & Locke, 1979; Locke 1968; Locke & Latham, 2002) has supported several constructs as important moderators of the relationship between goals and performance; those moderating constructs include self-efficacy, goal progress, goal commitment,

and feedback (Locke & Latham, 2002, 2006). Goals may exert a greater impact on enhancing performance when individuals believe in their own ability or competence to complete the task, perceive progress towards the goal, commit to reach the goal despite potential difficulties, and evaluate performance in relation to the goal (Locke & Latham, 2002). Thus, goal progress is useful and important to look at in research. In this research, goal progress is operationalized as the self-perceived progress made towards an individual's goals. This is an approach widely adopted in empirical research conducted across different fields and contexts (Locke & Latham, 2002, 2006, 2015).

**Achievement goal progress.** In this research, I focused on teachers' achievement goals. An achievement goal is defined as a goal that strives for achievement experiences in one's work domain (Brunstein et al., 1998). As this research attempts to address teachers' goal-directed outcomes relevant to their work-related pursuits, I chose achievement goal progress as an important outcome variable. Achievement goal progress is the progress made towards achievement goals (Brunstein et al., 1998). An example of an achievement goal is "I am very engaged in enhancing my delivery of course content. I am learning to use more tech tools, and would like to actually implement some new ways of teaching soon."

### **Perseverance**

In current body of teacher retention literature, researchers have investigated the various motives that lead teachers to leave their schools or teaching profession (e.g., Borman & Dowling, 2008; Guarino et al., 2006; Kelly, 2004; Ryan et al., 2017; Struyven & Vanthournout, 2014; Vekeman et al., 2017). However, few scholars have examined the underlying motivational or self-regulatory constructs that facilitate teachers' perseverance. The ability to persevere, to adapt and cope with various challenges or setbacks despite attractive alternatives, is critical for successful pursuit of long-term career goals for teachers, especially those in historically

underserved communities. It is vital to gain an understanding of these teachers' unique sources of agency or motivation to teach students from economically disadvantaged backgrounds in order to understand and prepare for or prevent the large numbers leaving teaching and the various societal problems teacher shortages cause. Clarifying the antecedents advances a deeper understanding of why certain teachers persevere while others quit or change course. In this research, I sought to contribute to a better understanding of teachers' long-term goal striving or perseverance.

Perseverance is defined as a future-oriented psychological strength that enables individuals to continuously devote efforts despite potential challenges (Duckworth et al., 2007, 2009). Perseverance is best conceptualized by grit, which has been examined in numerous empirical studies to reflect long-term goal striving (e.g., Duckworth et al., 2009; Duckworth & Gross, 2014; Hagger & Hamilton, 2019; Palisoc et al., 2017). Grit involves two aspects: (a) consistency of interests: maintaining a constant focus and interests towards a given goal or end; and (b) perseverance of effort: investing efforts despite challenges or failures (Duckworth et al., 2007; Duckworth & Quinn, 2009). Overall, grit positively contributes to educational attainment, retention, and performance (Duckworth et al., 2007). In essence, grit is a future-oriented motivational construct that enables individuals to keep persevering toward their long-term vision or goals (Duckworth et al., 2007); this corresponds to the self-realization or self-actualization view on well-being (Ryan & Deci, 2001). Extant research suggests that grit drives determination and concentration towards individuals' goals even when facing potential challenges or setbacks, a lack of positive feedback or uncertainty about end-results -- all of these aspects are important for success in long-term goal pursuit (Duckworth et al., 2007; Maddi, et al., 2013).

In the education context, grit is very relevant in studying teachers' motivational characteristics relative to perseverance or long-term goal striving (e.g., Duckworth et al., 2009; Robertson-Kraft & Duckworth, 2014). For example, grit is a distinguishing characteristic to evaluate when choosing or hiring novice teachers, as the daily work for a teacher does not always

lead to desirable results and can easily be stressful and challenging for a novice teacher (Duckworth et al., 2009). Further, grit predicted novice teachers' retention over a one-academic-year period by two times as well as higher academic performance of students that taught by novice teachers (Duckworth et al., 2009). Robertson-Kraft and Duckworth (2014) conducted a series of two longitudinal studies on teachers serving in low-income school districts (sample sizes were 154 and 307 respectively). They reported consistent findings across both studies that grit positively predicted teachers' retention over a school year and their teaching performance.

### **Subjective Well-Being**

Subjective well-being (SWB) is defined as "people's evaluations of their lives -- evaluations that are both affective and cognitive. People experience abundant subjective well-being when they feel many pleasant and few unpleasant emotions, when they are engaged in interesting activities, when they experience many pleasures and few pains, and when they are satisfied with their lives" (Diener, 2000, p. 34). In short, SWB is a key perspective within the hedonic paradigm; it is a cognitive and affective evaluation of one's life (Diener, 1994, 2000; Diener et al., 2018). For this research, I considered SWB as a relevant construct to examine in the teaching context, since SWB represents a much broader, more holistic view on how an individual defines successes and achieving satisfaction and optimal states with respect to many domains in life, in contrast to job satisfaction which only captures one aspect in life. It is especially salient and necessary to examine K-12 in-service teachers' SWB, and the ways their goals and goal-related outcomes relate to their overall self-evaluations of well-being.

### **Development of Hypotheses**

I addressed the research questions (referred to as RQ1, RQ2, RQ3, and RQ4) by developing and investigating a series of hypotheses on the interrelationships among variables of interest through conducting two studies. In Study 1, I addressed research questions 1 and 2 (i.e.,

RQ1 and RQ2) through developing and examining a set of hypotheses on the interrelationships among passion for teaching (HP for teaching, OP for teaching), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being.

In Study 2, I addressed research questions 3 and 4 (i.e., RQ3 and RQ4) through developing and examining a set of hypotheses on the interrelationships among self-regulatory mode (locomotion, assessment), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being.

This section contains two parts; each part is devoted to one study (Study 1 and Study 2 respectively). Each part proceeds in the following manner: I first recap the research questions for the study. I then present a set of hypotheses about the interrelationships among a set of variables of interest, followed by a rationale to support each hypothesis. Lastly, I provide a conceptual model that illustrates the set of hypotheses for the study.

### **Study 1: Hypotheses and Conceptual Model**

This part mainly comprises the research questions, development of hypotheses, and the conceptual model for Study 1.

**Research questions.** Study 1 focused on the following questions:

- RQ1.** What is the role of harmonious passion for teaching (HP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?
- RQ2.** What is the role of obsessive passion for teaching (OP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?



**Hypotheses development.** To address RQ1 and RQ2, I developed a set of hypotheses concerning the interrelationships among passion for teaching (HP for teaching, OP for teaching), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. The hypotheses are as follows:

***Hypothesis 1a:** There will be a positive relationship between harmonious passion for teaching and achievement goal progress.*

***Rationale:*** Harmonious passion (HP) is demonstrated through empirical evidence as being largely conducive to positive outcomes (Vallerand, 2015; Vallerand et al., 2008). For example, HP has been found to positively predict work performance across different contexts (e.g., Carmeli et al., 2009; Dubreuil et al., 2014; Salanova et al., 2005).

Teachers with a harmonious passion for teaching (HP for teaching) are able to wholeheartedly concentrate on teaching or teaching-related tasks and enjoy positive experiences both during task engagement (e.g., states of flow) and afterwards (e.g., work satisfaction) (Vallerand, 2015; Vallerand et al., 2003; Carbonneau et al., 2008). As such, I proposed that HP for teaching has a positive relationship with achievement goal progress, as task concentration and positive emotions (e.g., states of flow) assist teachers to make progress towards achievement goals.

***Hypothesis 1b:** There will be a negative relationship between obsessive passion for teaching and achievement goal progress.*

***Rationale:*** In terms of obsessive passion for teaching (OP for teaching), Carbonneau and her colleagues (2008) reported that changes in OP for teaching were unrelated to several outcome variables including teachers' burnout symptoms, perception of positive student behaviors, and job satisfaction.

Across different professional or organizational settings, obsessive passion (OP) was found to correlate with mixed intra- and inter- personal outcomes (positive or negative outcomes) (Vallerand et al., 2003). Nonetheless, compared to harmonious passion (HP), OP generally causes less adaptive, or even maladaptive outcomes (e.g., rigid persistence at the cost of one's health) (Vallerand, 2015). OP was found correlated with negative affect during task engagement (Vallerand et al., 2003). Ho et al. (2011) conducted a study on a sample of 509 employees from an insurance company to examine the links between each type of passion (HP and OP) and cognitive engagement at work (involving attention and absorption). The results showed a negative association between OP and cognitive attention at work. Given these findings, I proposed that OP for teaching has a negative relationship with achievement goal progress, as negative emotions and less cognitive attention at work may hinder teachers' progress on achievement goals.

***Hypothesis 1c:** There will be a positive relationship between achievement goal progress and grit.*

***Rationale:*** Extant research suggested that gritty individuals are more likely to engage in deliberate practice on tasks (Duckworth et al., 2011), which in turn produce positive achievement-related outcomes such as greater goal attainment (Sheldon et al., 2015) and persistence in challenging pursuits (Duckworth et al., 2009). However, there is a lack of research on whether or how intermediate goal progress contributes to grit. Meanwhile, previous research suggested that grit sustains long-term pursuits despite the absence of positive feedback on goal progress (Lucas et al., 2015).

Regarding a teacher's career, even a short-term achievement goal (e.g., enhancing students' grades by the end of the semester) can be a necessary small step towards a long-term vision (e.g., a successful teaching career). Making progress towards an achievement goal fosters

sustained interest and positive affect, which fuel the “consistency of interests” aspect in grit. As such, I proposed that achievement goal progress has a positive relationship with grit. This hypothesis is exploratory due to a lack of relevant research.

***Hypothesis 1d:** There will be a negative relationship between obsessive passion for teaching and grit.*

***Rationale:*** There is scarce research about the impact of obsessive passion (OP) on grit. Bonneville-Roussy et al. (2013) conducted two studies to examine the persistence of music students either attending international summer music academies or enrolled in college music majors in Canada. One study incorporated a cross-sectional design, while the other used a longitudinal design. Sample sizes were 144 and 218 students for each study respectively. Persistence was operationalized as self-reported intention to remain studying music and registration record for each study respectively. The results showed that OP was not linked to persistence in either studies. OP had a negative, but not significant relationship with persistence in the longitudinal study.

In terms of OP for teaching, those with an OP for teaching have less sense of control over teaching activities. Taking up disproportionately significant time in teaching may create potential conflict with or neglect over other aspects or domains in life such as leisure or family (Carbonneau et al., 2008). Engaging in daily teaching activities may not be as enjoyable or internally fulfilling to those teachers with an OP for teaching. For them, when needs or obligations emerge from other important life domains (e.g., family) and potentially conflict with their work-related pursuits, they are likely to experience difficulty in maintaining interest and positive affect at work. This may harm the “consistency of interests” aspect in grit. Thus, I proposed that OP for teaching has a negative relationship with grit. This hypothesis is exploratory due to a lack of previous research.

***Hypothesis 1e:** There will be a positive relationship between harmonious passion for teaching and subjective well-being.*

***Rationale:*** Based on the dualistic model of passion, harmonious passion for teaching (HP for teaching) essentially indicates that an autonomous internalization of the teaching career is in harmony with self-identity or other important aspects of life such as life purpose (Deci & Ryan, 2000; Vallerand, 2015; Vallerand et al., 2003). For teachers with a HP for teaching, in those situations when they are not engaged in teaching activities, they are capable of directing attention towards other life aspects, without constantly ruminating about the teaching-related activities (Carbonneau et al., 2008; Vallerand et al., in press). Extant research has provided evidence to support the positive relationship between harmonious passion and subjective well-being, as harmonious passion produces positive affect during activity engagement, which in turn lead to improved subjective well-being (Rousseau & Vallerand, 2008; Vallerand et al., 2003). So I hypothesized that HP for teaching has a positive relationship with subjective well-being.

***Hypothesis 1f:** There will be a positive relationship between grit and subjective well-being.*

***Rationale:*** Previous researchers found a positive relationship between grit and subcomponents of subjective well-being (Singh & Jha, 2008). Grit pertains to a eudemonic view towards well-being that stresses on the importance of individual growth towards self-actualization or self-fulfillment, as long-term goal pursuits largely involves self-training, or enhancing competence through continuous efforts (Ryan & Deci, 2001). In the teaching context, the positive relationship between grit and subjective well-being is likely to hold. Therefore, I proposed that grit has a positive relationship with subjective well-being.

**Conceptual model.** To illustrate the set of hypotheses for Study 1, I present the following conceptual model (Fig 2.1.1).

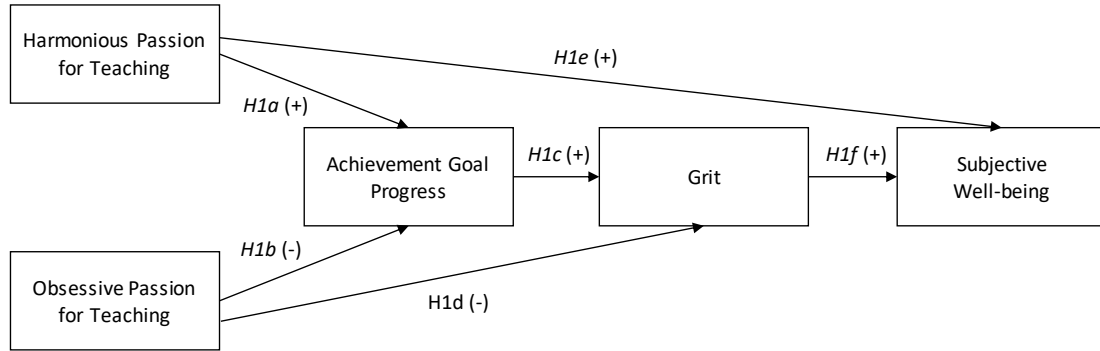


Figure 2.1.1. Conceptual model for Study 1.

## Study 2: Hypotheses and Conceptual Model

This part mainly comprises the research questions, development of hypotheses, and the conceptual model for Study 2.

**Research questions.** Study 2 focuses on the following questions:

- RQ3.** What is the role of locomotion in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?
- RQ4.** What is the role of assessment in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

**Hypotheses development.** To address RQ3 and RQ4, I developed a set of hypotheses concerning the interrelationships among self-regulatory mode (locomotion, assessment), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. The hypotheses are as follows:

***Hypothesis 2a:** There will be a positive relationship between locomotion and achievement goal progress.*

***Rationale:*** Kruglanski et al. (2000) found that individuals with high locomotion levels were more likely to adopt a mastery goal orientation (i.e., a goal orientation that emphasizes developing competence or skills). Especially for individuals under pressure (e.g., individuals who are expected to work on complicated tasks at work), a mastery goal orientation is more conducive to engagement and efforts, and enhanced performance (Butler, 2007; Dweck, 1999; Dweck & Elliott, 1983; Elliott & Dweck, 1988). Mastery goal orientation has been found to predict positive affect and goal attainment (Pierro et al., 2006). Given these findings, I proposed that locomotion has a positive relationship with achievement goal progress.

***Hypothesis 2b:** The relationship between locomotion and achievement goal progress will be moderated by assessment such that the effects of locomotion are stronger when assessment is high.*

***Rationale:*** The interaction between locomotion and assessment (locomotion  $\times$  assessment), and the profound effect of the joint operation of locomotion and assessment, were illustrated through a number of empirical studies in both experimental and natural settings (e.g., Higgins et al., 2003; Kruglanski et al., 2000; Pierro et al., 2013). High locomotion was linked to goal striving, and the interaction effect of a high-high combination (high locomotion  $\times$  high assessment) translated into optimal achievement (Mauro et al., 2009; Pierro et al., 2006). As Higgins et al. (2003) posited, “High locomotion is necessary to succeed at endeavors that require persistence over a long period, but it is not sufficient. High assessment is also important because considering alternatives, which includes managing one’s time and effort, enhances performance on such endeavors” (p. 333). In the teaching context, optimal achievement goal progress is likely to occur when “taking prompt actions” (high locomotion) is coupled with “doing it right” (high

assessment). Thus, I hypothesized that assessment has a positive moderating effect on the relationship between locomotion and achievement goal progress.

***Hypothesis 2c:** There will be a positive relationship between achievement goal progress and grit.*

***Rationale:*** Prior research suggested that gritty individuals are more likely to engage in deliberate practice on tasks (Duckworth et al., 2011), which in turn produce positive achievement-related outcomes such as greater goal attainment (Sheldon et al., 2015) and persistence in challenging pursuits (Duckworth et al., 2009). However, there is a lack of research on whether or how intermediate goal progress contributes to grit. Meanwhile, previous research suggested that grit sustains long-term pursuits despite the absence of positive feedback on goal progress (Lucas et al., 2015).

Regarding a teacher's career, even a short-term achievement goal (e.g., enhancing students' grades by the end of the semester) can be a necessary small step towards a long-term vision (e.g., a successful teaching career). Making progress towards an achievement goal fosters sustained interest and positive affect, which fuel the "consistency of interests" aspect in grit. As such, I proposed that achievement goal progress has a positive relationship with grit. This hypothesis is exploratory due to a lack of relevant research.

***Hypothesis 2d:** There will be a positive relationship between locomotion and subjective well-being.*

***Rationale:*** Researchers found that high locomotion was negatively associated with social anxiety and depression symptoms (Di Santo et al., 2018; Hong et al., 2004; Kruglanski et al. 2000; Lucidi et al., 2016). Further, researchers have reported that high locomotion was positively related to subjective well-being (Hong et al., 2004; Kruglanski et al. 2000; Lent et al., 2005; Lucidi et al., 2016). For example, based on a sample of 143 Singaporean undergraduate students,

Hong et al. (2004) showed that subjective well-being is highest among those students with high locomotion and low assessment levels, and lowest among those with low locomotion and high assessment levels. As such, in the teaching context, teachers with high locomotion (combined with low assessment) are likely to feel most satisfied with life. So I proposed that locomotion has a positive relationship with subjective well-being.

***Hypothesis 2e:** There will be a positive relationship between grit and subjective well-being.*

***Rationale:*** Grit pertains to a eudemonic view towards well-being that stresses the importance of individual growth towards self-actualization or self-fulfillment, as long-term goal pursuits largely involves self-training, or enhancing competence through continuous efforts (Ryan & Deci, 2001). Researchers have found a positive link between grit and subcomponents of subjective well-being (Singh & Jha, 2008). In a recent study conducted on a sample of 7,617 late adolescent and adult participants across the globe, Disabato et al. (2019) reported that the “perseverance of effort” aspect of grit was moderately to strongly associated with subjective well-being. Therefore, in the teaching context, I proposed that grit has a positive relationship with subjective well-being.

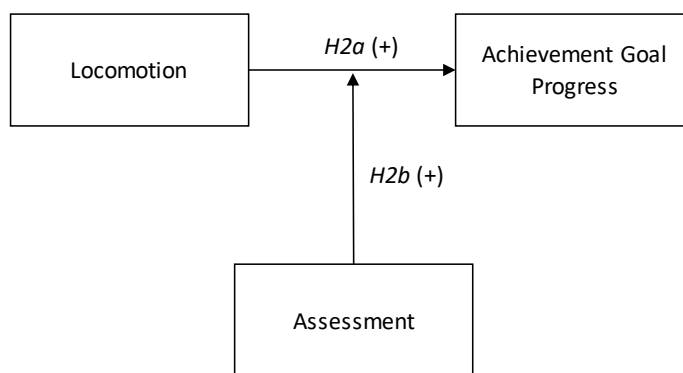
***Hypothesis 2f:** There will be a negative relationship between assessment and subjective well-being.*

***Rationale:*** In addition to the conjoint effects of locomotion and assessment together, high assessment has been found to attach to specific psychological and behavioral outcomes. Individuals high in assessment (and low in locomotion) tend to be more influenced by social norms or social criticisms, meaning that they are very much concerned about “doing it right” in the eyes of others in the social context (Higgins et al., 2003; Pierro et al., 2002, 2011). They are very sensitive to the perception and feedback from others or derived from social expectations or



norms, attempting to ensure seeking a most proper action after taking into consideration of any feedback or criticism from all sources as they engage in excessive evaluations. They tend to take others' criticisms seriously, regardless of whether those criticisms truly matter (Higgins et al., 2003; Pierro et al., 2002). Previous researchers found that high assessment (combined with low locomotion) was negatively associated with adaptive psychological states such as self-esteem and optimistic thinking, and positively associated with negative psychological states including social anxiety, counter-factual thinking, depression, and regret (Chen et al., 2018; Kruglanski et al. 2000; Pierro et al., 2008, 2011). Furthermore, there is evidence to suggest that high assessment (combined with low locomotion) negatively influences subjective well-being. For example, Hong et al. (2004) found that subjective well-being is lowest among those individuals with high assessment and low locomotion levels. As such, in the teaching context, teachers with high assessment (combined with low locomotion) are likely to feel less satisfied with life. So I proposed that assessment has a negative relationship with subjective well-being.

**Conceptual model.** To illustrate the set of hypotheses for Study 2, I present the following conceptual models (Fig 2.2.1 and Figure 2.2.2).



*Figure 2.2.1.* Moderation hypothesized in Study 2.

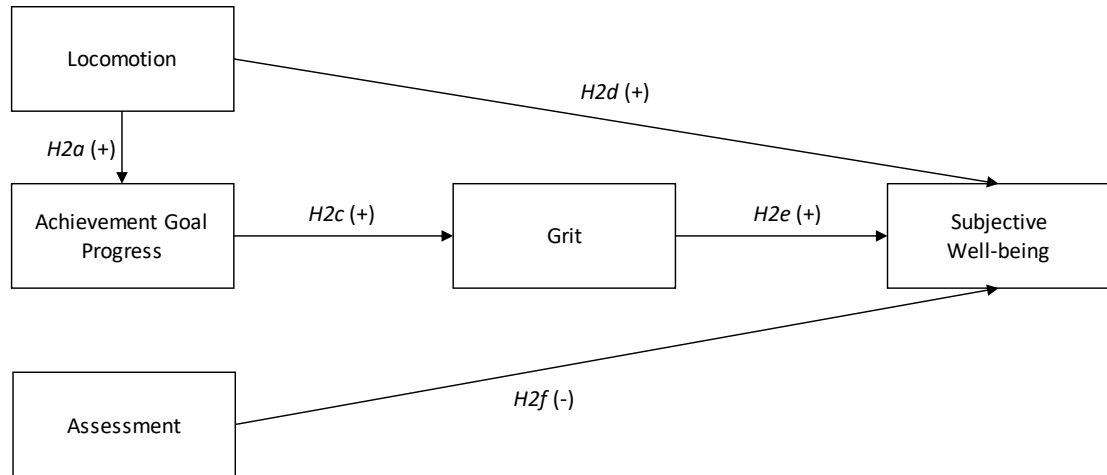


Figure 2.2.2 Main conceptual model for Study 2.

### Summary

In summary, to address the research questions, I developed and investigated a series of hypotheses on the interrelationships among variables of interest through conducting two studies. Specifically, Study 1 examined the following hypotheses:

**Hypothesis 1a:** *There will be a positive relationship between harmonious passion for teaching and achievement goal progress.*

**Hypothesis 1b:** *There will be a negative relationship between obsessive passion for teaching and achievement goal progress.*

**Hypothesis 1c:** *There will be a positive relationship between achievement goal progress and grit.*

**Hypothesis 1d:** *There will be a negative relationship between obsessive passion for teaching and grit.*

**Hypothesis 1e:** *There will be a positive relationship between harmonious passion for teaching and subjective well-being.*

**Hypothesis 1f:** *There will be a positive relationship between grit and subjective well-being.*

Study 2 examined the following hypotheses:

**Hypothesis 2a:** *There will be a positive relationship between locomotion and achievement goal progress.*

**Hypothesis 2b:** *The relationship between locomotion and achievement goal progress will be moderated by assessment such that the effects of locomotion are stronger when assessment is high.*

**Hypothesis 2c:** *There will be a positive relationship between achievement goal progress and grit.*

**Hypothesis 2d:** *There will be a positive relationship between locomotion and subjective well-being.*

**Hypothesis 2e:** *There will be a positive relationship between grit and subjective well-being.*

**Hypothesis 2f:** *There will be a negative relationship between assessment and subjective well-being.*

My goal in this research was to develop a deeper understanding of unique sources of motivation (HP for teaching or OP for teaching) and self-regulatory skills (locomotion and assessment) that contribute to achievement goal progress, perseverance, and subjective well-being of K-12 in-service teachers. This research may have practical diagnostic implications for why

some teachers fail to persevere. This research could also provide important insights on possible teaching and improvements in self-regulatory skills as a way for enhancing the likelihood of work-related goal attainment and long-term perseverance in the teaching profession. In the next chapter (Chapter III), I detail the research methods including procedures of data collection and analysis, participants, and measures used for each study.

## CHAPTER III

### METHODOLOGY

In this chapter, I describe the research methods including procedures of data collection and analysis, participants, and measures used for each study. Following an introduction of the sampling population and the procedure for data collection in both studies (Study 1 and Study 2), this section comprises two sections. Each section is devoted to one study (Study 1 and Study 2 respectively). Each section proceeds in the following manner: I first recap the research questions and the set of hypotheses examined in the study. I then describe the participants, followed by measures used. Lastly, I lay out the steps of data analysis in the study.

#### **Sampling Population**

According to the public records of the Oklahoma State Department of Education regarding K-12 public education for the school year 2017-2018, there are a total of 512 traditional public school districts and 28 charter school districts in Oklahoma (Oklahoma State Department of Education, 2017). The K-12 system consisted of 1795 schools, including 985 elementary schools, 239 middle schools, 62 junior high schools, 451 high schools, and 58 charter schools (Oklahoma State Department of Education, 2017). The largest school districts by enrollment are as follows: Oklahoma City (over 45,000 students), Tulsa (about 40,000 students), Edmond (over 20,000 students), Moore (over 20,000 students), and Putnam City (about 20,000 students) (Oklahoma State Department of Education Office of Accreditation, 2017).

For the 2016-2017 school year, a total of 41,047 teachers taught in Oklahoma K-12 classrooms (Oklahoma State Department of Education, 2017).

Funding for K-12 public education has decreased over the years as has been demonstrated by teacher strikes in Oklahoma and other states in 2018 (“Thousands of teachers, students converge on Oklahoma,” 2018). Funding for Oklahoma’s K-12 public education was behind many other states, yet limited improvements were implemented. Based upon the Rankings and Estimates Report by National Education Association, for the school year 2016-2017, the national average classroom teacher salary in the U.S. was about \$59,000. However, Oklahoma’s average teacher salary was \$45,276 in 2016, ranked 49th nationally (National Education Association Research, 2017). Between 2008 and 2015, per-student funding declined by 15.6 percent, according to the Center on Budget and Policy Priorities (2018).

Oklahoma K-12 schools are experiencing a significant teacher shortage issue. Between 2010 and 2015, there were more teachers that quit teaching than joined the profession (Oklahoma Study of Educator Supply & Demand, 2015), consistent with the trend across the U.S. Teacher turnover significantly contributes to the chronic shortages of teachers (particularly in high-poverty school districts) and limited opportunities for students with significant learning needs to access quality education (Ingersoll & Merrill, 2013). An objective of this research was to gain a deeper understanding of the unique sources of agency or motivation that contribute to the perseverance of K-12 in-service teachers, specifically, how teachers’ passion and self-regulatory modes influence teachers’ goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. As Oklahoma is facing critical issue in K-12 education with underfunded schools and teachers’ leaving at an alarming rate, this research recruits participants from Oklahoma K-12 in-service teachers.

## Procedure

After obtaining the approval from the Institutional Review Board (IRB) (Appendix B), potential participants for both studies (Study 1 and Study 2) were identified through a public listserv in the Excel format published by the Oklahoma State Department of Education. This public listserv contains the official email addresses of approximately 44,090 K-12 in-service teachers. For each of the two studies (Study 1, Study 2), a general goal for participant recruitment was to ensure a relatively independent, random sample of K-12 in-service teachers. I first randomized all of the email addresses of teachers in the listserv. To do this, I first used the random number generator command in Excel to assign a random number to each entry of teachers. Next, I performed the randomization once again to ensure all entries on the listserv were as randomized as possible. I then divided all randomized entries into 4 approximately equal-size sampling population groups. As a result, each group contains about 11,000 entries. For a clear recording purpose, Study 1 participants were recruited from Group #1 (sampling population size is 11,212 teachers), and Study 2 participants were recruited from Group #2 (sampling population size is 11,215 teachers). The benefit of conducting the process of randomization and grouping of sampling population is twofold: (a) to ensure that the resulting sample for one study is as independent as possible from that of the other study; (b) to ensure that each sampling population from which participants were drawn was as representative as possible across a variety of characteristics (such as school setting, school district, school level). In order to generate meaningful, generalizable results from this dissertation research, it is crucial to ensure a fairly rigorous sampling/recruiting procedure.

This dissertation research (Study 1 and Study 2) adopts a cross-sectional design. For each study, I created an online questionnaire via a secure online survey system Qualtrics (Boas et al., 2020). Each questionnaire includes measures for constructs of interest, corresponding to each study. See Appendix A for a list of all measures included in this research (Study 1 and Study 2).

Besides, each questionnaire contains a section of demographic variables such as age group, gender, and experience. Additionally, to prevent participants' random marking on the online questionnaires, I included two integrity check questions in each survey. One integrity check question asks the participant to identify a picture of a cat out of a total of four pictures; the other asks the participant to solve a mathematical question. Further, I randomized the order of the measures in each survey to reduce potential order effect (Krosnick & Alwin, 1987).

For a clear recording purpose, Survey #1 contains the measures for Study 1, and was distributed to Group #1. Similarly, Survey #2 contains the measures for Study 2, and was distributed to Group #2. Using the Qualtrics system, I sent a recruitment email which contains a link to the corresponding online questionnaire to Group #1 and Group #2 simultaneously. Note that Group #1 recipients received a link to Survey #1, while Group #2 recipients received a link to Survey #2. The length of each questionnaire/survey is approximately the same.

To enhance the response rate for this research, after completing the online questionnaire, if a participant also correctly answered the two integrity questions, the participant would be re-directed to another separate online form to voluntarily provide his or her contact info to enter into gift-card drawing. Qualifying participants had the chance to win an electronic gift card (Walmart or Amazon electronic gift card) ranging from \$30 - \$15. This online form was not linked to any of the participant's responses to the research questionnaire. Note that all data collected from each research questionnaire (Survey #1, Survey #2) were anonymous. The surveys did not contain any coding for any identifiers (e.g., names, social security numbers, driver's license numbers, etc.). All recipients of the research invitation email were presented with an information sheet that thoroughly details the research protocols, so that they could decide at freedom whether to give their consent and participate in the research study, or choose not to participate. Participation was completely voluntary. For each study, two follow-up reminder emails were sent within a two-week period of the initial invitation email. Through the built-in function of Qualtrics, the



reminders were sent to those unfinished respondents (including those who did not start responding to the online questionnaire).

In the pages that follow, this chapter consists of two sections; each section pertains to one study (Study 1 and Study 2 respectively). Each section comprises a recap the research questions and the set of hypotheses examined in the study, the participants, measures used, and steps of data analysis in the study.

### **Study 1**

Study 1 focused on the following questions:

- RQ1.** What is the role of harmonious passion for teaching (HP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?
- RQ2.** What is the role of obsessive passion for teaching (OP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

To address RQ1 and RQ2, I developed and examined a set of hypotheses concerning the interrelationships among passion for teaching (HP for teaching, OP for teaching), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. The hypotheses are as follows:

***Hypothesis 1a:** There will be a positive relationship between harmonious passion for teaching and achievement goal progress.*

***Hypothesis 1b:** There will be a negative relationship between obsessive passion for teaching and achievement goal progress.*

***Hypothesis 1c:** There will be a positive relationship between achievement goal progress and grit.*

***Hypothesis 1d:** There will be a negative relationship between obsessive passion for teaching and grit.*

***Hypothesis 1e:** There will be a positive relationship between harmonious passion for teaching and subjective well-being.*

***Hypothesis 1f:** There will be a positive relationship between grit and subjective well-being.*

## **Participants**

Study 1 participants were recruited from Group #1 (sampling population size is 11,212 teachers). Qualtrics platform indicated that 582 teachers clicked on or opened the online questionnaire (Survey #1). Of these, 536 teachers at least provided one response. So the response rate is 4.78% with respect to the population size.

There were a total of 448 completed responses. Regarding the incomplete responses, I made a decision to retain those responses completing at least 85% of the survey questions. As a result, I included 3 more such responses. Afterwards, out of these 451 responses, I identified 3 responses that did not pass any of the two integrity check questions in the questionnaire. I then removed those 3 responses to ensure the quality of collected data. Therefore, the final sample size for Study 1 was 448 (N = 448). Table 3.1.1 provides key demographic information of the participants.

Table 3.1.1

*Descriptive Statistics of Study 1 Participant Demographics*

N = 448		
Variable	Frequency (n)	Percent (%)
<b>Age Group</b>		
21-25	36	8.0%
26-30	46	10.3%
31-35	45	10.0%
36-40	62	13.8%
41-45	53	11.8%
46-50	66	14.7%
51-55	56	12.5%
56-60	48	10.7%
Over 60 years old	36	8.0%
<b>Gender</b>		
Male	76	17.0%
Female	369	82.4%
Non-binary	3	0.7%
<b>Ethnicity</b>		
White/Caucasian	357	79.7%
Black/African American	10	2.2%
Hispanic/Latino origin	17	3.8%
Native American/Alaska Native	36	8.0%
Asian/Asian American	5	1.1%
Two or more ethnicities	16	3.6%
Other	1	0.2%
Not Disclosed	5	1.1%
Missing	1	0.2%
<b>Highest education level</b>		
Bachelor's degree	257	57.4%
Master's degree	174	38.8%
Doctorate	5	1.1%
Other	12	2.7%
<b>Years of classroom teaching experience</b>		
< 1 year	23	5.1%
1-5 years	113	25.2%
6-10 years	94	21.0%
11-15 years	66	14.7%
16-20 years	43	9.6%
21-25 years	38	8.5%
26-30 years	38	8.5%
	59	

## Measures

In Study 1, participants completed a questionnaire containing demographic questions, and measures of harmonious and obsessive passions for teaching (HP for teaching, OP for teaching), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. See Appendix A for a complete list of measures in this study.

**Passion for teaching.** The Passion Scale is a multi-dimensional measurement based on the dualistic model (harmonious passion and obsessive passion) of passion (Vallerand et al., 2003). The Passion Scale aims to measure an individual's harmonious passion (HP) and obsessive passion (OP) with respect to a specific activity, work domain, or pursuit of interest. The Passion Scale is a 16-item instrument assessing the two types of passion (HP and OP) in a specific domain of interest. This instrument can be adapted in a very straightforward manner to specifically measure passion in a given domain or activity of interest, based on a researcher's needs or research questions (Vallerand, 2015). For example, a sample item from the original Passion Scale is "This activity is in harmony with the other activities in my life". If a researcher examines a specific activity or pursuit, then this sample item can be adapted accordingly: "\_\_\_\_\_ (name of the specific activity or work domain) is in harmony with the other activities in my life."

In this study, I specifically used the Passion for Teaching Scale (Carbonneau et al., 2008) as I focused on teachers' passion for teaching. The Passion for Teaching Scale is composed of two parts. The first part measures the degree to which an individual is passionate about teaching. In particular, a participant will be asked to report the degree to which she or he considers teaching as a valuable pursuit, invest time into this endeavor, likes the job as a teacher, and views teaching as a passion. This part consists of 4 items. A sample item for an overall assessment of one's

perceived level of passion for teaching is “I spend a lot of time doing my job as a teacher.” The second part of the scale consist of two 6-item subscales to measure the harmonious passion for teaching (HP for teaching) and obsessive passion for teaching (OP for teaching) respectively. A sample item for the HP for teaching subscale is “My job as a teacher reflects the qualities I like about myself.” And a sample item for OP for teaching is “I have the impression that my job as a teacher controls me.” Responses to all of the items are to be measured on a 7-point Likert type scale ranging from 1 (do not agree at all) to 7 (very strongly agree).

Extant research has provided ample support for the validity and the reliability of the Passion Scale including the adapted Passion Scale across different work contexts (Vallerand et al., 2006). As indicated in the original study of scale development, Vallerand and his colleagues reported high levels of reliability reflecting the homogeneity of the items for both the HP and OP subscales (Vallerand et al., 2003). With a sample size of over 500 participants (N = 520) The Cronbach alpha for the HP subscale was 0.79; and the Cronbach alpha for the OP subscale was 0.89 (Vallerand et al., 2003). To date, researchers have conducted over 100 studies incorporating the Passion Scale (e.g., Carbonneau et al., 2008; Mageau et al., 2005; Ratelle et al., 2004; Seguin-Levesque et al., 2003; Vallerand et al., 2007; Vallerand et al., 2008). Vallerand (2015) suggests that the Cronbach alpha values (ranging from 0.71 to 0.92) for these two subscales (HP and OP) are consistently adequate for all of these studies published (e.g., e.g., Carbonneau et al., 2008; Mageau et al., 2005; Ratelle et al., 2004; Seguin-Levesque et al., 2003; Vallerand et al., 2007; Vallerand et al., 2008). The Passion Scale has also exhibited satisfactory internal consistency (Cronbach alpha values ranging from 0.70 to 0.89 for HP and OP subscales) in laboratory studies (e.g., Bélanger et al., 2013) as well as in field studies. The Passion Scale has demonstrated satisfactory temporal stability degrees of temporal stability. For the Passion for Teaching Scale (directly derived from the original Passion Scale) Cronbach’s alpha values for harmonious passion for teaching (HP for teaching) subscale remained the same (Cronbach’s alpha = 0.87)

over a 3-month period; the Cronbach's alpha values for obsessive passion for teaching subscale (OP for teaching) were 0.76 at the beginning of the 3-month period, and 0.80 at the end.

I ran reliability analysis on these dimensions of the Passion for Teaching Scale (Carbonneau et al., 2008). Internal consistency indices for this study were adequate ( $\alpha = .841$ ,  $.711$ , and  $.765$  for the HP for teaching, OP for teaching, and passion criteria subscales, respectively).

Additionally, I performed a factor analysis using principal components factoring with varimax rotation. I retained each factor with an eigenvalue greater than one. I also examined a scree plot which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was  $.899$ , close to  $1.0$ . Bartlett's test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor analysis indicated a 3-factor structure. The vast majority of the items loaded in a way as expected from the original Passion for Teaching Scale, based on a factor loading criteria of  $.30$ . I noticed that one item from the Passion Criteria subscale ("I like my job as a teacher") loaded on the factor with items from the harmonious passion for teaching (HP for teaching) subscale. The three factors explained  $57.363\%$  of the total variance. Loadings of the items on these factors mostly exceeded  $.5$ .

**Achievement goal progress.** To estimate goal progress, the ideal approach is to ask the participants to list a couple of (usually three) most important goals that they have set and plan to achieve in a period of time (e.g., in the next 6 to 12 months). After that period of time, the researcher asks the participants to report their progress on the goals that they provided earlier. In short, collecting participants' responses through a longitudinal design is a more accurate way for assessing participants' goal progress. However, in this study, I used a cross-sectional survey approach, and collected data at one point in time. This design was mainly based on the

consideration of time constraints and potential high attrition rate of longitudinal design. This study was exploratory in that most of the interrelationships that I hypothesized to exist among variables of interest had not been examined on the population of teachers, although there was support for the hypotheses given empirical evidence in other work contexts. It was adequate to use a cross-sectional design to address the research questions. For this study, it was important to utilize a measure of achievement goal progress proper for the cross-sectional design.

I used a subscale from the personal goal progress measure originally developed by Brunstein et al. (1998) to assess the achievement progress of teachers. The original personal goal progress measure (Brunstein et al., 1998) assesses the progress individuals made towards their personal goals which they pursued lately and intend to pursue in the near future. Through the direction provided for the measure, participants are first informed that “personal goals refer to the objectives, plans, and projects that you have pursued lately (about 3 to 6 months) and that you intend to work on in the near future” (Brunstein et al., 1998). Next, a participant is asked to report one goal for each of the three domains of personal goals. In total, each participant is expected to provide a list of three personal goals (one per each domain). The three domains correspond to the three areas of personal striving: (a) achievement goal, defined as a goal “striving for achievement experiences,” which in the current study pertains to a teacher’s work-related goals; (b) relationship goal, defined as a goal “striving for affiliation, friendly social contacts, intimacy, or interpersonal closeness”; this domain emphasizes those goals for establishing positive social or personal relationships; and (c) independence goal, defined as a goal “striving for independence, social influence, and self-reliance”; this domain related to those goals on achieving independence and influence (Brunstein et al., 1998).

Interestingly, these three domains are consistent with the three psychological needs of the Self-Determination Theory: competence, relatedness, and autonomy (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017). Each of the domain is illustrated by an example goal, so that participants are

clear about listing one goal under a specific domain relatively accurately (Brunstein et al., 1998; Schultheiss et al., 2008). For example, an example for a domain (b) goal (i.e., independence goal) is: “I try to devote myself to my sick mother, who is in desperate need” (Brunstein et al., 1998).

After participants provide one goal under each domain, participants are expected to rate the progress they made on each goal according to a 4-item scale (a sample item is “I have quite a lot of success in pursuing this goal”). Responses are scored on a 5-point Likert type scale where 1 = strongly disagree to 5 = strongly agree. The Cronbach alpha values for the goal progress ranged from 0.77 to 0.89 (Brunstein et al., 1998; Schultheiss et al., 2008).

As stated, this study only used the domain (a) goal progress (achievement goal progress) as I focused on teachers’ work-related pursuits. An example of a domain (a) goal (an achievement goal) is “I am very engaged in enhancing my delivery of course content. I am learning to use more tech tools, and would like to actually implement some new ways of teaching soon.” I ran reliability analysis on the achievement goal progress subscale. The reliability coefficient obtained in this study for this subscale is adequate ( $\alpha = .811$ ).

I performed a factor analysis using principal components factoring with direct oblimin rotation. I retained one factor with its eigenvalue greater than one. I also examined a scree plot which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was .779, higher than .6. Bartlett’s test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor analysis suggested all four items loaded on one single factor. This one single factor explained 64.663% of the total variance.

**Grit.** I used the Short Grit Scale (Grit-S; Duckworth & Quinn, 2009) in this study to measure teachers’ perseverance. It is a well-established 8-item instrument consisting of a 4-item subscale measuring “consistency of interests” and another 4-item subscale assessing



“perseverance of effort.” A sample item for the “consistency of interests” dimension is: “New ideas and projects sometimes distract me from previous ones”. A sample item for the “perseverance of effort” dimension is: “I finish whatever I begin.” Responses are rated on a 5-point Likert scale ranging from 1 (not like me at all) to 5 (very much like me) on the extent to which each item is representative of one’s attitudes and behaviors. Extant research has offered ample evidence to support the internal consistency, test-retest stability, consensual validity, and predictive validity for the Short Grit Scale (Duckworth & Quinn, 2009; Duckworth et al. 2010; Eskreis-Winkler et al., 2014; Reed et al., 2013). This scale has previously demonstrated high internal consistency (as measured through Cronbach’s alpha) ranging between 0.77 and 0.84 across 6 studies, and high temporal stability over a 1-year period (Cronbach’s alpha values were 0.82 and 0.84 respectively at the beginning and at the end of the 1-year period) (Duckworth & Quinn, 2009). Also, compared to the original 12-item Grit scale (Duckworth et al., 2007), the Short Grit Scale (Duckworth & Quinn, 2009) has exhibited comparable, satisfactory psychometric properties with fewer items (Duckworth & Quinn, 2009; Duckworth et al. 2010). Therefore, it is appropriate to use the Short Grit Scale (Grit-S; Duckworth & Quinn, 2009) for this study.

I ran reliability analysis on this scale. The reliability coefficient obtained in this study for the Short Grit Scale is acceptable ( $\alpha = .748$ ), but not strong. By examining the item-total correlation for each item contained in this scale, I found that Item #2 of the scale was particularly problematic, with a corrected item-total correlation value of .118, which was much lower than the .4 threshold for items to be internally consistent (Kline, 2000).

This item is “Setbacks don’t discourage me.” I made a decision to remove this item (Item #2) from the Grit-S in this study. The revised scale contained 7 items in total, with an adequate reliability coefficient ( $\alpha = .786$ ).

I conducted a factor analysis for the remaining seven items using principal components factoring with varimax rotation. I retained each factor with an eigenvalue greater than one. I also examined a scree plot which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was .808, much higher than .6. Bartlett's test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor analysis indicated a 2-factor structure. The vast majority of the items loaded in a way as expected from the original Short Grit Scale (Grit-S), based on a factor loading criteria of .30. The two factors explained 63.866% of the total variance. Loadings of the most items on these factors were above .70.

**Subjective well-being.** I used the established and widely used Satisfaction With Life Scale (SWLS; Diener et al., 1985), a 5-item scale developed to measure global life satisfaction. Sample items include "In most ways my life is close to my ideal," and "If I could live my life over, I would change almost nothing." Participants were asked to rate their perceived levels of agreement to the items on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Extensive support exists for the validity and reliability measures of the SWLS (Erdogan et al., 2012). SWLS has previously shown high internal consistency (e.g., Pavot et al., 1991; Yardley & Rice, 1991). Diener et al. (1985) reported Cronbach's alpha value of 0.87, and test-retest reliability coefficients of over 0.82 for a 2-month period. In this study, I ran reliability analysis on the SWLS. The measure produced a strong Cronbach's alpha score ( $\alpha = .892$ ).

I performed a factor analysis using principal components factoring with direct oblimin rotation. I retained one factor with its eigenvalue greater than one. I also examined a scree plot, which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was .881, close to 1.0. Bartlett's test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor

analysis suggested all five items loaded on one single factor. This one single factor explained 71.5% of the total variance.

### **Steps of Data Analysis**

Scale scores were calculated for variables in this study (including HP for teaching, OP for teaching, achievement goal progress, grit, and subjective well-being) through computing the mean score of all associated items for each scale. For testing all of the hypothesized relationships as shown in the conceptual model (See Figure 2.1.1), I conducted path analyses by running multiple linear regression models.

In the present study, I did not include any control variables based on the following reasons. First, no control variables were incorporated in extant research on how teachers' passion for teaching (HP for teaching, OP for teaching) influences relevant outcomes (such as teachers' burnout symptoms, job satisfaction, perceived student classroom behaviors, and positive affect) (e.g., Carbonneau et al., 2008; Moe, 2016). Second, researchers previously showed that a range of variables including teachers' age, gender, and years of teaching experience were unrelated to the level of passion (e.g., Carbonneau et al., 2008; Moe, 2016). Third, in studies across different populations and life situations, when passion (HP, OP) was examined as a predictor variable, these variables (such as age, gender, and years of experience) had no effects on various outcome variables (such as goal attainment, well-being, positive affect, subjective vitality) (e.g., Philippe et al., 2009; Schellenberg et al., 2013; Vallerand et al., 2008). Therefore, there was no clear evidence to treat any specific variable as a confounding factor in the present study.

Following VanVoorhis and Morgan's (2007) suggestion, a desirable sample size for regression analysis is  $50 +$  (at least 30 per independent variable) for achieving adequate power. So a sample size of at least 110 was desirable for this study. Thus, the present study ( $N = 448$ ) met this sample size expectation.

Before conducting regression analysis, I conducted a multicollinearity test to evaluate the degree of correlation among study variables (Mason et al., 1989; Kennedy, 1992). I also carried out a common method bias test, since all data was self-reported, collected through a survey questionnaire (Podsakoff et al., 2003). Further, I conducted a series of tests on key assumptions of linear regression analysis.

I then ran three multiple regression analyses using Statistical Package for Social Sciences (SPSS) 20.0. Results are in Chapter IV.

## **Study 2**

Study 2 focused on the following questions:

**RQ3.** What is the role of locomotion in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

**RQ4.** What is the role of assessment in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

To address **RQ3** and **RQ4**, I developed and tested a set of hypotheses concerning the interrelationships among self-regulatory mode (locomotion, assessment), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. The hypotheses are as follows:

***Hypothesis 2a:** There will be a positive relationship between locomotion and achievement goal progress.*

***Hypothesis 2b:** The relationship between locomotion and achievement goal progress will be moderated by assessment such that the effects of locomotion are stronger when assessment is high.*

***Hypothesis 2c:** There will be a positive relationship between achievement goal progress and grit.*

***Hypothesis 2d:** There will be a positive relationship between locomotion and subjective well-being.*

***Hypothesis 2e:** There will be a positive relationship between grit and subjective well-being.*

***Hypothesis 2f:** There will be a negative relationship between assessment and subjective well-being.*

## **Participants**

Study 2 participants were recruited from Group #2 (sampling population size is 11, 215 teachers). Qualtrics platform indicated that 302 teachers clicked on or opened the online questionnaire (Survey #2). Of these, 261 teachers at least provided one response. So the response rate is 2.33% with respect to the population size.

There were 224 completed responses. Regarding the incomplete responses, I made a decision to retain those responses completing at least 85% of the survey questions. However, none of the incomplete responses met this criterion in order to be included. Afterwards, out of the 224 completed responses, I identified one response that did not pass an integrity check in the questionnaire. I then removed that response to ensure the quality of collected data. Therefore, the final sample size for Study 2 was 223 (N = 223). Table 3.2.1 provides key demographic information of the participants.

Table 3.2.1

*Descriptive Statistics of Study 2 Participant Demographics*

N = 223		
Variable	Frequency (n)	Percent (%)
<b>Age Group</b>		
21-25	28	12.6%
26-30	31	13.9%
31-35	30	13.5%
36-40	34	15.2%
41-45	22	9.9%
46-50	18	8.1%
51-55	33	14.8%
56-60	13	5.8%
Over 60 years old	14	6.3%
<b>Gender</b>		
Male	31	13.9%
Female	191	85.7%
Not Disclosed	1	0.4%
<b>Ethnicity</b>		
White/Caucasian	173	77.6%
Black/African American	10	4.5%
Hispanic/Latino origin	5	2.2%
Native American/Alaska Native	14	6.3%
Asian/Asian American	5	2.2%
Native Hawaiian/Other Pacific Islander	1	0.4%
Two or more ethnicities	11	4.9%
Other	1	0.4%
Not Disclosed	3	1.3%
<b>Highest education level</b>		
Associate's degree	1	0.4%
Bachelor's degree	129	57.8%
Master's degree	82	36.8%
Doctorate	6	2.7%
Other	5	2.2%
<b>Years of classroom teaching experience</b>		
< 1 year	20	9.0%
1-5 years	63	28.3%
6-10 years	49	22.0%
11-15 years	30	13.5%
16-20 years	23	10.3%
	70	

21-25 years	11	4.9%
26-30 years	13	5.8%
> 30 years	14	6.3%

## Measures

In Study 2, participants completed a questionnaire containing demographic questions, and measures of self-regulatory modes (locomotion and assessment), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. See Appendix A for a complete list of measures in this study.

**Locomotion and assessment.** Locomotion and assessment are both distinct self-regulatory mechanisms defined by Kruglanski et al. (2000). Locomotion represents the “action” mode of self-regulation, involving cognitive and behavioral orientations to initiate goal-directed actions in a direct and swift manner. Assessment represents the “evaluative” mode of self-regulation, involving cognitive and behavioral orientations or processes to involve in critical, deliberate evaluations (Kruglanski et al., 2000). Kruglanski et al. (2000) developed an instrument to measure an individual’s locomotion and assessment levels. This instrument, called “the Locomotion and Assessment Scales,” consists of a 12-item scale for locomotion and another 12-item scale for assessment. So far, researchers have reported either no correlation or modest correlation between these two scales (Kruglanski et al., 2000; Pierro et al., 2008, 2012). Items are rated on a 6-point Likert type scale ranging from 1 = strongly disagree to 6 = strongly agree. A sample item for locomotion is: “When I decide to do something, I can’t wait to get started”; a sample item for assessment is: “I spend a great deal of time taking inventory of my positive and negative characteristics” (Kruglanski et al., 2000). Ample empirical support exists for the bifactor structure, validity, reliability, and temporal stability of the Locomotion and Assessment Scales (Bélanger et al., 2015; Kruglanski et al., 2000; Lucidi et al., 2015). As specified by Kruglanski et al. (2000), Cronbach’s alpha values for the locomotion scale ranged from 0.78 to

0.85, based on the studies conducted on 13 different samples; the Cronbach's alpha values for the assessment scale ranged from 0.57 to 0.80. (Kruglanski et al., 2000). Collapsing across these 13 samples, the overall Cronbach's alpha value for locomotion was 0.82; and the overall Cronbach's alpha value for assessment was 0.78 (Kruglanski et al., 2000).

I ran reliability analysis on the locomotion scale. Internal consistency coefficient for the locomotion scale was adequate for this study ( $\alpha = .824$ ). I also ran reliability analysis on the assessment scale, which yielded an internal consistency coefficient of .717 ( $\alpha = .717$ ). Through examining the item-total correlation for each item contained in the assessment scale, I found that Item #5 ("I don't spend much time thinking about ways others could improve themselves") and #11 ("I rarely analyze the conversations I have had with others after they occur") of the scale were particularly problematic, each with a corrected item-total correlation value lower than the .4 threshold for items to be internally consistent. Both items were reverse coded. I made a decision to remove these items from the assessment scale in this study. The revised assessment scale contained 10 items in total, with an adequate reliability coefficient ( $\alpha = .738$ ).

Also, I performed a factor analysis using principal components factoring with varimax rotation. I retained each factor with an eigenvalue greater than one. I also examined a scree plot which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was .811, much higher than .6. Bartlett's test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor analysis indicated a 2-factor structure. The majority of the items loaded in a way as expected from the original locomotion and assessment scales, based on a factor loading criteria of .30. The two factors explained 35.735% of the total variance. Loadings of the items on these factors mostly exceeded .5.



**Achievement goal progress.** I used a subscale from the personal goal progress measure originally developed by Brunstein et al. (1998) to assess the achievement progress of teachers. Through the direction provided for the measure, participants were first informed that “personal goals refer to the objectives, plans, and projects that you have pursued lately (about 3 to 6 months) and that you intend to work on in the near future.” Next, each participant was asked to report one goal for the domain (a): achievement goal, defined as a goal “striving for achievement experiences,” which in the present study pertains to a teacher’s work-related goals. An example of a domain (a) goal (an achievement goal) is “I am very engaged in enhancing my delivery of course content. I am learning to use more tech tools, and would like to actually implement some new ways of teaching soon.” Then, participants were expected to rate the progress they made on their achievement goal according to a 4-item scale (a sample item is “I have quite a lot of success in pursuing this goal”). Responses were scored on a 5-point Likert type scale ranging from 1 = strongly disagree to 5 = strongly agree. The Cronbach alpha values for the original goal progress scale ranged from 0.77 to 0.89 (Brunstein et al., 1998; Schultheiss et al., 2008).

I ran reliability analysis on the achievement goal progress subscale. The reliability coefficient obtained in this study for this subscale is adequate ( $\alpha = .780$ ). In addition, I performed a factor analysis using principal components factoring with direct oblimin rotation. I retained one factor with its eigenvalue greater than one. I also examined a scree plot which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was .661, higher than .6. Bartlett’s test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor analysis suggested all four items loaded on one single factor. This one single factor explained 54.828% of the total variance.

**Grit.** I used the Short Grit Scale (Grit-S; Duckworth & Quinn, 2009) in this study to measure teachers’ perseverance. It is a well-established 8-item instrument consisting of a 4-item

subscale measuring “consistency of interests” and another 4-item subscale assessing “perseverance of effort.” A sample item for the “consistency of interests” dimension is: “New ideas and projects sometimes distract me from previous ones.” A sample item for the “perseverance of effort” dimension is: “I finish whatever I begin.” Responses are rated on a 5-point Likert scale (1 = not like me at all; 5 = very much like me) on the extent to which each item is representative of one’s attitudes and behaviors. This scale has previously demonstrated high internal consistency (as measured through Cronbach’s alpha) ranging between 0.77 and 0.84 across 6 studies, and high temporal stability over a 1-year period (Cronbach’s alpha values were 0.82 and 0.84 respectively at the beginning and at the end of the 1-year period) (Duckworth & Quinn, 2009). Also, compared to the original 12-item Grit scale (Duckworth et al., 2007), the Short Grit Scale (Duckworth & Quinn, 2009) has exhibited comparable, satisfactory psychometric properties with fewer items (Duckworth & Quinn, 2009; Duckworth et al. 2010). Therefore, it is appropriate to use the Short Grit Scale (Grit-S; Duckworth & Quinn, 2009) for this study.

I ran reliability analysis on this scale. The reliability coefficient obtained in this study for the Short Grit Scale is adequate ( $\alpha = .813$ ). However, after examining the item-total correlation for each item contained in this scale, I found that Item #2 of the scale was particularly problematic, with a corrected item-total correlation value of .282, which was lower than the .4 threshold for items to be internally consistent (Kline, 2000).

This item is “Setbacks don’t discourage me.” I made a decision to remove this item (Item #2) from the Grit-S in this study. The revised scale contained 7 items in total, with an improved reliability coefficient ( $\alpha = .828$ ).

I conducted a factor analysis for the remaining seven items using principal components factoring with varimax rotation. I retained each factor with an eigenvalue greater than one. I also

examined a scree plot which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was .799, much higher than .6. Bartlett's test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor analysis indicated a 2-factor structure. The vast majority of the items loaded in a way as expected from the original Short Grit Scale (Grit-S), based on a factor loading criteria of .30. The two factors explained 68.826% of the total variance. Loadings of the most items on these factors were above .70.

**Subjective well-being.** I used the established and widely used Satisfaction With Life Scale (SWLS; Diener et al., 1985), a 5-item scale developed to measure subjective well-being. A sample item is "If I could live my life over, I would change almost nothing" (Diener et al., 1985). Participants were asked to rate their perceived levels of agreement to the items on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Extensive support exists for the validity and reliability measures of the SWLS (Erdogan et al., 2012). SWLS has previously shown high internal consistency (e.g., Pavot et al., 1991; Yardley & Rice, 1991). Diener et al. (1985) reported Cronbach's alpha value of 0.87, and test-retest reliability coefficients of over 0.82 for a 2-month period. In this study, I ran reliability analysis on the SWLS. The measure produced a strong Cronbach's alpha score ( $\alpha = .879$ ).

I performed a factor analysis using principal components factoring with direct oblimin rotation. I retained one factor with its eigenvalue greater than one. I also examined a scree plot which showed the eigenvalue against the factor number. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was .871, much higher than .6. Bartlett's test of sphericity yielded  $p < .001$ . These values demonstrated the adequacy of this factor analysis. The result of the factor analysis suggested all five items loaded on one single factor. This one single factor explained 68.882% of the total variance.

## Steps of Data Analysis

I calculated scale scores for variables in this study (including locomotion, assessment, achievement goal progress, grit, and subjective well-being) through computing the mean score of all associated items for each scale. I used Statistical Package for Social Sciences (SPSS) 20.0 for testing hypotheses by regression analyses.

In the present study, I did not include any control variables based on the following reasons. First, locomotion and assessment have not yet been explored on teacher populations. However, in studies across other populations, no control variables were incorporated on how self-regulatory modes (locomotion, assessment) influences relevant outcomes (negative affect, subjective well-being, goal choice, task enjoyment, work performance) (e.g., Hong, et al., 2004; Kruglanski et al., 2000; Lee, 2012; Pierro et al., 2012). Second, researchers previously showed that a range of variables including individuals' age and gender were mostly unrelated or only minimally related to self-regulatory mode (e.g., Kruglanski et al., 2000). Kruglanski et al. (2000) reported correlation coefficients between age and self-regulatory mode (locomotion or assessment) ranged from  $-.10$  to  $.14$  across different samples; and the correlation coefficients between gender and self-regulator mode (locomotion or assessment) ranged from  $.05$  to  $.14$  across different samples. Therefore, there was no clear evidence to treat any specific variable as a confounding factor in the present study.

Following VanVoorhis and Morgan's (2007) suggestion, a desirable sample size for regression analysis is  $50 +$  (at least 30 per independent variable) for achieving adequate power. So a sample size of at least 140 was desirable for this study. Thus, the present study ( $N = 223$ ) met this sample size expectation.

Before conducting regression analysis, I conducted a multicollinearity test to evaluate the degree of correlation among study variables (Mason et al., 1989; Kennedy, 1992). I also carried

out a common method bias test, since all data was self-reported, collected through a survey questionnaire (Podsakoff et al., 2003). Further, I conducted a series of tests on key assumptions of linear regression analysis.

To test the hypothesized moderating effect of assessment on the relationship between locomotion and achievement goal progress (See Figure 2.2.1), I created an interaction term (locomotion  $\times$  assessment, or the product of locomotion and assessment) and conducted a two-step hierarchical linear regression with locomotion entered in the first step and the interaction term entered in the second step.

Given the significant interaction between locomotion and assessment (See Chapter IV for the results), different assessment levels might potentially relate to other relevant variables in the proposed conceptual model differently. Therefore, I split the data based on assessment levels after analyzing the distribution of assessment across the entire sample. Eventually, data were split into two groups by assessment levels. Specifically, the low assessment group (assessment value  $< 4$ ) had 106 observations in total; the high assessment group (assessment value  $\geq 4$ ) contained 117 observations.

Then, for testing the hypothesized relationships as shown in the conceptual model (See Figure 2.2.2), I conducted path analyses by running multiple linear regression models for each group of data (by assessment level). Results are in Chapter IV.

## CHAPTER IV

### RESULTS

In this chapter, I describe the results from data analysis in Study 1 and Study 2 respectively. There are two sections in this chapter; each section describes the results from one study. Each section proceeds as follows: I first recap the research questions of the study. Next, I detail the results from conducting multicollinearity test and common method bias test. Then, I provide descriptive statistics and zero-order bivariate correlations of the study variables. Lastly, I detail the results of hypotheses testing using regression analysis, including the results from testing important assumptions for regression models. I present all of the path analyses results graphically through one or more figures.

#### **Study 1**

In Study 1, I addressed the following research questions:

**RQ1.** What is the role of harmonious passion for teaching (HP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

**RQ2.** What is the role of obsessive passion for teaching (OP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

### Multicollinearity Test

I tested for multicollinearity among the variables, harmonious passion for teaching, obsessive passion for teaching, achievement goal progress, and grit, by using the Variance Inflation Factor in SPSS. The Variance Inflation Factor (VIF) captures the degree of multicollinearity among the variables in a linear regression. A VIF value of 10 or higher generally indicates a problematic level of multicollinearity in a regression model (Mason et al., 1989; Kennedy, 1992). See Table 4.1.1 for the results of the multicollinearity test. All of the VIF values were less than 2, indicating multicollinearity was not a problem.

Table 4.1.1

*Variance Inflation Factor Multicollinearity Test*

Variables	1		2		3		4	
	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>
1. Harmonious Passion	--	--	.989	1.011	.946	1.057	.948	1.055
2. Obsessive Passion	.900	1.112	--	--	.902	1.109	.921	1.086
3. Achievement Goal Progress	.910	1.099	.954	1.049	--	--	.935	1.069
4. Grit	.887	1.127	.948	1.055	.910	1.099	--	--

### Common Method Bias Test

Data for the study was self-reported, collected through a survey questionnaire. Consequently, the data was likely to be subject to common method variance (i.e., common

method bias), which might be a potential concern. Common method variance is defined as the variance arising from the measurement method instead of the theoretical constructs represented by the measures (Podsakoff, MacKenzie, & Podsakoff, 2012; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The presence of common method variance introduces bias in the estimates of the relationships among constructs of interest, often leading to artificial inflation of the true correlations among the observable variables in a study (Podsakoff et al., 2012). I used the Harman’s Single-Factor Test in SPSS to examine common method variance. Results from the test revealed 6 distinct factors with Eigen values greater than 1.0, rather than a single factor. Also, only about 23% of the total variance was explained by the first largest factor, indicating common method bias was not a problem for this data set.

### **Descriptive Statistics and Intercorrelations of the Study Variables**

Descriptive statistics and internal consistency coefficients of the study variables are shown in Table 4.1.2.

Table 4.1.2

*Descriptive Statistics for the Study Variables*

	<i># of items</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>α</i>
Harmonious Passion	6	5.0182	1.08075	1-7	.841
Obsessive Passion	6	3.3255	1.10897	1-7	.711
Achievement Goal Progress	4	4.0989	.75560	1-5	.811
Grit	7	3.8240	.59965	1-5	.786
Subjective Well-being	5	5.0638	1.30911	1-7	.892



Table 4.1.3 presents the zero-order bivariate correlations among the variables.

Table 4.1.3

*Inter-correlations of the Study Variables*

	N	1	2	3	4
1. Harmonious Passion	448	--			
2. Obsessive Passion	448	.198**	--		
3. Achievement Goal Progress	392	.266**	-.088	--	
4. Grit	448	.201**	-.053	.221**	--
5. Subjective Well-being	448	.514**	.054	.186**	.200**

*Note.*

\*\*p < .01; Correlation is significant at the 0.01 level.

\*p < .05; Correlation is significant at the 0.05 level.

The level of passion, a variable measured by the Passion Criteria subscale of the Passion for Teaching Scale (Carbonneau et al., 2008), is not among the key variables in this study. However, this variable offers meaningful information about the passion levels of the teachers who participated in this study. According to Carbonneau et al. (2008), a value of 4 and above (on a 1 to 7 scoring scale) for the Passion Criteria subscale is classified as passionate. In this study, across the 448 participants,  $M = 5.8951$ , standard deviation  $s = .85735$ . Also, overall, 97.8% of the teachers in this study were passionate about teaching (with a Passion Criteria score of at least 4).

### **Hypotheses Testing Using Regression Analysis**

In order to test all of the hypothesized relationships in the proposed conceptual model, path analyses were performed by running three separate multiple linear regression models.

**Assumptions testing.** Before conducting each multiple linear regression model, key assumptions of linear regression were tested.

**Testing linearity.** The linearity assumption was tested with scatter plots of the standardized predicted value of each dependent variable on relevant predictor variable(s) against the standardized residuals. Then, a non-linear best fit line known as the Loess Curve was fitted through each scatterplot to detect any nonlinearity. Based on the scatter plots as well as the fitted Loess Curves, for each regression model, the relationship of the standardized predicted value of the dependent variable against the standardized residuals was roughly linear around zero. Thus, the assumption of linearity was met for each regression model. The scatter plots are presented in Appendix C.

**Testing normality of residuals.** To test the assumption that the residuals were normally distributed, a Normal probability plot (more specifically a P-P plot) was generated for each regression model. The P-P plots (as shown in Appendix D), for the majority of the regression models, showed strongly linear patterns. However, for the regression model with grit as the dependent variable, the P-P plot showed a reasonably linear pattern with some degree of deviation. Since there were no drastic deviations, the assumption of the normality of residuals was not violated.

**Testing homogeneity of error variance.** To test the assumption that the variance of the residuals was homogeneous across levels of the predicted values, also known as homoscedasticity, the scatter plots of the residuals were used (See Appendix C). For the regression model wherein subjective well-being was the dependent variable, the points in the scatter plot were mostly equally distributed above and below zero on the X axis, and to the left and right of zero on the Y axis. This suggested that the homoscedasticity was met for this regression model.

For the regression model with grit as the dependent variable, the points in the scatter plot were mostly equally distributed above and below zero on the Y axis, but appeared not all equally dispersed to the left and right of zero on the X axis, with a few outliers that spread to the far left. So there appeared to be some slight degree of heteroscedasticity.

For the regression model with achievement goal progress as the dependent variable, the points in the scatter plot were mostly equally distributed to the left and right of zero on the X axis, but appeared not equally dispersed above and below zero on the Y axis, with some outliers that spread toward the bottom. So there appeared to be some slight degree of heteroscedasticity.

Marked heteroscedasticity might increase the risk of Type I error (Osborne & Waters, 2002). However, linear regression is generally robust to slight violations of the homoscedasticity assumption (Nimon, 2012).

***Testing independence of errors.*** The assumption specifies that the errors associated with one observation are not correlated with the errors of any other observations. For all regression models, the Durbin-Watson statistic values were close to 2, ranging from 1.862 to 2.158. Therefore, the assumption of independent error terms was met (Kutner, Nachtsheim, Neter, & Li, 2005).

***Detecting any influential data points.*** A data point is considered as influential if removing it greatly changes coefficient estimates. A Cook's Distance value greater than 1 is generally viewed as an issue of concern, suggesting an influential data point (Cook, 1977). In this study, Cook's Distance values were all well below 1, ranging from .000 to .086. Hence, there were not any unusual data points unduly influencing each regression model.

**Path Analyses I.** A multiple linear regression model was ran to test the following hypotheses:

***Hypothesis 1a:*** *There will be a positive relationship between harmonious passion for teaching and achievement goal progress.*

***Hypothesis 1b:*** *There will be a negative relationship between obsessive passion for teaching and achievement goal progress.*

In the regression model, achievement goal progress was set as the dependent variable. Harmonious passion for teaching and obsessive passion for teaching were entered as the independent variables. The results of the regression indicated that the model explained 8.7% of the variance in achievement goal progress (adjusted  $R^2 = .087$ ) and that the model was a significant predictor of achievement goal progress,  $F(2, 389) = 19.526, p < .001$ . Both independent variables contributed significantly to the model. Harmonious passion for teaching was positively significantly related to achievement goal progress ( $\beta = .295, t = 5.980, p < .001$ ). Obsessive passion for teaching was negatively significantly related to achievement goal progress ( $\beta = -.146, t = -2.963, p = .003$ ). Based on the results, both *Hypothesis 1a* and *Hypothesis 1b* were supported.

**Path Analyses II.** A multiple linear regression model was carried out to test the following hypotheses:

***Hypothesis 1c:*** *There will be a positive relationship between achievement goal progress and grit.*

***Hypothesis 1d:*** *There will be a negative relationship between obsessive passion for teaching and grit.*

The multiple linear regression model with grit as the dependent variable and achievement goal progress and obsessive passion for teaching as the independent variables produced  $F(2, 389) = 10.264, p < .001$ . The two-predictor model was able to account for 4.5% of the variance in grit

(adjusted  $R^2 = .045$ ). As the path from achievement goal progress to grit was significant ( $\beta = .218$ ,  $t = 4.401$ ,  $p < .001$ ), *Hypothesis 1c* was supported. However, since obsessive passion for teaching did not contribute significantly to the model ( $\beta = -.034$ ,  $t = -.686$ ,  $p = .493$ ), *Hypothesis 1d* was not supported.

**Path Analyses III.** A multiple linear regression model was used to test the following hypotheses:

*Hypothesis 1e: There will be a positive relationship between harmonious passion for teaching and subjective well-being.*

*Hypothesis 1f: There will be a positive relationship between grit and subjective well-being.*

In the regression model, subjective well-being was set as the dependent variable. Harmonious passion for teaching and grit were entered as the independent variables. The results of the regression showed that the model explained 27.1% of the variance in subjective well-being (adjusted  $R^2 = .271$ ) and that the model was a significant predictor of subjective well-being,  $F(2, 445) = 83.959$ ,  $p < .001$ . Both independent variables contributed significantly to the model. Harmonious passion for teaching was positively significantly related to subjective well-being ( $\beta = .494$ ,  $t = 11.973$ ,  $p < .001$ ). Grit was positively significantly related to subjective well-being ( $\beta = .101$ ,  $t = 2.451$ ,  $p = .015$ ). Based on the results, both *Hypothesis 1e* and *Hypothesis 1f* were supported.

Figure 4.1.1 below displays the beta coefficients from all multiple regression analyses conducted:

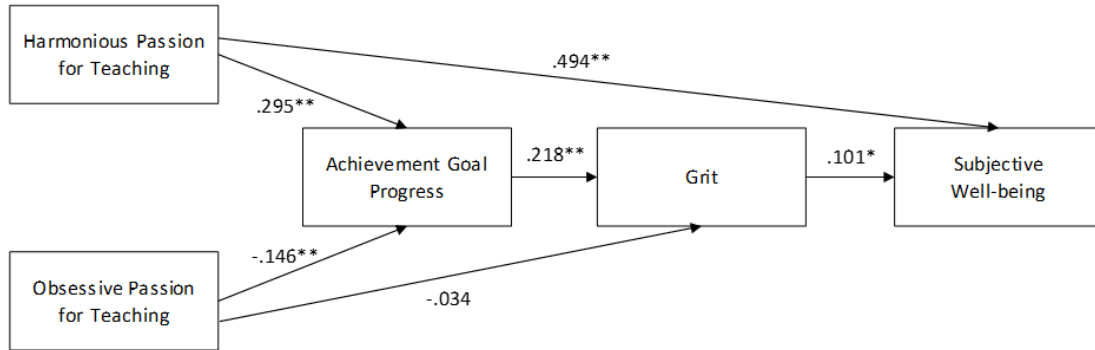


Figure 4.1.1. Path analyses results.

Note.

\*\*p < .01; Beta coefficient is significant at the 0.01 level.

\*p < .05; Beta coefficient is significant at the 0.05 level.

## Study 2

In Study 2, I addressed the following research questions:

**RQ3.** What is the role of locomotion in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

**RQ4.** What is the role of assessment in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

### Multicollinearity Test

Collinearity, also used interchangeably with multicollinearity, occurs when two or more variables are linear combinations of one another. The Variance Inflation Factor (VIF) indicates the extent to which the estimated variance is increased due to collinearity. Generally, VIF values

greater than 10 indicate serious multicollinearity, and VIF values from 5 to 10 indicate that some degree of multicollinearity may exist (Myers, 1990). Besides VIF, another measure of multicollinearity is tolerance. Tolerance is calculated as 1 minus the squared multiple correlation of a variable. Tolerance values less than 0.10 indicate that multicollinearity is an issue of concern (Hair, Anderson, Tatham, & Black, 1998). I tested for multicollinearity among the variables locomotion, assessment, achievement goal progress, and grit by using the Variance Inflation Factor as well as the tolerance values in SPSS. See Table 4.2.1 for the results of the multicollinearity test. All of the VIF values were less than 2. Also, the lowest tolerance value was .626, which is way above the cut-off value of 0.10. Therefore, multicollinearity was not a problem.

Table 4.2.1  
*Variance Inflation Factor Multicollinearity Test*

Variables	1		2		3		4	
	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>	<i>Tolerance</i>	<i>VIF</i>
1. Locomotion	--	--	.912	1.097	.899	1.112	.838	1.193
2. Assessment	.712	1.405	--	--	.890	1.123	.687	1.456
3. Achievement Goal Progress	.684	1.462	.867	1.153	--	--	.626	1.598
4. Grit	.930	1.075	.977	1.024	.913	1.095	--	--

### **Common Method Bias Test**

Common method variance, also referred to as common method bias, is a prominent type of systematic error variance (Richardson, Simmering, & Sturman, 2009). It is defined as the variance arising from the measurement method rather than the theoretical constructs of interest (Campbell & Fiske, 1959; Podsakoff et al., 2012; Podsakoff et al., 2003). Common method variance may artificially inflate or deflate the observed relationships among variables in a study

(Podsakoff et al., 2012). All measures of the present study were administered as a part of a single survey. So the study data might be subject to this methodological concern. I used the Harman's Single-Factor Test in SPSS to examine common method variance. Results from the test revealed 11 distinct factors with Eigen values greater than 1.0, rather than a single factor. Moreover, only about 19% of the total variance was explained by the first largest factor. Thus, common method bias was not a problem for this data set.

### **Descriptive Statistics and Intercorrelations of the Study Variables**

Descriptive statistics and internal consistency coefficients of the study variables are shown in Table 4.2.2.

Table 4.2.2

*Descriptive Statistics for the Study Variables*

	<i># of items</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>α</i>
Locomotion	12	4.7956	.67957	1-6	.824
Assessment	10	3.9516	.74838	1-6	.738
Achievement Goal Progress	4	4.1153	.73198	1-5	.780
Grit	7	3.7572	.66267	1-5	.828
Subjective Well-being	5	5.1148	1.28963	1-7	.879



Table 4.2.3 presents the zero-order bivariate correlations among the variables.

Table 4.2.3

*Inter-correlations of the Study Variables*

	N	1	2	3	4
1. Locomotion	223	--			
2. Assessment	223	.093	--		
3. Achievement Goal Progress	193	.256**	-.138	--	
4. Grit	223	.512**	-.278**	.314**	--
5. Subjective Well-being	223	.244**	-.160*	.172*	.258**

*Note.*

\*\*p < .01; Correlation is significant at the 0.01 level.

\*p < .05; Correlation is significant at the 0.05 level.

### **Hypotheses Testing Using Regression Analysis**

In order to test all of the hypothesized relationships in the proposed conceptual model, path analyses were performed by running several separate multiple and simple linear regression models.

**Assumptions testing.** Before conducting each linear regression model, key assumptions of linear regression were tested.

**Testing linearity.** The linearity assumption was tested with scatter plots of the standardized residuals versus standardized predicted values. Further, a non-linear best fit line known as the Loess Curve was fitted through each scatterplot to check for any nonlinearity. Based on the scatter plots as well as the fitted Loess Curves, for each regression model, the relationship of the standardized predicted value of the dependent variable against the standardized

residuals was roughly linear around zero. Thus, the assumption of linearity was met for each regression model. The scatter plots are presented in Appendix C.

*Testing normality of residuals.* To test the normality of residuals assumption, a Normal probability plot (more specifically a P-P plot) was produced for each regression model. The P-P plots (as shown in Appendix D), for the regression model with achievement goal progress as the dependent variable, the P-P plot showed a strongly linear pattern. For the remaining regression models, the P-P plot demonstrated reasonably linear patterns with some degree of deviation. Since there were no drastic deviations, the assumption of the normality of residuals was not violated.

*Testing homogeneity of error variance.* To test the homoscedasticity assumption (constant variance of the errors), the scatter plots of the residuals were used (Refer to Appendix C). For the regression model with subjective well-being as the dependent variable, the points in the scatter plot were mostly equally distributed above and below zero on the X axis, and to the left and right of zero on the Y axis. There were only a couple of outliers that distributed toward the bottom. This indicated that the homoscedasticity was met for this regression model.

For the regression model with grit as the dependent variable, the points in the scatter plot were mostly equally dispersed above and below zero on the Y axis, but appeared not all equally distributed to the left and right of zero on the X axis, with a few outliers located at the far left. So there appeared to be some slight degree of heteroscedasticity.

For the regression model with achievement goal progress as the dependent variable, the points in the scatter plot were mostly equally distributed to the left and right of zero on the X axis, but appeared not equally dispersed above and below zero on the Y axis, with some outliers that spread toward the bottom. So there might be some slight degree of heteroscedasticity.

When marked heteroscedasticity occurs, ordinary least squares (OLS) estimates remain unbiased, but may become inefficient (Long & Ervin, 2000). However, its effect is much smaller than that of multicollinearity and linear regression is generally robust to slight violations of the homoscedasticity assumption (Nimon, 2012).

***Testing independence of errors.*** The assumption states that the errors associated with one observation are independent of the error of any other observation. For all regression models, the Durbin-Watson statistic values were close to 2, ranging from 1.849 to 1.976. Thus, the assumption of independent error terms was met (Kutner et al., 2005).

***Detecting any influential data points.*** An observation is viewed as influential if removing the observation substantially changes the estimate of coefficients. A Cook's Distance value exceeding 1 is generally considered as an issue of concern, indicative of an influential data point (Cook, 1977). In this study, Cook's Distance values were all much lower than 1, ranging from .000 to .297. Therefore, there were not any unusual data points unduly influencing each regression model.

**Path Analyses I.** A multiple linear regression model was used to test the following hypotheses:

***Hypothesis 2a:*** *There will be a positive relationship between locomotion and achievement goal progress.*

***Hypothesis 2b:*** *The relationship between locomotion and achievement goal progress will be moderated by assessment such that the effects of locomotion are stronger when assessment is high.*

In the regression model, achievement goal progress was set as the dependent variable. Locomotion and an interaction term (locomotion  $\times$  assessment, or the product of locomotion and

assessment) were entered as the independent variables. The results of the regression indicated that the model explained 9.3% of the variance in achievement goal progress (adjusted  $R^2 = .093$ ) and that the model was a significant predictor of achievement goal progress,  $F(2, 190) = 10.849$ ,  $p < .001$ . Both independent variables contributed significantly to the model. Locomotion was positively significantly related to achievement goal progress ( $\beta = .411$ ,  $t = 4.655$ ,  $p < .001$ ), thereby providing support for *Hypothesis 2a*. The interaction between locomotion and assessment was negatively significantly associated with achievement goal progress ( $\beta = -.247$ ,  $t = -2.798$ ,  $p = .006$ ). Therefore, *Hypothesis 2b* was not supported.

**Moderation Analysis.** Further, in light of the significant interaction between locomotion and assessment, it was necessary to examine whether assessment produced a negative moderation on the relationship between locomotion and achievement goal progress. A two-step hierarchical linear regression was conducted with achievement goal progress as the dependent variable. Locomotion was entered in the first step. The interaction term (locomotion  $\times$  assessment) was entered in the second step in order to determine whether the interaction between locomotion and assessment showed a significant change in the portion of explained variance in achievement goal progress by the model. Results are shown in Table 4.2.4.

Table 4.2.4

*Testing Moderator Effect Using Hierarchical Linear Regression*

Variables	B	SE B	$\beta$	t	p
<b>Step 1</b>					
Locomotion	.276	.075	.256**	3.659**	.000
F					13.391**
R <sup>2</sup> (adjusted R <sup>2</sup> )					.066 (.061)
<b>Step 2</b>					
Locomotion	.443	.095	.411**	4.655**	.000
Locomotion $\times$ Assessment	-.038	.014	-.247**	-2.798**	.006
F					10.849**
R <sup>2</sup> (adjusted R <sup>2</sup> )					.102 (.093)
$\Delta F$					7.828**
$\Delta R^2$					.037**

*Note.*

\*\*p < .01, \*p < .05

The step 2 model with the interaction between locomotion and assessment accounted for significantly more variance than just locomotion as the independent variable. Introducing the interaction term into the model accounted for an additional 3.7% of the variance in achievement goal progress,  $\Delta R^2 = .037$ ,  $\Delta F(1, 190) = 7.828$ ,  $p = .006$ . The result indicated that assessment had a significant moderating effect on the relationship between locomotion and achievement goal progress such that the effects of locomotion on achievement goal progress were stronger when assessment was low.

Figure 4.2.1 below displays the beta coefficients after the moderation analysis:

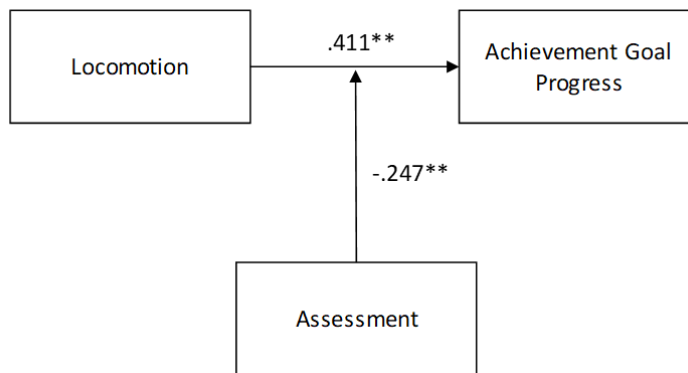


Figure 4.2.1. Moderation analysis results.

Note.

\*\* $p < .01$ ; Beta coefficient is significant at the 0.01 level.

\* $p < .05$ ; Beta coefficient is significant at the 0.05 level.

**Split Data by Assessment Level.** Considering the significant interaction between locomotion and assessment, different assessment levels might potentially relate to other relevant variables in the proposed conceptual model differently. Thus, it was appropriate to see whether the data could be split based on assessment levels. First, I examined the general distribution of the assessment values in the data through the histogram and box plot generated for assessment values. Figure 4.2.2 below displays the histogram for assessment:

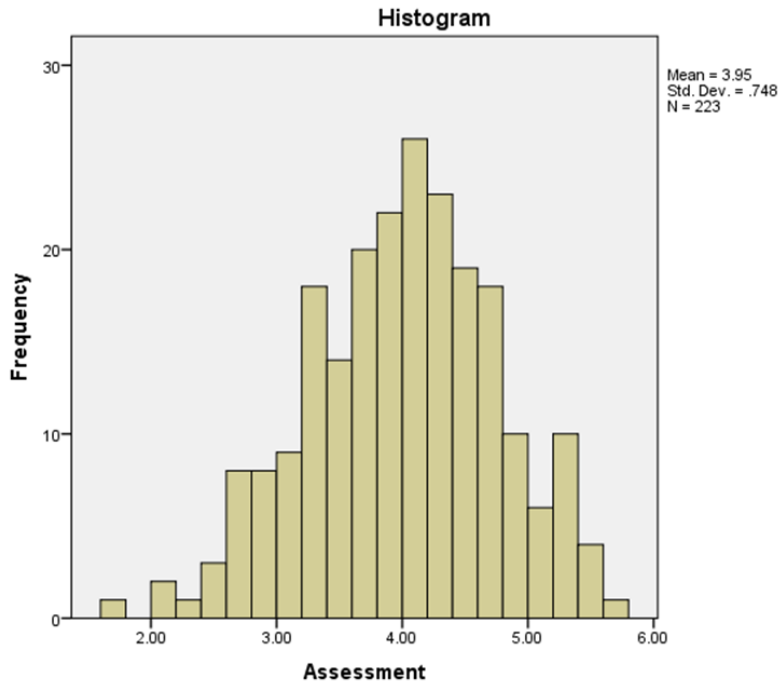


Figure 4.2.2. Histogram for assessment.

Figure 4.2.3 below displays the box plot for assessment:

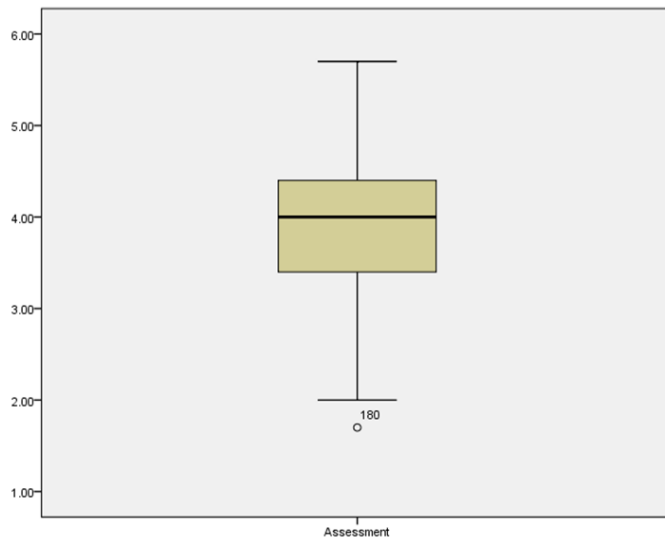


Figure 4.2.3. Box plot for assessment.

These graphical tools provided a good indication of how the values of the variable assessment were spread out. Further, according to the descriptive statistics for assessment, its mean  $M = 3.9516$ , which was extremely close to the median (4.0000). Standard deviation  $s = .74838$ . The skewness of  $-.205$ , which was between  $-0.5$  to  $0.5$ . This indicated that the distribution was approximately symmetric. The kurtosis of  $-.187$  for the distribution was close to 0, also within the range of  $-1.0$  to  $1.0$ . So the distribution was considered as a normal distribution.

Next, on the basis of these analyses, 4 emerged as a proper cutoff value to assign different assessment values into two main categories: low assessment versus high assessment. The observations with assessment values less than 4 were designated as the low assessment category. The high assessment category was applied to observations with assessment values equal to or greater than 4. Lastly, the study data were grouped or split based upon the assessment category prior to conduct further regression analyses. In short, data were split into two groups by assessment category. Specifically, the low assessment group (assessment value  $< 4$ ) had 106 observations in total; the high assessment group (assessment value  $\geq 4$ ) contained a total of 117 observations.

**Path Analyses II.** A simple linear regression model was carried out to test the following hypothesis for each group of data (by assessment category):

***Hypothesis 2a:*** *There will be a positive relationship between locomotion and achievement goal progress.*

For the low assessment group, the simple linear regression model with achievement goal progress as the dependent variable and locomotion as the independent variable produced  $F(1, 88) = 14.525$ ,  $p < .001$ . The model was able to account for 13.2% of the variance in achievement goal progress (adjusted  $R^2 = .132$ ). As the path from locomotion to achievement goal progress was



significant ( $\beta = .376$ ,  $t = 3.811$ ,  $p < .001$ ), *Hypothesis 2a* was supported for the low assessment group.

For the high assessment group, the regression model produced  $F(1, 101) = 3.687$ , adjusted  $R^2 = .026$ ,  $p = .058$ . So this one-predictor model was not significant. Since the path from locomotion to achievement goal progress was not significant ( $\beta = .188$ ,  $t = 1.920$ ,  $p = .058$ ), *Hypothesis 2a* was not supported for the high assessment group.

**Path Analyses III.** A simple linear regression model was used to test the following hypothesis for each group of data (by assessment category):

*Hypothesis 2c: There will be a positive relationship between achievement goal progress and grit.*

For the low assessment group, the simple linear regression model with grit as the dependent variable and achievement goal progress as the independent variable produced  $F(1, 88) = 8.682$ ,  $p = .004$ . The model was able to account for 7.9% of the variance in grit (adjusted  $R^2 = .079$ ). Since the path from achievement goal progress to grit was significant ( $\beta = .300$ ,  $t = 2.946$ ,  $p = .004$ ), *Hypothesis 2c* was supported for the low assessment group.

For the high assessment group, the regression model was also significant,  $F(1, 101) = 10.536$ ,  $p = .002$ . The model explained 8.5% of the variance in grit (adjusted  $R^2 = .085$ ). As the path from achievement goal progress to grit was significant ( $\beta = .307$ ,  $t = 3.246$ ,  $p = .002$ ), *Hypothesis 2c* was also supported for the high assessment group.

**Path Analyses IV.** A multiple linear regression model analysis was conducted to test the following hypotheses for each group of data (by assessment category):

*Hypothesis 2d: There will be a positive relationship between locomotion and subjective well-being.*

*Hypothesis 2e: There will be a positive relationship between grit and subjective well-being.*

*Hypothesis 2f: There will be a negative relationship between assessment and subjective well-being.*

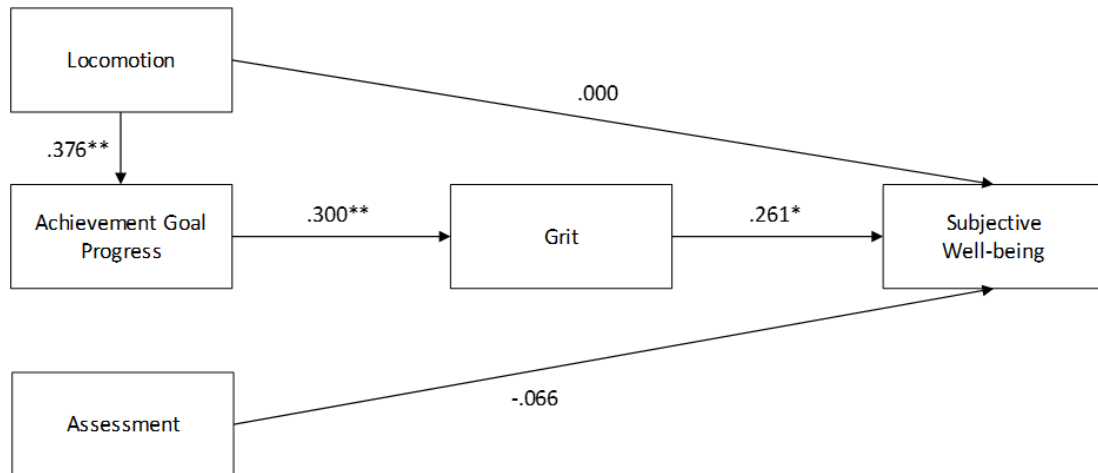
In the regression model (applied to each group by assessment category), subjective well-being was set as the dependent variable. Locomotion, grit, and assessment were entered as the independent variables.

For the low assessment group, the three-predictor regression model was significant,  $F(3, 102) = 3.112, p = .030$ . The model explained 5.7% of the variance in subjective well-being (adjusted  $R^2 = .057$ ). Out of the three independent variables, there was only one independent variable grit contributed significantly to the model ( $\beta = .261, t = 2.125, p = .036$ ), thereby providing support for *Hypothesis 2e*. However, neither of the other two independent variables locomotion and assessment significantly contributed to the model. Since the path from locomotion to subjective well-being was not significant ( $\beta = .000, t = -.002, p = .998$ ), *Hypothesis 2d* was not supported. Similarly, the path from assessment to subjective well-being was not significant ( $\beta = -.066, t = -.655, p = .514$ ), *Hypothesis 2f* was not supported.

For the high assessment group, the regression model was significant,  $F(3, 113) = 7.418, p < .001$ . The model accounted for 14.2% of the variance in subjective well-being (adjusted  $R^2 = .142$ ). Out of the three independent variables, there were two independent variables locomotion and assessment that significantly contributed to the model. The path from locomotion to subjective well-being was significant ( $\beta = .365, t = 3.566, p = .001$ ), thereby providing support for *Hypothesis 2d*. As the path from assessment to subjective well-being was significant ( $\beta = -.219, t = -2.458, p = .016$ ), *Hypothesis 2f* was supported. However, the other independent variable

grit did not contribute significantly to the model ( $\beta = .001$ ,  $t = .009$ ,  $p = .993$ ), therefore, *Hypothesis 2e* was not supported.

Figure 4.2.4 below displays the beta coefficients from all regression analyses conducted for the low assessment group:



*Figure 4.2.4.* Path analyses results for the low assessment group (assessment value < 4)

*Note.*

\*\* $p < .01$ ; Beta coefficient is significant at the 0.01 level.

\* $p < .05$ ; Beta coefficient is significant at the 0.05 level.

Figure 4.2.5 below displays the beta coefficients from all regression analyses conducted for the high assessment group:

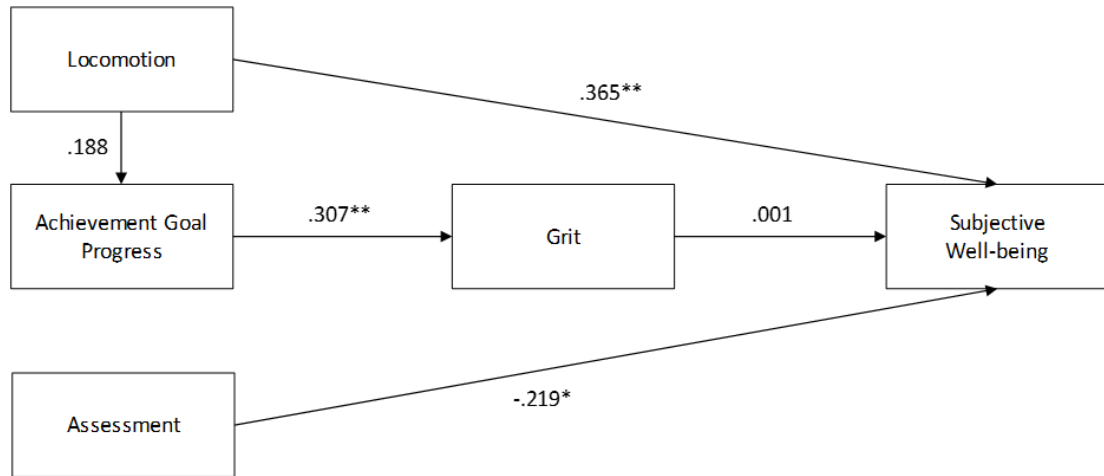


Figure 4.2.5. Path analyses results for the high assessment group (assessment value  $\geq 4$ )

Note.

\*\* $p < .01$ ; Beta coefficient is significant at the 0.01 level.

\* $p < .05$ ; Beta coefficient is significant at the 0.05 level.

## CHAPTER V

### DISCUSSION

In this dissertation research, I examined how passion for teaching (HP for teaching, OP for teaching) and self-regulatory mode (locomotion, assessment) each influences teachers' goal-directed outcomes (achievement goal progress and perseverance) as well as their subjective well-being. In this chapter, I discuss the research findings, implications, limitations, and potential future research.

This chapter comprises two sections. In the first section, I discuss the findings and insights from each study (Study 1 and Study 2 respectively). In the second section, I offer a general discussion including the implications, limitations, and future research directions.

#### **Discussion for Each Study**

This section consists of two parts. Each part corresponds to one study. Within each part, I discuss the findings and insights from the study with respect to the research questions addressed.

#### **Discussion for Study 1**

In Study 1, I addressed the following research questions:

**RQ1.** What is the role of harmonious passion for teaching (HP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

**RQ2.** What is the role of obsessive passion for teaching (OP for teaching) in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

To address RQ1 and RQ2, I developed and tested a set of hypotheses concerning the interrelationships among passion for teaching (HP for teaching, OP for teaching), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. Findings and insights based on the data analysis results are as follows:

**The role of HP for teaching in K-12 in-service teachers' goal-directed outcomes and subjective well-being.** The results of Study 1 showed that HP for teaching had a positive association with achievement goal progress, which was an antecedent of teachers' perseverance (*Hypothesis 1a* and *Hypothesis 1c* were supported).

First, extant research has not yet explored the impact of HP for teaching on teachers' progress made towards their work-related goals. This study result highlighted a strongly significant positive correlation between HP for teaching and achievement goal progress (*Hypothesis 1a* was supported;  $\beta = .295$ ,  $t = 5.980$ ,  $p < .001$ ). This means that HP for teaching is instrumental not only in fostering teachers' positive emotions during work (Carbonneau et al., 2008) but also in facilitating their progress towards work-related achievement goals.

In other professional settings, researchers found HP promoted cognitive engagement at work. For example, Ho et al. (2011) conducted a study on a sample of 509 employees from an insurance firm, and reported that HP was conducive to better work performance. Moreover, the positive link between HP and work performance was mediated by cognitive absorption, defined

as the level of immersion and concentration in one's work. The researchers suggested that HP facilitated employees' cognitive engagement at work.

As such, HP for teaching may produce both positive affect (Carbonneau et al., 2008) and concentration (Ho et al., 2011) during work, all of which help teachers to make meaningful progress to their work-related achievement goals.

Second, achievement goal progress was demonstrated as an antecedent of teachers' perseverance, as *Hypothesis 1c* was supported with a strongly significant positive correlation between achievement goal progress and grit ( $\beta = .218, t = 4.401, p < .001$ ). In the present study, perseverance is defined as a future-oriented psychological strength that enables individuals to continuously devote efforts despite potential challenges (Duckworth et al., 2007, 2009). Perseverance is best conceptualized by grit, which has been examined in numerous empirical studies to reflect long-term goal striving (e.g., Duckworth & Gross, 2014; Hagger & Hamilton, 2019; Palisoc et al., 2017).

Researchers have not yet looked at the effects of intermediate goal progress on teachers' perseverance (i.e., grit). Prior research examined grit as a predictor of teachers' retention and teaching effectiveness (Duckworth et al., 2009; Robertson-Kraft & Duckworth, 2014). For example, on a sample of 390 teachers in underserved public schools, Duckworth et al. (2009) showed that gritty teachers experienced a higher level of optimism and performed significantly better at work, as compared to their colleagues. Note that their work performance was objectively measured based on students' grade-level gains and mastery of course content. In a series of two longitudinal studies, Robertson-Kraft and Duckworth (2014) demonstrated that grit predicted teachers' performance as well as their retention over a school year in low-income school districts.

In the present study, achievement goal progress emerged as a contributor to teachers' perseverance. This finding is especially meaningful because educators have treated grit as a

useful trait-like individual level characteristic for choosing or hiring novice teachers. The day-to-day tasks and responsibilities for working as a teacher are demanding. However, dedication of significant efforts does not always produce readily observable achievements, and teaching activities can easily create stress and challenges for someone new to teaching (Duckworth et al., 2009). Given this finding, teachers are able to enhance their perseverance through making progress on self-developed intermediate achievement goals. In a practical sense, this also suggests the importance of goal-setting for teachers, as developing meaningful achievement goals to pursue is a first step prior to making efforts and progress. Further, this finding indicates that grit not only may be adopted as a diagnostic tool for selecting novice teachers, but also can be improved through professional development programs targeted to teachers' goal setting and goal attainment.

Next, results from Study 1 showed that HP for teaching had a direct positive effect on teachers' subjective well-being (*Hypothesis 1e* was supported;  $\beta = .494$ ,  $t = 11.973$ ,  $p < .001$ ). This result is consistent with findings from previous research. Carbonneau et al. (2008) found that increases in HP for teaching predicted reduced burnout symptoms and improved work satisfaction. Moe (2016) based her study on a sample of 379 Italian K-12 teachers and found that HP for teaching positively related to teachers' positive affect and subjective happiness (measured by self-rated happiness relative to other people).

Another finding from the present study is that perseverance (i.e., grit) positively contributed to teachers' subjective well-being (*Hypothesis 1f* was supported;  $\beta = .101$ ,  $t = 2.451$ ,  $p = .015$ ). Prior research has offered evidence to support this. For example, Singh and Jha (2008) conducted a study on a sample of 254 undergraduate students and found a positive link between grit and subcomponents of subjective well-being. Vainio and Daukantaitė (2016) carried out two studies on different populations. One of those studies was with a sample of 196 university students. The other was with a sample of 396 individuals from a variety of sectors and industries,



with half of the participants working as teachers. A major finding was that grit was positively associated with three different well-being variables including subjective well-being. Further, this finding was consistent across both studies. As such, the present study adds to the grit and subjective well-being literature with further evidence drawn from a sample of K-12 in-service teachers. This finding suggests that persevering teachers are also happier in life.

Overall, results from Study 1 demonstrated that HP for teaching produced direct positive influence on teachers' goal progress and their subjective well-being. Moreover, the results also laid out the potential paths through which HP for teaching may lead to adaptive outcomes such as teachers' perseverance. Future research may examine achievement goal progress as a possible mediator between HP for teaching and perseverance.

**The role of OP for teaching in K-12 in-service teachers' goal-directed outcomes and subjective well-being.** First, the results of Study 1 showed that OP for teaching has a significant negative association with achievement goal progress (*Hypothesis 1b* was supported;  $\beta = -.146$ ,  $t = -2.963$ ,  $p = .003$ ). This finding is particularly interesting because: (a) Previous research hasn't studied the relationship between OP for teaching and achievement goal progress (or any intermediate goal progress made by teachers); (b) Extant research on OP across different domains have generated mixed findings. For example, Vallerand et al. (2003) found that OP was associated with negative emotions during task engagement. Nonetheless, Carbonneau et al. (2008) showed that changes in OP for teaching were unrelated to several outcome variables such as teachers' perception of positive student behaviors and job satisfaction.

The finding in the present study suggests that the type or quality of the passion for teaching matters. If a teacher's passion for teaching conflicts with other important aspects of life, then this passion could hinder meaningful progress on work-related achievement goals. Lavigne et al. (2014) carried out a study on 485 Canadian teachers, and found that those teachers with OP

for teaching were more likely to feel overwhelmed with job responsibilities and perceive less control in accomplishing tasks at work. As such, OP for teaching may lead to negative perceptions of teaching workload, which in turn hinder teachers from making progress towards achievement goals.

Second, the results of Study 1 indicated that OP for teaching was not linked to perseverance, as *Hypothesis 1d* was not supported ( $\beta = -.034$ ,  $t = -.686$ ,  $p = .493$ ). The results showed a negative, yet not significant correlation between OP for teaching and perseverance. Previously, researchers have not examined the influence of OP for teaching on perseverance. Nonetheless, this result seems to corroborate with a finding on student samples. Bonneville-Roussy et al. (2013) discovered that OP in music was not linked to students' persistence in music. Persistence was operationalized as a combination of a student's self-reported intention to remain studying music and the student's actual registration record.

Based on the present finding, there is no clear evidence to suggest that OP for teaching either contributes or harms teachers' perseverance. As specified earlier, in different professional settings, obsessive passion (OP) was associated with mixed intra- and inter- personal outcomes (positive or negative outcomes) (Vallerand et al., 2003). OP entails a rigid persistence in an activity or pursuit; such persistence often conflicts with other important life aspects (Vallerand, 2015; Vallerand et al., 2007, 2008). OP could still generate increased performance (Vallerand et al., 2003, 2007, 2008). Nonetheless, such gain in performance often comes at a cost. OP could lead to negative effects. For example, Moe (2016) found that OP for teaching had a negative relationship with teachers' subjective happiness, and a positive relationship with negative affect. This suggested that those teachers with a more rigid, controlled passion for teaching were more likely to experience negative emotions at work, and feel less happy overall. Future research may continue to explore the relationship between OP for teaching and perseverance on other teacher samples.

## Discussion for Study 2

In Study 2, I addressed the following research questions:

**RQ3.** What is the role of locomotion in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

**RQ4.** What is the role of assessment in K-12 in-service teachers' goal-directed outcomes (achievement goal progress and perseverance) and their subjective well-being?

To address **RQ3** and **RQ4**, I developed and tested a set of hypotheses concerning the interrelationships among self-regulatory mode (locomotion, assessment), goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being.

Locomotion represents the “action” mode of self-regulation, involving cognitive and behavioral orientations to initiate goal-related actions in a direct and swift manner (Kruglanski et al., 2000). In contrast, assessment represents the “evaluative” mode of self-regulation, involving cognitive and behavioral processes for critical, deliberate evaluations (Kruglanski et al., 2000). The two self-regulatory modes, locomotion and assessment, each involves a unique cognitive and behavioral process. These two distinctive self-regulatory mechanisms are independent of each other. That is, if someone has a high locomotion level, then this person may either have a high assessment level, or a low assessment level (Chernikova et al., 2016; Higgins et al., 2003; Kruglanski et al., 2000).

In this sample of 223 teachers, the correlation between locomotion and assessment is low, and not significant ( $r = .09$ ), suggesting these two scales were unrelated; this psychometric property is consistent with extant research. For example, Kruglanski et al. (2000) reported the correlation coefficients between locomotion and assessment across different samples were

ranging from -.07 to .20. Further, results from the present study showed that locomotion and assessment levels acted together to influence teachers' goal-directed outcomes (achievement goal progress and perseverance), and subjective well-being. It is difficult to parse out how each self-regulatory mode impacted the outcomes. Rather, I focus my discussion on the role of both self-regulatory modes in influencing teachers' achievement goal progress, perseverance, and subjective-welling. I also include discussions for situations wherein a direct effect from one self-regulatory mode applies.

**The role of locomotion in K-12 in-service teachers' achievement goal progress for the full sample of 223 teachers.** The results of Study 2 showed that locomotion had a significant positive association with achievement goal progress (*Hypothesis 2a* was supported;  $\beta = .411$ ,  $t = 4.655$ ,  $p < .001$ ). K-12 in-service teachers in public schools operate in a stressful environment characterized by a heavy workload (Chaplain, 2008; Jepson & Forrest, 2006; Kyriacou, 2001). Their daily work often involves multi-tasking, job responsibility changes, and challenging working conditions (Chaplain, 2008; Jepson & Forrest, 2006; Kyriacou, 2001).

This finding suggests that teachers oriented with high locomotion take prompt actions to address various needs at work and conscientiously persist in making progress towards their achievement goals. High locomotion fosters determination and decisiveness, assists teachers to avoid extensively comparing alternative goals or means, and therefore propels them focus on work-related goals.

Researchers have not yet investigated the relationship between locomotion and teachers' achievement goal progress. Nonetheless, there is evidence to support this finding. Amato et al. (2014) studied 339 individuals consisting of 249 students and 90 working professionals, and found that those with high locomotion were better at sorting out priorities, managing time for different tasks, and maintaining control over their goals. As such, the present study stresses the

importance of locomotion. It functions as an effective self-regulatory mode for teachers to progress toward their achievement goals. Future research may explore the potential antecedents or contributing factors for locomotion, which is an area that has not yet been investigated. Potential questions for future research are: Can the level of locomotion be improved in a teacher? If so, how?

**The role of the interaction between locomotion and assessment in K-12 in-service teachers' achievement goal progress for the full sample of 223 teachers.** In the present study, assessment had a significant negative moderating effect on the relationship between locomotion and achievement goal progress, as the interaction between locomotion and assessment was negatively significantly associated with achievement goal progress (*Hypothesis 2b* was not supported;  $\beta = -.247$ ,  $t = -2.798$ ,  $p = .006$ ). In other words, the relationship between locomotion and achievement goal progress was moderated by assessment such that the effects of locomotion were weaker when assessment was high.

Researchers have not yet examined how the interaction between these two self-regulatory modes influences teachers' achievement goal progress. Meanwhile, a number of studies across different contexts (such as organizational settings, sports, lab settings) have explored the effects of the joint operation of locomotion and assessment. Mostly, the interaction effect of high locomotion and high assessment translated into even higher goal attainment and achievement. This suggested that both "getting on with it" (high locomotion) and "doing it right" (high assessment) are equally important to produce optimal outcomes (Higgins et al., 2003; Kruglanski et al., 2000; Mauro et al., 2009; Pierro et al., 2006).

Contrary to these conclusions, the present finding suggests otherwise. For teachers in the present study, optimal achievement goal progress occurred with a high locomotion  $\times$  low assessment combination. Devoting an excessive amount of time and energy to ensure "doing it

right” was not advantageous to make concrete progress towards achievement goals. Rather, swift action on goals is much more effective. The present study has pointed out a situation/context wherein the high-high combination of self-regulatory modes is counterproductive. K-12 in-service teachers, especially those serving in under resourced schools, work in a fast-paced, stressful environment. This finding suggests that the benefits of high locomotion as an effective self-regulatory mechanism is most pronounced when coupled with low assessment.

More recently, Chernikova et al. (2016) conducted two studies. One surveyed a sample of 94 Italian workers at a super market; over 60% of the participants had only a high school diploma. The other was an experimental study on a sample of 103 Italian college students. Both studies reached consistent results: on simple tasks, the high locomotion and low assessment combination produced optimal task performance. On the contrary, on complex tasks, the high locomotion and high assessment combination led to the best performance. These conclusions appear to contradict the finding of the present study. Study 2 was conducted on a different population facing different challenges at work, the present study offers new insights to contribute to the self-regulatory modes research.

Next, another important finding is as follows. Based on different levels of assessment (Figure 4.2.4 for low assessment group; Figure 4.2.5 for high assessment group), there are different contributors to teachers’ perseverance and subjective well-being. Moreover, the paths through which those contributing factors lead to relevant outcomes were different.

In light of the significant negative moderation introduced by assessment, the full sample of 223 teachers were split into two groups by assessment levels. Specifically, the low assessment group (assessment value < 4) had 106 teachers in total. The high assessment group (assessment value  $\geq$  4) contained a total of 117 teachers. This was an interesting observation that about half

of the teachers in the entire sample had low assessment levels, and the other half had high assessment levels, in a fairly random sample of teachers.

**The role of locomotion and assessment in K-12 in-service teachers' achievement goal progress, perseverance, and subjective well-being for the sample of 106 teachers with low assessment levels.** The results were: for teachers with low assessment levels, locomotion had a significant positive relationship with achievement goal progress, which was an antecedent of perseverance. Additionally, perseverance contributed to subjective well-being.

First, for teachers with low assessment, the results continued to support that locomotion is a stronger contributor to teachers' achievement goal progress, as the path from locomotion to achievement goal progress was significant (*Hypothesis 2a* was supported for the low assessment group;  $\beta = .376$ ,  $t = 3.811$ ,  $p < .001$ ).

Second, for teachers with low assessment, the progress they made towards achievement goals led to perseverance, as the path from achievement goal progress to grit was significant (*Hypothesis 2c* was supported for the low assessment group;  $\beta = .300$ ,  $t = 2.946$ ,  $p = .004$ ). Previous researchers have not yet explored how intermediate goal progress influences teachers' perseverance (i.e., grit). They instead examined grit as a predictor to adaptive outcomes. For example, grit was predictive of teachers' retention and teaching effectiveness (Duckworth et al., 2009; Robertson-Kraft & Duckworth, 2014).

In the present study, for those teachers less prone to extensively compare alternative goals or means at work, achievement goal progress served as a contributor to their perseverance. This finding is salient because grit has mostly been treated as a useful trait-like individual level attribute for choosing or hiring novice teachers. As a teacher, engaging in an array of teaching-related activities is stressful and challenging; efforts and time spent in teaching often is not proportional to the recognition or approval that could be received (Duckworth et al., 2009). Based

on the present finding, teachers are able to enhance their perseverance through making progress on self-developed intermediate achievement goals.

Third, for teachers with low assessment, perseverance had a positive impact on subjective well-being (*Hypothesis 2e* was supported for the low assessment group;  $\beta = .261$ ,  $t = 2.125$ ,  $p = .036$ ). This is in line with previous research. For example, Singh and Jha (2008) reported a positive association between grit and subcomponents of subjective well-being. Vainio and Daukantaitė (2016) demonstrated that grit was positively associated with three different well-being variables including subjective well-being. In the present study, the perseverance of those teachers, who were less keen in constant comparisons, contributed to a better sense of life satisfaction.

Fourth, for the low assessment sample, locomotion was unrelated to subjective well-being. (*Hypothesis 2d* was not supported for the low assessment group;  $\beta = .000$ ,  $t = -.002$ ,  $p = .998$ ). This is a unique finding because previous research mostly showed that high locomotion positively related to subjective well-being (Hong et al., 2004; Lent et al., 2005; Lucidi et al., 2016; Kruglanski et al. 2000). However, in this low assessment sample, a better sense of overall satisfaction with life only came from perseverance. Teachers' cognitive and behavioral orientation to swiftly act only produced progress on achievement goals, but did not directly promote a sense of life satisfaction.

Lastly, for teachers with low assessment, assessment was unrelated to subjective well-being, since the path from assessment to subjective well-being was not statistically significant (*Hypothesis 2f* was not supported for the low assessment group;  $\beta = -.066$ ,  $t = -.655$ ,  $p = .514$ ). This is in line with prior research. Previously, researchers demonstrated that high assessment (along with low locomotion) was negatively associated with adaptive psychological states such as self-esteem and optimistic thinking (Chen et al., 2018; Kruglanski et al. 2000; Pierro et al., 2008,



2011). Following this thought, for teachers with low assessment, the low assessment levels might either lead to better subjective well-being or not affect the evaluations of their lives. Garcia et al. (2015) found that assessment was negatively associated with high school students' psychological well-being. However, in the present study, for teachers with low assessment, the low assessment levels did not affect the overall evaluations of their lives.

**The role of locomotion and assessment in K-12 in-service teachers' achievement goal progress, perseverance, and subjective well-being for the sample of 117 teachers with high assessment levels.** In the present study, I found: for teachers with high assessment levels, achievement goal progress led to perseverance. Locomotion contributed to subjective well-being. Assessment was negatively related to subjective well-being.

First, for teachers with high assessment, the progress they made towards achievement goals led to perseverance, as the path from achievement goal progress to grit was significant (*Hypothesis 2c* was supported for the high assessment group;  $\beta = .307$ ,  $t = 3.246$ ,  $p = .002$ ). This is an interesting finding because this finding is consistent across teachers with different assessment levels. Regardless of the assessment levels, making progress towards achievement goals fuels teachers' perseverance. As such, achievement goal progress appears to be an impactful contributor to teachers' perseverance.

Second, for the high assessment sample, locomotion had a positive impact on subjective well-being, as the path from locomotion to subjective well-being was significant (*Hypothesis 2d* was supported for the high assessment group;  $\beta = .365$ ,  $t = 3.566$ ,  $p = .001$ ). This means that those teachers more prone to critically evaluate different goals or means are more likely to experience greater life satisfaction, if they also feel comfortable to promptly act on goals. Prior research mostly demonstrated a positive link between high locomotion and subjective well-being (Hong et al., 2004; Lent et al., 2005; Lucidi et al., 2016). However, the present finding differs to some

extent with a conclusion from another study. On a college student sample, Hong et al. (2004) found that subjective well-being was the highest among those students with high locomotion and low assessment levels.

Third, for the high assessment sample, assessment has a direct, negative impact on subjective well-being, as the path from assessment to subjective well-being was significant (*Hypothesis 2f* was supported for the high assessment group;  $\beta = -.219$ ,  $t = -2.458$ ,  $p = .016$ ). Similarly, Kruglanski et al. (2000) indicated that high assessment negatively related to wellbeing measures such as positive emotions and optimistic thinking. Similarly, Garcia et al. (2015) discovered that high school students with high assessment levels had higher grades, however, felt less happy. High assessment emphasizes “doing it right.” Therefore, teachers with high assessment may be sensitive to the perception of them or their work by others. Researchers have suggested that those with high assessment took others’ criticisms seriously, regardless of whether the criticisms truly mattered (Higgins et al., 2003; Pierro et al., 2002). Also, due to self-perceived social pressures, those high in assessment constantly ruminated about their decisions or performances, and ended up feeling unhappy (Nima et al., 2013).

Fourth, for teachers with high assessment, locomotion was unrelated to achievement goal progress, since the path from locomotion to achievement goal progress was not significant (*Hypothesis 2a* was not supported for the high assessment group;  $\beta = .188$ ,  $t = 1.920$ ,  $p = .058$ ). This means high assessment hindered achievement goal progress, even given high levels of locomotion. Previous researchers offered evidence to support this finding. Those with high assessment procrastinated on tasks (Pierro et al., 2011) and often acted slower upon goals (Mauro et al., 2009).

In the present study, prior to splitting the entire sample by assessment level, locomotion was found to have a positive impact on achievement goal progress. However, when examining

this relationship in the high assessment sample, locomotion's positive contribution to achievement goal progress was offset by high assessment levels. This finding is intriguing, because this means that for K-12 teachers, high assessment levels, or excessive critical evaluations on goals or means, may harm achievement goal progress, even if they are comfortable to swiftly act on goals. High assessment is counter-productive for K-12 in-service teachers to realize meaningful achievement goals.

Lastly, for teachers with high assessment, grit did not contribute to subjective well-being, as the path from grit to subjective well-being was not statistically significant (*Hypothesis 2e* was not supported for the high assessment group;  $\beta = .001$ ,  $t = .009$ ,  $p = .993$ ). This finding is contrary to previous research. For example, Singh and Jha (2008) discovered a positive association between grit and subcomponents of subjective well-being. Vainio and Daukantaitė (2016) demonstrated that grit was positively related to three different well-being variables including subjective well-being.

The present study adds to the self-regulatory modes research with new insights drawn from a sample of K-12 in-service teachers. The present finding suggests that high assessment level seems to offset the effects of grit on teachers' subjective well-being. In contrast to high locomotion, high assessment seems to associate with less beneficial goal-directed outcomes for teachers.

## **General Discussion**

In this research, I sought to illuminate the factors that explain why certain teachers strive more towards achievement goals and perseverance, while others change course or disengage from those goals. Research into teachers' perseverance is in its infancy. With the present research, I made a contribution to teachers' retention literature through clarifying the antecedents of teachers' perseverance. An important finding in the present research is that achievement goal

progress was consistently positively related to perseverance. As discussed earlier, researchers have not yet investigated the influence of intermediate goal progress on teachers' perseverance (i.e., grit). Grit has been treated as a fairly fixed, trait-like personal attribute for the selection of novice teachers (Duckworth et al., 2009). Grit was used to distinguish those who were equipped with a psychological strength to overcome various challenges in teaching from others (Duckworth et al., 2009). As a consistent finding across my two studies, teachers were able to enhance their perseverance through making progress on self-developed intermediate achievement goals. This further suggests the importance of goal-setting for teachers. A practical implication is that efforts to enhance K-12 teachers' perseverance should focus on teachers' goal setting, goal attainment, as well as the alignment between goals set by school administrators and teachers' self-developed achievement goals. Teachers' professional development programs should target or include these areas.

The present research also made a contribution to the research on passion. Harmonious passion for teaching was positively associated with achievement goal progress, which was an antecedent of teachers' perseverance. Also, harmonious passion for teaching had a direct positive association with subjective well-being. Further, the distinction between harmonious passion for teaching and obsessive passion for teaching was found. Obsessive passion for teaching led to a negative effect on achievement goal progress. As such, for K-12 in-service teachers, harmonious passion for teaching, not obsessive passion for teaching, is advantageous for achieving goal-directed outcomes and overall happiness in life. In this research, 97.8% of the teachers (Study 1) were passionate about teaching (with a Passion Criteria score of at least 4). So the amount of passion was high across the board, it was the type or quality of passion that mattered. Researchers have found that harmonious passion for teaching and obsessive passion for teaching were invariant across at least a three-month period (Carbonneau et al., 2008; Moe, 2016). Therefore, an

important question to address in future research is: how can harmonious passion for teaching be developed or improved?

This research also contributed to the literature on self-regulatory modes. To date, the constructs of locomotion and assessment have not been previously studied in teachers' context. For the first time, in this research I addressed the ways locomotion and assessment influenced K-12 in-service teachers' achievement goal progress, level of perseverance relative to long-term pursuits, and subjective well-being. An important finding is that high locomotion had a greater potential for achieving positive goal-directed outcomes and subjective well-being than high assessment. Excessively pondering upon alternative goals or means (high assessment) was not beneficial for K-12 teachers' goal-directed outcomes or subjective well-being. Instead, taking prompt actions could translate into concrete progress on work-related achievement goals. So a natural question in future research is: in what ways could teachers' locomotion be strengthened?

The present research offered insights to address a gap in Self-Determination Theory research (Deci & Ryan, 1985, 1991; Ryan & Deci, 2017). Why do highly motivated individuals still fail to act sometimes? In this research, I found that teachers with high locomotion were better equipped to make meaningful progress towards self-developed achievement goals. This suggests that locomotion -- a strong inclination to "do it now" -- is an effective self-regulatory mechanism to drive concrete actions. As Cairns et al. (1996) indicated, intention or motivation are important predictors of behavior or action, but they sometimes are not the most critical factors.

### **Limitations**

This research is not without limitations. First, correlations between harmonious passion and obsessive passion varied across previous studies (Carbonneau et al., 2008; Vallerand, 2015; Vallerand et al., 2003). This indicated that the two types of passion might either be orthogonal or as a function of the activity that the individual is passionate about (Carbonneau et al., 2008). In

this research (Study 1), the correlation coefficient between harmonious passion for teaching and obsessive passion for teaching was significant ( $r = .198, p < .01$ ). This observation suggested that for teachers in this study, the quality of their passion possibly was influenced by some underlying characteristics of teaching (or a common contextual factor that influenced the teachers in this sample). Thus, there should be cautious interpretation of the interrelationships between each type of passion and teachers' goal-directed outcomes.

Second, on one hand, I made efforts to ensure that each sampling population from which participants were drawn was as representative as possible across a variety of characteristics (such as school setting, school district, school level). Based on the data from the 2011-2012 Schools and Staffing Survey (National Center for Education Statistics, 2012), the ethnic composition of Oklahoma K-12 teachers was as follows: 82% White, 3.5% Black, 8.6% Native American/Alaska Native, 1.1% Hispanic, and 4.5% two or more ethnicities. The ethnic breakdown of Study 1 participants ( $N = 448$ ) was very close to this overall ethnic composition, however, with higher percentages of Hispanic (3.8%) and Asian (1.1%) participants. The ethnic composition of Study 2 participants ( $N = 223$ ) was also close to the overall ethnic composition, however, with higher percentages of Black (4.5%) and Asian (2.2%) participants, and a lower percentage of Native American/Alaska Native (6.3%). On the other hand, due to a lack of data on other socio-demographic information of Oklahoma K-12 teachers (such as the distribution of age groups across the entire population of Oklahoma K-12 teachers), it is difficult to completely ascertain the representativeness of the samples in this research.

Third, there may be some degree of self-selection bias. Participation in this research was voluntary. Perhaps the teachers who chose to participate in the present research were more self-reflective of their passion in teaching. Fourth, the Short Grit Scale is a well-established, widely applied measure to capture the future-oriented psychological strength in sustaining efforts towards long-term goals despite challenges (Duckworth & Quinn, 2009; Duckworth et al. 2010;

Eskreis-Winkler et al., 2014; Reed et al., 2013). In this research, through examining the scale's psychometric property, I discovered that across two independent, random samples of teachers, one item in Grit-S was not as internally consistent as other items in the scale. The item was "Setbacks don't discourage me." It had lower corrected item-total correlation value. Negative wording ("don't") might have introduced ambiguity for participants to derive meaning or accurately respond to an item (Roszkowski & Soven, 2010). Future research may modify this negatively worded item in Grit-S for teacher samples.

Fifth, the data was self-reported in nature. So participants' responses may be potentially subject to some degree of recall bias and social desirability. Sixth, the present research did not include control variables such as age, gender, years of experience, as there was no clear evidence to treat any specific variable as a confounding factor in the present study. Nonetheless, this approach did not rule out the possibilities of examining any potential confounding variables. The predictor variables in this research showed a stronger predictive effect on teachers' subjective well-being than on teachers' goal-directed outcomes. For example, the regression model in Study 1 explained 27.1% of the variance in subjective well-being; in Study 2, for the high assessment group, the regression model accounted for 14.2% of the variance in subjective well-being. Meanwhile, the predictor variables in this research explained approximately 4.5% to 13.2% of the variation in teachers' goal-directed outcomes (achievement goal progress and perseverance). Future research should consider introducing other meaningful variables into the conceptual model for further exploration of their effects.

Lastly, the present research used a cross-sectional design, which did not permit causal inferences. Future research should consider a longitudinal design in order to examine possible causal relationships among teachers' passion for teaching, self-regulatory modes, goal-directed outcomes, and subjective well-being.

## **Future Research**

This research contributed to a better understanding of unique sources of motivation (passion for teaching) and self-regulatory mechanisms (locomotion, assessment) that influence goal-directed outcomes and subjective well-being of teachers. Arguably, expert teachers typically are those with many years of experience, who have gradually learned from past challenges or failures, and developed adaptive expertise (Gibson & Ross, 2016). Further, adaptive expertise may enable teachers to carry out teaching or teaching-related activities in a more flexible and creative manner (Bransford et al., 2005). As such, researchers considering future studies could examine whether and how teachers' adaptive expertise might influence their self-regulatory modes, goal-directed outcomes, and subjective well-being.

Future research may further address school-level programs or policies beneficial to teachers' goal striving and overall happiness. Does any school-level, district-level, or state-level assessment criterion or approach impact the levels of locomotion and assessment of teachers? Previous research offered evidence that state-level accountability policies influenced teachers' turnover intent (Ryan et al., 2017). Thus, future studies could examine: (a) the degree of alignment between teachers' self-regulatory modes and the specific measures of teaching effectiveness imposed by the school, district, or state, and (b) how such alignment or misalignment might influence teachers' goal-directed outcomes and subjective well-being.



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## APPENDICES

### APPENDIX A

#### **The Passion for Teaching Scale (Carbonneau et al., 2008)**

Please read each of the following statements and decide how much you agree with each according to your beliefs and experiences. Please respond according to the following scale:

<b>Do not agree at all</b>	<b>Hardly agree</b>	<b>Slightly agree</b>	<b>Somewhat agree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Very strongly agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>

1. I spend a lot of time doing my job as a teacher.
2. I like my job as a teacher.
3. My job as a teacher is important for me.
4. My job as a teacher is a passion for me.
5. My job as a teacher is in harmony with the other activities in my life.
6. I have difficulties controlling my urge to do my job as a teacher.
7. The new things that I discover doing my job as a teacher allow me to appreciate it even more.
8. I have almost an obsessive feeling for my job as a teacher.
9. My job as a teacher reflects the qualities I like about myself.
10. My job as a teacher allows me to live a variety of experiences.
11. My job as a teacher is the only thing that really turns me on.
12. My job as a teacher is well integrated in my life.
13. If I could, I would only do my job as a teacher.
14. My job as a teacher is in harmony with other things that are part of me.
15. My job as a teacher is so exciting that I sometimes lose control over it.
16. I have the impression that my job as a teacher controls me.

\* Key for the Passion Scale:

# 1-4, Passion Criteria

# 5, 7, 9, 10, 12, 14, Harmonious Passion

# 6, 8, 11, 13, 15, 16, Obsessive Passion

### Locomotion and Assessment Scales (Kruglanski et al., 2000)

Please read each of the following statements and decide how much you agree with each according to your beliefs and experiences. Please respond according to the following scale:

<b>Strongly disagree</b> <b>1</b>	<b>Moderately disagree</b> <b>2</b>	<b>Slightly disagree</b> <b>3</b>	<b>Slightly agree</b> <b>4</b>	<b>Moderately agree</b> <b>5</b>	<b>Strongly agree</b> <b>6</b>
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#### Locomotion Items:

1. I don't mind doing things even if they involve extra effort.
2. I am a "workaholic."
3. I feel excited just before I am about to reach a goal.
4. I enjoy actively doing things, more than just watching and observing.
5. I am a "doer."
6. When I finish one project, I often wait a while before getting started on a new one. (Reverse scored)
7. When I decide to do something, I can't wait to get started.
8. By the time I accomplish a task, I already have the next one in mind.
9. I am a "low energy" person. (Reverse-scored)
10. Most of the time my thoughts are occupied with the task that I wish to accomplish.
11. When I get started on something, I usually persevere until I finish.
12. I am a "go-getter."

#### Assessment Items:

1. I never evaluate my social interactions with others after they occur. (Reverse-scored)
2. I spend a great deal of time taking inventory of my positive and negative characteristics.
3. I like evaluating other people's plans.
4. I often compare myself with other people.
5. I don't spend much time thinking about ways others could improve themselves. (Reverse-scored)
6. I often critique work done by myself and others.
7. I often feel that I am being evaluated by others.
8. I am a critical person.
9. I am very self-critical and self-conscious about what I am saying.
10. I often think that other people's choices and decisions are wrong.
11. I rarely analyze the conversations I have had with others after they occur. (Reverse-coded)
12. When I meet a new person I usually evaluate how well he or she is doing on various dimensions (e.g., looks, achievements, social status, clothes).

### Achievement Goal Progress Scale (Brunstein et al., 1998)

Personal goals refer to the objectives, plans, and projects that you have pursued lately and that you intend to work on in the near future. Achievement goals are defined as goals striving for achievement experiences. First, please carefully read the following example for an achievement goal:

*Example: "I am very engaged in enhancing my delivery of course content. I am learning to use more tech tools, and would like to actually implement some new ways of teaching soon."*

Next, please briefly write down one achievement goal that you have pursued lately (for the past few months) and intend to reach over the next few months. Note that if you have not set an achievement goal, simply select the option "Not Applicable/No Goal."

Lastly, please read a set of statements for you to assess how much progress you have made towards this goal:

1. I have made a great deal of progress in the attempt of advancing this goal.
2. I have hardly made any progress in accomplishing this goal (Reverse scoring).
3. I have quite a lot of success in pursuing this goal.
4. Many of my efforts in realizing this goal have failed (Reverse scoring).

Then please decide the extent to which you agree with each statement, using the scale below:

<b>Strongly disagree</b>	<b>Somewhat disagree</b>	<b>Neither disagree nor agree</b>	<b>Somewhat agree</b>	<b>Strongly agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

**Short Grit Scale (Grit-S; Duckworth & Quinn, 2009)**

Please respond to the following 8 items using the scale below. Please be honest -- there are no right or wrong answers.

<b>Not like me at all 1</b>	<b>Not much like me 2</b>	<b>Somewhat like me 3</b>	<b>Mostly like me 4</b>	<b>Very much like me 5</b>
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1. New ideas and projects sometimes distract me from previous ones (Reverse scoring).
2. Setbacks don't discourage me.
3. I have been obsessed with a certain idea or project for a short time but later lost interest (Reverse scoring).
4. I am a hard worker.
5. I often set a goal but later choose to pursue a different one (Reverse scoring).
6. I have difficulty maintaining my focus on projects that take more than a few months to complete (Reverse scoring).
7. I finish whatever I begin.
8. I am diligent.

**Satisfaction With Life Scale (SWLS; Diener et al., 1985)**

Below are five statements that you may agree or disagree with. Using the scale below, indicate your agreement with each item. Please be open and honest in your responding.

<b>Strongly disagree 1</b>	<b>Disagree 2</b>	<b>Slightly disagree 3</b>	<b>Neither agree nor disagree 4</b>	<b>Slightly agree 5</b>	<b>Agree 6</b>	<b>Strongly agree 7</b>
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1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

## APPENDIX B



### Oklahoma State University Institutional Review Board

Date: 09/18/2018  
Application Number: ED-18-106  
Proposal Title: In-service K-12 teachers' passion for teaching, perseverance, and happiness

Principal Investigator: Jun Fu  
Co-Investigator(s): Sue Jacobs  
Faculty Adviser: Sue Jacobs  
Project Coordinator:  
Research Assistant(s):

Processed as: Exempt

#### **Status Recommended by Reviewer(s): Approved**

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The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 223 Scott Hall (phone: 405-744-3377, [irb@okstate.edu](mailto:irb@okstate.edu)).

Sincerely,

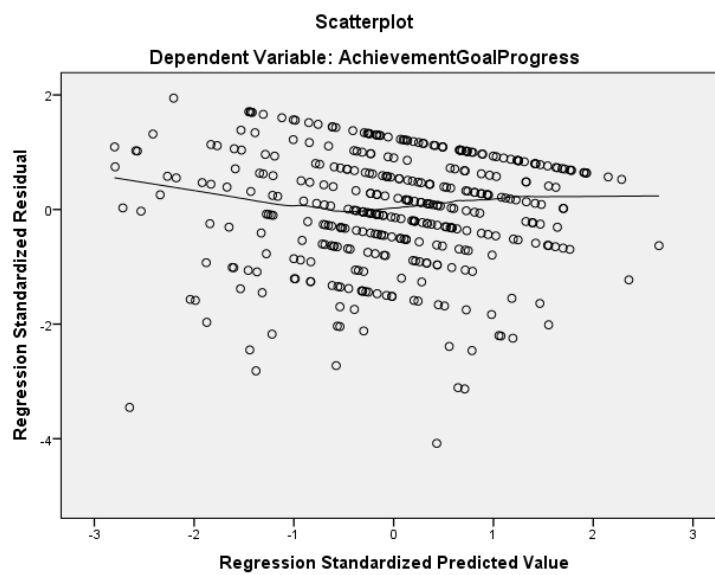
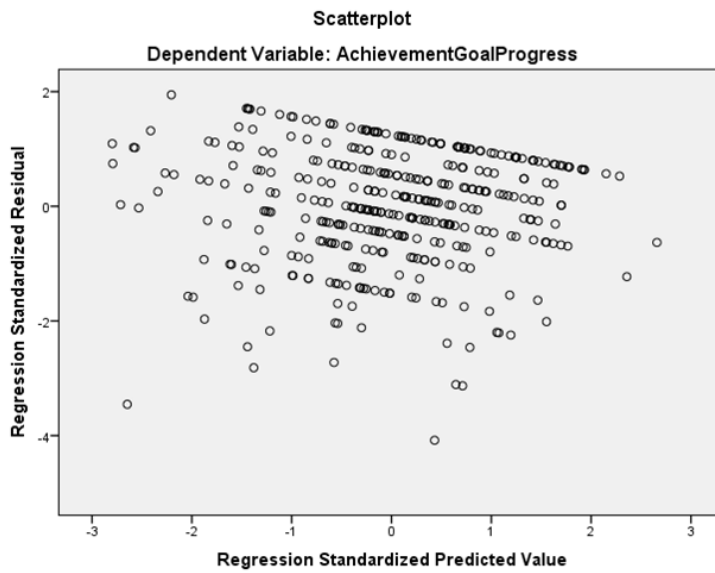
A handwritten signature in black ink, appearing to read 'Hugh Crethar'.

Hugh Crethar, Chair  
Institutional Review Board

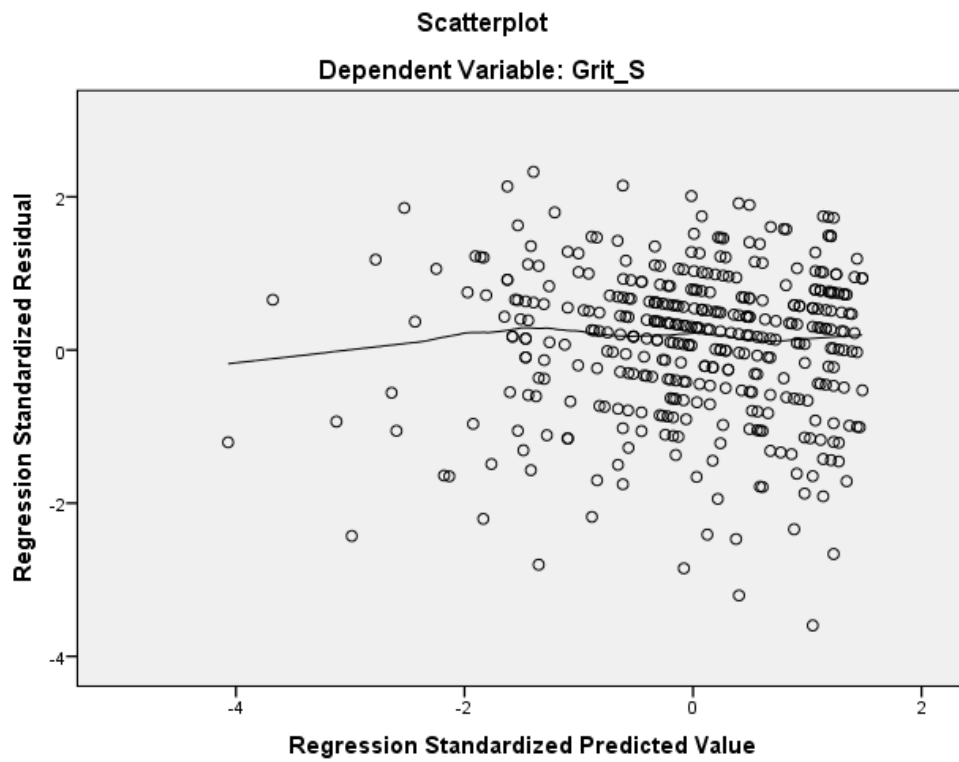
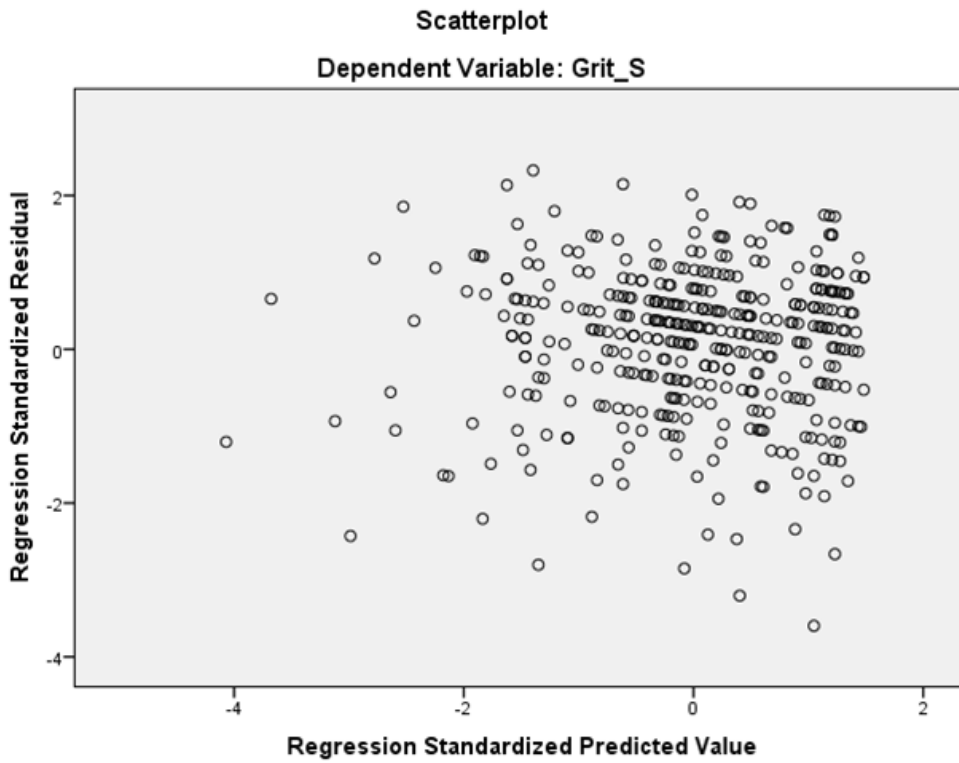
## APPENDIX C

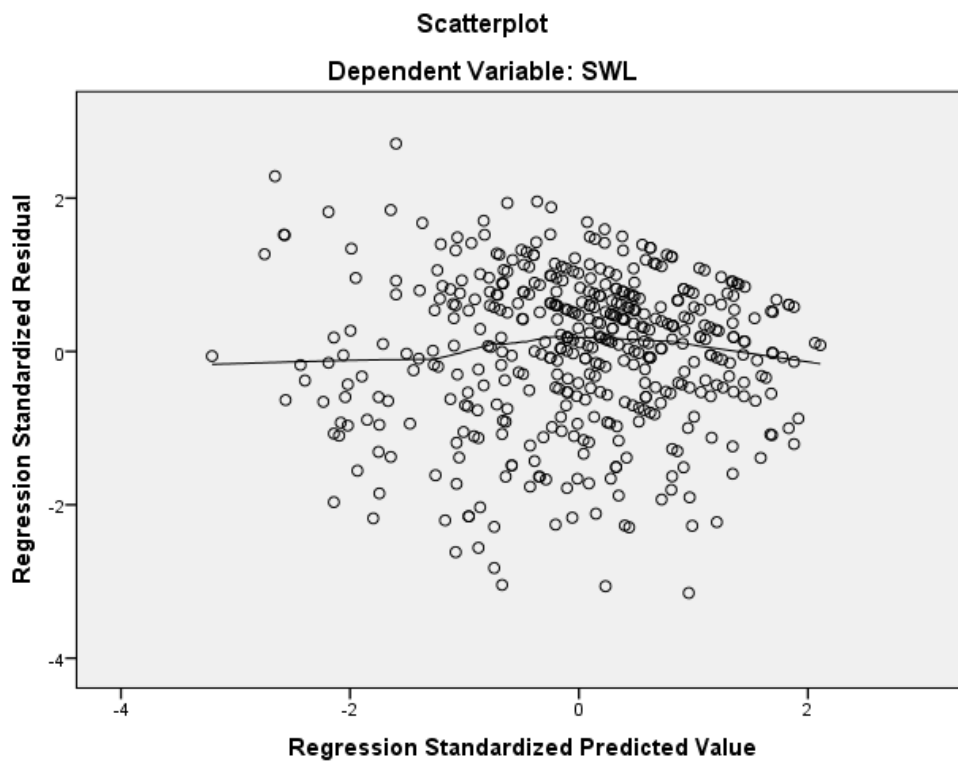
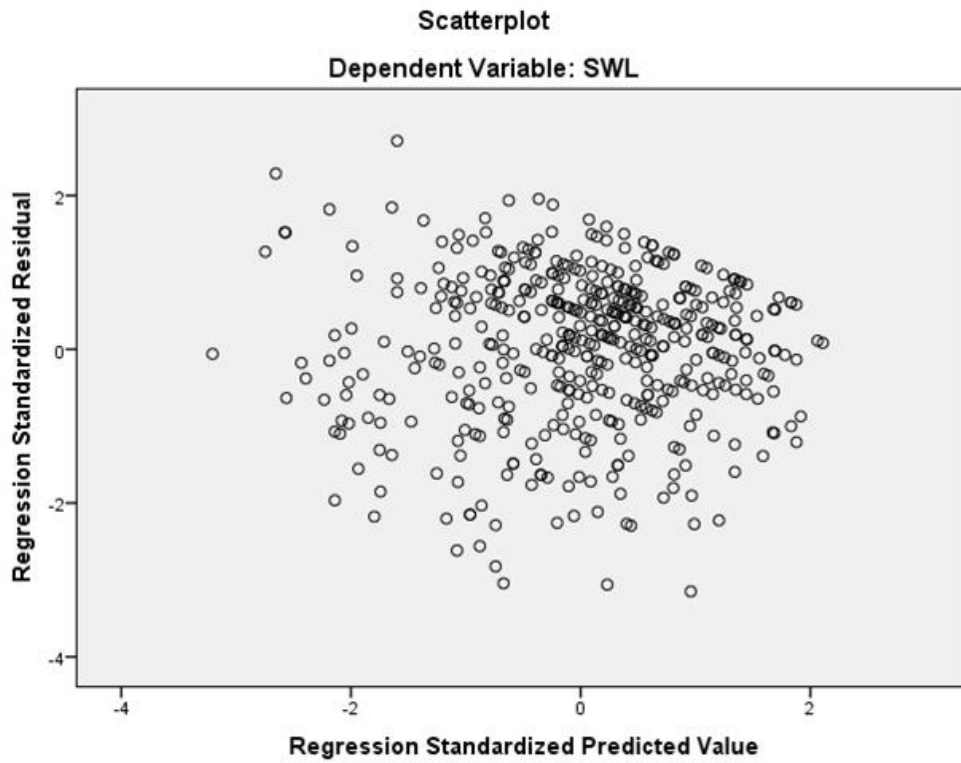
### Scatter Plots of Residuals and Dependent Variable Values

Study 1:

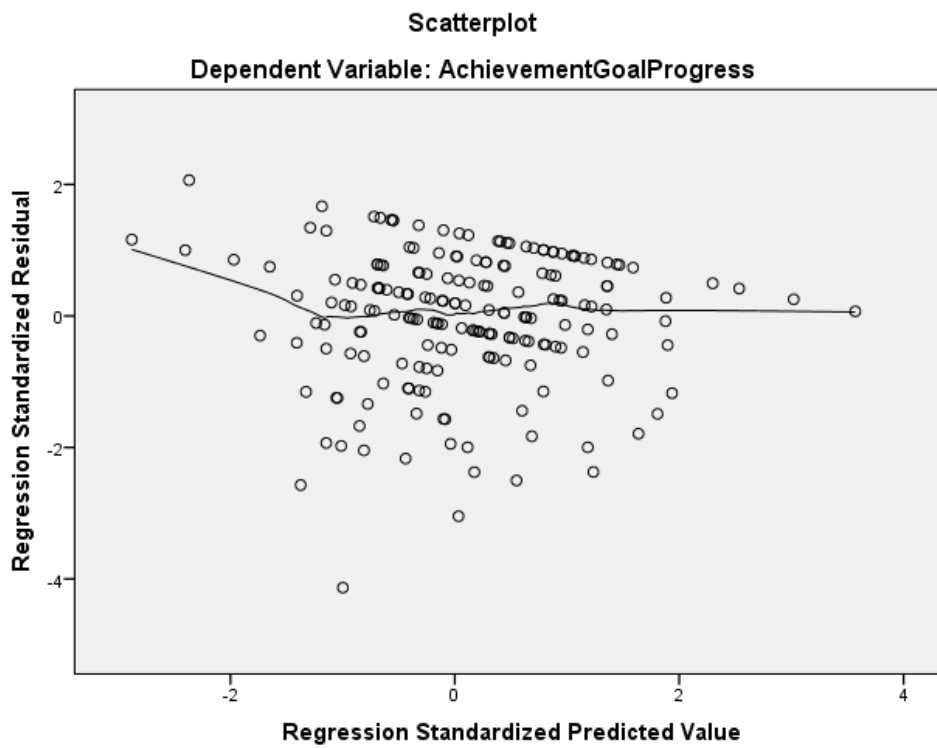
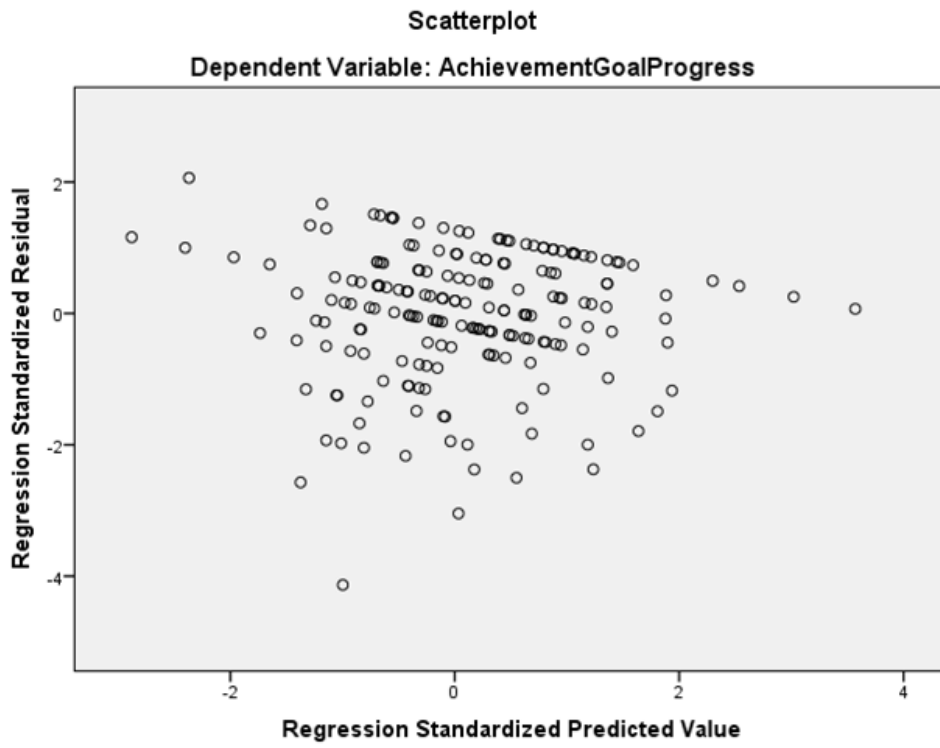


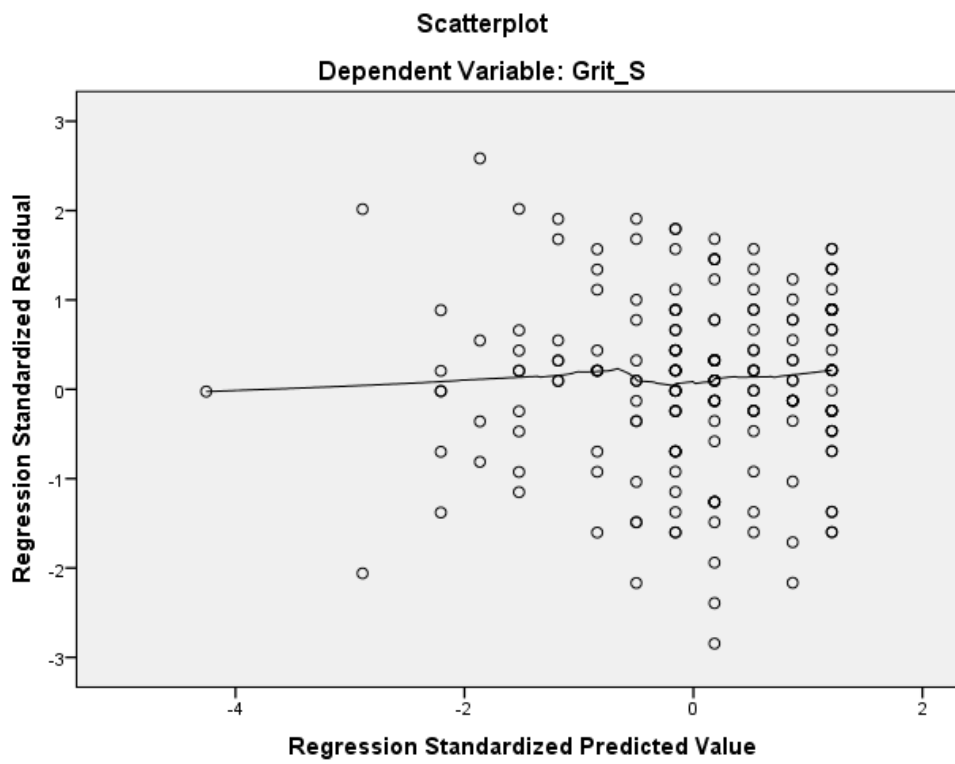
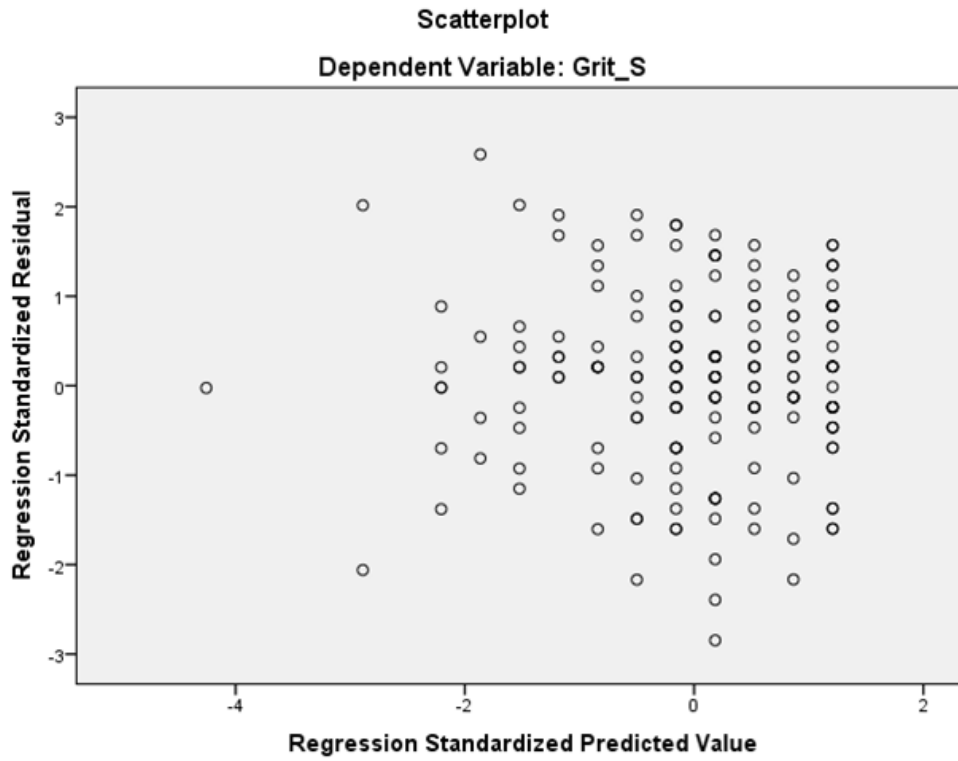


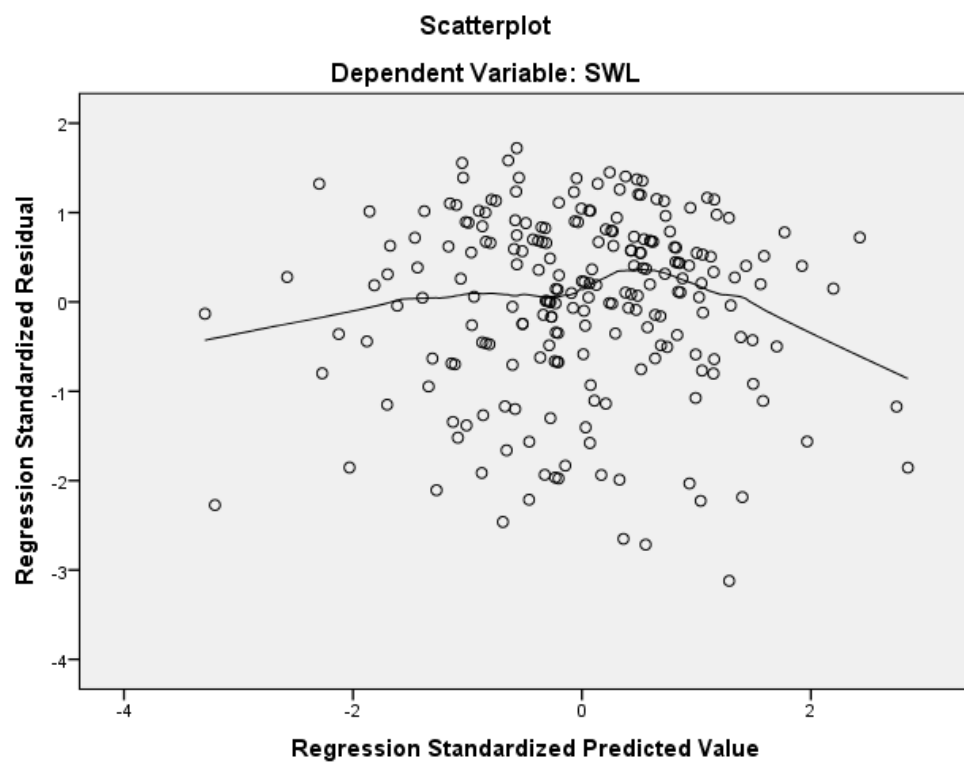
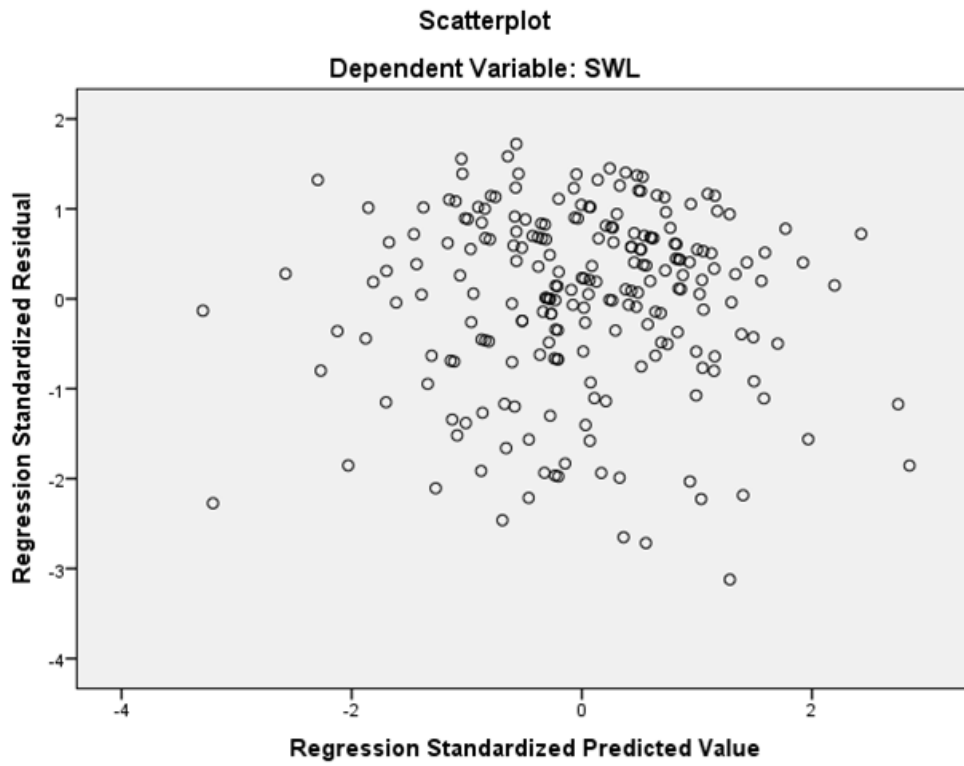




Study 2:



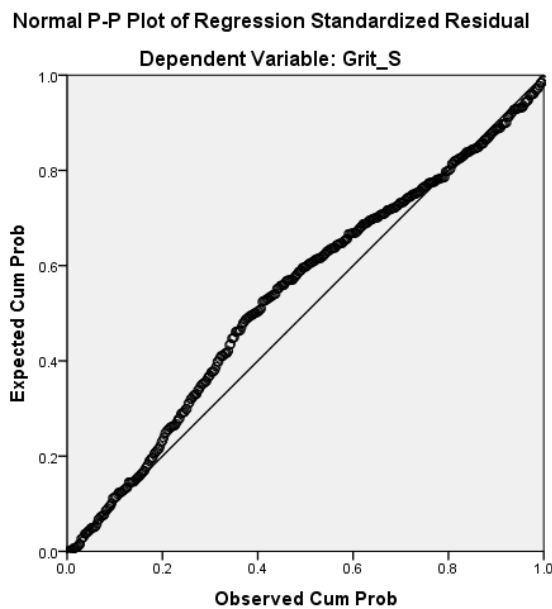
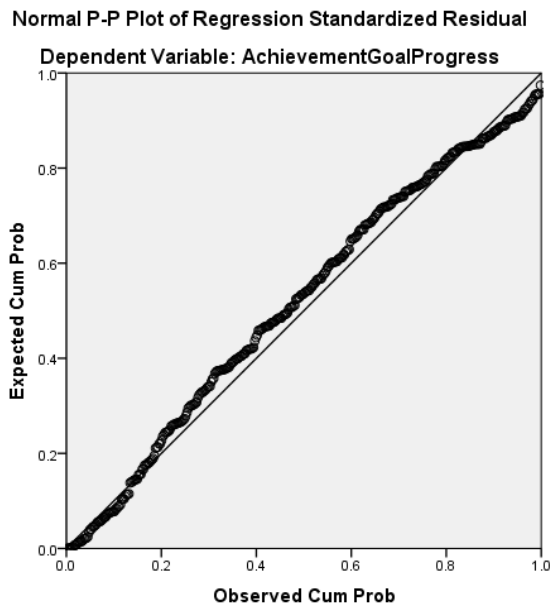




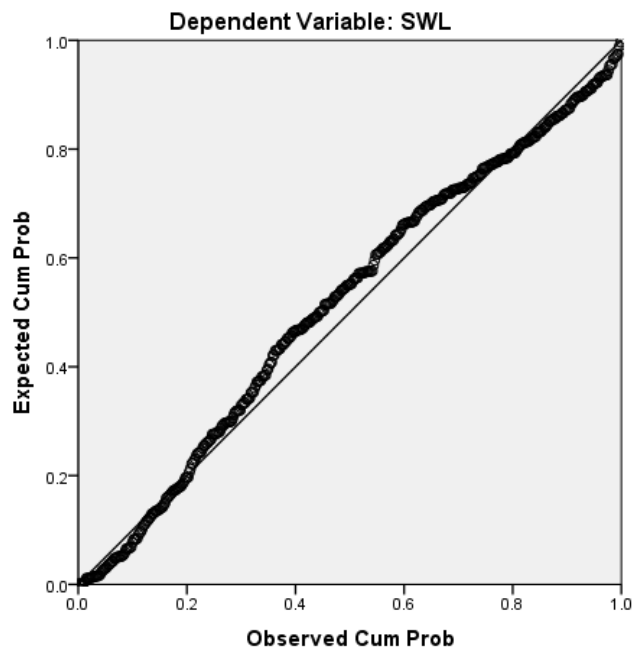
APPENDIX D

Normal Percentile-Percentile (P-P) Plots

Study 1:

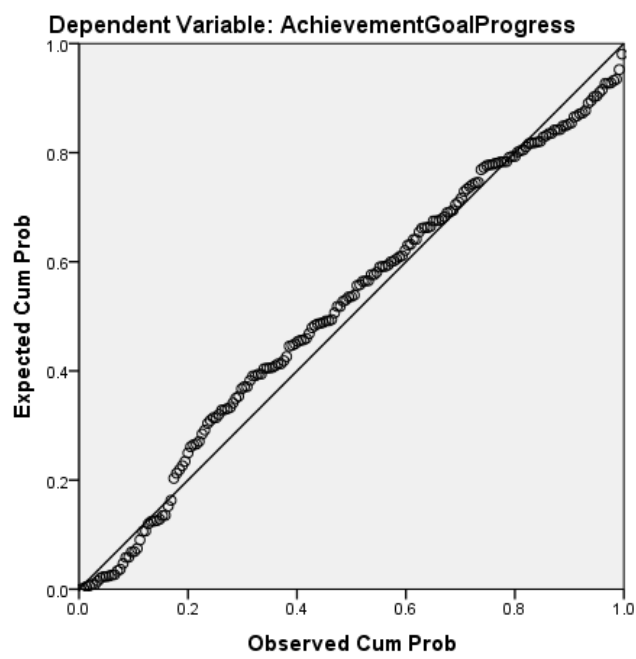


Normal P-P Plot of Regression Standardized Residual

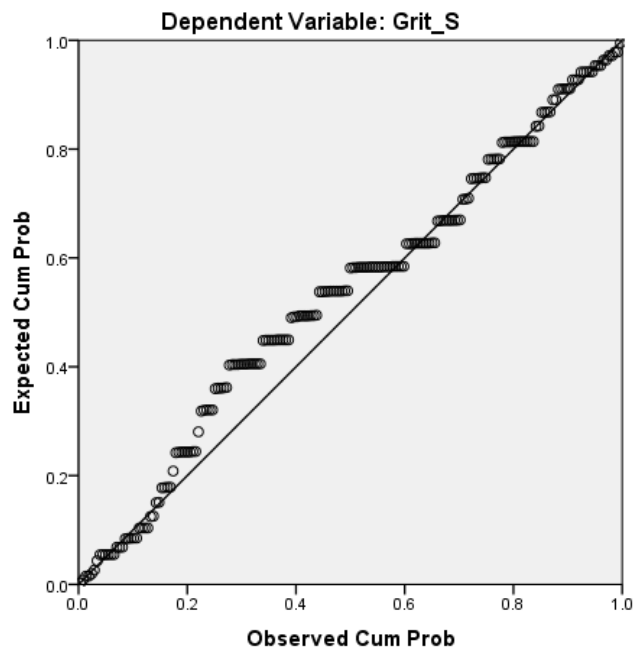


Study 2:

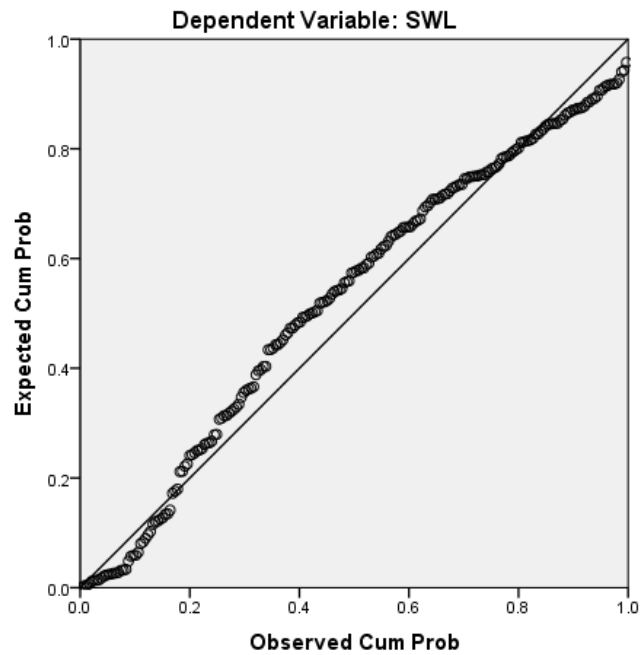
Normal P-P Plot of Regression Standardized Residual



Normal P-P Plot of Regression Standardized Residual



Normal P-P Plot of Regression Standardized Residual





VITA

Jun Fu

Candidate for the Degree of

Doctor of Philosophy

Dissertation: LINKING PASSION FOR TEACHING AND SELF-REGULATORY  
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American Educational Research Association