Does Perceived Wellness Influence Employee Work Engagement? Examining the Effects of Wellness in the Presence of Established Individual and Workplace Predictor Variables

DISSERTATION

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By

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Abstract

Work engagement and employee wellness are important issues in human resource development. Guided by Conservation of Resources theory and the Job Demands-Resources Model, this study examined the effect perceived wellness had on teachers’ reported levels of work engagement. While previous studies have examined discrete domains of wellness and their relationship to work engagement, no study had examined perceived, holistic wellness and its relationship to work engagement. As workplace wellness programs offer services that reflect components of holistic wellness, it is desirable to understand the variability holistic wellness can explain in work engagement.

A cross-sectional survey was conducted to collect data from a sample of K-12 teachers. In addition to collecting data on perceived wellness and work engagement, additional data were collected for the control variables of psychological capital, supervisory support, and work autonomy. Tests for linear regression, hierarchal regression, multiple regression, and mediation were conducted to evaluate the research questions. Findings from the study suggested those higher in wellness have higher levels of work engagement, that wellness predicts unique variance in work engagement in the presence of established personal and job resource predictor variables, and that there is a partially mediated effect from wellness to work engagement through psychological capital.
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Chapter 1: Introduction

Employee work engagement is a positive affective-motivational state of work-related well-being that is characterized by employees being involved in their work roles, finding meaning in their work, and demonstrating physical, emotional, and cognitive energy toward their work activities (Kahn, 1990; Leiter & Bakker, 2010). While work engagement has been studied in fields such as psychology, business, education, and healthcare, it remains an important variable in human resource development as work engagement has been shown to predict individual and workplace performance outcomes (Harter, Schmidt, & Hayes, 2002; Macey & Schneider, 2008; Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010; Kim, Kolb, & Kim, 2012). The effects of work engagement have been demonstrated through relationships with outcome variables such as employee productivity, job performance, use of discretionary effort, role expansion, organizational citizenship behavior, employee turnover, employee safety, customer loyalty, and firm profitability (Harter et al., 2002; Schaufeli, Taris, & Bakker, 2006; Macey & Schneider, 2008; Halbesleben, 2010; Shuck, 2011).

Factors that Influence Work Engagement

The Job Demands-Resources (JD-R) model is the prominent conceptual framework to understand the antecedent variables that influence work engagement (Bakker & Demerouti, 2007; 2008). The JD-R model posits that the strength of an employee’s resources whether work-related or personal predict the level of the
employee’s work engagement (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Bakker & Demerouti, 2007). The level of work engagement for the employee then predicts their performance outcomes, and the collective engagement of the employee or workgroup then predicts the performance outcomes for the organization. Job demands moderate the effect of the resources when predicting work engagement. If levels of resources are high, high job demands have been shown to predict high measures of work engagement, indicating employees with greater resource reserves can rise to the occasion for challenging work activities when required of them (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007). Examples of job demands are time pressure, role overload, role conflicts, and emotional demands associated with clients. The JD-R model can be seen in Figure 1.

Figure 1: The Job Demands-Resources Model of Work Engagement
Adapted from Bakker & Demerouti (2007; 2008)
Examples of job resources that have been shown to predict engagement are co-worker relations and social support, supervisory support, work autonomy, person-job fit, task significance, task variety, feedback, opportunities for development, and organizational climate (May, Gilson, & Harter, 2004; Saks, 2006; Bakker & Bal, 2010; Halbesleben, 2010). Job resources can vary by the occupation, supervisor, department, and the specific organization.

Personal Resources as Predictors of Work Engagement

Whereas job resources can vary by professional occupation or work environment of the employee, personal resources are associated with the individual worker and may be relatively stable to that individual. Personal resources and work engagement have been studied primarily from an emotional-psychological perspective and a family-work perspective (Halbesleben, 2010; Sweetman & Luthans, 2010). Examples of personal resources from an emotional-psychological perspective that have been shown to predict engagement are self-efficacy, self-esteem, optimism, positive affect, resilience, and hope (Halbesleben, 2010; Sweetman & Luthans, 2010). These emotional-psychological variables that influence work engagement have been studied through the lens of social cognitive theory, the broaden and build theory of positive emotions, and conservation of resources (COR) theory (Salanova et al., 2010). Examples of personal resources that have been shown to predict work engagement from a family-work perspective are family-work congruence, family-work enrichment, and family support (Halbesleben, 2010, Siu, et al., 2010; Tement, 2014). These family-work variables have been studied through role accumulation, work-home resources, and spillover theory (Rothbard, 2001; Siu, et al., 2010; Tement, 2014).
The Concept of Wellness

Wellness is a construct that refers to a salutogenic or health-enhancing state where an individual seeks to improve their overall functioning to achieve their optimal health and well-being (Myers & Sweeney, 2005a; Granello & Witmer, 2013). Wellness has evolved from solely focusing on the absence of disease and physical health, to an expanded domain that includes spiritual, social, physical, intellectual, emotional, and psychological well-being. Wellness behaviors represent activities in these various domains engaged in by individuals to promote their level of wellness and achieve optimal well-being. The various aspects of wellness, their associated behaviors, and the outcomes from wellness can serve as personal resources for individuals, and these resources may be able to be applied towards work.

Several studies have examined wellness or well-being and their relationship to employee job attitudes and performance. Job attitudes are comprised of related constructs such as job burnout, job satisfaction, employee engagement, organizational commitment, and job involvement (Newman, Joseph, & Hulin, 2010). One study found that wellness variables predicted significant variance in job satisfaction (Connolly & Myers, 2003). Another study found wellness had a negative relationship with burnout and a positive relationship with practicing career-sustaining behaviors (Lawson & Myers, 2010). Further, another study found psychological well-being was correlated with job satisfaction and was a significant predictor of job performance (Wright & Cropanzano, 2000). While these studies demonstrated a relationship between wellness and job attitudes or performance, there has not been a study examining perceived wellness and
work engagement which has operationalized wellness as representing multiple aspects of spiritual, social, physical, intellectual, emotional, and psychological well-being.

Evolving Employee Wellness Programs

In addition to individuals participating in wellness activities on their own, wellness is an evidenced-based framework that can be used to structure group interventions. Workplace wellness programs are potential interventions that can incorporate holistic wellness elements. From their annual benefits benchmarking survey, the Society for Human Resource Management (SHRM) found 59% of members’ organizations offered a formal employee wellness program in 2017, and 24% of organizations increased wellness benefits offered to employees (SHRM, 2017). Workplace wellness programs were originally developed from a disease prevention-treatment paradigm to mitigate the effects of illness-related losses on employee productivity (Mattke et al., 2013). As a result, organizations that offer wellness programs oftentimes evaluate the changes in employee health behaviors, health-related business metrics (absenteeism, presenteeism), and healthcare spending costs (Goetzel et al., 2014). Modern wellness programs are focusing more on the holistic wellness of employees, rather than solely disease prevention and treatment, and are used as a tool in attracting and retaining talent (SHRM, 2017).

While wellness programs are offered at many organizations, they can vary in the services and scope provided. Some programs may offer more limited services, while other programs may offer multiple components that may include a combination of screenings, interventions, and incentives (Mattke et al., 2013). More comprehensive wellness program services may be offered in areas such as nutrition, weight management,
smoking cessation, physical fitness, alcohol and drug abuse, stress management, work-life balance, sleep, mindfulness, social wellness, community involvement, financial wellness, and spirituality (Rath & Harter, 2010; Mattke et al., 2013; OPTUM, 2016; SHRM, 2017). While workplace wellness programs are offered at many organizations and are effective at reducing costs related to employee lost labor and healthcare, it remains unknown if comprehensive wellness has an effect on work engagement.

Statement of the Problem

A majority of studies that examined predictors of work engagement have focused on work resources such as job characteristics, supportive co-worker relationships, and feedback received, with fewer studies focusing on personal resources (Duran, Extremera, & Rey, 2010). A smaller selection of studies that have examined personal resources as predictors of work engagement have identified the psychological-emotional and work-family perspectives as explaining variance in work engagement. Far fewer studies have examined wellness behaviors such as physical activity and sleep as predictors of work engagement, but none have systematically studied perceived wellness behaviors as a personal resource predicting work engagement. While recent studies have sought to include additional personal resource variables associated with wellness to identify if the concept of personal resources needs to be expanded, a gap still remains in understanding if perceived wellness is related to work engagement.

This gap in testing a small scope of wellness variables does not generalize to the scope of services offered by a comprehensive workplace wellness program. Wellness and well-being research on employee outcomes suggests that increasing levels of these personal resources has an effect on job attitudes and job performance, and thus there is
reason to assume a relationship may exist with work engagement, a known predictor of workplace performance outcomes. If perceived wellness demonstrates a relationship with work engagement, wellness programs may be considered to not only reduce employee health-related expenses, but to potentially contribute to improved employee performance as well.

Applying a holistic perspective of wellness to work engagement research will add to the understanding of what predicts engagement. Additionally, a more holistic approach to personal resources would allow theories from other disciplines to guide model-building efforts in work engagement research. As a result of this study, the antecedent variables predicting work engagement may need to be expanded to account for perceived wellness. There is a void in the literature describing the overlap between wellness and work engagement. Combining these perspectives in a systematic way will be of interest to researchers and practitioners in both the work engagement and wellness fields. This research study seeks to provide a systematic inquiry into this problem.

Purpose Statement

The purpose of this quantitative study was to examine perceived wellness as a personal resource variable in explaining the outcome variable, work engagement, in the presence of several known personal resource and job resource predictor variables.

Research Design

To address the purpose and research questions of this study, a cross-sectional survey collecting data at one time was employed as the research design. The survey combined established instruments of the variables and collected quantitative data for analysis. Regression analysis was conducted to examine the relationship between
perceived wellness and work engagement. Next, hierarchical regression was conducted to understand if wellness adds unique variance when predicting employee work engagement after controlling for the effects of psychological capital, a known personal resource predictor of work engagement. Then, a multiple regression analysis was conducted to examine the relative contribution of perceived wellness, alongside known personal and job resource variables in predicting work engagement. Job resources were assessed through work autonomy and supervisory support. Finally, a mediation analysis was conducted to further analyze if the relationship between wellness and work engagement is mediated by psychological capital.

Research Questions

1. Does a relationship exist between perceived wellness and work engagement?
2. After controlling for psychological capital, is perceived wellness a significant predictor of work engagement?
3. To what degree do perceived wellness, psychological capital, work autonomy, and supervisory support predict work engagement?
4. Does psychological capital mediate the relationship between perceived wellness and work engagement?

Relationship to Human Resource Development Research

Work engagement and employee wellness are both important constructs to human resource development (Eldor, 2016). Research and practice in human resource development can be described through two paradigms, the learning paradigm and the performance paradigm (Swanson & Holton, 2009). The learning paradigm views growth as good for the individual, believes development should occur in a holistic manner, and
assumes that organizations benefit most when individuals are fully developing. The performance paradigm views development as a means to support employee performance goals, the overall performance of the work system, and sustainable, high-performance cultures. Work engagement has been identified as a predictor of workplace performance outcomes, and thus studying predictors of work engagement that can be fostered through workplace interventions can be seen as representing the performance paradigm in human resource development research. While workplace wellness research can be implemented from the learning paradigm, this study uses the performance paradigm to examine if wellness has an impact on a known predictor of workplace performance.

Significance of the Study

Results of this study are significant for several reasons. These reasons can be grouped by the potential impact on future practice, research, and policy.

Future Practice

Groups that can take advantage of the study are human resource and benefits administrators inside organizations or external firms that offer wellness programs and serve organizations directly. These groups also may use the findings when developing a business case for employee wellness interventions. Similarly, labor unions may be interested in the findings as they may want to prioritize expanded health options for workers they represent. Another group that may benefit from the findings are employees themselves, as the information may encourage them to participate in wellness programs offered by their organization and prioritize their wellness.

Future Research
The present study sought to examine wellness and its effects on engagement in a sample of teachers. Future studies should examine other occupations or use other measures of wellness to test the stability of the findings. While this study examined psychological states in addition to wellness to represent personal resources, future studies may incorporate psychological traits to more fully understand the total effect of personal resource variables on work engagement. Future studies may also examine longitudinal impacts that wellness and work engagement have on each other to examine the gain and loss spirals proposed in COR theory.

Future Policy

State and national policymakers concerned with the healthiness and productivity of their workforce should be concerned with findings of this study. These stakeholders may enact policy initiatives that offer incentives to businesses to have wellness programs or they may review policies related to the scope of healthcare offerings for workers. Similarly, national and international agencies and organizations that focus on workforce and labor markets may be interested in the findings of the study to strengthen their recommendations for implementing healthy workplace initiatives and research agendas.

Delimitations

There are several delimitations to the present study. First, the results are not necessarily generalizable to all types of workers as only one occupation, teachers, was included in the present study. It may be possible that the relationships observed between wellness and work engagement in this study are specific to this occupational population. Sampling a different occupation may have found differing results.
Second, the way wellness was defined and measured can be seen as a delimitation. Scales could have been chosen for each domain of wellness, thus allowing for testing their individual relationship to work engagement. Also, wellness variables may have been defined through biometric measures such as heart rate or cholesterol levels, or instruments that are not self-report measures such as pedometers that track daily physical activity.

A third delimitation is the study employed a cross-sectional design, measuring the predictor and outcome variables simultaneously. An experimental design would allow for the assignment of employees of similar characteristics to control and intervention groups to examine differences in behaviors on work engagement. It is possible that a representative sample was not chosen for this population based on their individual wellness behaviors. Similarly, a longitudinal design may better control for recency bias in responses and in generalizing of wellness behaviors.

Even considering these several delimitations, the study provides insightful findings to the fields of work engagement and workplace wellness research. The findings address gaps in wellness research on employee outcomes, and in the research on personal resources and their effects on work engagement.

Definitions of Constructs and Variables

In this section, operational terms for the main constructs and variables are presented as how they are defined for this study. Further discussion of wellness and work engagement is presented in greater detail in chapter two.

**Personal Resources**- A component of the JD-R model that describes part of the total variance in explaining work engagement (Bakker & Demerouti, 2007). Whereas
work resources describe variables from the work site or work tasks that influence engagement, personal resources describe variables associated with the employee themselves and can range from psychological traits, states, or behaviors (Macey & Schneider, 2008). Personal resources allow employees to potentially influence and better manage their work tasks and work environment (Bakker, & Demerouti, 2008).

**Job Resources**- A component of the JD-R model that describes part of the total variance in explaining work engagement (Bakker & Demerouti, 2007). Whereas personal resources describe variables associated with the employee’s psychological traits, states, or non-work behaviors, job resources are variables associated with a task, position, relations at work, or the work organization. Job resources can help to achieve goals at work, reduce demands placed on employees, or encourage employee development (Hakanen & Roodt, 2010).

**Work Engagement**- A construct describing a positive affective-motivational state characterized by employee displays of behavioral, emotional, and cognitive energy dedicated to work activities (Kahn, 1990; Leiter & Bakker, 2010). Work engagement is comprised of the dimensions of vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Vigor refers to energy, pep, and resilience to perform work tasks. Dedication refers to identification and involvement in work tasks. Finally, absorption refers to being engrossed or a level of immersion in work-related tasks (Sweetman & Luthans, 2010). Work engagement is an indicator of work-related well-being and is related to, but empirically distinct from job satisfaction, job involvement, and organizational commitment (Schaufeli & Bakker, 2010).
Wellness- A construct that refers to a salutogenic or health-enhancing state where an individual seeks to improve their overall personal functioning to achieve their optimal health and well-being (Myers & Sweeney, 2005a; Granello & Witmer, 2013). Wellness is comprised of domains representing spiritual, social, physical, intellectual, emotional, and psychological well-being. Wellness behaviors represent activities engaged in by individuals in these various domains to promote their level of wellness and achieve optimal well-being.

Psychological Capital- A construct representing personal resources from the perspective of positive psychology that describes the combined effects of self-efficacy, resilience, hope, and optimism (Sweetman & Luthans, 2010). Psychological capital can be assessed as a context-free psychological state (Lorenz, Beer, Putz, & Heinitz, 2016).

Work Autonomy- A construct representing job resources that describes an employee’s discretion and authority for selecting, scheduling, and completing work tasks (Breaugh, 1999). May, Gilson, and Harter (2004) found autonomy predicted meaningfulness experienced at work, which in turn predicted work engagement.

Supervisory Support- Another construct representing job resources that describes positive relations, feedback, coaching, encouragement, and involvement from a supervisor (Oldham & Cummings, 1996; Bakker & Bal, 2010). May, Gilson, and Harter (2004) found supervisory relations predicted feelings of safety experienced at work, which in turn predicted work engagement.

Organization of the Study

Chapter one presented an overview of work engagement and described the factors that influence engagement for employees as job resources and personal resources. The
concept of wellness was introduced as a possible source of personal resources, and relevant studies were cited to show its positive impact on employee outcomes. Next, workplace wellness programs were introduced, along with the reasons they are offered, and the components of more comprehensive programs were described. A problem statement was then introduced to support the need to examine perceived wellness as a personal resource variable predicting work engagement. A description of the research design was presented along with the research questions that were designed to address the problem statement. The significance of the study was listed for several groups of stakeholders and delimitations of the study were presented that explain areas of research chosen not to be pursued. Finally, chapter one concluded with operational definitions for key terms used in the study.

Chapter two provides a more in-depth analysis on the theoretical framework used to guide the study, the seminal literature on work engagement, differing models of wellness, and research studies that have examined aspects of wellness and work engagement. Chapter three specifies the research design, sample selection, data collection procedures, instrumentation, and data analysis methods used in the study. Chapter four describes results from the survey and from the data analysis procedures. Chapter five provides discussion around the results of the study and their implications, along with future research directions.
Chapter 2: Literature Review

This chapter is comprised of five sections. The first section introduces conservation of resources (COR) theory as the theoretical framework used to guide the research questions. Tenants of COR theory are described, with specific attention paid to how individuals acquire and conserve their resource reserves. The second section describes the seminal studies that have informed the work engagement literature, along with a description of the conditions and outcomes of work engagement. The third section reports results from work engagement studies that have been conducted with teacher populations. The fourth section describes prominent wellness models that have emerged in several disciplines and their various domains. The section concludes by synthesizing the wellness domains across the models to use as a framework for the fifth section. The fifth section uses this framework of wellness domains to structure a literature review of previous studies that have examined the relationships between various wellness variables and work engagement. The chapter concludes with a summary of the findings and several observations from the literature reviewed.

Conservation of Resources Theory

As work engagement was originally thought to be the opposite of job burnout, psychological and pathological theories of work-life were examined to see if they could explain work engagement. A prominent theory identified that is associated with engagement is COR theory (Hobfoll, 1989; 2001). COR theory evolved out of studies...
explaining stress and its lack of a testable theoretical framework (Hobfoll, 1989; 2001). COR theory posits individuals build and maintain their personal resources, and that stressors detract from these resource reserves. Resources can encompass physiological states such as self-esteem or mastery, or roles such as employment status and social class. Resources tend to be relatively stable, and can promote problem-solving, self-regulation, or coping that may come from a work challenge or stressor (Hobfoll, 2002). Stress itself comes from a threat, loss, or lacking of these resources. When individuals have higher levels of resources, they tend to invest further in their resources, whereas individuals with lower resources experience greater levels of stress. Individuals will gain and maintain resources differently, have their levels of resources fluctuate, and perceive the value of their resources differently (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014).

In the work context, employees with higher levels of resources more easily find additional resources manifesting as motivation, whereas employees with fewer resources take less advantage of their working environment and tend to experience burnout (Hobfoll, 1989; 2001; 2002). In this aspect of COR theory, gain or loss spirals of resources may be experienced from resulting levels of engagement or burnout representing a cyclical pattern (Salanova et al., 2010). Those with higher levels of resources are less susceptible to resource loss, with resources serving as a buffer for them (Hobfoll, 2011). COR is an appropriate framework when studying work engagement, as greater work and personal resources allow employees to have the energy to fully dedicate themselves behaviorally, cognitively, and emotionally to their work. Research results examining work and personal resources have consistently shown that increasing levels of resources are associated with higher levels of work engagement (Halbesleben, 2010;
Salanova et al., 2010). These results provide support for tenants of COR theory that suggest acquiring and conserving a full range of resources helps individuals be engaged in their work. The research questions in this study examine if perceived wellness, acting as a personal resource, helps to sustain work engagement to further test COR theory.

Work Engagement

Kahn (1990) was the first to describe conditions and outcomes of work engagement in his seminal paper that examined the experiences of summer camp counselors and employees from an architectural firm. Kahn described engagement and disengagement as the degree to which employees participate and bring their “preferred self” into the tasks of the worker role that he or she performs at work. This participation in being engaged can be described as a continuum with embracing and distancing behaviors at each end of the continuum. Embracing behaviors manifest as cognitive, emotional, and physical displays expressed by the employee when performing work tasks. Subsequently, distancing behaviors represent the absence of these displays by the employee.

What Kahn (1990) found was that varying degrees of psychological conditions experienced by the employee, namely meaningfulness, safety, and availability, influenced the employees’ willingness to be engaged in their roles and corresponding work tasks. Meaningfulness refers to the perceived value of investing him or herself in a work task. Safety refers to an absence of fear for fully participating in a work task. Lastly, availability refers to having the resources available to participate in a work task. These three psychological conditions determined the degree to which employees would embrace their work tasks and roles.
The settings Kahn studied varied by their employment length and type, clientele served, work-life balance afforded, hierarchal structure, and job demands placed on the employee (Kahn, 1990). By studying diverse settings and the experiences of the many participants at each site, Kahn synthesized that these conditions of engagement were robust enough predictors to generalize across the individual, interpersonal, group, intergroup, and organizational factors that provide variability from other workers and work environments.

May, Gilson, and Harter (2004) empirically tested the tenet of Kahn’s (1990) theory that meaningfulness, safety, and availability predict work engagement using a structural equation model. The model confirmed various job resources, personal resources, and personality variables predicted these psychological conditions which in turn predicted work engagement. Additionally, several meta-analyses have confirmed the predictor and outcome variables associated with work engagement (Halbesleben, 2010; Christian, Garza, & Slaughter, 2011; Goering, Shimazu, Zhou, Wada, & Sakai, 2017). Macey and Schneider (2008) described outcomes of work engagement as representing in-role and extra-role performance, and adaptive or innovative behaviors.

After Kahn’s initial publication on work engagement, few studies were published on engagement before a survey instrument to measure work engagement was developed. Schaufeli et al. (2002) were studying burnout and developed an instrument to measure engagement that was hypothesized to be the opposite of burnout. The researchers acknowledged the burnout scale was not sufficient to use to measure engagement as lower scores on that scale did not theoretically align with the definition of work engagement they came to understand. The burnout measure consisted of scales for
emotional exhaustion, cynicism, and reduced efficacy, and the work engagement measure consisted of scales for vigor, dedication, and absorption. Vigor items were written to represent the opposite of exhaustion, as both constructs represented an “activation” dimension. Similarly, dedication items were written to represent the opposite of cynicism, as both constructs represented an “identification” dimension. Interviews conducted by Schaufeli and Bakker (2001) indicated absorption though, was a component of engagement that did not represent the opposite of reduced professional efficacy.

Through the study of Schaufeli et al. (2002), the researchers found significant negative relationships between burnout and engagement but did not find the constructs to load onto a single general factor, hence indicating the constructs were empirically distinct. Since the Schaufeli et al. (2002) publication, the vast majority of work engagement studies have used the instrument produced from this study, the Utrecht Work Engagement Scale (UWES), to study work engagement and have adopted this conceptualization as representing the theoretical framework of this construct.

Based on the aforementioned literature on work engagement, Figure 2 was created to depict the process by which engagement is fostered and occurs.

![Figure 2. Conditions and Outcomes of Work Engagement](image-url)
Figure 2 begins on the left with variables associated with the work and the worker in the first box which gives way to perceived psychological conditions in the second box. The first box on the left side of the figure represents categories of variables that have been found to be significant predictors of work engagement (Macey & Schneider, 2008, Halbesleben, 2010; Christian et al., 2011; Goering et al., 2017). The second box depicts Kahn’s (1990) theory of how predictor variables create psychological conditions that allow for employees to be engaged in their work roles. The third box describes the construct of employee work engagement, as provided by Schaufeli et al. (2002). Finally, the fourth and fifth box identify broadly how engagement is demonstrated by employees, and how it has been operationally studied as variables of work outcomes. The fourth box depicts how Kahn (1990) categorized the behaviors that resulted from being engaged at work. The final box represents the cumulative effects of work engagement studies that have examined outcome variables impacted by work engagement. Similar to the first box, outcomes variables are grouped by higher-level categorizations such as in-role, extra-role, and change-oriented behaviors (Macey & Schneider, 2008, Halbesleben, 2010; Christian et al., 2011; Goering et al., 2017). An example of an in-role behavior could be job performance, while an extra-role behavior could be organizational citizenship, and change-oriented behaviors could be creativity, job crafting, or workplace learning (Macey & Schneider, 2008).

Teacher Work Engagement

With the previous section describing work engagement from a broader perspective, this section reports work engagement studies that have been conducted with teachers. Specifically, the job resource, job attitude, and performance outcome variables
and their correlations to work engagement were examined. Later in this chapter, studies examining work engagement and personal resource variables are reported. A literature search found 33 studies that examined teachers and work engagement. Several studies were excluded as they had a qualitative focus, reported results with postsecondary education teaching staff, or did not report correlations. Table 1 presents the variables, correlations, and study citations arranged by variable category and correlation. Job demand and personal resource variables are excluded from the table. Where multiple studies are reported in Table 1, the correlations were averaged for that variable. Additionally, if a study did not report an overall engagement measure, but rather subscales for vigor, dedication, and absorption, then those correlations were averaged.
<table>
<thead>
<tr>
<th>Variable</th>
<th>JD-R Model Category</th>
<th>Correlation (Avg.)</th>
<th>Range</th>
<th>Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Design</td>
<td>Job Resource</td>
<td>0.67</td>
<td></td>
<td>Fouche et al., 2017</td>
</tr>
<tr>
<td>Meaningful Work</td>
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<td></td>
<td>Fouche et al., 2017</td>
</tr>
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<td>Calling Orientation</td>
<td>Job Resource</td>
<td>0.63</td>
<td>.53 - .72</td>
<td>Fouche et al., 2017; Rothmann &amp; Hamukang’andu, 2013</td>
</tr>
<tr>
<td>Perceived Justice</td>
<td>Job Resource</td>
<td>0.59</td>
<td></td>
<td>Lyu, 2016</td>
</tr>
<tr>
<td>Job Resources</td>
<td>Job Resource</td>
<td>0.55</td>
<td>.49 - .61</td>
<td>Tadic et al., 2015; Trepanier et al., 2014</td>
</tr>
<tr>
<td>Mastery of Skills</td>
<td>Job Resource</td>
<td>0.54</td>
<td></td>
<td>Hultell &amp; Gustavsson, 2011</td>
</tr>
<tr>
<td>Opp. for Development</td>
<td>Job Resource</td>
<td>0.54</td>
<td>.33 - .66</td>
<td>Bakker &amp; Bal, 2010; Bakker &amp; Xanthopoulou, 2013; Field &amp; Buitendach, 2014; Jackson et al., 2006; Simbula et al., 2013</td>
</tr>
<tr>
<td>Knowledge Sharing</td>
<td>Job Resource</td>
<td>0.49</td>
<td></td>
<td>Song et al., 2014</td>
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<tr>
<td>Knowledge Creation</td>
<td>Job Resource</td>
<td>0.47</td>
<td>.45 - .48</td>
<td>Bae et al., 2013; Song et al., 2014</td>
</tr>
<tr>
<td>Organizational Support</td>
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<td>0.47</td>
<td>.38 - .56</td>
<td>Field &amp; Buitendach, 2014; Jackson et al., 2006</td>
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<td>Work Role Fit</td>
<td>Job Resource</td>
<td>0.41</td>
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<td>Rothmann &amp; Hamukang’andu, 2013</td>
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<td>Org. Creativity</td>
<td>Job Resource</td>
<td>0.39</td>
<td></td>
<td>Bae et al., 2013</td>
</tr>
<tr>
<td>Innovation Support</td>
<td>Job Resource</td>
<td>0.38</td>
<td></td>
<td>Song et al., 2014</td>
</tr>
<tr>
<td>School Service Climate</td>
<td>Job Resource</td>
<td>0.38</td>
<td></td>
<td>Eldor &amp; Shoshani, 2017</td>
</tr>
<tr>
<td>Pupil Interactions</td>
<td>Job Resource</td>
<td>0.37</td>
<td></td>
<td>Runhaar et al., 2013</td>
</tr>
<tr>
<td>Task Meaningfulness</td>
<td>Job Resource</td>
<td>0.37</td>
<td></td>
<td>Rothmann &amp; Hamukang’andu, 2013</td>
</tr>
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<td>Supervisory Support</td>
<td>Job Resource</td>
<td>0.35</td>
<td>.23 - .35</td>
<td>Bakker &amp; Bal, 2010; Bakker &amp; Xanthopoulou, 2013; Hultell &amp; Gustavsson, 2011</td>
</tr>
<tr>
<td>Principal Leadership</td>
<td>Job Resource</td>
<td>0.34</td>
<td></td>
<td>Bae et al., 2013</td>
</tr>
<tr>
<td>Colleague Support</td>
<td>Job Resource</td>
<td>0.33</td>
<td>.15 - .59</td>
<td>Bakker &amp; Bal, 2010; Bakker &amp; Xanthopoulou, 2013; Fouche et al., 2017; Hultell &amp; Gustavsson, 2011; Simbula, 2010; Ventura et al., 2015</td>
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<tr>
<td>Work Autonomy</td>
<td>Job Resource</td>
<td>0.31</td>
<td>.16 - .57</td>
<td>Bakker &amp; Bal, 2010; Bakker &amp; Xanthopoulou, 2013; Hultell &amp; Gustavsson, 2011; Skaalvik &amp; Skaalvik, 2014; Ventura et al., 2015</td>
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<tr>
<td>Variable</td>
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<td>Correlation (Avg.)</td>
<td>Range</td>
<td>Citation</td>
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<td>--------------------------------</td>
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</tr>
<tr>
<td>Adv. Opportunities</td>
<td>Job Resource</td>
<td>0.29</td>
<td></td>
<td>Jackson et al., 2006</td>
</tr>
<tr>
<td>Internal Service Level</td>
<td>Job Resource</td>
<td>0.29</td>
<td></td>
<td>Eldor &amp; Shoshani, 2017</td>
</tr>
<tr>
<td>Motiv. HR Practices</td>
<td>Job Resource</td>
<td>0.28</td>
<td></td>
<td>Runhaar et al., 2013</td>
</tr>
<tr>
<td>Principal Creativity</td>
<td>Job Resource</td>
<td>0.21</td>
<td></td>
<td>Bakker &amp; Xanthopoulou, 2013</td>
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<td>Pay Satisfaction</td>
<td>Job Resource</td>
<td>0.19</td>
<td></td>
<td>Hultell &amp; Gustavsson, 2011</td>
</tr>
<tr>
<td>Principal Charisma</td>
<td>Job Resource</td>
<td>0.19</td>
<td></td>
<td>Bakker &amp; Xanthopoulou, 2013</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>Job Attitude</td>
<td>0.58</td>
<td>0.29 - 0.72</td>
<td>Eldor &amp; Shoshani, 2017; Hoigaard et al., 2012; Klassen et al., 2012; Salanov et al., 2011; Simbula, 2010; Simbula &amp; Guglielmi, 2013; Simbula et al., 2013; Skaalvik &amp; Skaalvik, 2014</td>
</tr>
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<td>Org. Commitment</td>
<td>Job Attitude</td>
<td>0.51</td>
<td>0.47 - 0.55</td>
<td>Field &amp; Buitendach, 2014; Jackson et al., 2006</td>
</tr>
<tr>
<td>Burnout</td>
<td>Job Attitude</td>
<td>-0.45</td>
<td>-0.36 - -0.59</td>
<td>Fouche et al., 2017; Hoigaard et al., 2012; Jackson et al., 2006; Skaalvik &amp; Skaalvik, 2014; Trepanier et al., 2014; Ventura et al., 2015</td>
</tr>
<tr>
<td>Perceived Performance</td>
<td>Outcome</td>
<td>0.53</td>
<td>0.42 - 0.64</td>
<td>Bakker &amp; Bal, 2010; Fouche et al., 2017</td>
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<td>Org. Citizenship</td>
<td>Outcome</td>
<td>0.44</td>
<td>0.31 - 0.57</td>
<td>Cheung &amp; Lun, 2015; Simbula &amp; Guglielmi, 2013</td>
</tr>
<tr>
<td>Turnover Intention</td>
<td>Outcome</td>
<td>-0.39</td>
<td>-0.15 - -0.53</td>
<td>Eldor &amp; Shoshani, 2017; Fouche et al., 2017; Hoigaard et al., 2012; Hultell &amp; Gustavsson, 2011; Klassen et al., 2012</td>
</tr>
</tbody>
</table>
The results from Table 1 reveal several trends about teachers from the work engagement literature. First, a majority of the job resource variables have a medium to high correlation with work engagement. This suggests the more resources teachers have available, the more they are available to be engaged at work and this finding is consistent with COR theory (Hobfoll, 1989; 2001). Second, the most frequently studied variables were opportunities for development, supervisory support, colleague social support, work autonomy, job satisfaction, burnout, and turnover intentions. These variables displayed medium to large correlations with work engagement. Third, the type of job resource variables, arranged by correlation, do not display a particular trend as to their grouping. Some variables are related to the organization and culture, supervisory staff, job-fit, affective feelings toward work, and task characteristics, and these variables are spread throughout the ordered range of correlations without a discernable pattern. A final trend is all the correlations between the job attitude and performance outcome variables with work engagement displayed medium to large effects. This finding provides support for the job attitudes label suggested by Newman et al. (2010) and the JD-R model (Bakker & Demerouti, 2007; 2008). The findings from this section will be compared with the findings from this study in chapter five.

Wellness

Wellness refers to a salutogenic or health-enhancing state where an individual seeks to improve their overall functioning (Granello & Witmer, 2013). Through self-care and lifestyle choices an individual can enhance their wellness in a variety of domains which may lead to improvements in quality of life and longevity (Witmer, 2013). Wellness as a concept can be traced back over 2,000 years to ancient Greece (Myers &
Sweeney, 2005a; Witmer, 2013). From mythology, the Greek god of healing, Asclepius, had two daughters, Panacea and Hygeia, who demonstrated the concept of wellness. Whereas Panacea focused on treating illness, Hygeia focused on preventing sickness through healthy living. Additionally, Aristotle, the famous Greek philosopher, advocated for individuals to aspire to a state of flourishing in their lives and to maintain good health through a balanced lifestyle. In the 20th century, the psychologist Alfred Adler promoted a framework for human development based around the notion of wholeness, from which modern wellness models have emerged (Myers & Sweeney, 2005b; Witmer, 2013). This framework was comprised of socio, teleo, analytic, and holism components (Myers & Sweeney, 2005b). Socio refers to one’s desire for social connectedness and the need for belonging. Teleo refers to one’s desires and motivations for thinking or acting in a certain matter. Analytic refers to the consistency of a person’s actions with their motives. Holism refers to the unity that exists within a person and encompasses their mind, body, spirituality, and accomplishment of life tasks. Adler also promoted the life tasks of work, friendship, and love that were important across the adult’s life span (Myers & Sweeney, 2005b). Halbert Dunn is considered to be one of the founders of the modern wellness movement in the 1960’s and promoted these Adlerian concepts in a book titled, *High Level Wellness* (Witmer, 2013).

Several lines of research that have informed wellness models include work on stress, longevity, positive psychology, and spirituality (Witmer, 2013). In addition to traditional medicine, counseling and alternative medicine are fields that have furthered the research on wellness. Several popular wellness models identifying various wellness domains demonstrate this notion of holism and rely on individuals to improve their
wellness through the socio-teleo-analytic concepts. The wellness models discussed in this section are Hettler’s Hexagonal Model of Total Wellness, the Perceived Wellness Model, the Wheel of Wellness, the Indivisible Self Model of Wellness, the Model of Lifestyle Balance, and the Clinical and Educational Wellness Model (Hettler, 1984; Myers & Sweeney, 2005b; Adams, Bezner, & Steinhardt, 1997; Myers & Sweeney, 2005b; Myers & Sweeney, 2005c; Matuska & Christiansen, 2008; Granello & Witmer, 2013). While other wellness models have been published, the intent of this section is not to provide an exhaustive review of these models. The intent of this section is to describe several models to demonstrate the various domains that comprise the construct of wellness.

**Hettler’s Hexagonal Model of Total Wellness**

Hettler’s Hexagonal Model of Total Wellness contains the six wellness domains of physical, emotional, occupational, social, intellectual, and spiritual wellness (Myers & Sweeney, 2005a). In addition to the six domains, several subdomains were defined for the physical, social, and emotional domains as physical exercise, physical nutrition, physical self-care, physical-vehicle safety, physical drug abuse, social-environmental, emotional awareness and acceptance, and emotional management (Hettler, 1984). The model was developed in a university setting and was used to help college students become aware of the domains, self-assess themselves in these areas, and make choices to benefit their health (Hettler, 1984). Hettler’s Hexagon is pictured in Figure 3.
Hettler described the vision of the university wellness program he worked with as teaching students to “live so that they did not become ill” and discussed how the program was integrated into pre-college and co-curricular programs at the university (Hettler, p. 13, 1984). Hettler believed wellness could help to prevent leading causes of death later in life and described how professionals at the health center spent part of their time in health promotion activities as opposed to solely reacting to student current health concerns (Hettler, 1984). Through student self-report data, Hettler found students’ areas of interest spanned each of the domains in the model. Several well-known and widely-used wellness assessments were developed based on Hettler’s Hexagonal Model of Total Wellness such as the Lifestyle Assessment Questionnaire and the Testwell instrument (Myers & Sweeney, 2005a).
The Perceived Wellness Model

The Perceived Wellness Model describes a framework where an individual’s perceptions of their wellness are favored as opposed to physiological measures and several domains comprise the full effects of wellness (Adams et al., 1997). This model treats wellness as a salutogenic or health-causing approach and the presence of wellness is viewed in contrast to an ill state of health. There is a high degree of overlap in this model with the wellness domains in Hettler’s Hexagonal Model of Total Wellness, but a difference between the domains in the models is the Perceived Wellness Model has a domain for psychological wellness whereas Hettler described a domain for occupational wellness. The authors defined psychological wellness as, “a general perception that one will experience positive outcomes to the events and circumstances of life,” and describe optimism and indirectly, self-efficacy, as determinants of psychological wellness (Adams et al., p. 210, 1997). Figure 4 depicts the Perceived Wellness Model.

Figure 4. The Perceived Wellness Model

Physical wellness referred to general physical health and the expectation of maintaining physical health but did not specify in the survey items reference to exercise or nutrition (Adams et al., 1997). Spiritual wellness was defined through beliefs about the future and holding a sense of meaning or purpose in life. Social wellness referred to giving and receiving of support from friends and family. Emotional wellness was defined through having a positive self-identity and regard for oneself. Intellectual wellness referred to having an appropriate amount of intellectual stimulation that was perceived positively. The researchers developed the Perceived Wellness Survey to measure an individual’s subjective perceptions of their wellness.

_The Wheel of Wellness_

The Wheel of Wellness is a model that emerged after synthesizing diverse interdisciplinary research on health and wellness (Myers & Sweeney, 2005b). The Wheel of Wellness describes five life tasks drawn from Adler’s work of spirituality, self-direction, work and leisure, love, and friendship. These life tasks are depicted inside an ecosystem comprised of globalization, life and world events, and social institutions such as family, government, and education. The Wheel of Wellness is pictured in Figure 5.
Spirituality is the central component of the model and refers to one’s beliefs, values, and connectedness to the world (Myers & Sweeney, 2005b). Self-direction is the next outward component of the model as the individual needs to self-regulate the twelve subtasks that act as wheel spokes in the graphic depiction of the model. These subtasks promote mindfulness and resiliency and help to keep an individual moving as spokes would for a wheel. Hence deficiencies in any particular subtask negatively affect the functioning of the other subtasks and make an individual more susceptible to challenges they may experience. The subtasks are defined as sense of worth, sense of control, realistic beliefs, emotional awareness and coping, problem solving and creativity, sense of humor, nutrition, exercise, self-care, stress management, gender identity, and cultural identity (Myers & Sweeney, 2005b).

Outside the subtasks are three other life tasks for work and leisure, friendship, and love (Myers & Sweeney, 2005b). Those with a high degree of wellness for work and
leisure have activities that are engaging, are useful and provide a sense of accomplishment, and allow for personal satisfaction. Those with a high degree of wellness in the friendship life task have satisfying non-familial interpersonal relationships with individuals or groups they are a part of. Finally, love as the final life task refers to having familial relations that are intimate, caring, and healthy (Myers & Sweeney, 2005b). The Wellness Evaluation of Lifestyle (WEL) is an instrument developed to assess wellness for adults across the various domains of the Wheel of Wellness model (Myers & Sweeney, 2005b). Interestingly, it is the WEL assessment that led to the development of the model that will be discussed next.

The Indivisible Self Model of Wellness

As data from administrations of the WEL were compiled over time, the hypothesized factor structure was tested to examine the expected fit of the model (Myers & Sweeney, 2005c). Additionally, exploratory analyses were conducted to examine a factor structure that the data revealed, and these findings were also subject to confirmatory studies as well. This empirical testing of the hypothesized model led to the development of a new model, the Indivisible Self Model of Wellness (IS-Wel). The IS-Wel has 17, third-order factors representing the 12 subtasks from the Wheel of Wellness, and five additional factors for love, friendship, work, leisure, and spirituality. These seventeen factors then load onto one of five, second-order factors. The second-order factors then load onto a higher-order wellness factor. The higher-order factor structure of the model offers support for Adler’s notion of holism, as all items load onto an overall wellness factor (Myers & Sweeney, 2005c).
The second order factors were labeled the Essential Self, the Social Self, the Creative Self, the Physical Self, and the Coping Self (Myers & Sweeney, 2005c). The Essential Self consists of spirituality, gender identity, cultural identity, and self-care. This factor comprises variables that help individuals to understand how they experience the world. The Social Self consists of friendship and love. This factor represents positive interpersonal relationships. The Creative Self consists of thinking, emotions, control, work, and positive humor. The variables in this factor distinguish individuals from others in social settings. The Physical Self consists of exercise and nutrition. This factor, while typically represented in workplace wellness programs, has a lower factor loading than the other four factors. Finally, the Coping Self consists of leisure, stress-management, self-worth, and realistic beliefs. The Coping Self helps individuals to adjust to life events and gain perspective (Myers & Sweeney, 2005c). The IS-Wel is pictured in Figure 6.

![The Indivisible Self Model of Wellness](image)

Figure 6. The Indivisible Self Model of Wellness

The Model of Lifestyle Balance

Another wellness model, the Model of Lifestyle Balance, describes healthy, meaningful, and sustainable daily practices that impact an individual (Matuska & Christiansen, 2008). The higher-order factor of lifestyle balance is made up of several components: sustained physical health and safety, rewarding interpersonal relationships, opportunities to feel engaged and competent, a positive personal identity, and successful time and energy management. Through interviews and qualitative data analysis on adults’ ability to live a balanced lifestyle, findings revealed several salient associated variables such as sleep, exercise, nutrition, social fulfillment, intellectual stimulation, financial resources, spirituality, and time management (Wagman, Hakansson, Matuska, Bjorklund, & Falkmer, 2012). A central focus of this model is the notion of balance, which aligns with the sense of control presented in the Wheel of Wellness and in the IS-Wel. Time management is not mentioned in the previous models. Additionally, the Model of Lifestyle Balance introduces financial wellness, which is being incorporated as a component into workplace wellness programs.

The Clinical and Educational Wellness Model

This model of wellness was developed through counseling practice and is comprised of eight domains (Granello & Witmer, 2013). The domains are cognition, emotional regulation, physical activity and nutrition, preventative self-care, spirituality and meaning, cultural and environmental context, social relationships, and creativity. Each of these domains interact with other domains and comprise overall well-being (Granello & Witmer, 2013). Similar to the Wheel of Wellness, self-care is included as part of this wellness model. Additionally, creativity is included in this model and is
described as intellectual wellness in other models. The cultural and environmental context is presented as an important domain of wellness in the Clinical and Educational Wellness Model, whereas it may not have been mentioned in previous wellness models or may have been located in the periphery.

Figure 7. The Clinical and Educational Wellness Model
Adapted from Granello and Witmer (2013).

After a review of these models, the wellness construct appears to converge in the domains of physical and physiological, emotional and psychological, social, intellectual, and spiritual wellness. With wellness and its domains explored, the preceding section will describe studies examining aspects of wellness and their relations to work engagement.

Studies Examining Wellness and Work Engagement

The research studies reviewed in this section are presented by the corresponding wellness domains identified in the previous section. The wellness domains were identified
as physical and physiological, emotional and psychological, social, intellectual, and spiritual wellness. Studies were identified for inclusion in this review through two methods, a review of two handbooks on work engagement (Albrecht, 2010; Bakker & Leiter, 2010) and literature searches using the EBSCOhost database. The handbooks identified studies of interest, and subsequently those studies and the relevant citations in those studies were reviewed. The literature search using the EBSCOhost database was conducted with all databases indexed by EBSCOhost selected for inclusion. Over fifty databases were included in this search including Academic Search Complete, Business Source Complete, Education Resource Information Center, Human Resources Abstracts, and PsycINFO. The searches were filtered to include publications either in peer-reviewed journals or that were published as a thesis/dissertation, and that were published after 1990. Several searches were conducted with either “work engagement” or “employee engagement” and keywords identified from each wellness domain. Domain specific keywords that were used are described in each subsection of the literature review that follows. Several iterative searches were conducted for each domain until results did not populate additional studies. The analysis of the research in this section interpreted correlations below .30 as having a small effect size, between .30 and .49 as having a medium effect size, and above .50 as having a large effect size (Cohen, 1988).

Physical/Physiological Wellness

The physical or physiological wellness domains in the wellness models included topics such as physical activity, nutrition, sleep, alcohol, and smoking. Studies were found that examined work engagement and these aspects of wellness, along with other related variables such as physical symptoms of ill-health and heart rate.
Specifically related to physical activity, several studies were identified that found both significant and non-significant relationships with work engagement. A study in a large sample of Japanese adults found statistically significant relationships with work engagement and physical activity at leisure time, although the correlation demonstrated a small effect size (Shiba, Nishimoto, Sugimoto, & Ishikawa, 2015). Another study examined off-job activities on vigor and work engagement the following day (ten Brummelhuis, & Bakker, 2012). Results revealed physical activity had a significant relationship with next day morning vigor and next day work engagement, and again showed a small effect size. Munir et al. (2015) examined the relationship between occupational sitting time, physical activity, and work engagement in a large sample of civil service employees who worked primarily in an office setting. Sitting time was significantly negatively related to all three subscales of work engagement for men and women. Physical activity was only significantly correlated for the vigor subscale of work engagement for both men and women, and the dedication subscale for women. All correlations were significant and showed small effects (Munir et al., 2015). A study from McManus, Jonvik, Richards, and Paice (2011) examined various forms of leisure activity participation and work engagement among doctors in the United Kingdom. Dance, playing sports, and hiking/ mountaineering, all activities associated with physical wellness, were each significantly related to work engagement, demonstrating small effect sizes. Another study examined the vigor dimension of work engagement and found significant associations with intrinsic motivations towards exercise and physical activity, again finding small effects (van Scheppingen et al., 2014). A final study found significant differences in pre and post-test measures in work engagement in employees after an
intervention on levels of physical activity (Coom, 2012). These six studies on physical activity and work engagement demonstrated small correlations ranging from .05 to .25 representing small effect sizes.

Three studies did not find significant relationships between physical activity and work engagement. van Berkel et al. (2013) examined the relationship between moderate to vigorous physical activity and work engagement but did not find a statistically significant relationship. Airila, Hakanen, Punakallio, Lusa, and Luukkonen (2012) sampled Finnish firefighters and did not find significant relationships with work engagement and body mass index or physical exercise. Strijk, Proper, van Mechelen, and van der Beek (2013) conducted a six-month experiment and assigned workers to an intervention or control group to examine effects on work engagement. The intervention group was provided the opportunity to attend a weekly aerobic workout, a weekly yoga class, and three health coaching sessions. There were no observed effects on work engagement as a result of the intervention.

One study was identified that examined the relationship between nutrition and work engagement. van Scheppingen et al. (2014) examined the vigor dimension of work engagement and found significant relationships with healthy diet habits, with the relationship having a small effect size.

Three studies examined the relationship between work engagement and sleep. In the first study, Caesens, Stinglhamber, and Luypaert (2014) found work engagement and sleep problems to be significantly negatively correlated, revealing a small effect size. Another study with a similar effect size examined sleep and also found a relationship with work engagement (Airila et al., 2012). The third study found a statistically significant
relationship between sleep hygiene and work engagement, but found that self-control capacity and perceived stress mediated the effect of sleep on work engagement (Barber, Grawitch, & Munz, 2012). The three studies on sleep and work engagement demonstrated small correlations ranging from .11 to .25 representing small effect sizes.

Several studies collected data on physical ill-health, health complaints, or sickness. Jackson, Rothmann, and van de Vijver (2006) reported relationships for the vigor dimension of work engagement and found a statistically significant relationship with physical ill-health with a small effect size observed. Another study found that low levels of work engagement predicted higher levels of sickness absence in a six-month follow-up study (Rongen, Robroek, Schaufeli, & Burdorf, 2014). van Scheppingen et al. (2014) examined the vigor dimension of work engagement and found significant associations with perceived health and presenteeism, demonstrating a medium effect size, but absenteeism did not demonstrate a statistically significant result. Another study found the relationship between work engagement and days on sick leave to be significant and revealed a small effect size (Airila et al., 2012). The study though did not find significant relationships with work engagement and alcohol consumption, smoking, or number of illnesses. Andreassen, Usin, and Eriksen (2006) examined the relationship between the three subscales of work engagement and three types of subjective health complaints—musculoskeletal, pseudoneurology, and gastrointestinal. All relationships were significant and had small and medium effects, with the exception of the absorption dimension and musculoskeletal complaints. A very large study \((n = 7,895)\) of employees across sectors in South Africa examined several physiological health related variables and their relationship to work engagement (de Beer, Pienaar, & Rothmann, 2016). While smoking,
irritable bowel syndrome, high cholesterol, diabetes, hypertension, and cardiovascular conditions had statistically significant correlations with engagement, due to the large sample size the effect of the correlations was not practically significant. Across all the studies examining variables related to ill-health and work engagement, several presented significant relationships and effects were both small and medium with correlations ranging from .07 to .40, while a nearly equal number of variables did not find significant relationships to work engagement.

One final study reported in the physical and physiological health domain was from Seppala et al. (2012) and examined the relationship between work engagement and healthy cardiac activity. The study included Finnish female employees and their heart rate was tracked over a two-day time period. Work engagement was significantly correlated with heart rate at work and high-frequency power of heart rate at work, demonstrating medium effect sizes.

After reviewing the studies examining variables related to physical and physiological wellness and work engagement, the studies were categorized by subdomains for physical wellness, nutrition, sleep, ill-health, and cardiac activity. The studies examining physical wellness, nutrition, sleep, and ill-health demonstrated small effect sizes, indicating less than ten percent of the variance in those wellness variables was associated with the variance in work engagement. The studies examining perceived health and cardiac activity demonstrated medium effect sizes, and at most 19% of the variance from those variables was associated with the variance in work engagement.
Emotional/ Psychological Wellness

The emotional and psychological wellness domain in the wellness models included topics such as optimism, self-efficacy, emotional awareness, coping, stress management, positive humor, leisure, self-worth, and having a positive identity. After searching for studies using these keywords, the relevant studies identified were categorized into three subdomains labeled emotional regulation, recovery, and psychological ill-health.

The subdomain of emotional regulation consisted of studies that included variables for self-efficacy, optimism, coping, emotional competencies, emotional intelligence, emotional self-regulation, psychological resources, stress appraisal, and self-control. The studies demonstrated correlations ranging from .14 to .59, representing small to large effect sizes. In a meta-analysis \((n = 5,163)\) the estimated population correlation between self-efficacy and work engagement was .59, indicating a large effect size (Halbesleben, 2010). Later studies on self-efficacy revealed similar findings. Lorente, Salanova, Martínez, and Vera (2014) found a significant correlation between self-efficacy and vigor subscale of work engagement, albeit with a small effect. Further, in a study of Italian teachers, Simbula, Guglielmi, Schaufeli and Depolo (2013) found self-efficacy was related to vigor with a large effect, and dedication and absorption with a medium effect. Another variable with several studies examining the relationship with work engagement was optimism. In the same meta-analysis \((n = 1,799)\) from Halbesleben (2010), the estimated population correlation between optimism and work engagement was .44, representing a medium effect size.

In the studies not examining self-efficacy and optimism, smaller effect sizes were observed. In the study from Airila et al. (2012), general psychological resources were found
to be significantly related to work engagement, and was a medium effect. Lorente et al. (2014) found emotional competencies were significantly correlated to the vigor and dedication subscales of work engagement and demonstrated a small effect size. Nel, Jonker, and Rabie (2013) examined the effects of emotional intelligence and work engagement and found the results were statistically significant. In a study with German teachers, work engagement was significantly related to emotional self-regulation, demonstrating a medium effect size (Wojdylo, Baumann, Fischbach, & Engeser, 2014).

In the previously mentioned study from Barber et al. (2012), the researchers found significant relationships between work engagement and self-control capacity and perceived stress with medium effect sizes observed for both variables. The researchers also tested these variables as mediators in the model with sleep as the predictor and found they fully mediated the effect of sleep on work engagement. Another study examined work engagement and its relation to stress appraisal and active coping in a sample of Portuguese police recruits (Kaiseler, Queriros, Passos, & Sousa, 2014). Both were significantly related to work engagement, demonstrating small effect sizes. Searle and Lee (2015) found similar findings when examining the relationship between proactive coping and work engagement.

The subdomain of recovery consisted of variables such as the fade-out effects of vacation, relaxation, control over leisure time, engaging in low-effort activities, detachment from work activities, mindfulness, meditation, positive affect, and positive work reflection. The studies demonstrating significant correlations ranged from .12 to .61, representing small to large effect sizes.

Kuhnel and Sonnentag (2010) examined the effects of vacation on work engagement in a sample of teachers. Work engagement before vacation was significantly
lower than directly after vacation. Additionally, those who reported higher levels of leisure time relaxation experiences delayed the fade-out effects of vacation on work engagement at two weeks after vacation. Sonnentag (2003) assessed day-level recovery on work engagement using a measure of recovery that assessed if leisure time activities the previous day enhanced current feelings of recovery, relaxation, and mood. Day-level recovery was significantly related to day-level work engagement demonstrating a medium effect size. van Scheppingen et al. (2014) examined vigor and relaxation, finding significant associations which revealed a small effect size. Kinnunen and Feldt (2013) examined the relationships between subscales of the Recovery Experience Questionnaire (REQ) and all three subscales of work engagement. The study was conducted with Finnish employees across public and private sectors. The subscales of the REQ measured detachment from work activities, relaxation, and control over leisure time. Detachment and relaxation were significantly related to the vigor subscale at a small effect, but not the dedication or absorption scales. Control over time was related to all three scales of work engagement at small and medium effects. Another study examining recovery was from ten Brummelhuis and Bakker (2012) examining off-job activities on vigor and work engagement the following day. Results revealed low-effort activities had a significant relationship with next day morning vigor representing a medium effect size, and next day work engagement representing a small effect size. Psychological detachment and relaxation variables were also found to mediate the relationship between various activities and next day morning vigor.

Petchsawang and McLean (2017) surveyed Thai workers and found mindful meditation and work engagement were significantly related with a medium effect. In a
study of Japanese adults, work engagement and meditation were significantly related, although the correlation had revealed a small effect size (Shiba et al., 2015). A study that did not demonstrate a relationship between mindfulness and engagement was a randomized controlled trial, with the treatment group receiving a mindfulness intervention. Results revealed no differences in work engagement between the treatment and control groups at both six and twelve month intervals (van Berkel, Boot, Proper, Bongers, & van der Beek, 2014). Daniel and Sonnentag (2014) in a study of German workers examined the relationships between work engagement, positive affect, and positive work reflection. The correlation between work engagement and positive affect was significant and represented a large effect. Additionally, the correlations between work engagement and positive work reflection were also significant and represented a medium effect. In another study, Tement (2014) found positive affect was related to work engagement and demonstrated a medium effect. Positive affect was also related to work engagement in a sample of organizational leaders in New Zealand, demonstrating a large effect (ten Brummelhuis, Haar, & Roche, 2014).

The final subdomain of emotional and psychological wellness was labeled psychological ill-health. This subdomain consisted of variables for psychological ill-health, mental health complaints and problems, anxiety, depression, perceived stress, and general dysphoria. Correlations ranged from .24 to .49, representing small to medium effects. Jackson et al. (2006) reported a statistically significant relationship between the vigor dimension of work engagement and psychological ill-health, representing a medium effect size. Simbula (2010) found mental health complaints and work engagement significantly related at a medium effect size as well. Simbula and Guglielmi (2013) found
a negative relationship between work engagement and mental health problems in a sample of teachers, also representing a medium effect size. Innstrand, Langballe, and Falkum (2012) conducted a study examining anxiety, depression, and the vigor and dedication subscales of work engagement and results revealed both small and medium effect sizes. A study of 7,895 employees in South Africa examined the relationship between depression and work engagement and found the relationship had a medium effect size (de Beer et al., 2016). Caesens et al. (2014) found work engagement and perceived stress to be negatively correlated and a small effect size was observed. Lastly, in a study with Italian teachers, general dysphoria was negatively related to vigor and dedication at a medium effect size, and absorption at a small effect size (Simbula et al., 2013).

After reviewing the studies examining variables related to emotional and psychological wellness and work engagement, the studies were categorized by subdomains for emotional regulation, recovery, and psychological ill-health. The correlations for studies examining emotional regulation ranged from .14 to .59, representing small to large effect sizes. The studies examining recovery found correlations that ranged from .12 to .61, representing small to large effects. Finally, the studies examining psychological ill-health revealed correlations that ranged from .24 to .49, representing small to medium effects. It appears at most that 24% to 37% of the variance in these variables is associated with the variance in work engagement.

Social Wellness

Social wellness is defined through relationships with friends and family, participation in social activities, and community involvement. Studies were found that examined work engagement along with work-family variables, social support at work,
participation in social activities, variables relating to social dysfunction, and civic attitudes.

As mentioned in chapter one, the family-work perspective has been studied extensively in relation to work engagement. Only a very brief review of that literature is provided in this section. Rothbard (2001) conceptualized work engagement with an attention and absorption dimension, and also assessed family importance and family positive affect in a sample of university staff members. Attention and absorption were both related to family importance and family positive affect, demonstrating small effect sizes. In a study of Italian teachers, Simbula et al. (2013) found that work-family balance was related to vigor and dedication with small effects as well, but absorption was not related to work-family balance. Lu, Siu, Chen, and Wang (2011) examined the relationship between family mastery and work engagement in a sample of Chinese nurses and found evidence of a small effect size. Family mastery and work engagement at time one were significantly related, and family mastery at time one predicted work engagement at time two (Lu et al., 2011). Tement (2014) found family support was related to work engagement demonstrating a small effect size and found self-efficacy mediated this relationship. Another study examining family support found significant correlations work engagement and again demonstrated a small effect size (Siu et al., 2010). Hakanen, Peeters, and Perhoniemi (2011) conducted a longitudinal study and found work-family enrichment had a significant effect on work engagement and found work engagement had a significant future effect on work-family enrichment. Another study examined family work enrichment found significant correlations with work engagement revealing a small effect size (Siu et al., 2010).
In the study of organizational leaders in New Zealand, family work enrichment was related to work engagement and produced a medium effect (ten Brummelhuis et al., 2014). Similarly, family work conflict was related to engagement but only demonstrated a small effect size. In the previously cited meta-analysis from Halbesleben (2010), the estimated population correlation \((n = 5,517)\) between family-work conflict and work engagement was .21 demonstrating a small effect size. In a study of Italian principals, work-family conflict showed a negative relationship with both the vigor and dedication subscales of work engagement demonstrating small to medium effect sizes (Guglielmi, Simbula, Schaufeli, & Depolo, 2012). A study with Canadian employees across sectors found family-work conflict to be significantly related to vigor with a small effect size, but not dedication or absorption (Fiksenbaum, 2014). As it appears, there is a relationship between work engagement and work-family conflict. Another study examined supervisors who were supportive of family demands and this relationship to engagement. Supervisors’ family-supportive behaviors demonstrated a medium effect size with employees’ work engagement in two separate data collections reported by the researchers (Matthews, Mills, Trout, & English, 2014).

Social support is a frequently used job resource variable and refers to giving and receiving support and mutual exchanges with work colleagues. In the meta-analysis from Halbesleben (2010), the estimated population correlation \((n = 35,243)\) between social support and work engagement demonstrated a medium effect size. A later study of Indian nurses found workplace friendships similarly demonstrated a significant relationship with work engagement but revealed a small effect size (Dasgupta, 2016). Regarding social situations outside of work, the study from ten Brummelhuis and Bakker (2012) that
examined off-job activities on vigor and work engagement the following day revealed social activities had a significant relationship with next day morning vigor and next day work engagement. In a longitudinal study assessing social strategies among university students at three time periods in college, Salmela-Aro, Tolvanen, and Nurmi (2011) reported the relationship to a work engagement measure taken at a 14 and 18 year time interval from the start of the study. Being optimistic in social situations had a significant relationship with work engagement and the correlations ranged from small to medium effects.

Several studies examined social dysfunction, social withdrawal, and social handicapping. In the study of Italian teachers, social dysfunction was negatively related to all three subscales of engagement and ranged from small to medium effect sizes (Simbula et al., 2013). Similarly, a study of Spanish nurses found social dysfunction was a significant predictor of both vigor and dedication, demonstrating a small effect size (Jenaro, Flores, Begona Orgaz, & Cruz, 2011). The longitudinal study of university students found significant negative relationships between social withdrawal and work engagement ranging from small to medium effect sizes, and also negative correlations for self-handicapping in social situations with only small effect sizes observed (Salmela-Aro et al., 2011).

No studies were found that linked work engagement to community or local involvement. Wuestewald (2012) conducted a study of police officers and examined the relationship of work engagement and civic attitudes. The relationship between work engagement and civic attitudes was significant and demonstrated a large effect, but may reveal an occupational-specific finding.
The studies that were found to represent social wellness were comprised of variables for family-work congruence, social support at work, participation in social activities, variables relating to social dysfunction, and civic attitudes. The relationships between these variables and work engagement ranged from small to medium effect sizes, with correlations ranging from .07 to .47. From these studies, it appears that up to 22% of the variance in social wellness is associated with the variance in work engagement.

Intellectual Wellness

The intellectual wellness domain from the wellness models included topics such as thinking, having an appropriate amount of intellectual stimulation, and having opportunities to feel engaged and competent. Several variables have been reported in studies examining work engagement that may represent intellectual wellness. For purposes of this review, those variables were identified as mastery of new skills unrelated to work, participation in creative cultural activities, participation in professional development, creativity, knowledge sharing, knowledge creation, innovation, and mental competencies.

Several of the studies examined participation in non-work related activities. In the study conducted by Kinnunen and Feldt (2013), the researchers examined the relationship between participation in activities that allow for mastery of new skills that are unrelated to work and all three subscales of work engagement. Mastery of new skills was significantly related to vigor representing a medium effect size, and also dedication and absorption which both demonstrated a small effect size. In a study of information technology professionals, Ellis (2015) found the correlation between nonwork mastery experiences and work engagement to be statistically significant and revealed a medium effect size. Another study examined creative cultural activities and receptive cultural activities and
relationship to their work engagement in a sample of health care professionals (Tuisku, Pulkki-Raback, Ahola, Hadanen, & Virtanen, 2012). The association between receptive cultural activities and work engagement was significant and had a small effect, but the relationship between creative cultural activities and work engagement was not significant. Tuisku, Virtanen, De Bloom and Kinnunen (2016) examined receptive and creative cultural activities and their effect on work engagement in a study of hospital employees and found groups who did not participate in either type of activity had the lowest levels of work engagement, while groups that did creative activities only or both activity types had significantly higher levels of work engagement. In the study examining doctors in the United Kingdom and their various leisure activity participation and work engagement, participation in high culture activities (classical music, playing instruments, opera, poetry art, reading, books, painting, and crafts) was significantly related to work engagement, representing a small effect size (McManus et al., 2011).

Other studies examined continuous learning at work, which represents a form of intellectual wellness. Bjarnadottir (2011) executed a qualitative, phenomenological study of experienced and highly-engaged nurses to examine factors that influenced their work engagement. One finding was that continuous learning and professional development that coincided with current patients and work responsibilities had an influence on engagement. Respondents reported this type of learning peaked their interest, increased their capacity, and offered the opportunity to apply themselves even more. This type of ongoing development became a cyclical process that repeated over time as engagement led to performance which led to additional opportunities. In another study, Bakker and Xanthopoulou (2013) found a similar finding in a study of school principals and teachers.
Opportunities for professional development had a significant relationship with vigor and dedication representing a medium effect size, but absorption did not reveal a significant relationship.

The final set of studies examined creativity, knowledge creation, knowledge sharing, being in an innovative climate, and general mental competencies. Bakker and Xanthopoulou (2013) reported creativity had a significant relationship with vigor and absorption, representing a medium effect, but not dedication. Toyama and Mauno (2017) studied the relationship between work engagement and creativity in Japanese nurses. The correlation between the variables was statistically significant and demonstrated a medium effect size. Another study of teachers examined creativity and knowledge creation and their relationship to work engagement (Bae, Song, Park, & Kim, 2013). Creativity and knowledge creation both had statistically significant relationships with engagement producing medium effect sizes. A study of Korean teachers found statistically significant associations between work engagement and knowledge creation, knowledge sharing, and working in an innovative climate (Song, Kim, Chai, & Bae, 2014). All correlations from this study revealed medium effect sizes. Lastly, in a study on construction workers, the correlation between mental competencies and the vigor and dedication subscales of work engagement was significant and demonstrated a medium effect size (Lorente et al., 2014).

The studies in this section showed that engaging in non-work activities, engaging in professional learning, and having opportunities to create or share knowledge were associated with being engaged at work. Across all the studies examining variables related to intellectual wellness, a majority of the studies demonstrated significant correlations with work engagement with small to medium effects observed and correlations ranging from
.12 to .49. It appears at most that 24% of the variance in these variables is associated with
the variance in work engagement.

Spiritual Wellness

The final wellness domain reviewed was spiritual wellness. In the wellness
models, spiritual wellness was associated with topics such as values, religious beliefs,
beliefs about the future, having a sense of meaning or purpose in life, and feeling a sense
of connectedness to the world. Studies were found that examined work engagement and
variables defined as philosophical/ existential views, conscious interactions/ relational
views, meaningful work, workplace spirituality, spiritual resources, transcendent spiritual
views, religious orientation and views, daily spiritual experiences, Islamic religiosity, and
Christian spiritual maturity.

Studies were not found examining general meaning in life or purpose, but one
study examined meaningful work and work engagement in Israeli workers across several
industries (Steger, Littman-Ovadia, Miller, Menger, & Rothmann, 2012). Meaningful
work was measured with items that represented positive meaning, meaning making, and
motivations to benefit the greater good. Meaningful work and work engagement were
significantly related demonstrating a large effect size.

Several studies examined spiritual beliefs, values, or views. In a sample of
healthcare workers who practiced alternative medicine, four aspects of spirituality were
studied to examine their relationship to work engagement (Büssing, Lötzke, Glöckler, &
Heusser, 2015). All aspects of spirituality in this study were found to be significantly
correlated with work engagement, with religious orientation and views and philosophical/
existential views having a medium effect size. Both conscious interactions/ relational
views and transcendent spiritual views produced a small effect size. In a study from Petchsawang and McLean (2017), work engagement was significantly related to workplace spirituality and transcendence, with both revealing a large effect size.

Bickerton, Miner, Dowson, and Griffin (2014) conducted a longitudinal study to examine the effects of spiritual resources on work engagement in a sample of Australian religious workers. The correlation between spiritual resources and work engagement was significant and ranged from moderate to large effect sizes. Spiritual resources at the first data collection were found to predict work engagement in the second data collection. A replication study published on this population found similar results with spiritual resources related to and predicting work engagement (Bickerton, Miner, Dowson, & Griffin, 2015).

Several studies examined spiritual and religious practices. Roof (2015) examined spiritual practices and work engagement in an online convenience sample that was predominately from North America, comprised of managers or executives, and from companies with less than 100 employees. Daily spiritual experiences were significantly related to overall engagement, vigor, and dedication, but not absorption. The significant relations demonstrated small effect sizes. Zahrah, Hamid, Rani, and Kamil (2017) examined the relationship between Islamic religiosity and work engagement in Malaysian university administrators and found significant moderate correlations between the variables. Hartman (2015) examined the relationship between Christian spiritual maturity and work engagement in a sample of evangelical Christians but did not find an overall significant relationship between the variables. The scale for Christian spiritual maturity consisted of subscales for prayer, repentance, worship, meditation, examination of
conscience, bible reading and study, evangelism, fellowship, service, and stewardship; only prayer, service, and stewardship were correlated with any of the subscales of engagement demonstrating small effect sizes.

Across all the studies examining variables related to spiritual wellness and work engagement, many of the studies presented significant relationships with small to large effects observed and correlations ranging from .14 to .69. This indicates up to 47% of the variance in work engagement is associated with these variables. Several of the studies in this section focused on occupations such as clergy or those working in alternative medicine, while other studies focused on a particular religious sect. These findings may not generalize well to a more heterogeneous population, but several of the studies did examine a more diverse sample. It appears from these studies that spirituality can indeed have an effect on work engagement.

Summary

This chapter introduced the theoretical framework for the study, the conditions and outcomes of work engagement, variables that have been examined in relation to teacher work engagement, several wellness models, and research studies examining aspects of wellness and work engagement. The first section presented COR theory as the guiding theoretical framework which was used to help craft the research questions in the study. A review of the seminal literature in work engagement was then provided to describe the conceptualization of work engagement, the conditions by which it is fostered, and the outcomes from being engaged. Then results from teacher work engagement studies were displayed to understand the prominent job resource variables that support teacher work engagement. Next, a review of wellness models was completed to synthesize common
wellness domains across the models, which were then used to structure the review of the literature. The wellness domains that were identified were physical and physiological, emotional and psychological, social, intellectual, and spiritual wellness. The literature review for each wellness domain consisted of identifying studies through relevant keywords and reporting correlations and effect sizes found in the studies. The results of the literature suggest interpretation of the relationship between wellness and work engagement as having a small to large effect.

An interesting finding from this chapter is that psychological detachment, relaxation, self-control capacity, self-efficacy, and perceived stress all were found to mediate aspects of wellness and its relation to work engagement. This may potentially suggest that psychological states may generally mediate the relationship between perceived wellness behaviors and work engagement. This hypothesis will be tested in research question four.

While reviewing the literature on wellness and work engagement, this chapter provided support for the problem statement that the effects of perceived wellness on work engagement are still unknown. This study sought to address this gap. In the next chapter, the research methodology followed by the researcher is detailed including the research design, sampling methods, data collection instruments, and the data analysis procedures.
Chapter 3: Methodology

This chapter details the methodology used in the study. The purpose of this study was to examine perceived wellness as a personal resource variable in explaining the outcome variable, work engagement, in the presence of several known personal resource and job resource predictor variables. Among the studies examining the variables predicting work engagement, personal resources represent a minority of the studies, and the collective effects of perceived wellness have not been examined as a predictor of work engagement. While studies have examined wellness in particular domains such as social or emotional wellness, understanding if there is a link between perceived wellness and work engagement will suggest if comprehensive workplace wellness programs can have an effect on work engagement and therefore work performance outcomes. The specific research questions were:

1. Does a relationship exist between perceived wellness and work engagement?
2. After controlling for psychological capital, is perceived wellness a significant predictor of work engagement?
3. To what degree do perceived wellness, psychological capital, work autonomy, and supervisory support predict work engagement?
4. Does psychological capital mediate the relationship between perceived wellness and work engagement?
To address these research questions, the research design selected was a cross-sectional study collecting all data at one time period through survey research (Adler & Clark, 2008). A cross-sectional study was appropriate as the goal of the research was not to control or manipulate the predictor variables, but rather to understand their relationships to the outcome variable, work engagement. Theory and empirical research suggested the temporal precedence of the variables predicting work engagement, but a general disadvantage of the cross-sectional study design is that the ability to infer causality is limited when compared to longitudinal or experimental designs. Advantages of the cross-sectional design are reduced costs and increased efficiency compared to other designs, measures of multiple variables can be collected at once, and the data collected from use of surveys lend themselves to quantitative data analysis (Adler & Clark, 2008).

For this study, an online self-administered survey was created and administered for data collection. The survey included wellness, work engagement, psychological capital, work autonomy, supervisory support, and demographic variables. Quantitative data analysis subsequently followed the data collection to understand the relations between the variables. The purpose of the data analysis was to make inferences from this sample to a larger population and understand the relations of the constructs more fully.

Evidence of internal validity in this research design can be seen through several aspects. First, the study included several research questions that examined differing types of relationships and models of the variables in the study to more accurately draw conclusions about the true relationships of the variables (Adler & Clark, 2008). Second, the study examined the reliability of the instruments to reduce measurement error and strengthen the validity argument. Third, with a cross-sectional survey there were no
issues related to mortality, maturation or testing effects for the respondents, as this design collected data at one time whereas a different research design such as an experiment with a pre-post measure or a longitudinal design could make participants aware of wellness concepts and this may introduce some change in behaviors or responses (Creswell, 2008). Another aspect of the cross-sectional study that added credibility to the internal validity is that survey items ask respondents for typical behaviors, so specific responses from a certain time were controlled for. Several areas of concern for the internal validity of the study are participants may not have been able to understand the survey items fully, and there may have been a social desirability or response bias that prevented participants from answering truthfully based on their typical behaviors (Adler & Clark, 2008).

Evidence of external validity can also be seen in several aspects of the study. First, the survey collected demographic items for gender, age, and tenure in position to examine the distribution of the sample (Creswell, 2008). Second, the sample was selected from a range of settings in which aggregate performance outcomes of employees in those settings varied. Third, respondents in the population from which the sample was collected all had an equal chance of participation in the study (Creswell, 2008). Areas of concern for the external validity of this study were that a non-probability sampling technique was chosen as compared to probability sampling technique (Adler & Clark, 2008).

Additionally, the results of the study are limited to the specific occupation that was studied, as there are unique resources and demands that may influence work engagement in various ways across occupations that were not captured in this study. Thus, claims made from results of this study were restricted to this population (Creswell, 2008).
In this chapter, several sections are presented to expand on this introduction of the research design including sample selection, data collection procedures, instrumentation used, data analysis, and methodological limitations. These sections fully detail the steps taken by the researcher when the study was conducted.

Sample Selection and Procedures

The population studied was K-12 teachers in the Midwestern region of the United States. As described in the teacher work engagement studies in chapter two, other studies have examined the effects of the control variables used in this study with work engagement in this population. By selecting teachers in this study, the relationships found between the variables could be compared to the relationships found in previous studies. The U.S. Department of Labor, National Center for Occupational Network Development publishes separate work analysis reports for elementary, middle, and secondary school teachers (National Center for O*NET Development, 2018a, 2018b, 2018c). Work analysis reports contain various types of data that describe an occupation. One type of data included in these reports are job-task statements that describe units of work. Table 2 identifies all job-task statements that were common to at least two of the three work analysis reports for the three teacher designations (National Center for O*NET Development, 2018a, 2018b, 2018c).

Table 2. Common Job Tasks of U.S. Teachers

<table>
<thead>
<tr>
<th>No.</th>
<th>Job-Task (arranged alphabetically)</th>
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<tbody>
<tr>
<td>1</td>
<td>Adapt teaching methods and instructional materials to meet students' varying needs and interests.</td>
</tr>
<tr>
<td>2</td>
<td>Administer standardized ability and achievement tests and interpret results to determine student strengths and areas of need.</td>
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<tr>
<td>3</td>
<td>Assign and grade class work and homework.</td>
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<tr>
<td>4</td>
<td>Attend professional meetings, educational conferences, and teacher training workshops to maintain and improve professional competence.</td>
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<tr>
<td>5</td>
<td>Attend staff meetings and serve on committees, as required.</td>
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<tr>
<td>6</td>
<td>Confer with other staff members to plan and schedule lessons promoting learning, following approved curricula.</td>
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<tr>
<td>7</td>
<td>Confer with parents or guardians, other teachers, counselors, and administrators to resolve students' behavioral and academic problems.</td>
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<tr>
<td>8</td>
<td>Enforce all administration policies and rules governing students.</td>
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<td>9</td>
<td>Establish and enforce rules for behavior for maintaining order among students.</td>
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<tr>
<td>10</td>
<td>Establish clear objectives for all lessons, units, and projects and communicate those objectives to students.</td>
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<tr>
<td>11</td>
<td>Counsel students with adjustment or academic problems, or special interests.</td>
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<tr>
<td>12</td>
<td>Instruct through lectures, discussions, and demonstrations in one or more subjects, such as English, mathematics, or social studies.</td>
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<tr>
<td>13</td>
<td>Maintain accurate and complete student records as required by laws, district policies, and administrative regulations.</td>
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<tr>
<td>14</td>
<td>Meet with other professionals to discuss individual students' needs and progress.</td>
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<tr>
<td>15</td>
<td>Meet with parents and guardians to discuss their children's progress and to determine priorities for their children and their resource needs.</td>
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<tr>
<td>16</td>
<td>Observe and evaluate students' performance, behavior, development, and health.</td>
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<td>17</td>
<td>Organize and label materials and display students' work.</td>
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<td>18</td>
<td>Perform administrative duties, such as assisting in school libraries, hall and cafeteria monitoring, and bus loading and unloading.</td>
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<tr>
<td>19</td>
<td>Prepare and implement remedial programs for students requiring extra help.</td>
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<td>20</td>
<td>Prepare for assigned classes and show written evidence of preparation upon request of immediate supervisors.</td>
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<tr>
<td>21</td>
<td>Prepare materials and classrooms for class activities.</td>
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<tr>
<td>22</td>
<td>Prepare objectives and outlines for courses of study, following curriculum guidelines or requirements of states and schools.</td>
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<tr>
<td>23</td>
<td>Prepare reports on students and activities as required by administration.</td>
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<tr>
<td>24</td>
<td>Prepare students for later grades by encouraging them to explore learning opportunities and to persevere with challenging tasks.</td>
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<tr>
<td>25</td>
<td>Prepare, administer, and grade tests/ assignments to evaluate student progress.</td>
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<td>26</td>
<td>Provide disabled students with assistive devices, supportive technology, and assistance accessing facilities, such as restrooms.</td>
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<tr>
<td>27</td>
<td>Select, order, issue, and inventory classroom equipment, materials, and supplies.</td>
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<tr>
<td>28</td>
<td>Sponsor extracurricular activities, such as clubs and academic contests.</td>
</tr>
<tr>
<td>29</td>
<td>Use computers, visual aids, and other materials to supplement presentations.</td>
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</tbody>
</table>
While the job-task statements in Table 2 describe the work performed by teachers, another feature distinguishing occupations are characteristics of the work context. The work context characteristics allow for comparison across occupations, and thus are generic descriptions, but provide a portrayal of the environment in which the job-task statements are performed. For teachers, the highest rated work context characteristics were: contact with others, physical proximity, face to face discussions, coordinating or leading others, use of email, working with groups and teams, a work week over 40 hours, making frequent decisions, primarily working indoors, use of written letters and memos, sensitivity to time pressure, freedom to make decisions, time spent standing, freedom to structure work, decisions having a high impact on others, dealing with the public, public speaking, and frequency of facing conflict situations (National Center for O*NET Development, 2018a, 2018b, 2018c). Other types of work-related data describing teachers in the United States include the technology and tools frequently used by teachers, and the knowledge, skills, abilities, and education required for employment (National Center for O*NET Development, 2018a, 2018b, 2018c).

The sample selected for the present study was a purposive sample of K-12 teachers from seven school districts across seven counties in the central region of a Midwestern state of the United States. The school districts represented various levels of aggregate student achievement, expressed through a district performance index score. The district performance index scores were publically available and identified through the most recent state report cards containing school-level data. The school district data was downloaded from the state’s department of education website. The methodology used by the state to determine the district performance index scores calculated a weighted
average of each students’ performance in the district across the individual subject area achievement tests in social studies, mathematics, reading, science, and writing. For the counties in the central region of the state, the schools were sorted by district performance index scores and a sample of school districts was chosen that had the same average district performance index score as the average district performance index score of all school districts in the state. The school districts were chosen so each county was represented, and that a range of urban, rural, and suburban schools and schools with students from varying socioeconomic backgrounds were included. All current teachers in the school districts were sent the survey \((n = 1,305)\).

A power analysis was conducted to determine the sample size requirements necessary to answer the research questions in the study. An a-priori power analysis was conducted for multiple regression based on research question three, as this research question had the highest number of predictors. Research question three had four variables in the model as predictors of work engagement. For the power analyses, the desired alpha level was set to .05, statistical power level was set to .8, and the anticipated effect size was set to .15. The results yielded a required minimum sample size of 85 participants \((G^*\text{Power, version 3.1.9.2})\). Statistical power level and probability level were chosen based on recommendations from Cohen (1988) and the estimate of effect size was selected based on the literature reviewed in chapter two.

Data Collection Procedures

The study was submitted for review to the institutional review board using the forms in Appendices A-D. The study was determined to be exempt from review (Appendix E), and then data collection was allowed to begin. The survey described in the
following section was developed in the online survey platform, Qualtrics. The survey was distributed in January, 2018, to all 1,305 teachers. The invitation to participate in the survey came directly from the researcher.

Participants self-selected to complete the survey after review of an informed consent form that included information on the survey design, human subjects research protections, variables included in the survey, and incentives. The informed consent form was placed on the front page of the survey. For respondents to continue with the survey, they needed to give their consent. The survey items were placed on separate pages of the survey, and respondents needed to click arrows on the bottom of the screen to move onto subsequent survey items.

The survey consisted of 48 items in total. The survey was active for four weeks. Two reminder emails were sent to those who did not complete the survey. Participants were offered a chance to win one of 15, $10 gift cards, or one of 10, $20 gift cards as incentives. All responses to survey items were recorded without participant names, and only emails were captured for those who wanted a chance to win a gift card. The response rate for the survey distribution was calculated by dividing the number of completed surveys by the number of surveys successfully delivered.

Instrumentation and Reported Validity Evidence

The survey that was created was a composite of existing published research scales and demographic items. Scales for wellness, work engagement, psychological capital, work autonomy, and supervisory support are described in this section along with sample items and relevant validity and reliability evidence. Scale items, prompts, and response options for each instrument are presented in their entirety in Appendix C. Item scaling for
the existing scales utilized ordinal scaling. The demographic items selected were used to collect age, gender, and tenure in position.

**Wellness Variable**

The Health Enhancement Lifestyle Profile-Screener (HELP-Screener) was used to measure perceived wellness (Hwang, 2012a; 2012b, 2013). The HELP-Screener is a 15-item questionnaire developed based on the 56-item, original version of the HELP (Hwang, 2009; 2010a; 2010b). Items for the HELP were specifically written for wellness domains of exercise, diet, leisure, daily living activities, psychological wellness, spiritual participation, and participation in educational, work, and social activities. The domains represent aspects of successful aging and having a health-related lifestyle (Hwang, 2009). Additionally, the items were pilot-tested with respondents to improve their wording and to review how the respondents interpreted the items. The HELP instrument was originally developed for use with older-adult populations, but the items appear to represent domains that may be intervened in workplace wellness programs. After review of the individual items, one item was edited to be more inclusive for adults of all ages.

While the original HELP contained a six-point scale, the HELP-Screener recommends use of dichotomous scoring. For this study, the six-point agreement scale was utilized and response options ranged from “strongly disagree” to “strongly agree.” Sample items for the HELP-Screener are “I consume a variety of healthy foods rich in protein, fiber, or calcium every day (e.g., white meat, fish, fruits, vegetables, milk, soy products),” and “I exercise more than twice a week” (Hwang, 2012a). The HELP-Screener is a unidimensional instrument based on results from a principal components analysis. Reliability for the HELP-Screener was reported using Cronbach’s alpha and was
.74 (Hwang, 2013). For evidence of convergent validity, total scores from the HELP-Screener were negatively related to self-reported health problems, and positively related to overall self-ratings of health (Hwang, 2012b).

Work Engagement Variable

The UWES-9 was used to measure work engagement (Schaufeli et al., 2002; Schaufeli, Bakker, & Salanova, 2006). The UWES is composed of nine items from the three subscales for vigor, dedication, and absorption. A sample item for the vigor dimension is “At my work, I feel bursting with energy.” An item for the dedication dimension is “I am enthusiastic about my job.” And an item representing the absorption dimension is “I get carried away when I am working.” Scaling used is a seven-point frequency scale with both absolute and relative scale points listed that ranges from “never” to “always/ every day”. Reliability for the UWES-9 has ranged from .85 - .92 for the entire instrument. The UWES has demonstrated measurement invariance as it has been examined extensively across age, gender, industries, and cross-culturally (Schaufeli, Bakker, & Salanova, 2006; Shimazu, et al., 2008; Nerstad, Richardsen, Martinussen, 2009; Fong & Ng, 2012; Jeve, Oppenheimer, & Konje, 2015).

The original UWES-17’s three factors had correlations that ranged from .56 to .74 demonstrating moderate to high correlations and a large effect size (Schaufeli et al., 2002). De Bruin and Henn (2013) compared different SEM models of the UWES-9 to examine which internal structure had the best model fit and a bi-factor model with items loading onto a general work engagement factor and individual factors fit best. DeBruin and Henn (2013) concluded the instrument should be treated as unidimensional as all items in the bi-factor model had higher loadings on the general factor when compared to
the individual factors, and these loadings ranged from .56 - .87, and due to the general factor accounting for a very high proportion of the variance in the scale. The correlations between the factors ranged from .71 to .93, demonstrating highly correlated dimensions (DeBruin & Henn, 2013). Another study examining the UWES-17 concluded the three separate factors did not produce significantly different person measures and recommended the instrument be treated as unidimensional (de Bruin, Hill, Henn, & Muller, 2013). Adhering to these recommendations, an overall work engagement composite scale was created.

*Psychological Capital Variable*

The Compound Psychological Capital Scale (CPC-12) was used as the measure of psychological capital (Lorenz et al., 2016). The CPC-12 is made up of 12 items from the four dimensions for hope, optimism, resilience, and self-efficacy. The scale items are suitable for use across contexts. The instrument itself is a compound instrument, made up of items from published scales on the dimensions. An example item for hope is “I can think of many ways to reach my current goals.” An example item for optimism is “I am looking forward to the life ahead of me.” An example item for resilience is “Sometimes I make myself do things whether I want to or not.” And an example item for self-efficacy is “I can solve most problems if I invest the necessary effort.” The ordinal scaling used a six point agreement scale and ranged from “strongly disagree” to “strongly agree.”

Lorenz et al. (2016) found the internal structure of the CPC-12 to demonstrate acceptable model fit through confirmatory factor analysis, and expected relationships through a convergent validity study with constructs such as positive affect, job satisfaction, perceived social support, meaning of work, work engagement, gratitude, and
proactive attitude. Cronbach’s alpha for the entire scale was .81, but the reliability of each construct was not reported. Correlations among the factors were not reported also, but correlations among the original scales and the CPC-12 ranged from .53 - .82. The theory of psychological capital states the combined predictive power of the four variables has a stronger effect than the impact either of the individual variables has alone (Sweetman & Luthans, 2010). Following the precedent set by other researchers researching psychological capital and its relationship to work engagement, an overall psychological capital composite scale was created (Avey, Wernsing, & Luthans, 2008; Nigah, Davis, & Hurrell, 2012; de Waal & Pienaar, 2013; Gorgens-Ekermans & Herbert, 2013; Simons & Buitendach, 2013; Adil & Kamal, 2016; Bonner, 2016; Wang, Liu, Zou, Hao, & Wu, 2017).

Work Autonomy Variable

Three items from the revised Job Diagnostic Survey (Hackman & Oldham, 1974; 1975; Idaszak & Drasgow, 1987) were used to measure autonomy. The items were “This job gives me a chance to use my personal initiative and judgment in carrying out the work,” “The job gives me considerable opportunity for independence and freedom in how I do the work,” and “How much autonomy is there in your job?” (Hackman & Oldham, 1974; Idaszak & Drasgow, 1987). The scaling for all items has seven points. The first two items contained a scale based on accuracy and ranged from “very inaccurate” to “very accurate”, and the final item had a scale that ranged from “very little” to “very much” autonomy. Idaszak and Drasgow (1987) revised the Job Diagnostic Survey and found a five factor solution with acceptable model fit and subscales with reliabilities above .80. Additionally, the autonomy factor had small to medium
correlations with the other factors for task identity, skill variety, task significance, and feedback offering evidence of convergent validity (Idaszak & Drasgow, 1987).

Supervisory Support Variable

Similar to May et al. (2004), six items were used from the supportive supervision scale developed from Oldham and Cummings (1996). Sample items include “My supervisor helps me solve work-related problems,” and “My supervisor encourages me to develop new skills.” The scale used was a seven-point agreement scale that ranged from “strongly disagree” to “strongly agree”. Oldham and Cummings (1996) performed a principal components analysis on the scale and found all items had factor loadings greater than .52. Reliability was assessed through Cronbach’s alpha and was .86. Evidence of convergent validity was demonstrated through relations to variables such as non-controlling supervision, job complexity, and intention to quit. May et al. (2004) replicated these findings related to factor structure, reliability, and convergent validity demonstrating additional validity evidence for the scale.

Data Analysis

Several data analyses were used to address the research questions. The research questions are presented in this section along with the analyses used to answer them. All analyses were completed in SPSS (version 24). The analysis techniques discussed helped to determine the relationship between wellness and work engagement, if wellness is a significant predictor of work engagement amongst known predictor variables, and if the relationship between wellness and work engagement is mediated by psychological capital. Each research question states analysis procedures utilized, primary sources used to guide the procedures, and output examined to interpret the analysis.
Prior to the data analysis, the dataset was examined for missing values and outliers. Missing values were examined to identify if the data were missing at random or if another factor may have influenced the missingness of the data. Little’s missing completely at random test (MCAR) was used to determine the categorization of missing data (Tabachnick & Fidell, 2001). Expectation maximization (EM) was then used to estimate the missing values and impute the missing data (Tabachnick & Fidell, 2001; Cohen et al., 2003). EM is a two-step process that generates a covariance matrix based on existing data and performs maximum likelihood estimation to impute the missing values with plausible values derived from the covariance matrix (Tabachnick & Fidell, 2001).

After missing data were imputed, screening for outlier data was conducted. Multivariate outlier tests were performed to examine Mahalanobis distance, Cook’s $D_i$, and leverage values (Tabachnick & Fidell, 2001; Cohen et al., 2003). As recommended by Tabachnick and Fidell (2001), a cautious interpretation of the outliers was conducted by excluding those cases that were identified by at least two out of the three multivariate outlier tests.

Next, composite variables were created by computing the mean for each variable. Then, descriptive statistics were produced and reliability for the instruments was analyzed. Coefficient alpha served as the measure of reliability. A correlation matrix was produced to examine the degree and direction of the relations between the variables in the study (Cohen et al., 2003). Pearson correlation coefficients were calculated to measure the relationships of the variables. Cohen’s (1988) levels of practical significance was used to interpret the degree of relationships between variables, with weak correlations ranging from .2-.39, moderate correlations ranging from .4-.79, and strong correlations ranging from .8 or greater. The hypothesis was all variables would demonstrate weak to
moderate, positive correlations. It was assumed the variables had positive and statistically significant correlations with each other, as higher levels of wellness, psychological capital, autonomy, supervisory support, and work engagement are assumed to be associated with each other.

Research Question One

The first research question was, “Does a relationship exist between perceived wellness and work engagement?” To answer this research question, a linear regression analysis was conducted to examine the variance explained in work engagement (Cohen, Cohen, West, & Aiken, 2003). A regression framework estimates the change in an outcome or criterion variable that is a result of the changes in the predictor variables. The equation for research question one is presented in Table 3.

Table 3. Linear Regression Equation for Research Question One

<table>
<thead>
<tr>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y = a + b_1 X_1 )</td>
</tr>
</tbody>
</table>

\( Y = \) Work Engagement
\( a = \) intercept
\( b_1 = \) beta coefficient of Wellness
\( X_1 = \) Wellness

The regression analysis assumptions of linearity, normality, and homoscedasticity were examined prior to analysis (Cohen et al., 2003). To check for normality, a histogram was produced of the standardized residuals in work engagement, and a P-P plot was produced of standardized residuals. Next, linearity and homoscedasticity were examined
through a scatterplot of the predicted and residual measures of work engagement. The analysis outputs were then interpreted with attention paid to model significance, the amount of variance explained in work engagement, and the beta weights and significance of the predictor variable.

Research Question Two

The second research question was, “After controlling for psychological capital, is perceived wellness a significant predictor of work engagement?” The second research question was addressed by using a hierarchal regression framework with work engagement as the outcome variable, and wellness added as a predictor after entering psychological capital into the model. Several studies have demonstrated psychological capital predicting a significant amount of variance in work engagement (Avey, et al., 2008; Nigah et al., 2012; Gorgens-Ekermans & Herbert, 2013; Hicks & Knies, 2015; Adil & Kamal, 2016; Wang et al., 2017). Thus the effects of psychological capital were controlled for by entering this variable in the first block of the regression model and then adding the wellness predictor variable in the subsequent block. This hierarchal regression analysis identified if wellness predicts unique variance in work engagement above the effects of psychological capital (Cohen et al., 2003). The equation for research question two is displayed in Table 4.
Table 4. Hierarchical Regression Equation for Research Question Two

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y = a + b_1 X_1 )</td>
<td>( Y = a + b_1 X_1 + b_2 X_2 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y = ) Work Engagement</td>
<td>( Y = ) Work Engagement</td>
</tr>
<tr>
<td>( a = ) intercept</td>
<td>( a = ) intercept</td>
</tr>
<tr>
<td>( b_1 = ) beta coefficient of Psychological Capital</td>
<td>( b_1 = ) beta coefficient of Psychological Capital</td>
</tr>
<tr>
<td>( X_1 = ) Psychological Capital</td>
<td>( X_1 = ) Psychological Capital</td>
</tr>
<tr>
<td>( b_2 = ) beta coefficient of Wellness</td>
<td>( b_2 = ) beta coefficient of Wellness</td>
</tr>
<tr>
<td>( X_2 = ) Wellness</td>
<td>( X_2 = ) Wellness</td>
</tr>
</tbody>
</table>

Before conducting the regression analysis, the assumptions of linearity, normality, homoscedasticity, and multicollinearity were checked (Cohen et al., 2003). Linearity, normality, and homoscedasticity were checked in the same manner as in research question one. Next, multicollinearity was checked through examining tolerance values and the variance inflation factors of each predictor.

The resulting model was compared to the grand mean model to examine the \( R^2 \), or the total variance explained in the outcome variable, work engagement. Additionally, the change in \( R^2 \) was tested to see if adding wellness in the final block added unique variance in explaining work engagement. The standardized beta weights were also examined to compare the influence of the predictor variables.
Research Question Three

The third research question was, “to what degree do perceived wellness, personal resources, and job resources variables predict work engagement?” This research question was answered by using a multiple regression framework with work engagement as the outcome variable. The equation for research question three is presented in Table 5.

Table 5. Multiple Regression Equation for Research Question Three

<table>
<thead>
<tr>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$</td>
</tr>
</tbody>
</table>

$Y$ = Work Engagement  
$a$ = intercept  
$b_1$ = beta coefficient of Wellness  
$X_1$ = Wellness  
$b_2$ = beta coefficient of Psychological Capital  
$X_2$ = Psychological Capital  
$b_3$ = beta coefficient of Work Autonomy  
$X_3$ = Work Autonomy  
$b_4$ = beta coefficient of Supervisory Support  
$X_4$ = Supervisory Support

Before conducting the regression analysis, the same procedures were followed for checking the assumptions of linearity, normality, homoscedasticity, and multicollinearity as in research question two (Cohen et al., 2003). As in both research question one and two, the same statistics were examined for model significance. The $R^2$ statistic was examined to determine the variance accounted for in work engagement, or the combined
effects of wellness, psychological capital, work autonomy, and supervisory support. The standardized beta weights were examined to understand the relative effects of the predictor variables in the model. Semi-partial and partial correlations were also examined to understand the total and unique variance contributed by the predictor variables.

Research Question Four

The fourth research question was “Does psychological capital mediate the relationship between perceived wellness and work engagement?” The figure depicting the model for this research question is presented in Figure 8. Several studies have demonstrated that aspects of wellness have an indirect effect on work engagement through psychological states (path $ab$), and this research question tested this notion (Barber et al., 2012; ten Brummelhuis & Bakker, 2012; Tement, 2014). This question required a test for mediation, which tests a regression path model to examine if the total effect of wellness on work engagement (path $C$) is reduced in the presence of a mediating variable, indicating a direct effect ($C'$) that is reduced from the total effect (Jose, 2013). This test of the mediation variable identified if psychological capital is a conduit between wellness and work engagement, and if this model more accurately depicts the theoretical relationship implied in the linear regression model.
Table 6. Mediation Equation for Research Question Four

Regression Model
\[ Y = i_1 + cX + e_1 \]

Mediation Model
\[ Y = i_2 + c'X + bM + e_2 \]
\[ M = i_3 + aX + e_3 \]

<table>
<thead>
<tr>
<th>Regression Model</th>
<th>Mediation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y = \text{Work Engagement} )</td>
<td>( Y = \text{Work Engagement} )</td>
</tr>
<tr>
<td>( i_1 = \text{Intercept} )</td>
<td>( i_2 = \text{Intercept} )</td>
</tr>
<tr>
<td>( C = \text{Coefficient of } X \text{ and } Y )</td>
<td>( c' = \text{Coefficient of } X \text{ and } Y \text{ adjusted for } M )</td>
</tr>
<tr>
<td>( X = \text{Wellness} )</td>
<td>( X = \text{Wellness} )</td>
</tr>
<tr>
<td>( e_1 = \text{Unexplained Variance in } Y )</td>
<td>( b = M \text{ to } Y \text{ Coefficient} )</td>
</tr>
<tr>
<td></td>
<td>( M = \text{Psychological Capital} )</td>
</tr>
<tr>
<td></td>
<td>( e_2 = \text{Unexplained Variance in } Y )</td>
</tr>
<tr>
<td></td>
<td>( i_3 = \text{Intercept} )</td>
</tr>
<tr>
<td></td>
<td>( X = \text{Wellness} )</td>
</tr>
<tr>
<td></td>
<td>( a = X \text{ to } M \text{ Coefficient} )</td>
</tr>
<tr>
<td></td>
<td>( e_3 = \text{Unexplained Variance in } M )</td>
</tr>
</tbody>
</table>
The mediation analysis was conducted with the Process macro from Hayes (2013). A bias-corrected 95% bootstrap confidence interval for the indirect effect was calculated using 1,000 bootstrapped samples. The Sobel test was used to compare the mediation path and the direct effect to examine if the mediation was significant, and $R^2_{\text{med}}$ was used to report the effect size (Hayes, 2013, Fairchild, MacKinnon, Taborga, & Taylor, 2009). The analysis outputs examined were the effects of the model pathways, the significance of the effects, and the confidence intervals.

Study Limitations

There are several important limitations to identify that qualify the methodology chosen for this study. The first is that the study relied on self-report data. Self-report data require great concentration from respondents. The process of responding to an item includes a complex pattern of interpreting items, making conclusions about an item, and selecting a response given the available options (Krosnick, 1999). Self-report data rely on items to be clearly written and it is possible some items in the survey may have been difficult to interpret. Second, self-report response data are subject to social desirability bias, which describes respondents answering items not based on their actual behavior, but as they believe they should be perceived. Another limitation of survey research is the potential for respondent satisficing, which describes a respondent reducing their effort when selecting responses (Krosnick, 1999).

Another limitation of the study is that the survey data was obtained based on a non-probability sample (Adler & Clark, 2008). While many studies examining samples of employees are restricted to organizational contexts and thus are categorized as non-probability samples, this limitation could have been addressed by sampling teachers from
a population-level database (Landers & Behrend, 2015). A concern with non-probability samples is that they could lead to range restriction in the response data, which is a frequent issue in organizational research (Landers & Behrend, 2015). Range restriction also is associated with non-response bias, which is an additional limitation of the study as there was no effort to examine non-responders to see if their responses exhibited differing patterns when compared to responders (Adler & Clark, 2008). It is possible that those who did not respond may have had different observations when compared to those that did respond to the survey. The characteristics of the non-responders are unknown and it is possible that those who did not respond may be less engaged at work and opt out of voluntary work-related activities such as completing surveys related to their work.

Another limitation of cross-sectional survey research is that the results do not permit causal inferences (Adler & Clark, 2008). This study uses theory and preceding research to infer the temporal precedence of the variables, but this cross-sectional study does not permit us to infer causality in the same manner as a longitudinal or experimental research design (Sweetman & Luthans, 2010; Hakanen & Roodt, 2010). Lastly, there is likely omitted constructs from this research study that may further explain the complex relationships between these variables (Landers & Behrend, 2015).

Summary

This chapter described the procedures used to conduct the study. Sections of the chapter included an introduction to the research design and research questions, sample selection procedures, data collection procedures, instrumentation that was used, the data preparation techniques, the data analysis techniques that were used for each research question, and a summary of methodological limitations. The aim of the study was to
understand the relationships between the variables, and the research questions and analysis methods allowed for the observation of the relationships through data collected in this sample.

The research design and its strengths and weaknesses, along with consideration related to internal and external validity were described. The sample selected for the study was teachers in K-12 school districts with varying state achievement score ratings. The rationale for sample size requirements was stated, and the methods used to collect data were described as a cross-sectional survey administered via the internet. The instrument used in the study was a composite of published scales and their respective validity and reliability evidence was reported. After data collection, several data analysis strategies were then detailed to address the research questions that included examining descriptive statistics, reliability analysis, correlation analysis, linear regression analysis, hierarchal regression analysis, multiple regression analysis, and a mediation analysis. The main limitations that were identified related to use of self-report data, a non-probability sample, range restriction, non-response bias, the inability to infer causal inferences, and the potential of omitted variables. The following chapter describes the results of these analyses and conclusions drawn regarding the study’s research questions.
Chapter 4: Results

This chapter reports the findings from the analysis of the survey data. The survey was a composite of several demographic items and existing scales measuring the constructs of wellness, work engagement, psychological capital, supervisory support, and work autonomy. The purpose of the study was to examine perceived wellness as a personal resource variable in explaining the outcome variable, work engagement, in the presence of several established personal resource and job resource predictor variables. While previous studies have examined subdomains of wellness and its relationship to work engagement, there had not been a study that examined the holistic effects of wellness on work engagement.

The first section of this chapter describes the response rate and treatment of missing data and outliers. This section describes the data set, data screening, imputation technique used, and multivariate outlier tests that were conducted. The next section discusses descriptive statistics of both the sample and survey composite variables. Also presented in this section are the normality of the variables, the observed scale reliability, and the correlations between variables in the study.

The subsequent sections of the chapter address each research question. Research question one is presented with results from the linear regression analysis with wellness as the predictor and work engagement as the outcome variable. Research question two is presented with results from the hierarchical regression analysis examining the unique
variance explained in work engagement from wellness after controlling for effects of psychological capital. Research question three is subsequently described which details the multiple regression analysis with wellness, psychological capital, supervisory support, and work autonomy as simultaneous predictors in the model. Lastly, research question four describes a mediation analysis which tested if psychological capital mediated the effects of wellness on work engagement.

Response Rate and Treatment of Missing Data and Outliers

The survey was distributed in January, 2018, to all 1,305 teachers from the seven school districts. There were 13 emails that were not valid and the emails sent to these participants bounced back immediately. Of the remaining 1,292 respondents who were sent the survey, there were 270 completed responses to the survey. This yielded a 20.9% response rate.

The first step taken with the dataset was the examination of the raw data. Of the 270 respondents that began the survey, 10 respondents did not respond to any item or did not respond to any work engagement or wellness items. These cases were excluded from the data analysis. After excluding these cases, the data were screened to better understand the dataset. Preliminary analyses were conducted to examine frequency distributions, descriptive statistics, missing data, and potential outliers. Several figures were also created to evaluate the data such as histograms, box plots, and scatterplots.

From the remaining 260 respondents’ data, there were 132 total missing data points out of 12,480 possible data points ($k = 48$). This indicated approximately one percent of the data were missing. Even with a small amount of missing data, many inferential analyses require non-missing responses. For instance, a respondent who
answered all but one item may be removed from an analysis depending on how the
analysis is specified. To prevent a respondent with missing data from being excluded
from an analysis, the missing data can be imputed to generate plausible values for the
missing values. With as little missing data as one percent of the dataset, Tabachnick and
Fidell (2001) state similar results are achieved through various missing data treatment
options. The choice of missing data treatment depends on how the missing data can be
categorized. To determine the categorization of missing data, Little’s missing completely
at random test (MCAR) was used (Tabachnick & Fidell, 2001).

Little’s MCAR test determined the missing data were missing at random $X^2$
(1497) = 1565.66, $p = .11$. When data are missing at random, expectation maximization
(EM) can be used to estimate the missing data and impute the missing values
(Tabachnick & Fidell, 2001; Cohen et al., 2003). EM is a two-step process that generates
a covariance matrix based on existing data and performs maximum likelihood estimation
to impute the missing values with plausible values derived from the covariance matrix
(Tabachnick & Fidell, 2001). Using EM, the 132 missing data points were imputed and
saved in the dataset.

After treating the missing data, the remaining cases were reviewed to examine if
any outliers were present. Univariate outliers were examined through histograms and box
plots of each variable (Tabachnick & Fidell, 2001). No cases were removed after
inspection of univariate outliers, as an examination of multivariate outliers was also
conducted. A preliminary regression was conducted based on research question three
which included all variables and produced values of the multivariate outlier tests for
Mahalanobis distance, Cook’s $D_i$, and leverage values (Tabachnick & Fidell, 2001;
Cohen et al., 2003). Extreme values as a result of the interpretation of each outlier test were identified. As recommended by Tabachnick and Fidell (2001), a cautious interpretation of the outliers was conducted by accepting those cases as outliers that were identified by at least two out of the three multivariate outlier tests. Six cases in total were flagged by at least two of the three outlier tests and were excluded from further analysis. After the analysis of outliers, 254 cases remained.

Descriptive Statistics, Scale Reliability, and Correlations

For the remaining 254 respondents, descriptive statistics were analyzed for gender, age, and years in position (tenure). The sample had 47 respondents that were male (18.5%) and 207 respondents that were female (81.5%). The average age of respondents was 40.8 years \( (n = 254, \text{SD} = 10.2) \). Ages of respondents ranged from 22 to 65. Age results indicated a slight right skew and a platykurtic distribution. The average years employed in the same position was 12 years \( (n = 254, \text{SD} = 8.3) \). Tenure in position ranged from one to 34 years. Tenure results indicated a right skew and a mesokurtic distribution.

Next, descriptive statistics were analyzed for the scale composite variables \( (n = 254) \). Wellness had a mean of 4.03 \( (\text{SD} = .74) \), a minimum value of 2.13, and a maximum value of 5.87. Wellness appeared to be normally distributed. Work engagement had a mean of 5.36 \( (\text{SD} = .86) \), a minimum value of 3.0, and a maximum value of 7.0. Work engagement had a slight negative skew, indicating fewer respondents had lower scores. The other variables and their descriptive statistics can be seen in Table 7. The skewness and kurtosis ratios suggest several of the independent and dependent variables had a slightly non-normal distribution. Regression does not require variables to be normally
distributed but does require residuals of the variables to be normally distributed (Cohen et al., 2003). Reliability of the scales was analyzed using coefficient alpha (n = 254). The scales ranged from three to 15 items, and all scales were found to be highly reliable (α = .84-.94). Reliability for each scale can be seen in Table 7.

Table 7. Descriptive Statistics and Reliability of Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>Skewness Ratio</th>
<th>Kurtosis Ratio</th>
<th>Coefficient Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellness</td>
<td>4.03</td>
<td>0.74</td>
<td>2.13</td>
<td>5.87</td>
<td>-0.72</td>
<td>-0.86</td>
<td>0.84</td>
</tr>
<tr>
<td>Work Engagement</td>
<td>5.36</td>
<td>0.86</td>
<td>3.00</td>
<td>7.00</td>
<td>-3.08</td>
<td>-1.77</td>
<td>0.91</td>
</tr>
<tr>
<td>Psychological</td>
<td>5.02</td>
<td>0.50</td>
<td>3.29</td>
<td>6.00</td>
<td>-2.57</td>
<td>1.47</td>
<td>0.89</td>
</tr>
<tr>
<td>Capital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisory</td>
<td>4.79</td>
<td>1.40</td>
<td>1.00</td>
<td>7.00</td>
<td>-3.48</td>
<td>-1.38</td>
<td>0.94</td>
</tr>
<tr>
<td>Support</td>
<td>5.42</td>
<td>1.23</td>
<td>1.00</td>
<td>7.00</td>
<td>-7.25</td>
<td>3.87</td>
<td>0.92</td>
</tr>
<tr>
<td>Work Autonomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next, a Pearson correlation matrix was produced to examine the relationships between the variables. The correlation matrix is displayed in Table 8. Eight of the ten correlations between the variables displayed significant relationships. Those correlations ranged from weak to moderate relationships. Wellness was significantly correlated with work engagement, although the relationship can be categorized as weak (r = .29, p < .01). Wellness had a similar, albeit stronger correlation with psychological capital (r = .33, p < .01). Work engagement was significantly correlated with all predictor variables, but its only moderate correlation was with psychological capital (r = .46, p < .01). Supervisory support and work autonomy also had a moderate correlation with each other (r = .42, p < .01).
Table 8. Pearson Correlation Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wellness</th>
<th>Work Engagement</th>
<th>Psychological Capital</th>
<th>Supervisory Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Engagement</td>
<td>.294**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological Capital</td>
<td>.332**</td>
<td>.464**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisory Support</td>
<td>.223**</td>
<td>.306**</td>
<td>0.11</td>
<td>.419**</td>
</tr>
<tr>
<td>Work Autonomy</td>
<td>0.072</td>
<td>.384**</td>
<td>.227**</td>
<td>.419**</td>
</tr>
</tbody>
</table>

**Data is significant at the .01 level (2-tailed).

Results of Research Question One

The first research question was, “does a relationship exist between perceived wellness and work engagement?” A linear regression was specified as the analysis to address this research question with wellness as the predictor and work engagement as the outcome variable. The assumptions of regression were assessed first. The assumption of normality of residuals was examined in several ways. A histogram of the standardized residuals was inspected and the residuals appeared to follow a normal distribution. Also, a normal P-P plot was inspected to ensure residuals approximated the super-imposed straight line. After normality was assessed, the assumptions of linearity and homoscedasticity were checked by inspecting a plot of the residuals versus the predicted values of work engagement. The horizontal scatter of residuals demonstrated the assumption of linearity was met. The residuals were also spread equally over the predicted values of work engagement which demonstrated the assumption of homoscedasticity was met.

Without any violation of assumptions, the analysis was conducted as specified in chapter three. The regression results revealed wellness explained nine percent of the
variability (Table 9) in the dependent variable \( R = .29, R^2 = .09, F(1, 252) = 23.8, p < .001 \). The overall regression model was significant (Table 10). Wellness was found to be a significant predictor of work engagement \( \beta = .29, p < .001 \). Using Cohen’s \( f^2 \) as the measure of effect size, the effect size of the regression was interpreted as small \( (f^2 = .10) \). A post hoc power analysis was conducted \( (p = .01) \) and revealed the statistical power for the small effect size exceeded .99, and therefore enough power was observed in the analysis for this result to be detected. Table 11 displays the beta weights and significance of wellness in the regression model. Replacing the observed coefficients in the regression model identified a final equation of: Work Engagement = 4.00 + .34 * Wellness.

### Table 9. Linear Regression Analysis Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.29</td>
<td>0.09</td>
<td>0.08</td>
<td>0.82</td>
</tr>
</tbody>
</table>

### Table 10. ANOVA for Linear Regression Analysis Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>15.98</td>
<td>1</td>
<td>15.98</td>
<td>23.80</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Residual</td>
<td>169.15</td>
<td>252</td>
<td>0.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>185.13</td>
<td>253</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 11. Predictor Summary of Linear Regression Analysis Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Constant</td>
<td>4.00</td>
<td>0.28</td>
<td></td>
<td>199.84</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Wellness</td>
<td>0.34</td>
<td>0.07</td>
<td>0.29</td>
<td>23.80</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Results of Research Question Two

The second research question was, “after controlling for psychological capital, is perceived wellness a significant predictor of work engagement?” To control for the effects of psychological capital on work engagement and to examine the unique variance explained by wellness, a hierarchal regression analysis was conducted.

As in research question one, the assumptions of normality, linearity, and homoscedasticity were assessed. Additionally, multicollinearity was assessed because two predictor variables were included in the regression model. The assumption of normality was assessed by examining a histogram of the standardized residuals and a normal P-P plot. Both figures satisfied the assumptions. Next, linearity and homoscedasticity were assessed through a plot of the residuals versus the predicted values, and both conditions were satisfied. Lastly, multicollinearity was assessed by examining tolerance and variance inflation factors of both psychological capital and wellness in the second model of the hierarchal regression. The tolerance values were above .10 (.89) and the variance inflation factors were below 10 (1.12), as suggested by Cohen et al (2003).
When entering psychological capital ($\beta = .46$, $p < .001$) in the first regression model, it accounted for 22% of the variance in work engagement ($R = .46$, $R^2 = .22$, $F(1, 252) = 69.16$, $p < .001$). In the second hierarchical regression predicting work engagement, wellness ($\beta = .16$, $p = .008$) was found to contribute two percent of unique variance beyond the effects of psychological capital alone ($\beta = .41$, $p < .001$). The regression model revealed psychological capital and wellness explained 24% of the total variability in work engagement ($R = .49$, $R^2 = .24$, $F(2, 251) = 39.05$, $p < .001$). The effect size of the regression model can be interpreted as a medium effect ($f^2 = .32$). Post hoc power analyses were conducted for both the medium effect observed in the overall model and for the small effect observed from the change in $R^2$ in model two. The power analysis for the overall model ($p = .01$) revealed the statistical power exceeded .98 and was adequately powered. The power analysis for the small effect size ($p = .05$) for the change in $R^2$ equaled .61, and therefore less than adequate power was observed in the analysis to detect the small effect. Replacing the regression coefficients in the regression equation identified a final equation of: Work Engagement = 1.13 + .70 * Psychological Capital + .18 * Wellness

Table 12. Hierarchical Regression Analysis Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Std. Error Est.</th>
<th>$R^2$ Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.46a</td>
<td>0.22</td>
<td>0.21</td>
<td>0.76</td>
<td>0.22</td>
<td>69.16</td>
<td>1</td>
<td>252</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2</td>
<td>.49b</td>
<td>0.24</td>
<td>0.23</td>
<td>0.75</td>
<td>0.02</td>
<td>7.23</td>
<td>1</td>
<td>251</td>
<td>.008</td>
</tr>
</tbody>
</table>

Model 1: Constant, Psychological Capital
Model 2: Constant, Psychological Capital, Wellness
Table 13. ANOVA for Hierarchal Regression Analysis Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>39.86</td>
<td>1</td>
<td>39.86</td>
<td>69.16</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>145.26</td>
<td>252</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>185.13</td>
<td>253</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>43.93</td>
<td>2</td>
<td>21.97</td>
<td>39.05</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>141.19</td>
<td>251</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>185.13</td>
<td>253</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 14. Predictor Summary of Hierarchal Regression Analysis Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>F</th>
<th>Sig.</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.42</td>
<td>0.48</td>
<td>8.80</td>
<td>0.003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological Capital</td>
<td>0.79</td>
<td>0.10</td>
<td>0.46</td>
<td>69.16</td>
<td>&lt;.001</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.13</td>
<td>0.48</td>
<td>5.49</td>
<td>0.020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological Capital</td>
<td>0.70</td>
<td>0.10</td>
<td>0.41</td>
<td>49.70</td>
<td>&lt;.001</td>
<td>0.89</td>
<td>1.12</td>
</tr>
<tr>
<td>Wellness</td>
<td>0.18</td>
<td>0.07</td>
<td>0.16</td>
<td>7.23</td>
<td>.008</td>
<td>0.89</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Results of Research Question Three

The third research question was, “to what degree do perceived wellness, psychological capital, work autonomy, and supervisory support predict work engagement?” This research question was addressed through a multiple regression analysis. Before examining the analysis results, the assumptions of regression were again reviewed.
Similar to research question two, the assumptions of normality, linearity, homoscedasticity, and multicollinearity were assessed through the same procedures. Normality of the residuals was examined through both a histogram of the standardized residuals and a normal P-P plot. The residuals in the histogram approximated a normal distribution and the P-P plot revealed the residuals followed the diagonal line. Linearity and homoscedasticity were evaluated through the plot of the residuals and predicted values of work engagement. A horizontal scatter of residuals demonstrated the assumption of linearity was met and the spread of residuals across the predicted values of the dependent variable demonstrated the assumption of homoscedasticity was met. Multicollinearity was assessed by examining tolerance and variance inflation factors of all variables. The tolerance values ranged from .78-.85 and thus were above .10, and the variance inflation factors ranged from 1.18-1.28 and thus were below 10, as recommended by Cohen et al (2003).

The multiple regression analysis found that wellness ($\beta = .13, p = .024$), psychological capital ($\beta = .35, p < .001$), supervisory support ($\beta = .14, p = .015$), and work autonomy ($\beta = .24, p < .001$) all significantly predicted work engagement. No predictor variable was dropped from the model. The model accounted for 34% of the variance in work engagement ($R = .58, R^2 = .34, F(4, 249) = 31.4, p < .001$). The effect size of the model can be interpreted as a large effect ($f^2 = .52$). A post hoc power analysis was conducted ($p = .01$) and revealed the statistical power for the large effect size exceeded .99, and therefore enough power was observed in the analysis for this result to be detected. Semi-partial correlation coefficients are displayed in Table 17 and demonstrate the unique variance explained in work engagement as a result of the
predictor variables. The semi-partial correlation of wellness was .12 and demonstrated that 1.44% of the variance in work engagement was explained uniquely by wellness in this regression equation. Replacing the regression coefficients in the regression equation identified a final equation of: Work Engagement = .46 + .60 *Psychological Capital + .15 *Wellness + .09 *Supervisory Support + .16 *Work Autonomy

Table 15. Multiple Regression Analysis Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>Std. Error Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.58</td>
<td>0.34</td>
<td>0.33</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Table 16. ANOVA for Multiple Regression Analysis Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>62.07</td>
<td>4</td>
<td>15.52</td>
<td>31.40</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>123.06</td>
<td>249</td>
<td>0.49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>185.13</td>
<td>253</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 17. Predictor Summary of Multiple Regression Analysis Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>F</th>
<th>Sig.</th>
<th>Partial</th>
<th>Semi-Partial</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Constant</td>
<td>0.46</td>
<td>0.47</td>
<td>0.98</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wellness</td>
<td>0.15</td>
<td>0.06</td>
<td>0.13</td>
<td>5.19</td>
<td>0.024</td>
<td>0.14</td>
<td>0.12</td>
<td>0.85</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>Psychological Capital</td>
<td>0.60</td>
<td>0.10</td>
<td>0.35</td>
<td>39.53</td>
<td>&lt;.001</td>
<td>0.37</td>
<td>0.33</td>
<td>0.85</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>Supervisory Support</td>
<td>0.09</td>
<td>0.04</td>
<td>0.14</td>
<td>5.94</td>
<td>0.015</td>
<td>0.15</td>
<td>0.13</td>
<td>0.78</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>Work Autonomy</td>
<td>0.16</td>
<td>0.04</td>
<td>0.24</td>
<td>16.16</td>
<td>&lt;.001</td>
<td>0.25</td>
<td>0.21</td>
<td>0.78</td>
<td>1.28</td>
</tr>
</tbody>
</table>
Results of Research Question Four

The fourth research questions was, “does psychological capital mediate the relationship between perceived wellness and work engagement?” Assumptions of normality, linearity, homoscedasticity, and multicollinearity were tested and met for conducting mediation analysis (Jose, 2013). Normality of residuals was examined by both a histogram of the standardized residuals and a normal P-P plot. Linearity and homoscedasticity were both assessed through a plot of the residual and the predicted values of work engagement. Multicollinearity was checked in the same manner as in research question two, and the tolerance and variance inflation factors were within acceptable ranges.

Results from the mediation analysis indicated that path $a$ was significant with wellness predicting psychological capital ($b = .23, t(252) = 5.58, p < .001$) and path $b$ was significant with psychological capital predicting work engagement ($b = .70, t(251) = 7.05, p < .001$). The effect of wellness on work engagement without the mediator, path $c$ ($b = .33, t(252) = 4.88, p < .001$) was lessened with the inclusion of psychological capital, path $c’$ ($b = .18, t(251) = 2.69, p = .008$). The results of the model pathways support the mediational hypothesis. Standardized beta coefficients are displayed in Figure 9 and Table 18.
The 95% confidence interval for path $ab$ did not include zero, providing evidence that the path was significant ($R^2 = 23.73\%, F(2,251) = 39.05, p < .001$). A Sobel test was conducted and supported the finding that partial mediation occurred ($Z = 4.35, p < .001$). The $R^2_{med}$ effect size value was .06 and qualified the mediation result as a small effect (Fairchild et al., 2009). A post hoc power analysis was conducted ($p = .05$) and revealed that the statistical power for the small effect size exceeded .94, and therefore enough power was observed in the analysis for this result to be detected. The final equations for the mediation with unstandardized coefficients were:

Work Engagement = $1.13 + .18$ *Wellness $+.70$*Psychological Capital

Psychological Capital = $4.12 + .23$*Wellness
Table 18. Total, Direct, and Indirect Effects of the Mediation Model

<table>
<thead>
<tr>
<th>Model Pathways</th>
<th>$\beta$</th>
<th>SE</th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C$ (Total Effect, No Mediator)</td>
<td>0.29</td>
<td>.07</td>
<td>0.09</td>
<td>23.8</td>
<td>1,252</td>
<td>&lt;.001</td>
<td>0.20 - 0.47</td>
</tr>
<tr>
<td>$a$</td>
<td>0.33</td>
<td>.04</td>
<td>0.11</td>
<td>31.15</td>
<td>1,252</td>
<td>&lt;.001</td>
<td>0.15 - 0.30</td>
</tr>
<tr>
<td>$b$</td>
<td>0.41</td>
<td>.10</td>
<td>0.17</td>
<td>49.7</td>
<td>1,252</td>
<td>&lt;.001</td>
<td>0.50 - 0.89</td>
</tr>
<tr>
<td>$ab$ (Indirect Effect)</td>
<td>0.49</td>
<td>.03</td>
<td>0.24</td>
<td>39.05</td>
<td>2,251</td>
<td>&lt;.001</td>
<td>0.09 - 0.23</td>
</tr>
<tr>
<td>$C'$ (Direct Effect, with Mediator)</td>
<td>0.16</td>
<td>.07</td>
<td>0.03</td>
<td>7.234</td>
<td>2,251</td>
<td>0.008</td>
<td>0.05 - 0.31</td>
</tr>
</tbody>
</table>
Summary

This chapter presented the results of the data analysis from the survey that was conducted which followed the methodology described in chapter three. This chapter first described how data were screened for missing values and outliers, and the resulting actions that took place to treat the dataset. Next, the sample characteristics and descriptive statistics for the scale composite variables were presented. Also, the scale reliabilities and correlation matrix were discussed.

Subsequent sections of chapter four each presented results of the research questions. Research question one described results of the linear regression analysis of wellness and work engagement. Research question two described results from the hierarchical regression analysis that examined the unique effects of wellness on work engagement after controlling for the established personal resource variable, psychological capital. Research question three described results of the multiple regression analysis that included all predictors included in the model to examine if wellness remained a relevant predictor of work engagement. Lastly, research question four described a mediation analysis that explored whether the effects of wellness on work engagement were mediated by psychological capital.

In the following chapter, each of these results are explored further. Chapter five discusses the results considering other findings from the literature and their broader implications. Also discussed are suggestions for practice, research, and policy.
Chapter 5: Discussion

This chapter includes sections with a review of previous chapters, conclusions drawn based on the findings from each research question, implications based on the conclusions, and recommendations for practice, research, and policy. The review of previous chapters summarizes the problem statement, research questions, literature review, methodology, and findings from the data analysis. The conclusions section evaluates the results from each research question to provide insight into the practical or theoretical reasons for asking each research question. The implications, based on the conclusions, describe the researcher’s inferences of what the conclusions mean and assess how the findings agree with previous research. The final section on recommendations for practice, research, and policy includes concrete suggestions that can be implemented based on this study and several approaches to further studying the relationship between wellness and work engagement.

Review of Previous Chapters

The overarching goal of this research study was to examine the relationship between perceived wellness and work engagement. In chapter one, wellness and work engagement were both introduced. Work engagement was described as a positive affective-motivational state of work-related well-being that is a predictor of workplace performance outcomes (Kahn, 1990; Leiter & Bakker, 2010). Wellness was described as
a health-enhancing state where an individual seeks to achieve optimal health and well-being (Myers & Sweeney, 2005a; Granello & Witmer, 2013). The variables that have been primarily used to study the factors that influence work engagement have been described in the JD-R model as job resources and personal resources (Bakker & Demerouti, 2007; 2008). More studies have focused on job resources as predictors of work engagement, whereas variables representing personal resources have received less attention (Duran et al., 2010). Of the studies that have examined personal resources, a subsection of the studies examined individual aspects of wellness and their relation to work engagement. Prior to this research, there had not been a study examining perceived wellness and work engagement which operationalized wellness from a holistic perspective. The holistic perspective of wellness is congruent with prominent wellness theories and reflects components of more modern, comprehensive workplace wellness programs (Granello & Witmer, 2013; SHRM, 2017).

To understand the potential impact of the collective effects of perceived wellness on work engagement, several research questions were posed to investigate this gap in the literature. The first research question was, “does a relationship exist between perceived wellness and work engagement?” The second research question was, “after controlling for psychological capital, is perceived wellness a significant predictor of work engagement?” The third research question was, “to what degree do perceived wellness, psychological capital, work autonomy, and supervisory support predict work engagement?” Finally, the fourth research question was, “does psychological capital mediate the relationship between perceived wellness and work engagement?”
Chapter two was comprised of several sections. The first sections described COR theory and seminal studies that examined employee work engagement. The next section reported the results of past studies examining predictors of work engagement among teachers. Then, a review of wellness models was conducted to identify common wellness domains that existed across the models. The wellness domains that were identified were physical and physiological, emotional and psychological, social, intellectual, and spiritual wellness. Studies were identified that studied the relationship between an aspect of wellness and work engagement and were coded by wellness domain. Correlations and effect sizes were identified in each study. Effect sizes ranged from small to medium in the studies with wellness variables in the physical and physiological, social, and intellectual wellness domains. Effect sizes ranged from small to large in the studies with wellness variables in the emotional and psychological and spiritual wellness domains.

The methodology was detailed in chapter three. An online, cross-sectional survey study was created that combined existing instruments which measured the constructs of interest. This research design was chosen as it allowed efficient data collection of several variables with a large number of participants, and captured data that was able to be analyzed through quantitative analysis. The survey included 48 items in total, including three demographic items. All instruments included in the survey had been published in peer-reviewed journals with reported evidence of desirable psychometric properties. The HELP-Screener was a 15 item measure used to assess perceived wellness (Hwang, 2009; 2010a; 2010b). The UWES-9 was a nine item instrument used to measure work engagement (Schaufeli et al., 2006). The CPC-12 was a 12 item instrument used to assess
psychological capital (Lorenz et al., 2016). The measure of supervisory support was six items from Oldham and Cummings (1996) and the measure of work autonomy was a three item subscale from the revised Job Diagnostic Survey (Idaszak & Drasgow, 1987). All procedures were submitted and determined to be exempt by the institutional review board before the study was launched. The survey was sent to a purposive sample of 1,305 K-12 teachers in the central area of a Midwestern state. The teachers were selected from school districts with a range of student performance outcomes. The survey was open for data collection for four weeks and responses to the survey were recorded anonymously.

Initially, 1,305 teachers were sent the survey, but there were 13 emails that were not valid and the emails sent to these participants bounced back immediately. Of the remaining 1,292 who were sent the survey, 270 completed the survey. This yielded a 20.9% response rate and provided an acceptable level of power. There were 254 usable cases after removing 16 respondents who did not respond to any work engagement or wellness items or who were identified as outliers. The data contained approximately one percent missing values, and these values were imputed using expectation maximization and maximum likelihood estimation.

The data analysis began by examining descriptive statistics and correlations of the variables. Wellness was significantly correlated with work engagement \((r = .29, p < .01)\) and psychological capital \((r = .33, p < .01)\), and work engagement was significantly correlated with all variables \((r = .29 - .46, p < .01)\). After the initial review of the data, the analysis for each research question was conducted. Research question one used a linear regression analysis to examine the variance explained in work engagement by wellness.
The results of the analysis showed that wellness explained nine percent of the variance in work engagement ($R = .29$, $R^2 = .09$, $F(1, 252) = 23.8$, $p < .001$). This proportion of variance was categorized as a small effect ($f^2 = .10$).

Research question two utilized a hierarchical regression analysis to examine the unique variance explained in work engagement by wellness after controlling for psychological capital. The second model was significant and showed a change in $R^2$ equal to two percent ($R = .49$, $R^2 = .24$, $F(2, 251) = 39.05$, $p < .001$). With both predictors in the model, 24% of the variance in work engagement was explained and the effect size was interpreted as a medium effect ($f^2 = .32$).

Research question three used a multiple regression analysis with all variables included to understand their relative contribution to the variance in work engagement. All variables displayed a significant contribution to work engagement and the model was significant. Together, the variables accounted for 34% of the variance in work engagement ($R = .58$, $R^2 = .34$, $F(4, 249) = 31.4$, $p < .001$). The effect size of the model was interpreted as a large effect ($f^2 = .52$). The semi-partial correlation of wellness revealed that 1.44% of the variance in engagement was explained uniquely by wellness.

Research question four utilized a mediation analysis to examine if the effect of wellness on work engagement could be best explained through psychological capital. Results of the mediation analysis showed the indirect effect was significant ($R^2 = 23.73\%$, $F(2,251) = 39.05$, $p < .001$). The significance of wellness was reduced in the presence of psychological capital and indicated a partial mediation ($Z = 4.35$, $p < .001$). This partial mediation was interpreted as a small effect ($R^2_{\text{med}} = .06$).
Conclusions

The findings of this study address several voids in the work engagement research literature that had not previously been addressed. The findings indicate those with higher levels of perceived wellness have higher levels of work engagement, that wellness predicts unique variance in work engagement amongst established personal and job resource predictor variables, and that there is a partially mediated effect from wellness to work engagement through psychological capital. Besides this set of overarching findings, each research question reveals further conclusions.

The first research question was, “does a relationship exist between perceived wellness and work engagement?” This question was asked from a practical perspective to understand if a relationship existed between the constructs and to understand the variability that could be explained through wellness. This analysis also tested wellness as a potential resource that could be explained through COR theory (Hobfoll, 1989; 2001). The results identified that wellness is a predictor of work engagement. This suggests that COR theory adequately describes the wellness-work engagement relationship; those who invest in their resources through the practice of wellness are prone to gaining and using resources at work (Salanova et al., 2010).

Additionally, this first research question tested to see if performance at work is impacted by perceived wellness. This finding offers support that organizations will realize performance outcomes at work as a result of wellness, as proposed by Connolly (2005). This result indicates that wellness is a construct that organizations may plan to foster in their employees if they want to improve work engagement. For organizations
that offer wellness programs that are designed to be reactive to employee health needs and reduce healthcare expenses, this finding should provide evidence that proactive approaches to a lifestyle of wellness can be beneficial for the organization in more ways than cost reduction alone.

The second research question was, “after controlling for psychological capital, is perceived wellness a significant predictor of work engagement?” This question was asked to identify if the JD-R model needs to expand the list of variables that are defined as personal resources (Bakker & Demerouti, 2007; 2008). With wellness explaining unique variance in work engagement, a revised JD-R model should include wellness as a personal resource variable. A revised model is presented in Figure 10.

Figure 10: The Revised Job Demands-Resources Model of Work Engagement
Adapted from Bakker & Demerouti (2007; 2008)
While the results of the second research question indicated wellness should be included in the model, it is important to acknowledge that wellness predicted less variance in work engagement when compared to psychological capital. The standardized beta weights from Table 14 reveal the relative contribution from each predictor variable. This finding confirmed that psychological capital is an important predictor of engagement and that individuals with higher levels of psychological capital carry this psychological state into their work performances (Sweetman & Luthans, 2010). The studies included in the psychological and emotional section of the literature review in chapter two suggested a strong relationship between psychological capital and work engagement and the other variables that represented the psychological and emotional domains of wellness.

The third research question was, “to what degree do perceived wellness, psychological capital, work autonomy, and supervisory support predict work engagement?” This question sought from a practical perspective to compare personal and job resources to each other to examine the relative strength of these variables, which were representing different components of the JD-R model. All variables explained a significant amount of variance in work engagement. Interestingly, the personal resource variables explained a higher amount of variance when the standardized coefficients were examined. While there were many other variables that could have been included in this study and regression model, this does indicate the relative strength of the personal resources in predicting work engagement. One explanation put forth from a similar line of research is the “happy/ productive worker thesis” by Demerouti and Cropanzano.
(2010). This explanation states optimism and subjective well-being have been able to predict performance outcomes while controlling for workplace predictor variables. Similar to this explanation, there may be a “healthy/productive worker thesis” that explains wellness and psychological capital predicting a greater amount of variance in work engagement when compared to the job resource variables included in this study.

Another significant finding from the third research question was the unique variance explained by wellness while in the presence of the other three established predictor variables. If the effect of wellness was nonsignificant, a more parsimonious model could have been adopted. With wellness remaining a significant contributor to work engagement in the presence of the other variables in the model, it appears to be a modest but worthwhile predictor variable.

Finally, the fourth research question was, “does psychological capital mediate the relationship between perceived wellness and work engagement?” This question was posed as several research studies found this relationship existed, albeit in a more limited scope (Barber et al., 2012; ten Brummelhuis & Bakker, 2012; Tement, 2014). This research question directly tested this notion posed in the literature and sought to identify if this relationship was more appropriate than the simple linear relationship examined in research question one. The results found wellness was partially mediated by psychological capital, but the mediation did not explain all the variance from wellness. Wellness still showed a direct, but small impact on work engagement. This partial mediation suggests that the broader notion may be true: that wellness influences general psychological states, which in turn impacts work-related affective states. The results also
confirmed that the linear relationship between wellness and work engagement in research question one does not adequately reflect the complexity of the relationship between these constructs.

There may be several explanations for the relationship to exist between wellness and psychological capital. One explanation could be that wellness may lead to positive emotions and feelings of life satisfaction (Degges-White & Shurts, 2005). The broaden-and-build theory of positive emotions (Fredrickson & Levenson, 1998; Fredrickson, 2000; 2001) contends that positive emotions broaden thought processes, which in turn influence behaviors which lead to the building of resources. Fredrickson (2000; 2001) suggests that outcomes of positivity allow for the broadening of thought-action repertoires and these effects are enduring and cumulative. Additionally, positivity is linked to workplace behaviors such as pursuing professional development, coworker relations, accepting feedback, risk-taking, conflict reduction, and asking questions (Demerouti & Cropanzano, 2010). The broaden-and-build theory of positive emotions may explain the mediation effect of wellness building psychological capital, which in turn builds work engagement.

Implications

In this section, four major implications are discussed based on the findings and conclusions of the study. The first implication is that the strength of the findings from the study appear to be consistent with relationships reported in previous research which offers evidence of convergent validity from the study’s findings. The second implication is that wellness offers strategic value to organizations. The third implication is that
wellness and psychological states appear to offer an effective foundation for the design of workplace wellness programs. The fourth implication is that personal resource interventions present unique advantages for organizations that are deciding between interventions targeted to improve either job or personal resources.

The first implication is that several relationships from this study agreed with trends from the literature reviewed in chapter two. The relationship between wellness and work engagement was categorized as a small effect, albeit it was toward the higher end of this effect size range \((r = .29, p = .001)\). Many of the job resources identified in chapter two reported correlations with teacher work engagement that ranged from a medium to large effect. The job resource variables included in this study, supervisory support and work autonomy, showed very similar associations to the reported relationships with work engagement from the literature review, which were at the lower end of the medium effect size range. The associations of wellness and work engagement can be seen as being only slightly smaller than those of the job resource variables. Also, the relationship of psychological capital and work engagement was very similar to the relationship reported by Adil and Kamal (2016). These personal resource associations are substantiated by the relationships reported in the meta-analysis from Halbesleben (2010). With the relationships of the variables in this study showing a high degree of agreement with previous research, there appears to be evidence of convergent validity (DeVellis, 2012). While these findings should be replicated, the evidence of convergent validity demonstrates the findings have additional credibility.
The evidence of convergent validity offers support for the relationships between closely associated variables that were not included in this study. For instance, wellness and psychological capital may not only have an impact on work engagement, but also job burnout. Burnout was not investigated in this study, but other studies have shown evidence to suggest wellness and psychological capital prevent burnout (Lawson & Myers, 2010; Puig et al., 2012; Peng et al., 2013). Furthermore, Halbesleben’s meta-analysis (2010) demonstrated a moderate, negative relationship between burnout and work engagement. As it relates to the teacher population, this study showed that wellness and psychological capital have the potential to impact work engagement, which may suggest a similar finding with job burnout if that variable were to be included in this study. While there are many projected job openings for teachers in the region and nationally, there is evidence that attrition from the profession is partly to blame for the shortage of teachers (Ohio Department of Job and Family Services, 2014; Sutcher, Darling-Hammond, & Carver-Thomas, 2016). With the teaching profession seeing turnover for a variety of reasons of which may be related to burnout, potential interventions will undoubtedly be considered (Sutcher et al., 2016). Job burnout and work engagement have both been shown to predict turnover intentions (du Plooy & Roodt, 2010). Designing interventions based on job and personal resource variables that are known predictors of work engagement and job burnout may be a potential solution to address attrition from which the convergent validity evidence in this study supports.

The second implication from this study is that wellness offers strategic value to organizations. Strategic value is realized when organizational objectives can be achieved.
Through the results in this study, it was evident that wellness contributed to work engagement, a known predictor of performance outcomes at work (Harter et al., 2002; Halbesleben, 2010). Across all workers, performance may be defined as in-role or extra-role performance. For teachers, performance may be defined through student achievement. Previous studies have demonstrated that wellness offers organizational value as evidenced by significant relationships with job satisfaction, job performance, and employee burnout (Connolly & Myers, 2003, Lawson & Myers, 2010; Wright & Cropanzano, 2000). The relationship of wellness and work engagement should signal that workplace wellness programs may have additional effects other than reducing healthcare costs. Zwetsloot and Pot (2004) state that overall wellness is a critical part of organizational excellence when it demonstrates a positive economic impact. This positive impact justifies its value by serving organizational interests, influencing the vitality of the workforce, and contributing to the sustainability of the organization. A strategic approach to overall wellness is an investment in people, which in turn influences the value of the organization (Zwetsloot & Pot, 2004). In this study, the effects of wellness have been shown to be related to work engagement; there is further evidence that wellness relates to strategic outcomes for organizations beyond healthcare program cost reductions.

The third implication is related to the relationship of wellness and psychological capital, and the potential benefit of designing workplace wellness programs to include interventions and services related to both constructs. Both wellness and psychological capital were significantly correlated, both predicted variance in work engagement, and psychological capital was found to mediate the relationship between wellness and work
engagement. Many of the wellness models reviewed in chapter two described aspects of psychological capital as components of psychological and emotional wellness. Psychological capital interventions can be built into workplace wellness programs through information sharing, coaching, individual reflection, guided meditation, goal setting and planning, group discussion, and learning soft skills that can be applied to challenging work situations.

Given the evidence of this partial mediation between wellness and psychological capital, organizations would see benefits from fostering both of these constructs in their employees. As suggested by Duran et al. (2010), personal resources encourage employees to mobilize additional resources, which is consistent with the gain spirals that manifest at work as proposed by COR theory (Halbesleben et al., 2014). Salanova et al. (2010) stated that gain spirals act as a self-perpetuating, dynamic process, and this appears to be true with wellness and psychological capital as it relates to work engagement. Workplace wellness programs continue to evolve from a disease prevention-treatment paradigm to focus more on holistic aspects of wellness. The effects of these programs may be greater by incorporating a proactive approach to psychological and emotional health due to the benefits of the gain spirals realized through enhanced levels of personal resources.

The fourth implication is that personal resource interventions present unique advantages for organizations when deciding between job and personal resource interventions. Salanova et al. (2010) and Lorente et al. (2014) state job resources create personal resources and personal resources create job resources. The effect of these resources is that they have a cumulative effect on each other, and this effect is described
as being a resource caravan (Salanova et al., 2010). With all resources correlating positively with each other in this study, this resource caravan effect appears to have emerged. While it might appear that organizations may realize gains in work engagement through interventions to improve either job resource variables or personal resource variables, it should be noted that job resource interventions may not have similar effects across organizations due to variability in supervisors, job characteristics, and future organizational changes. For instance, an organization with limited human resource development resources may decide to offer an intervention based on improving managerial effectiveness. Some employees in parts of the organization may benefit, while other employees may receive no additional benefits if their managers cannot participate, are already effective, or if those individuals lose supervisory responsibility in the future. Conversely, the organization as a whole and all employees can benefit from a single, well-designed workplace wellness program where the benefits realized in employees would stay with employees even if they move throughout the organization. Employees may also perceive workplace wellness programs to reflect an employer’s concern about their personal life instead of only their outputs as a worker. Additionally, organizations realize additional benefits from personal resource interventions, as they can use wellness programs as a tool for recruitment of new employees, to improve morale of existing staff, and to reduce healthcare spending costs (Mattke et al., 2013; SHRM, 2017). If the resource caravan notion is true with job and personal resources having a cumulative effect on each other (Salanova et al., 2010; Lorente et al., 2014), it might make sense to spend limited human resource development resources on interventions targeted toward
personal resources assuming the effects on work engagement and programmatic costs are similar.

The implications for this study were based on the convergent validity evidence identified from the relationships between the variables, the strategic value of wellness, the ability for workplace wellness programs to incorporate psychological capital into their services and offerings, and the unique advantages that interventions on personal resources offer for organizations.

Recommendations for Practice, Research, and Policy

Recommendations for Practice

Several recommendations for practice are identified through this study. First, with wellness demonstrating a relationship with work engagement, fostering wellness in employees may be an appropriate strategy that can be accomplished through workplace wellness programs. Human resource and benefits staff should include employee engagement as part of the business case for workplace wellness programs and should also evaluate these programs not only in terms of cost savings and return on investment but in terms of improved job attitudes and job performance.

Second, when comparing the relative contribution of wellness and psychological capital, it was apparent that psychological capital was a stronger predictor of engagement. While more holistic definitions of wellness incorporate these aspects of psychological capital, it would be wise for organizations to offer interventions on psychological capital either through workplace wellness programs or as stand-alone interventions. Wellness
programs that offer comprehensive services and education as opposed to physiological screenings only would appear to have a greater influence on work engagement.

A third recommendation is for supervisors and managerial staff. The recommendation is that supervisors should consider these results and understand that the work context alone does not predict work engagement, job attitudes, and job performance. Supervisors may understand that their employees’ lives are not bifurcated and that work and personal lives have spillover effects on each other. Supervisors should encourage their employees to participate in wellness programs and to invest resources in strengthening their psychological and emotional competencies. Supervisors themselves should participate in interventions designed to help themselves and their employees practice wellness and build psychological capital.

Recommendations for Research

There are several areas future research could address. First, a replication study could examine if wellness has the same effect in another sample of teachers. Other attempts to replicate the study may include different occupations. The other occupations could have differing characteristics from this population. For instance, other occupations may have differing educational requirements, gender distributions, or types of job demands.

Another way to attempt to replicate the findings may be to use other existing wellness instruments. This study used an instrument that represented multiple aspects of wellness but was reported as being unidimensional. Other wellness models and researchers have produced multidimensional wellness instruments. This study did not
attempt to evaluate the dimensionality of any construct or to compare instruments measuring the same construct, but it would add credibility to the study’s findings if another study were able to replicate the results using a multidimensional wellness instrument to examine the effect on work engagement. Another type of replication study might examine the effects of objective wellness data and compare the results to the effects of perceived wellness. Further, another replication could look to capture frequency of wellness behaviors as opposed to capturing typical wellness behaviors, which was done in this study. A final variant of the study could change the way work engagement is measured by collecting engagement data from supervisors to attempt to reduce social desirability bias that may be present in respondent self-report data.

Another area of future inquiry may examine wellness, psychological states, and psychological traits and their relationship to work engagement. Positive affect and conscientiousness have been identified as personality variables that are predictors of work engagement (Macey & Schneider, 2008). Including these variables in the study would have permitted the comparison of the relative contribution from other identified personal resource variables. A further inquiry into personal resources could examine if the effects of wellness are moderated by job demands. This type of inquiry may evaluate the tenet of the JD-R model that high levels of resources and high job demands predict a high degree of work engagement (Bakker et al., 2007).

One of the areas for improvement in the work engagement research literature is the lack of studies based on interventions. Another line of research may address the actual changes in wellness that occur over the course of workplace wellness programs or
interventions and assessing if work engagement has a corresponding change. Also, studies that assign treatment and control groups to those who receive wellness interventions would offer additional evidence if this relationship of wellness and work engagement occurs. Only several experimental research studies were identified that examined wellness and work engagement, and additional studies of this variety could provide more convincing evidence than cross-sectional studies alone (Coom, 2012; Strijk et al., 2013; van Berkel et al., 2013; van Berkel et al., 2014).

Related to this population, further studies may consider the impact of various job and personal resources on turnover intentions or job burnout, with work engagement as a mediating variable. If for instance, work engagement was found to mediate the relationship between wellness and psychological capital when predicting turnover intentions or job burnout, then interventions could be designed and prioritized if a school district had challenges retaining teachers. Additionally, this study found surprising results with supervisory support and work autonomy demonstrating significant relationships with several demographic variables. Supervisory support was negatively related to age ($r = -.20, p = .001$) and tenure ($r = -.23, p < .001$). Work autonomy was also negatively related to age ($r = -.08, p = .041$) and tenure ($r = -.14, p = .026$). This could be an implication for further study to identify if older and more experienced teachers are in need of more or different types of supervisory support and autonomy.

**Recommendations for Policy**

Several recommendations can be made for specific policies and to support future policy creation inside organizations and at a governmental level. The first
recommendation is targeted toward policy inside organizations. Given the relatively strong effect of psychological capital and work engagement on performance outcomes, employees should be supported through employee assistance programs when they demonstrate signs of burnout, as suggested by Yu, Lin, and Hsu (2009).

Another recommendation is targeted toward policy makers in governmental organizations. This suggestion is to support, incentivize, and promote healthy workplaces. An example is Taiwan’s Health Promotion Administration, which offers certifications for workplaces that engage in tobacco prevention and health promotion activities (Chen & Yu, 2016).

Another recommendation is for researchers to translate research about the state of healthy workplaces to organizational leaders and policy makers so these individuals can support policy. An example is a cross-sectional study of Massachusetts employers, which described their organization’s health promotion and occupational safety measures, shortcomings in program offerings, and recommendations for workplaces (Tremblay, Nobrega, Davis, Erck, & Punnett, 2013). Taken together, these recommendations would have an impact on both employee well-being, work engagement, and performance outcomes at work.

Summary

The purpose of the study was to examine the degree to which perceived wellness predicted variability in work engagement, amongst several established personal resource and job resource predictor variables. While previous studies have examined subdomains
of wellness and its relationship to work engagement, there had not been a study that examined the holistic effects of perceived wellness on work engagement.

The results of this study support the relationship between wellness and work engagement, and it appears that by fostering wellness, general psychological states and work-related affective states are increased. A lack of wellness was found to be a threat to general psychological states and work engagement. Teachers with limited resources reported to be less willing to invest their resources on performing work tasks. Overall, the results indicate that COR theory appears to offer a valid explanation for increasing levels of work engagement. While not all tenets of the theory were tested in this study, the general tenet that increasing levels of resources enable performance held true as evidenced by all predictor variables explaining variance in work engagement.

Bindl and Parker (2010) caution against generalizing these results to other occupational groups, as many job characteristics such as the meaningfulness of the task, degree of autonomy, persistence required, and level of co-worker involvement may alter the relationships between the variables that were observed from these findings. While these results might not fully generalize to other occupational groups, this study supports the growing body of research suggesting the benefits of wellness at work (Mattke et al., 2013). Work engagement is likely one of the many work-related outcomes from higher degrees of wellness and it appears the benefits of wellness in the workplace are in the early stages of being understood. This study may not fully model the complex relationships in the domain space of wellness, job attitudes, and work performance outcomes, but the relationships do appear to exist based on these findings.
Results suggest that wellness can be seen as a personal resource variable that supports employee work engagement. Wellness was found to be a useful personal resource and should be included in the JD-R model. Personal resources were found to be relatively stronger predictors as compared to the job resource variables that were included in the study. The relationship of wellness and work engagement was also found to be partially mediated by psychological capital, indicating wellness may influence general psychological states, which in turn affects work-related affective states.

This study demonstrates a relationship between wellness and work engagement in K-12 teachers, and while this may limit the generalizability of the findings to other professions, this study should encourage further research on the relationship between wellness and work engagement. Given that wellness was found to predict unique variance compared to other variables when predicting work engagement, wellness interventions may likely have a positive impact on resulting levels of work engagement.
References


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Appendix A: Recruitment Email

Subject: Teacher Wellness Survey for OSU Dissertation Research

Dear teacher,

My name is Dennis Priebe and I am a doctoral candidate in the College of Education at Ohio State.

I am seeking your participation in a survey of teachers to see how personal wellness impacts attitudes about work. The survey has 48 closed-ended questions and takes less than 15 minutes to complete.

I will raffle off 15, $10 and 10, $20 gift cards for participants of the study (to Walmart and Amazon).

The survey will present statements about the following variables and ask for you to select a response: wellness, positive psychological states, supervisory support, autonomy, and work engagement.

The survey will be open until 6 pm on Friday, January 26th.

Participation in the study is voluntary, and you are free to opt out of the study if you wish to discontinue. All responses will be kept confidential. To ensure your confidentiality, this survey is not being conducted in conjunction with any school district. The study is solely for purpose of my dissertation research. The data will only be analyzed once aggregated.

If you have any questions or concerns regarding the online survey or the research, or if you feel you have been harmed by study participation, you may contact Dennis Priebe at priebe.11@osu.edu.

Please click the below link to participate the survey:
(embedded link here)

Thank you for considering to participate in this study,

Dennis Priebe
Doctoral Candidate, Workforce Development and Education
College of Education and Human Ecology, The Ohio State University
Appendix B: Recruitment Follow Up Email

Subject: RE: Teacher Wellness Survey for OSU Dissertation Research

Dear teacher,

This is a reminder email asking for your participation in the below online survey for a study on the relationship between wellness and attitudes about work:

(embedded link here)

The survey has 48 questions that ask for a response. The survey should take you no more than 15 minutes to complete.

Participation in the study is voluntary, and you are free to opt out of the study if you wish to discontinue. All responses will be kept confidential.

I will raffle off 15, $10 and 10, $20 gift cards for participants of the study (to Walmart and Amazon).

The survey will be open until 6 pm on Friday, January 26th.

If you have any questions or concerns regarding the online survey or the research, or if you feel you have been harmed by study participation, you may contact Dennis Priebe at priebe.11@osu.edu.

Thank you for considering to participate in this study,

Dennis Priebe
Doctoral Candidate, Workforce Development and Education
College of Education and Human Ecology, The Ohio State University
Appendix C: Survey Instrument

Demographic Questions (3 items)
1. What is your gender?
   a. Scaling- Male- 0, Female- 1
2. What is your age?
   a. Scaling- Continuous Variable
3. How many years have you been employed in your current position?
   a. Scaling- Continuous Variable

Wellness Scale (15 items)
Prompt: For the following statements, please consider your behaviors in a typical week.

Response Options (6-point scale): Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree

1. I spend sufficient time taking good care of myself (e.g., grooming, showering, cooking, and house cleaning).
2. I avoid health-risk behaviors (e.g., excessive drinking, smoking, consuming over-the-counter drugs).
3. I consume a variety of healthy foods rich in protein, fiber, or calcium everyday (e.g., white meat, fish, fruits, vegetables, milk, soy products).
4. I go out with my family or friends at least once a week.
5. I pursue my hobbies at least once a week.
6. I have skills for coping with stress.
7. I frequently monitor my health (e.g., blood pressure, blood sugar, body weight).
8. I frequently get quality sleep and rest.
9. I engage in my religious/spiritual activities at least once a week.
10. I frequently avoid those foods high in fat, cholesterol, sodium, or sugar (e.g., red meat, butter, eggs, canned soup, and desserts).
11. I frequently read the nutrition labels of food products before buying/eating them.
12. I exercise more than twice a week.
13. I engage in activities in my community at least once a week.
14. I frequently look for resources or information on health promotion through the mass media, health practitioners, or classes/clubs.
15. I frequently avoid sedentary activities/behaviors (e.g., watching TV, sitting and reading).
Work Engagement Scale (9 items)
Prompt: The following statements are about how you typically feel at work. Please read each statement carefully and decide if you ever feel this way about your job.

Response Options (Seven point scale): Never, Almost Never (A few times a year or less), Rarely (Once a month or less), Sometimes (A few times a month), Often (Once a week), Very Often (A few times a week), Always (Everyday)

Subscale 1: Vigor
1. When I get up in the morning, I feel like going to work.
2. At my work, I feel bursting with energy.
3. At my job I feel strong and vigorous.

Subscale 2: Dedication
4. My job inspires me.
5. I am enthusiastic about my job.
6. I am proud of the work that I do.

Subscale 3: Absorption
7. I get carried away when I am working.
8. I am immersed in my work.
9. I feel happy when I am working intensely.

Psychological Capital Scale (12 items)
Prompt: Please indicate to what extent you generally agree with the following statements (not specific to work).

Response Options (6-point scale): Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree

1. If I should find myself in a jam, I could think of many ways to get out of it.
2. Right now, I see myself as being pretty successful.
3. I can think of many ways to reach my current goals.
4. I am looking forward to the life ahead of me.
5. The future holds a lot of good in store for me.
6. Overall, I expect more good things to happen to me than bad.
7. Sometimes I make myself do things whether I want to or not.
8. When I’m in a difficult situation, I can usually find my way out of it.
9. It’s okay if there are people who don’t like me.
10. I am confident that I could deal efficiently with unexpected events.
11. I can solve most problems if I invest the necessary effort.
12. I can remain calm when facing difficulties because I can rely on my coping abilities.
Supervisory Support Scale (6 items)
Prompt: Please indicate to what extent the following statements are generally true of you (not specific to work).

Response Options (7-point scale): Strongly Disagree, Disagree, Slightly Disagree, Neutral, Slightly Agree, Agree, Strongly Agree

1. My supervisor helps me solve work-related problems.
2. My supervisor encourages me to develop new skills.
3. My supervisor keeps me informed about how employees think and feel about things.
4. My supervisor encourages employees to participate in important decisions.
5. My supervisor praises good work.
6. My supervisor encourages employees to speak up when they disagree with a decision.

Work Autonomy Scale (3 items)
Prompt: Please indicate to what extent you generally feel this way (not specific to work).

Response Options for Item One (Seven point scale, descriptors listed at points one, four, and seven): Very little autonomy, Moderate autonomy, Very much autonomy

1. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing your work?

Response Options for Items Two and Three (Seven point scale): Very Inaccurate, Mostly Inaccurate, Slightly Inaccurate, Neutral, Slightly Accurate, Mostly Accurate, Very Accurate

2. This job gives me a chance to use my personal initiative and judgment in carrying out the work.
3. The job gives me considerable opportunity for independence and freedom in how I do the work.
The Ohio State University Consent to Participate in Research

Study Title: Examining the Relationship between Teachers’ Wellness and Work Engagement

Researcher: Dennis Priebe, M.A.

This is a consent page for research participation. Please read carefully. It contains important information about this study and what to expect if you decide to participate.

Your participation in the study is voluntary. Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will click the arrow at the bottom of the page to begin the survey, which will serve as consenting to participate in the study. You may print a copy of this page.

Purpose: The purpose of this study is to determine if wellness variables are related to teacher work engagement.

Procedures/Tasks: You will be given a series of questions regarding your demographic characteristics, work engagement, perceived wellness, psychological capital, autonomy at work, and supervisory support. Please respond to the statements by providing an appropriate response. You may skip any questions you do not wish to answer.

Duration: 15 minutes. You may discontinue the survey at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled.

Risks and Benefits: There are no predicted or anticipated risks for participation in this study. You will not benefit directly from participating in the study.

Confidentiality: Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research): Office for Human Research Protections or other federal, state, or international regulatory agencies; The Ohio State University Institutional Review Board or Office of Responsible Research Practices.
**Internet Data Collection:** We will work to make sure that no one sees your survey responses without approval. But, because we are using the internet, there is a chance that someone could access your online responses without permission. In some cases, this information could be used to identify you.

**Incentives:** There are 15, $10 and 10, $20 gift cards being raffled to those who participate in the survey. The survey will ask for your email address on the final screen to enter for the gift card raffle. You may have a 19% chance of winning a gift card assuming 131 respondents.

**Participant Rights:** You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By click the arrows at the bottom of this page, you do not give up any personal legal rights you may have as a participant in this study.

This study has been determined Exempt from IRB Review, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

**Contacts and Questions:** For questions, concerns, or complaints about the study, or you feel you have been harmed as a result of study participation, you may contact Dennis Priebe, Priebe.11@osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

**Signing the consent form**

I have read this page and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask email questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study. I am not giving up any legal rights by acknowledging this page. I can print a copy of this page.

By selecting the arrows at the bottom of the page and moving to the next screen, you indicate that:

- You have read the above information (or someone has read it to you)
- You voluntarily agree to participate in the research study
- You have had the opportunity to ask questions and have had them answered to your satisfaction
- You are at least 18 years of age.

If you do not wish to participate in the research study, you may close and exit the web browser.
Appendix E: Institutional Review Board Letter of Exemption

12/15/2017

Study Number: 20175082
Study Title: Examining the Relationship between Teachers’ Wellness and Work Engagement

Principal Investigator: Christopher Zirkle
Date of determination: 12/15/2017

Qualifying exempt category: #2

Dear Christopher Zirkle,

The Office of Responsible Research Practices has determined the above referenced project exempt from IRB review.

Please note the following about this determination:

- Retain a copy of this correspondence for your records.
- Only the Ohio State staff and students named on the application are approved as Ohio State Investigators and/or key personnel for this study.
- Simple changes to personnel that do not require changes to materials can be submitted for review and approval through Buck-IRB.
- No other changes may be made to exempt research (e.g., recruitment procedures, advertisements, instruments, protocol, etc.) if changes are needed, a new application for exemption must be submitted for review and approval prior to implementing the changes.
- Records relating to the research (including signed consent forms) must be retained and available for audit for at least 3 years after the study is closed. For more information, see university policies, Institutional Data and Research Data.
- It is the responsibility of the investigators to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under The Ohio State University’s OHRP Federalwide Assurance #00005373. Human research protection program policies, procedures, and guidance can be found on the OHRP website.

Please feel free to contact the Office of Responsible Research Practices with any questions or concerns.

Jacob Stoddard
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614-292-7676