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The Job Demands-Resources Model: Understanding the Impact of Job Characteristics on Healthcare Leaders

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THE JOB DEMANDS-RESOURCES MODEL: UNDERSTANDING
THE IMPACT OF JOB CHARACTERISTICS ON HEALTHCARE LEADERS

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ABSTRACT

The job demands-resources (JD-R) model is one of the most popular in occupational health psychology but it often overlooks a key group: leaders. This study applies this framework to leaders in healthcare, considering how challenge and hindrance demands and resources via their unit's perceptions of teamwork impact the affective states of the leader. This study also considers meaningful work, rather than engagement, as the motivational process as it is highly relevant in healthcare. Many JD-R models also include how the motivational and health impairment processes influence performance; this study considers the leader's rating of their unit's performance, accounting for the JDR's effects on both the unit's performance and their leader's rating of it.

Using path analysis from multi-source data with 738 leaders, the results suggest that, when controlling for healthcare leaders' resilience and their occupational stress, challenge demands have a significant and positively effect on hindrance demands, the job resource – unit's perception of teamwork, and the leader's perception of meaningful work. Hindrance demands had a significant, positive relationship with emotional exhaustion and significant negative relationship with meaningful work with meaningful work being significantly, negatively related to emotional exhaustion and having a significant, positive relationship with the leader's rating of the unit's performance; all other proposed relationships were non-significant.

Overall, this study provides an important insight into the JDR model in terms of healthcare leaders. It also contributes by considering the unit's perception of teamwork a

resource for the leader and using meaningful work as the motivational process. Finally,

this study also considers how leader affective states (i.e., emotional exhaustion,

meaningful work) impact their perceptions of their unit's performance, rather than their

own, as a particularly relevant outcome for both leaders and the healthcare environment.

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CHAPTER 1

INTRODUCTION

Burnout is a well-known issue, impacting a wide variety of workforce populations, with about 28% of the general working population experiencing burnout, determined as meeting the cutoffs for high burnout on at least one of its three dimensions (Shanafelt et al., 2012; Shanafelt et al., 2015). This can cause a wide range of effects for the individual (e.g., fatigue, insomnia, heart disease, obesity, vulnerability to illnesses, depression, anxiety; Mayo Clinic Staff, 2015), for the organization (e.g., higher rates of turnover and absenteeism, reduced job performance; Swider & Zimmerman, 2010), and even at the national level (e.g., an estimated $125 to $190 billion annually in U.S. healthcare spending; Garton, 2017). The breadth of the consequences that burnout can have makes it an area of interest to both practitioners and researchers alike to better understand its causes and outcomes to provide targeted interventions geared at effectively reducing the experience of burnout.

One field that has garnered a lot of attention due to the prevalence of burnout has been that of healthcare, in part because the rates of being high on at least one dimension of burnout are substantially higher than that of the general population (48.8% for physicians vs. 28.4% general working population; Shanafelt et al., 2015). Research has also found that, at least for physicians, the rates of being high on at least one dimension of burnout have increased over time (54.4% in 2014 vs. 45.5% in 2011; Shanafelt et al., 2015). Largely, this is attributed to healthcare being a high stress occupation in which

there are high work- and patient-loads, shift work (e.g., working overnight), conflict with patients and their families, and long working hours as well as the more common issues with interpersonal relationships (e.g., conflict among colleagues), lack of support from management, problems with human resources (e.g., pay inaccuracies), and a lack of resources (e.g., supplies, time), all of which contribute to high levels of stress (Happell et al., 2013; Tomioka, Morita, Saeki, Okamoto, & Kurum, 2011; Tyler & Cushway, 1998).

In addition, leaders in a healthcare setting may face additional supports and challenges than their front-line colleagues do, including higher levels of autonomy (i.e., the control one has over how the job is completed; Hackman & Oldham, 1976), a characteristic more typical of leadership roles in general, and less direct contact with patients and families, a specific function of leading in a healthcare environment. Specifically, autonomy has primarily been considered a resource in the literature (see Schaufeli & Taris, 2014) as it increases the control one has over their job. More ambiguously is the extent that the leader interacts with the patients and their families. Although this interaction increases the experience of emotional labor (i.e., emotional and expression management to display "appropriate" emotions rather than an individual's actual feelings; Morris & Feldman, 1997), it may remind leaders and front-line providers of why they entered the field and what makes working in healthcare meaningful. As such, the reduced amount of patient facing time that a physician leader may have could be seen as reducing a demand (i.e., emotional labor), as increasing their feeling that what they do has meaning, or as a byproduct of the increased amount of time a leader would spend managing their units and doing other administrative tasks (e.g., a demand). Together, the

unique job characteristics that a leader in healthcare faces may have a direct impact on their experience of burnout, particularly compared to front-line providers.

Conversely, leaders often face additional demands that their subordinates do not, including managing subordinates, communicating needs and wants to upper management, and relaying decisions to their employees, making sure policies are followed even if they disagree with them (Wilkie, 2018). Furthermore, it is important for individuals in these positions to have some training or education on leading others, particularly in healthcare as a dysfunctional leader may result in a dysfunctional unit (e.g., Burke, Stagl, Klein, Goodwin, Salas, & Halpin, 2006; D'Innocenzo, Mathieu, & Kukenberger, 2016), with poorer team function having increased chances of patient mortality (Hughes et al., 2016). However, this is not a common practice (Sonnino, 2016) and may lead to higher levels of uncertainty and ambiguity with decision-making. This lack of leadership training may create additional issues such that it would directly impact the ability of these leaders to bridge the gap between the front-line providers and the upper level management, potentially fostering increased frustration from the front lines and poorer communication across organizational levels, all of which may increase a leader's stress and their risk of developing burnout.

Furthermore, burnout in healthcare providers can reduce the quality of care patients receive and their safety (Fahrenkopf et al., 2008; Hall, Johnson, Watt, Tsipa, & O'Connor, 2016; Shanafelt, Bradley, Wipf, & Back, 2002), it can result in higher error rates (Prins et al., 2009) and increases in patient mortality (Tourangeau et al., 2007). Given this, it is even more imperative that burnout be understood as it has serious,

widespread, multilevel consequences on the individual, their subordinates, their patients, and their organization, especially in a healthcare setting. Despite an abundance of research on burnout in nurses and physicians, leaders in healthcare are often overlooked and, therefore, the effects of burnout in this population is not well understood.

To assess the causes and outcomes of burnout in the healthcare context, one common and flexible model that is frequently used is the job demands-resources (JD-R) model, which describes the different relationships that demands and resources have on affective states, typically burnout and engagement, and how they influence more distal outcomes, such as performance and turnover (e.g., Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli & Bakker, 2004). Specifically, job demands were originally described as those aspects of the job that require sustained effort and are associated with physiological and psychological costs (Demerouti et al., 2001) and includes things like time and work pressure, responsibility, role conflict, and computer problems (Schaufeli & Taris, 2014). This categorization of job demands was later expanded to represent challenge demands, or demands that that can be overcome and provide the opportunity for personal development and achievement (Podsakoff, LePine, & LePine, 2007), and hindrance demands, or obstacles that limit the employee' ability to do their job and drains their energy (Cavanaugh, Boswell, Roehling, & Boudreau, 2000), a distinction that has found support in the literature, including through multiple meta-analyses (Crawford, LePine, & Rich, 2010; LePine, Podsakoff, & LePine, 2005; Podsakoff, LePine, & LePine, 2007). Job resources, on the other hand, focused on those aspects of the job that help achieve work goals, reduce job demands and their associated costs, or that stimulate

personal growth and development (Demerouti et al., 2001) and includes things like leadership, safety and social climate, task variety, and team cohesion (Schaufeli & Taris, 2014). This model has therefore provided guidance as to the interaction of different job demands and resources on healthcare leader burnout.

However, there are a few issues with the model as it is in the literature. The first is that, given the various types of demands, resources, measures of well-being, and outcomes that fall into each of these categories (see Schaufeli & Taris, 2014 for examples), it is hard to compare the results of one study with those of another (Schaufeli & Taris, 2014; Taris & Schaufeli, 2016). For instance, one article may focus on workload as a demand whereas others may consider interpersonal conflict or physical demands. All of these qualify as job demands but they are all very different types that are hard to compare, especially across occupations and contexts. A second issue is that there are a wide variety of models being used in the literature to reflect the JD-R model. This can create some confusion as to how to correctly conceptualize the relationships among variables, not to mention how these relationships should be tested. For instance, many studies include a relationship between demands and resources in their model (e.g., Bakker & Demerouti, 2007; Taris & Schaufeli, 2016; Xanthopoulou et al., 2007) but some do not (e.g., Goering, Shimazu, Zhou, Wada, & Sakai, 2017; Schaufeli, 2017; Van Mol, Nijkamp, Bakker, Schaufeli, & Kompanje, 2018). This has resulted in the JD-R model being used more often as "inspiration" (Schaufeli & Taris, 2014, p. 51) given the lack of consistency in the included relationships in the literature

Purpose of the Current Study

      This study addressed the lack of research on the causes and outcomes of burnout for leaders in healthcare, who experience unique resources, demands, and stressors managing others in addition to job characteristics experienced by those working in healthcare. Specifically, using the JD-R model, this study identified how challenge and hindrance demands and resources experienced by healthcare leaders relate to their affective states (i.e., emotional exhaustion and meaningful work) and, thus, to their perceptions of their unit's performance. The results of this study provide a first glimpse into the burnout development process in this specific population. Additionally, this research contributes to the literature by using the unit-level perceptions of teamwork as a potential resource available to leaders as cohesive units provide support, trust, and back-up behaviors for leaders (Marks, Mathieu, & Zaccaro, 2001) while also limiting the amount of conflict management that the leader would have to do otherwise. Furthermore, as healthcare is centered around providing care and helping others, meaningful work was included as the motivational process being used in this study, rather than engagement. Finally, this research also expands the JD-R model in that, rather than focusing on the performance of the healthcare leaders themselves, it considers leaders' perceptions of their unit's performance.

      This manuscript is structured as follows. First, an overview of the literature on the JD-R model is provided, discussing its history and the various ways it has been used in past research. Next, the specific job characteristics (i.e., challenge and hindrance demands and resources) relevant to healthcare leadership is discussed as well as how

these characteristics may influence the leader's affective states and their perception of their unit's performance. This is then followed by the methodologies used to test these relationships and their results, and finally by the discussion, including the limitations, implications for practice and research, and directions for future research.

CHAPTER II

THE JOB DEMANDS-RESOURCES MODEL

In the following sections, the details and history of the job demands-resources model is discussed. The model is then applied to healthcare leaders through the demands and resources faced in this context. Next, the relationships between the demands and resources to the affective states of healthcare leaders are elaborated and, finally, how their affective states impact outcomes, specifically their perception of their unit's performance.

The Development and Use of Job Demands-Resources Model

There have been many models and theories regarding how job characteristics influence the well-being of its employees, including the effort-reward imbalance theory (Siegrist, 1996) and the job demands-control model (Karasek, 1979). Many of these account for various stressors and reactions but, at their core, all of them seek to explain how and why people become stressed or burned out. However, many of these models and theories describe specific variables that are relevant to them. For instance, with the effort-reward imbalance theory (Siegrist, 1996), its emphasis is on whether the amount of work that an individual exerts to complete a task is worth the reward or outcome of that task. As a motivational theory, it explains why people are not likely to put forth a high level of effort (e.g., hours of detailed artwork) for minimal reward (e.g., putting the drawing on the wall of a fast food restaurant).

Although less focused on well-being, the job demands-control model (Karasek, 1979) states that the level of demands (e.g., sources of stress like workload) an individual experiences at work interacts with the amount of control or decision latitude they have over their job. These two variables interact to create the level of job strain an individual experiences such that high demands and low control indicates a high strain job. For instance, a job where an individual is expected to work 60 hours a week will create more strain if they have very little input into how their job gets done (e.g., assembly line, call center) compared to one with a high amount of job control (e.g., some academics, entrepreneurs, freelancers). These models have been used to both explain the motivations that drive individuals (e.g., exert effort comparable to the rewards received) as well as explaining what causes individuals to experience stress. However, it became apparent that excessively high stress could be harmful and/or debilitating, leading to the development of the burnout framework by Maslach and Jackson (1984).

Burnout and the Job Demands-Resources Model. Based upon their framework, burnout is comprised of emotional exhaustion, depersonalization, and a lack of personal accomplishment (Maslach & Jackson, 1984; Maslach, Jackson, & Leiter, 1996) and research has identified that approximately 28.4% of the general population experiences burnout (Shanafelt et al., 2015). As such, it has been and continues to be a major point of concern and one that has encouraged researchers and practitioners to study it and identify its causes and how it develops over time. Both the effort-reward imbalance and the job demands-control models have been used to describe the causes of burnout (e.g., Bakker, Killmer, Siegrist, & Schaufeli, 2000; de Jonge, Mulder, & Nijhuis, 1999; Hammig,

Brauchli, & Bauer, 2012; Portoghese, Galletta, Coppola, Finco, & Campagna, 2014; Schulz et al., 2009). As the job demands-control model has been able to account for more objective causes of stress and burnout than the perceived imbalance between effort and reward, a meta-analysis was conducted to further understand what was and was not related to burnout at a broader scale. Specifically, Lee and Ashforth (1996) assessed the relationships of various demands (e.g., role clarity, workload) and resources (e.g., supports - work friends, supervisor support; job enhancement opportunities – autonomy, participation; reinforcement contingencies – rewards, punishments; behavior and attitudinal outcomes –organizational commitment, control coping) to the three dimensions of burnout to better understand its causes. It also confirmed the distinction between the three components, with certain demands and resources being more strongly tied to certain dimensions than others (e.g., workload to emotional exhaustion: $r = 0.65$, to depersonalization: $r = 0.34$, to personal accomplishment: $r = - 0.07$).

In an effort to broaden the study and definition of burnout to include occupations that were not focused on human service, Demerouti and colleagues (2001) developed the job demands-resources (JD-R) model to address this (Figure 1). The JD-R model more broadly specifies that high levels of job demands are likely to cause exhaustion whereas low levels of job resources are likely to lead to disengagement, which the authors argue are more generalized forms of emotional exhaustion and depersonalization respectively. This model also specified that the job demands and resources influence one another, which is reinforced by their definitions: *demands* are aspects of a job that require sustained physical or mental effort and are associated with certain physiological and

psychological costs whereas *resources* are aspects of a job that are a) functional in achieving work goals, b) reduce job demands at their costs, or c) stimulate personal growth or development (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

The JD-R model therefore not only built upon prior work around the causes of stress (i.e., the job demands-control and the effort-reward imbalance models) but also incorporated key components of burnout to create a more comprehensive framework. This has allowed both researchers and practitioners to understand how stress and burnout develop both within the human service industry (e.g., healthcare, education) and in the broader population, leading to the JD-R model becoming one of the most popular models in occupational health psychology (Taris & Schaufeli, 2016), which is "the application of psychology to improving the quality of work life, and to protecting and promoting the safety, health and well-being of workers" (CDC, n.d.). Over the years, it has expanded, including both negative (i.e., health impairment) and positive (i.e., motivational) processes. Specifically, it suggests that job demands increase strain (burnout), which impacts negative outcomes such as health problems whereas job resources improves well-being (engagement), therein increasing positive outcomes such as performance, with interactions existing between the two processes (see Figure 2; Schaufeli & Taris, 2014).

Using the Job Demands-Resources Model. The specific relationships between the health impairment and motivation processes, however, have varied substantially depending the article. Nearly all models include a bi-directional relationship between job demands and job resources (exceptions include Taris, Leisink, & Schaufeli, 2017 and Van Mol, Nijkamp, Bakker, Schaufeli, & Kompanje, 2018). Additionally, the

relationship, if one is indicated at all, between job demands and engagement and between job resources and burnout varies depending on the paper, with some suggesting direct relationships (e.g., Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014; Taris, Leisink, & Schaufeli, 2017), others indicating a moderation effect (e.g., Bakker & Demerouti, 2007; Bakker, Demerouti, & Verbeke, 2004; Taris & Schaufeli, 2016), and others still who do not propose any crossover effect (e.g., Xanthopoulou et al., 2007). This may be a consequence of the original authors suggesting there would be no meaningful interaction between demands and resources (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) and the hyper flexibility of the JD-R model, allowing for researchers and practitioners being able to adapt the model to fit their specific variables and research design and resulting in its use as "inspiration" (Schaufeli & Taris, 2014, p. 51).

As this model is one of the most popular in the literature, there is a substantial number of papers assessing the effects and interactions of job demands and resources, including a quite a few meta-analyses (e.g., Alarcon, 2011; Crawford, LePine, & Rich, 2010; Halbesleben, 2010; Swider & Zimmerman, 2010). Largely, these studies have supported the various relationships hypothesized in the JD-R model (Taris & Schaufeli, 2016), although the lack of consistent use of the model and the variability in specific demands and resources across studies confounds their results. Some research suggests that using qualitatively dissimilar dimensions (e.g., physical demands, cognitive resources, emotional exhaustion) may be another reason for the inconsistencies seen in the literature (e.g., De Jonge, Dormann, & Van den Tooren, 2008; Feuerhahn, Bellingrath, & Kudielka, 2013; Van de Ven & Vlerick, 2013). Despite this, the research

tends to support the model's premises when assessed cross-sectionally and longitudinally (Bakker & Demerouti, 2017; Schaufeli & Taris, 2014; Taris & Schaufeli 2016), and even when used to assess within-individual variance via diary studies (Kuhnel, Sonnentag, & Bledow, 2012; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009; Xanthopoulou, Bakker, Heuven, Demerouti, & Schaufeli, 2008; see Schaufeli & Taris, 2014 for a review).

Expanding the Job Demands-Resources Model. Other researchers have further added to and clarified the JD-R model. For instance, some authors have added personal resources to the JD-R model, which refer to positive self-evaluations linked to resiliency and self-efficacy for influencing their environment and which help achieve goals, protect themselves from threats or costs, and stimulate personal growth and development (e.g., Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). The placement of personal resources in the model varies substantially in part because the specific variables (e.g., extraversion, self-efficacy, resilience; Schaufeli & Taris, 2014) in this category may impact different relationship in different ways (i.e., as antecedents, mediators, moderators, or confounders; Schaufeli & Taris, 2014; Taris & Schaufeli, 2016).

Still others have distinguished between challenge and hindrance demands (e.g., Goering, Shimazu, Zhou, Wada, & Sakai, 2017; see Figure 3), which refers to stimulating job experiences worth the energy they require once they are overcome (e.g., time pressure, workload) and obstacles that limit the employee's ability to do the job and drain their energy (e.g., job insecurity, interpersonal conflicts), respectively (e.g., Cavanaugh,

Boswell, Roehling, & Boudreau, 2000; Gomoll, 2018; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). This distinction is due, in part, to the differential relationships that challenge and hindrance demands have on burnout and engagement. Specifically, challenge demands may increase burnout but may also increase engagement as these are obstacles that can be overcome whereas hindrance demands are sources of frustration, increasing burnout and decreasing engagement (Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). This distinction has helped clarify the inconsistencies that had been found in the literature around the effects of job demands to strains (e.g., burnout) and motivation (e.g., engagement; LePine, Podsakoff, & LePine, 2005).

Given the multitude of methods for assessing the JD-R model found in the literature, there is no clear "best" or most "correct" way to analyze this model. However, this study will focus on the model as put forth by Schaufeli and Taris (2014), accounting for the distinction between challenge and hindrance demands, as well as for various other conceptualizations of the relationships as described in the literature. The following sections discuss this study's application of the JD-R model to healthcare leaders, starting with their job demands and resources and followed with indices of their affective states and a more distal outcome – their perception of their unit's performance.

CHAPTER III

HEALTHCARE LEADERS' JOB CHARACTERISTICS

Despite the vast amount of existing research using the JD-R model, the focus has been almost exclusively on front-line workers and when the model is applied in healthcare settings, leaders or managers are rarely included. As such, the following sections will discuss healthcare leaders' job characteristics as they relate to challenge and hindrance demands and to resources and the relationships between these characteristics.

Challenge Demands. Although original grouped into one large category of demands that referred to components of the job that require effort and associated with certain costs (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), it's well-recognized now that there are different types of demands separated by the extent that an individual may be able to overcome them. This refers to the categorization of demands as challenges, which refers to stimulating job experiences that are deemed worthy of the time and energy they require once they have been overcome (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Gomoll, 2018; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010).

An example of this is the workload that providers and their leaders in healthcare face. As discussed previously, it is not uncommon for these individuals to work over 40, and sometimes 60, hours a week (Anim, Markert, Wood, & Schuster, 2009; Rogers, Hwang, Scott, Aiken, & Dinges, 2004), including for leaders in healthcare (Bureau of Labor Statistics). This can cause substantial stress to the individuals and lead to burnout

(Greenglass, Burke, & Fiksenbaum, 2001). However, there is a certain degree of control that leaders have over the number of hours they work. For instance, by reducing unnecessary meetings (e.g., visitors), engaging in structured planning (e.g., create shift schedule on Mondays from 2-4), and appropriate delegation, leaders may be able to manage their working time better and not need to spend as many hours working (Yanik & Ortlek, 2016). Similarly, there may be flexibility in when and how they do their work. Specifically, there may be more administrative tasks that can be done virtually, which may allow the leader to leave work earlier and engage in personal activities (e.g., exercise, hobbies, family time) and pick up the incomplete tasks in the evening (e.g., after children are in bed).

Furthermore, many healthcare leaders must balance various different tasks and roles (e.g., patient care, administrative tasks, managing subordinates), which has been described as a hybrid of professional-manager roles (Ferlie, 1994). Although these hybrid roles can create role conflicts (e.g., a demand), it is possible for the individuals to find balance and alignment across these roles, making it a challenge demand. For instance, by engaging in a more shared leadership model, the healthcare leader can ensure that the different perspectives and key outcomes for different stakeholders (e.g., physicians, nurses, administrators, senior management) are included in decision making processes. This would then increase the understanding of the processes across different and interdependent groups (e.g., shared mental models; Salas, Shuffler, Thayer, Bedwell, & Lazzara, 2014) and further allows the leader to delegate tasks out to those best suited, reducing their own demands. These are just a few examples of various challenge

demands that leaders in healthcare may face and how they might overcome each one. In the following section, hindrance demands will be described, including how they relate to the challenge demands.

     Hindrance Demands. Whereas a challenge demand is something that can be overcome, a hindrance demand is a component of the job that limits the person's ability to do their job and drains their energy and resources (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Gomoll, 2018; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). Essentially hindrance demands are those job characteristics that are fairly constant and there isn't much that an individual can do to change them. One example of this for leaders in healthcare is the amount of role conflict they experience. This is can be due to competing demands from various patient needs, if they are practicing providers, and organizational expectations (e.g., professional-manager roles; Ferlie, 1994) or from the different functions they have as a leader (e.g., conflict and scheduling manager, boundary spanner between departments and subordinates and upper levels of management). However, there is little that the individual can do to mitigate these demands; the conflict among their different roles is integral to their position, thus making it a hindrance rather than a challenge demand.

     Another example of a hindrance stressor is the shift work (e.g., working morning, evening, and/or night on different days, weeks, or months) that is common in some areas of healthcare (Happell, Dwyer, Reid-Searl, Burke, Caperchione, & Gaskin, 2013), particularly within hospitals. Having different times of day to work during different weeks (or even within the same week) is problematic and impacts many aspects of the

individual's life. For instance, it creates difficulties when trying to plan activities outside of work and often disrupts the individual's circadian rhythm (Kuhn, 2001), negatively impacts sleep schedules and quality (Karwowski, 2006; Sallinen, & Kecklund, 2010); reduces immune function (Nagai et al., 2011); increases stress, absenteeism, and turnover; and reduces performance (Karwowski, 2006). There is also very little an individual can do to alter this beyond changing where they work, which can be difficult depending on specialty, or having more decision rights with seniority, clearly classifying it as a hindrance stressor.

Another example of a hindrance demand is interpersonal conflict, which is a common hindrance regardless of the job type. There is substantial research recognizing the issues that conflict can have within social groups, including reducing team performance, satisfaction, and viability (de Wit, Greer, & Jehn, 2011; De Dreu & Weingart, 2003; O'Neill, Allen, & Hastings, 2013). One study reports that 53% of nurses in the US find conflict to be commonplace (Dewitty, Osborne, Friesen, & Rosenkranz, 2009). The interpersonal conflict that can occur between providers is a contributing factor to medical practice errors (Rowe & Sherlock, 2005) and may require the leader of that unit to mediate or resolve the conflict. However, for healthcare leaders, these disputes can have stronger effects within their unit, department, and beyond. Although most, if not all, conflicts theoretically *can* be resolved, it is much more difficult, if possible, to resolve conflicts between others, with many supervisors' responses seen as ineffective and failing to meet the expectations of providers (Bochatay et al., 2017). Furthermore, responses to conflicts can exacerbate the situation, potentially creating additional issues and

negatively affecting the relationships within and without the unit as well as the quality of patient care that is provided (Bochatay et al., 2017). As leaders only have minimal, if any, impact on conflict, it is classified as a hindrance demand.

Despite the distinction between challenge and hindrance demands, they are both demands in that they are job characteristics that require physical or mental effort and are associated with certain costs (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). As such, challenge and hindrance demands may be positively related to one another such that high levels of one would be tied to higher levels of the other. For instance, a leader may have a high level of administrative hassles – a hindrance demand – and this may result in them having to complete more work – a challenge demand. Similarly, a leader may have to multitask their projects – a challenge demand – when they have conflicting requests from their supervisors – a hindrance demand. Research distinguishing the two types of demands have consistently found a small to moderate effects between the two categories through multiple studies (e.g., $r = 0.28, 0.27$; Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Gomoll, 2018, respectively) and meta-analyses (e.g., $\rho = 0.23, 0.23, 0.33; 0.39$; Crawford, LePine, & Rich, 2010; Goering, Shimazu, Zhou, Wada, & Sakai, 2017; LePine, Podsakoff, & LePine, 2005; Podsakoff, LePine, & LePine, 2007; respectively). As such, this study proposes the following hypothesis:

Hypothesis 1a: Healthcare leaders' challenge demands are positively related to their hindrance demands.

Job Resources. In contrast to the demanding job characteristics are job resources, which is defined as aspects of a job that help to achieve work goals, reduce job demands,

or stimulate personal growth or development (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), therein focusing on job characteristics that are "*positively valued*" (p. 56; emphasis in original; Schaufeli & Taris, 2014). The incorporation of the valuation in the revised definition put forth by Schaufeli and Taris (2014) also resolves the conflict in definitions that suggested a lack of resources would be construed as a demand rather than a lack of mechanisms that are helpful or provide support for job completion. For instance, if an individual manages a supportive unit in that they provide emotional support to each other and help one another complete tasks, it is a resource. Conversely, leaders of units that do not provide that social support may just be amiable colleagues working parallel (i.e., lack of the resource) rather than a unit that is actively against one another and in conflict (i.e., a hindrance demand).

Just as with demands, job resources can come from a variety of sources, including the organization, the department, or the units. For instance, the organization may be able to provide funding for extra staffing to relieve pressure from their employees whereas a department might encourage and host social events. Units may also provide resources through encouraging supportive and collaborative relationships, beyond treating one another with respect. This study, however, will focus on the latter – resources from the unit level, particularly looking at how the unit's functioning based on their own perceptions is a resource to the leader of their unit. As there is a dearth of literature assessing the effects of a unit or team on the leader, this study contributes to the literature by providing some understanding of the effect of unit function on leaders.

As a key function of being a leader is to lead and manage others, the quality of the interactions within those units can have substantial effects on the leaders themselves. For instance, conflict within the team (i.e., a hindrance demand) would cause a variety of issues (e.g., poor collaboration and performance, tattling behaviors) that the leader would need to address. Conversely, a unit that has a supportive climate in which the members can expect to both receive and give support to one another is likely to have better cohesion and shared cognition (i.e., shared mental models, transactive memory systems) and higher performance, as described in the Model of Social Support in Teams (MSST; Huffmeir & Hertell, 2010), requiring less interpersonal and information management by the leader of the unit.

Although leaders can be internal or external to the team and are either formally or informally appointed (Morgeson, DeRue, & Karam, 2010), leaders in healthcare are typically formally appointed individuals external to the team, making their ability to reliably and accurately rate the quality of the unit's teamwork less certain. For instance, an external leader that works closely with their unit(s) or statuses with them regularly is likely to have a stronger understanding of the unit's teamwork but a leader that is less connected or involved would have much less knowledge of the interactions among unit members. Therefore, it is preferred to use the unit members' ratings of their own teamwork for a more accurate representation of the quality of teamwork within that unit. Leaders are also substantially impacted by the functioning of their units. For instance, increased teamwork has been tied to teams that are more motivated and coordinated and have higher performance, satisfaction, cohesion, and potency with lower levels of conflict

(DeChurch & Mesmer-Magnus, 2010; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008) and teamwork has been shown to have substantial positive effects on patient care, such that improvements in teamwork improved the communication and coordination surrounding patient care, the prevention of adverse events, and can improve staff well-being (Clements, Dault, & Priest, 2007; Manser, 2009).

For leaders in healthcare, this all means smoother team functioning, which requires less oversight and management and allows the leader to focus on the other tasks they have to complete (e.g., administrative work, coordination across units and/or departments). As such, the inclusion of the unit's perception of their teamwork would be a resource for their leader as the unit's ability to work together provides substantial benefits to the leader when it exists but does not create issues by its absence, recognizing again that a lack of cooperation does not by itself indicate the presence of conflict. This is also a novel application for the job demands-resources model in that research tends to focus only on single level self-reports of the variables of interest. More commonly, job resources include variables such as the level of autonomy or control the individual has over their job (Alarcon, 2011; Schaufeli & Taris, 2014) and their perceptions of fairness (Schaufeli & Taris, 2014). Although team cohesion and harmony are also considered job resources (Schaufeli & Taris, 2014), the research using them as a resource uses the JD-R model to assess team-level motivation and health impairment processes, rather than considering the impact of team cohesion and teamwork has on leaders of those teams. As such, one of the contributions of this study is to focus on unit-level characteristics as a resource for leaders in healthcare environments.

The Relationship Between Job Demands and Resources. Across a multitude of studies, job demands and resources have been shown to interact with one another (e.g., Bakker, Demerouti, & Euwema, 2005; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Hansen, Sverke, & Näswall, 2009; Schaufeli & Bakker, 2004; Xanthopoulou et al., 2007). Particularly as resources are partially characterized by reducing job demands and their costs (Shanafelt & Taris, 2014), the presence of more resources will, by their nature, reduce the job demands experienced. For instance, having high quality teamwork and cohesion within a healthcare unit (i.e., a resource) reduces the conflict and politics within that unit (i.e., a hindrance demand) and provides within-unit support for complex tasks (i.e., a challenge demand) by streamlining the work as colleagues will engage in supportive back-up behaviors (Clements, Dault, & Priest, 2007; Manser, 2009; Salas, Shuffler, Thayer, Bedwell, & Lazzara, 2014), therein improving the unit's performance. Conversely, the higher the demands on the leader, the fewer resources will be available. One example of this is a leader who has a high time pressure to complete their tasks and high levels of responsibility for them (i.e., challenge demands) while also managing disputes within their unit (i.e., hindrance demand) is unable to spend time or effort to build a supportive social climate in their unit (i.e., a resource).

Despite the distinctions between hindrance and challenge demands, resources can help mitigate their negative effects just as higher levels of demands may overshadow the positive effects of the leader's resources. This negative relationship between the overall job demands and job resources has been generally been supported across numerous studies (see Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014; Taris & Schaufeli, 2016

for reviews) with more recent work confirming it when distinguishing between challenges and hindrances (Crawford, LePine, & Rich, 2010). However, the research is inconsistent when considering the dynamics between challenge and hindrance demands and job resources in that some studies have found non-significant relationships (e.g., $r = -.01$ between challenge demands and resources; Goering, Shimazu, Zhou, Wada, & Sakai, 2017) whereas some have found significant relationships between these variables ($r = .18, -.28$ between job resources and challenge and hindrance demands respectively; Gomoll, 2018).

As such, this study aims to provide further clarity for these inconsistencies by assessing the relationships between challenge and hindrance demands and job resources to determine the strength of their interconnectedness and provide insight into whether research using the JD-R model ought to account for the relationships among these variables. Based upon the findings from the literature as well as the definitional interdependence between demands and resources, this study specifically proposes:

Hypothesis 1b: Healthcare leaders' challenge demands are negatively related to their resources (i.e., their unit's teamwork).

Hypothesis 1c: Healthcare leaders' hindrance demands are negatively related to their resources (i.e., their unit's teamwork).

CHAPTER IV

HEALTHCARE LEADERS' AFFECTIVE STATES

The original premise of the JD-R model was to understand how job demands and

resources would impact the development of the emotional exhaustion and disengagement

or depersonalization aspects of burnout (Demerouti, Bakker, Nachreiner, & Schaufeli,

2001). It was later expanded to consider how both demands and resources impacted

"burnout" or "strain" in the negative or health impairment process and including a

motivational process. However, the labels for the affective state in the motivational

process have varied (Schaufeli & Taris, 2014), including labels such as "well-being"

(e.g., Schaufeli & Taris, 2014), "motivation" (e.g., Bakker & Demerouti, 2007; Taris,

Leisink, & Schaufeli, 2017; Taris & Schaufeli, 2016), and "engagement" (e.g., Schaufeli,

2017; Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014; Taris, Leisink, & Schaufeli,

2017; Taris & Schaufeli, 2016; van Mol, Nijkamp, Bakker, Schaufeli, & Kompanje,

2018). As such, the following sections will discuss the impacts of challenge and

hindrance demands and resources in the health impairment and the motivational

processes.

Emotional Exhaustion. Maslach and Leiter have both suggested that the

emotional exhaustion component is the core element of burnout and the others follow as a

result of the exhaustion (Leiter & Maslach, 2004; Maslach & Leiter, 1997). This has

particularly found support in the healthcare setting, as there tends to be substantially

lower rates of depersonalization than emotional exhaustion, despite the much lower

cutoff score (e.g., 10 or more on a range of 0-30 vs. 27 or more on a scale of 0-54;

Maslach, Jackson, & Leiter, 1996). For instance, Shanafelt and colleagues (2015) found

46.9% of physicians reported high levels of emotional exhaustion, whereas 34.6%

reported high levels of depersonalization, a difference of 12.3%. In context, the median

scores for physician emotional exhaustion was 25 out of 54 (mean = 2.78 on a 0 – never

to 6 – every day scale) compared to 7 out of 30 (mean = 1.4) for depersonalization.

Similar trends have been found in other research in different healthcare departments (e.g.,

Embriaco, Papazian, Kentish-Barnes, Pochard, & Azoulay, 2007; Glasberg, Eriksson, &

Norberg, 2007; Goodman, & Schorling, 2012; Renzi, Tabolli, Ianni, Di Pietro, & Puddu,

2005). As such, the emphasis on emotional exhaustion in the health impairment process

is particularly relevant in this context.

In the JD-R model, job demands are positively related to emotional exhaustion

(see Taris & Schaufeli, 2016 for a review). Research on the JD-R model in healthcare

settings has also confirmed this relationship (e.g., Aiken, Clarke, Sloane, Sochalski, &

Silber, 2002; Embraico, Papazian, Kentish-Barnes, Pochard, & Azoulay, 2007; Garrett &

McDaniel, 2001; Hansen, Sverke, & Naswall, 2009; Prins et al., 2009). This has also

generally remained true when accounting for the distinction between challenges and

hindrances (Crawford, LePine, & Rich, 2010; Goering, Shimazu, Zhou, Wada, & Sakai,

2017), although some research has found non-significant relationships between challenge

demands and emotional exhaustion (Gomell, 2018; Van den Broeck, De Cuyper, De

Witte, & Vansteenkiste, 2010). However, as yet, no studies have considered the effects of

challenge and hindrance demands on emotional exhaustion in healthcare leaders. As such, this study further contributes to the literature by addressing the following:

Hypothesis 2a: Healthcare leaders' challenge demands are positively related to their emotional exhaustion.

Hypothesis 2b: Healthcare leaders' hindrance demands are positively related to their emotional exhaustion.

Similarly, there is a plethora of research connecting the resources to lower levels of emotional exhaustion (e.g., Goering, Shimazu, Zhou, Wada, & Sakai, 2017; Gomell, 2018; Schaufeli & Taris, 2014; Taris & Schaufeli, 2016). However, as mentioned previously, these are often self-report surveys focus on a referent level in that an employee may fill out surveys about each of the variables of interest with no other sources. Given the substantial impact that a unit's teamwork can have on the ability of the leader to function more efficiently, it is an important resource for leaders, particularly when the performance of the unit is tied with the quality of patient care. Additionally, research has shown that higher levels of social support, such as the back-up behaviors that are a key teamwork process (Marks, Matheiu, & Zaccaro, 2001), reduces burnout (Garrett & McDaniel, 2001; Halbesleben, 2006). As such, it is hypothesized that:

Hypothesis 2c: Healthcare leaders' resources (i.e., their unit's teamwork) are negatively related to their emotional exhaustion.

Meaningful Work. Complementing the health impairment process suggested by the job demands-resources model is the motivational process through which resources and demands impact the motivation of an individual, leading to positive outcomes (e.g.,

performance, job satisfaction; Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014).

Common mechanisms by which resources impact these outcomes are disengagement

(Bakker, Demerouti, & Verbeke, 2004; Demerouti, Bakker, Nachreiner, & Schaufeli,

2001), engagement (Goering, Shimazu, Zhou, Wada, & Sakai, 2017; Schaufeli, 2017;

Schaufeli & Bakker, 2004; Van Mol, Nijkamp, Bakker, Schaufeli, & Kompanje, 2018;

Xanthopoulou et al., 2007), motivation (Bakker & Demerouti, 2007; Taris, Leisink, &

Schaufeli, 2017; Taris & Schaufeli, 2016), and well-being (Schaufeli & Taris, 2014).

However, one affective state that has not been discussed as much in relation to the

motivational processes in the job demands-resources model is meaningful work, which

refers to the judgement that the work being done is significant, worthwhile, and has a

positive impact (Rosso, Dekas, & Wrzesniewski, 2010). Particularly within healthcare,

there is a high potential for employees to experience meaningful work and for it have

substantial impacts (Leape et al., 2009). People entering the healthcare field likely do so

to care for others and helping and treating patients provides them with meaning for the

work that they do. Meaningful work has also been shown to be an antecedent to

employee engagement (May, Gilson, & Harter, 2004; Saks, 2006; Steger, Littman-

Ovadia, Miller, Menger, & Rothmann, 2013), which is a common mechanism by which

the motivational processes function. This may be due, in part, to its relationship with

intrinsic motivation, or behaviors that are engaged in for their own sake (e.g., enjoyment)

rather than for some external outcome (e.g., pay; Pinder, 2011; Steger, Dik, & Duffy,

2012). When an employee finds meaning in their work, they are more likely to be

motivated to continue doing it, which will increase their engagement (Chalofsky &

Krishna, 2009). Because it is a key draw for healthcare employees and an antecedent of engagement, this study focuses on it as the mechanism by which the motivational processes occur for healthcare leaders.

In particular, meaningful work has been tied to a variety of important outcomes in healthcare, including improving the quality of patient care, performance, job satisfaction, and empowerment (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Franco, Bennett, & Kanfer, 2002; Manojlovich, 2005; Pavlish & Hunt, 2012; Wagner, Cummings, Smith, Olson, Anderson, & Warren, 2010). Given this potential for impact in a field with high rates of burnout (Shanafelt et al., 2015), it is an important facet to consider broadly but one that is highly applicable in this context and within the JD-R model itself. Unfortunately, this is not something that has garnered the attention of researchers in terms of the role of meaningful work with healthcare leaders or with leaders in general. As such, this study fills this gap in the literature.

Specifically, the JD-R model suggests that the higher the demands someone faces, the less engaged and motivated they would be (see Schaufeli & Taris, 2014 and Taris & Schaufeli, 2016 for a review). When considering the role that meaningful work plays in this context, the higher the demands a leader faces in healthcare, the more difficult it may be for them to find their work meaningful. However, distinguishing between those demands that are challenges rather than hindrances changes adds nuance to this relationship. As challenge demands are those obstacles that can be overcome, it can increase the perceptions of meaningful work for leaders as it increases the leader's self-esteem and self-efficacy, the impact they can make, and their sense of purpose (Rosso,

Dekas, & Wrzesniewski, 2010). In contrast to the original model in which all demands were grouped together, this study proposes:

Hypothesis 3a: Healthcare leaders' challenge demands are positively related to their perceptions of meaningful work.

In contrast to the challenge demands, hindrance demands are those obstacles that cannot be overcome and are more likely to elicit negative emotions (e.g., frustration) and further interfering with their ability to achieve work goals (Rodell & Judge, 2009; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). As such, hindrance demands follows the more traditional path of reducing motivation (LePine, Podsakoff, & LePine, 2005; Webster, Beehr, & Christiansen, 2010), including the perceptions of meaningful work. For instance, having to deal with conflict from colleagues or within their unit is an emotional demand which, according to self-determination theory (Deci & Ryan, 2000), reduces the ability of the leader to satisfy his or her needs for autonomy, competence, and relatedness as well as preventing them from spending the time that is spent resolving the conflict on other tasks that need their attention. Therefore, the following is proposed:

Hypothesis 3b: Healthcare leaders' hindrance demands are negatively related to their perceptions of meaningful work.

In comparison, the relationship between job resources and motivation and engagement are well researched in the literature (see Schaufeli & Taris, 2014 and Taris & Schaufeli, 2016) but the relationship between a unit's teamwork and their leader's perception of meaningful work has not been addressed. Because the literature has focused on front line employees, nearly to exclusion of other higher level groups, the use of the

JD-R model in healthcare leaders provides a key look into the processes by which demands and resources have an impact. However, a recent multilevel review and integration of the meaningful work literature (Lysova, Allan, Dik, Duffy, & Steger, 2019) indicated that good workplace relationships, innovative and supportive cultures, and job performance all have a positive relationship with perceptions of meaningful work. These are particularly applicable in relation to the influence of a unit's ability to work as a team on their leader's perceptions of meaningful work. For instance, the unit's ability to function as a team effectively is often tied to good workplace relationships partially attributable to the affect management team process behavior (Marks, Mathieu, & Zaccaro, 2001) and is indicative of a supportive culture within the unit (Salas, Reyes, & McDaniel, 2018). Furthermore, more effective teamwork consistently relates to better performance (LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Salas, Shuffler, Thayer, Bedwell, & Lazarra, 2014) and the unit's successful performance would help the leader achieve his or her goals, therein improving their perceptions of meaningful work. As such, the following hypothesis is proposed:

Hypothesis 3c: Healthcare leaders' resources (i.e., their unit's teamwork) are positively related to their perceptions of meaningful work.

It is well recognized that emotional exhaustion and engagement interact in the JD-R model (see Schaufeli & Taris, 2014 and Taris & Schaufeli, 2016 for a review) but the link with meaningful work in leaders is novel. However, research has shown a link between meaningful work and emotional exhaustion in other populations (Steger, Littman-Ovadia, Miller, Menger, & Rothmann, 2013; Varga, Roznár, Tóth, Oláh, Jeges,

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& Betlehem, 2012), including those in a healthcare context (Cain et al., 2017; Schadenhofer, Kundi, Abrahamian, Blasche, Stummer, & Kautzky-Willer, 2018). This supports the premise that the more meaningful work is, the less likely an individual is going to experience emotional exhaustion, although the opposite – emotionally exhausted individuals are less likely to find work meaningful, may also be true. As such, this study suggests that meaningful work and emotional exhaustion for leaders in healthcare are negatively related:

Hypothesis 4: Healthcare leaders' emotional exhaustion and perceptions of meaningful work are negatively related.

CHAPTER V

LEADERS' PERCEPTIONS OF THEIR UNIT'S PERFORMANCE

Finally, adaptations to the original JD-R model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) have included some variant of outcomes, either as outcome(s) across both the motivational and health impairment processes (e.g., Bakker & Demerouti, 2007; Goering, Shimazu, Zhou, Wada, & Sakai, 2017; Van Mol, Nijkamp, Bakker, Schaufeli, & Kompanje, 2018) or outcomes dependent upon the two processes themselves (e.g., Schaufeli, 2017; Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014; Taris, Leisink, & Schaufeli, 2017; Taris & Schaufeli, 2016). This study focuses on a singular outcome - the leader's perception of his or her unit's performance. As discussed previously, performance in a healthcare context has substantial implications beyond the traditional conceptualizations of quality of a product in that the performance of a healthcare provider is directly tied to the quality of care a patient receives. Specifically, it is well-recognized in the literature that emotional exhaustion has a negative effect on performance (Halbesleben & Bowler, 2007), including work that has been focused in healthcare, although a majority has focused on nursing staff (e.g., Giorgi, Mattei, Notarnicola, Petrucci, & Lancia, 2018; Sharma & Dhar, 2016). Additionally, a recent meta-analysis further confirmed that burnout has significant, negative effects on the quality of patient care and on patient safety (Salyers et al., 2017), which is a meaningful performance indicator for providers.

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In contrast, research supports the premise that increased perceptions of meaningful work positively impacts performance (Brown et al., 2001; Chalofsky, 2003; Duchon & Plowman, 2005; May, Gilson, & Harter, 2004; Steger, Dik, & Duffy, 2012), including some work that indicates that healthcare leaders who perceive their work to be more meaningful are likely to create an environment that supports higher performance and better patient outcomes (Aiken, Clarke, Sloane, Sochalski & Siber, 2002). However, much of this research, as noted previously, has focused on a single level: leader affective states and leader performance or front-line employee affective states and front-line employee performance. This study provides a new lens through which to consider the dynamic context of healthcare units by considering how the leader's affective state might influence perceptions of their unit's performance.

There are a few mechanisms by which this may occur. First, there may be an effect of emotional contagion, which refers to the mood transfer between individuals in a group (Barsade, 2002). Specially, this suggests that the leader's experience of emotional exhaustion or meaningful work may "spread" to the individuals that he or she works with (e.g., their unit). Based on the prior research on the effects of emotional exhaustion and meaningful work on performance, this spread from the leader would then cause members of their unit to have a similar affective state, thereby impacting their performance. Another potential mechanism is through behavioral modeling, in which the individuals within the unit identify and mimic acceptable behaviors based upon their leader's actions (Stixrud, 2014). This can also be reinforced by the norms, or shared beliefs and expectations for social behaviors of members (Bettenhausen & Murnighan, 1985;

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Bettenhausen & Murnighan, 1991) that develop within that unit. For instance, when the leader engages in specific behaviors (e.g., taking extra time to calm a stressed patient or employee), the members of the unit are more likely to replicate that behavior as it was modeled by the leader. As such, the leader's experience of meaningful work and emotional exhaustion may have a direct impact on the performance of their unit.

However, there is an added nuance to this particular performance index – it is the leader's perception of their unit's performance and not their objective performance itself. This is a key distinction because the leader's rating of their unit's performance may be impacted by their own affective state via the mood-congruent memory bias, in which memories matching the individual's affective state are easier to recall than those that are not congruent (Fiedler & Hutter, 2013). For instance, a leader who is frustrated and emotionally exhausted (i.e., in a negative affective state) is more likely to view and rate their unit's performance more critically than if they were in a good mood and perceive their work as meaningful (i.e., in a positive affective state). This would be due to the easier recall of events that align with his or her affective state, rather than a representative sampling of the actual and objective performance of that unit.

Given the dynamic between leaders and their units as well as the leader's biases, the following relationships are proposed:

Hypothesis 5a: Healthcare leaders' emotional exhaustion is negatively related to their perceptions of their unit's performance.

Hypothesis 5b: Healthcare leaders' perception of meaningful work is positively related to their perceptions of their unit's performance.

The specific hypothesized relationships in this study are summarized in Table 1 and Figure 4, building upon the model put forth by Schaufeli and Taris (2014) for the interplay among demands, resources, and affective states. However, it also incorporates the challenge and hindrance demand distinction from Goering, Shimazu, Zhou, Wada, & Sakai (2017) to more thoroughly understand the relationships among these variables within leaders in the healthcare industry. These two models were used as the foundation for the hypotheses in this study as they reflect the origins of the JD-R model as put forth by Demerouti and colleagues (2001) while simultaneously accounting for the growth that has occurred in the literature by distinguishing the different types of demands and the interdependence between the motivational and health impairment processes as seen in the literature. However, as there are many renditions of the JD-R model in the literature, a series of alternate models were tested to ensure that the final model is that which best represents these data.

This study will assess the differential effects of healthcare leaders' challenge and hindrance demands and job resources as unit ratings of their teamwork on the leader's affective states of emotional exhaustion and meaningful work, therein impacting the leader's perception of their unit's performance. This study contributes to the literature in a multitude of ways, including looking at the unit's teamwork as a resource to the leader, considering the role of meaningful work in an environment centered on helping others, and how a leader's affective states may influence their rating of the unit's performance. By using the job demands-resources model as a framework, this study further contributes

to the literature by helping to understand the experiences of leaders in healthcare, a

population that has been overlooked in this area.

CHAPTER VI

METHODS

This study was designed to test the proposed hypotheses in healthcare leaders using archival data. Two surveys were administered to participants in a large hospital system in the Southeastern United States: an annual employee engagement survey and a targeted leadership survey within the organization. The annual engagement survey is available to all employees in the organization for completion over two weeks and was administered in March 2018. The leadership survey is provided to individuals who had been identified as leaders and was available to participants for two weeks in November 2018. These surveys were conducted by a third-party organization to ensure data confidentiality and encourage honest employee feedback and participation.

Participants

The surveys were administered within a large healthcare system in the south eastern United States that included over 15,000 employees. The employee engagement survey, administered by a third-party organization who had conducted such surveys for the organization in the past, had 14,249 responses out of 15,659, for a response rate of 91%. Of these respondents, 11,606 (81.45%) identified as female and 2,643 (18.55%) as male; 763 (5.35%) were between 18 and 24 years of age, 3,776 (26.50%) were within 25 and 34, 3,323 (23.32%) were between 35 and 44, 3,259 (22.87%) were within 45 and 54, 2,607 (18.30%) between 55 and 64, 515 (3.61%) were 65 or above, and 6 (0.04%) did not respond. In terms of employee status 12,273 (86.13%) of the respondents identified as

working day shifts, 537 (3.77%) identified as working evening shifts, and 1,439 (10.10%) identified as working the night shifts. Additionally, of these respondents, 11,377 (79.84%) identified as Caucasian, 2,034 (14.27%) as African American, 392 (2.75%) as Hispanic or Latino, 284 (1.99%) as Asian, 126 (0.88%) as two or more ethnicities, 24 (0.17%) as an American Indian or Alaskan Native, and 12 (0.08%) as Native Hawaiian or other Pacific Islander.

For the leadership survey, a request to participate was sent to all 934 healthcare leaders and managers in the organization. Out of this population, 788 individuals responded for an 80% response rate. Of these respondents, 72 individuals did not answer demographic questions. For those who did, 520 (65.99%) identified as female and 196 (24.87%) as male; 18 (2.28%) were between 18 and 24 years of age, 133 (16.88%) were within 25 and 34, 205 (26.02%) were between 35 and 44, 229 (29.06%) were within 45 and 54, 123 (15.61%) between 55 and 64, and 8 (1.02%) were 65 or above. 668 (84.77%) of the respondents identified as working day shifts, 7 (0.89%) identified as working evening shifts, and 21 (2.66%) identified as working the night shifts. Additionally, of these respondents, 639 (81.09%) identified as Caucasian, 56 (7.11%) as African American, 11 (1.40%) as Hispanic or Latino, 7 (0.89%) as Asian, 2 (0.25%) as two or more ethnicities, and 1 (0.13%) as an American Indian or Alaskan Native.

Measures

Below are the primary measures that were used in this study, grouped by the source of that measure and including their reliabilities via Cronbach's alpha, their anchors and scales, and an example item.

Employee Engagement Survey – Job Resources. The employee engagement survey was used to assess the leader's job resources via the unit's perception of their teamwork. To do this, four subject matter experts (SMEs) in occupational health psychology reviewed the 92 items that were distributed to the health system's employees to identify items that would be a job resource for the leader from the unit's perspective. This resulted in 19 items that had at least two SMEs indicate alignment that the item reflected something that would impact the leader positively if it was present. These items were then reviewed by the author to ensure alignment with the construct of interest, which resulted in 2 items being removed. This was followed by running an exploratory factor analysis and scale reliability analysis using the employee engagement survey dataset from 2017 in the same organization on 750 units comprised of 11,430 individuals. The results of these analyses narrowed the potential items further and resulted in 6 items remaining. These six items were then tested in the 2018 employee engagement survey data with a scale reliability analysis and confirmatory factor analysis, which resulted in the removal of two additional items. The remaining 4 items from these analyses indicated suitable reliability (Cronbach's alpha = .864) and were grouped around the perceptions of teamwork from within that unit as the sole job resource at the employee-level that would impact the leaders.

As these items were at the employee level, rather than the unit or leader level, aggregation indices were calculated to determine whether there was sufficient support to aggregate (i.e., there was more variance at the unit level than at the individual level). The results indicated sufficient agreement: ICC1 = .158, ICC2 = .724, and 75.76% of the 854

units' rw$_G$ values had at least moderate support for aggregation (LeBreton & Senter, 2008). Once aggregated to the unit level, the Cronbach's alpha for the 4-item measure of job resources at the unit-level was .920 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). However, these items are proprietary; thus, similar items from validated scales are included in Appendix A, including the extent that unit members "assist each other when help is needed" (Mathieu, Luciano, D'Innocenzo, Klock, & LePine, 2019).

Leadership Survey. The following measures were collected from the leadership survey that was distributed in November of 2018, organized by the order in which they appear in the hypothesized model.

Challenge and Hindrance Demands. Challenge and hindrance demands were assessed using 5 items each from the Zhang, LePine, Buckman, and Wei (2014) measure, with a Cronbach's alpha of .865 and .764, respectively, on a scale of 1 (Never) to 5 (Extremely Often). One item was excluded from the challenge demands scale and two from the hindrance demands scale to minimize respondent burden. These items were chosen by a committee of six subject matter experts (SMEs) specialized in the healthcare field and/or in occupational health psychology, separate from those who identified the job resources items. This committee determined that the excluded items were redundant or not applicable to the healthcare context. The retained items in the study included indicating the frequency of "Having too high levels of responsibility" (i.e., challenge demand) and "Disputes with co-workers" (i.e., hindrance demand). The full measures for challenge and hindrance demands, including their excluded items, are available in Appendices B and C, respectively.

Emotional Exhaustion. This measure consists of three items from the Maslach, Jackson, and Leiter (1996) Maslach Burnout Inventory – General Survey emotional exhaustion scale, with a Cronbach's alpha of .813. These items are on a scale of 1 (Never) to 7 (Every Day) and an example item is "I feel emotionally drained from my work"; see Appendix D for the full measure.

Meaningful Work. This measure consists of two proprietary items related to meaningful work and a third item from Grant (2008). These three items have a Cronbach's alpha of .959 and these items were on a scale of 1 (Strongly Disagree) to 6 (Strongly Agree); the item from Grant (2008) was ___." Although the first items were developed by the survey distributor, there are other similar items in the literature that have sufficient reliability and validity evidence, lending support to these items accurately representing the intended construct of Meaningful Work. For instance, Steger, Dik, and Duffy (2012) used similar items in their ten-item Work and Meaning Inventory (WAMI) with a Cronbach's alpha of .93, including "I have found a meaningful career" and the reverse coded "My work really makes no difference in the world." Additionally, Bunderson and Thompson (2009) measured meaningful work with five items that had a Cronbach's alpha of .89 in each of two separate samples including "I have a meaningful job" and "The work that I do is meaningful." Appendix E lists similar scales to the two proprietary items for reference.

Leader's Rating of Unit Performance. Provided in the leadership survey, this measure consists of four items adapted from Edmondson's (1999) performance measure with a Cronbach's alpha of .804. These items are on a scale of 1 (Strongly Disagree) to 7

(Strongly Agree) for the first three items and 1 (Much Lower) to 5 (Much Higher) for the fourth; an example item is "The unit I supervise meets or exceeds expectations." However, both the scale reliability analysis and the confirmatory factor analysis (described later) indicated poor loading (0.492) of the third item, "Compared to other workgroups in your department or area, please indicate how the workgroup you supervise is performing"; thus, it was removed, and the Cronbach's alpha increased to .819. See Appendix F for the full measure.

Control Variables. The literature provides a multitude of possibly influential relationships. In this study, the leader's perception of occupational stress, their individual resilience, their tenure within this organization, their tenure as a leader, and the size of the leader's unit were all considered as control variables.

First, occupational stress is well understood to be a precursor to emotional exhaustion (e.g., Ortqvist & Wincent, 2006; Posig & Kickul, 2003). However, this study includes it as a control variable, rather than a mediator, as research has indicated that some departments and environments in healthcare organizations have higher levels of stress and burnout than others (e.g., the emergency department; Shanafelt et al., 2015), suggesting that the leaders that work within these more stressful environments are likely to have higher stress specifically because of the environment and not due to the job characteristics being assessed in this study. By including occupational stress as a control variable, it allows for the testing of the effects of challenge and hindrance demands and resources on emotional exhaustion and meaningful work without being confounded by the level of stress that the leader experiences at work. This variable was collected in the

leadership survey via a four-item measure (Motowidlo, Packard, & Manning, 1986) with a Cronbach's alpha of .847 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree), including the item "My job is extremely stressful". See Appendix G for the full measure. As occupational stress was significantly related to the other study variables, except job resources, it was included in the analyses as a control variable.

The second variable that was included as a potential control was the leader's resilience, to ensure that the results of this study would describe the organizational characteristics' effects on the development of burnout and meaningful work, rather than the individual differences between leaders. This variable was collected by the 6-item measure (Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008) in the leadership survey with a Cronbach's alpha of .858 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). Similar to the rationale for including an occupational stress measure as a control, the inclusion of the leader's resilience would allow for a clearer understanding of the extent that the challenge and hindrance demands and job resources as measured by the unit's perception of their teamwork have an impact on the leader's emotional exhaustion and meaningful work perceptions. Specifically, more resilient individuals may be less negatively impacted by the demands and would confound this study's effort to determine the extent that the job characteristics influence emotional exhaustion and meaningful work in healthcare leaders. As resilience was significantly correlated with four of the six main study variables, it was included as a control variable in the full analyses. See Appendix H for the full measure.

Third, the leader's tenure with the health system was included as a control variable and collected in the leadership survey. If a leader is highly burned out or perceive that their work is less meaningful, they are less likely to stay with that organization, suggesting that those with more tenure in the health system are those that may find their work more meaningful. Alternatively, a leader who has been with the system for a longer period of time may also developed coping mechanisms such that higher levels of hindrance demands may have less of an effect on them. However, as the leader's tenure with their health system was only significantly correlated with two of the six study variables, it was excluded from further consideration.

Finally, the fourth potential control variable was the size of the leader's unit. Specifically, the leader may have a higher frequency of demands (e.g., increased level of responsibility, more administrative hassles, office politics) due to the increased work of managing more individuals. As such, this variable was included as a potential control variable and was collected via the number of responses for each unit via the employee engagement survey. Although an imperfect measure due to non-respondents, it is a reasonable proxy for how many individuals the leader oversaw given the high response rate. Despite this, it was only correlated to two of the six main study variables and, thus, was excluded from further analyses.

Data Cleaning

Prior to analyzing the proposed hypotheses, the data were cleaned. Specifically, both the employee engagement survey and the leadership survey results were reviewed and cleaned as follows.

Employee Engagement Survey. The initial dataset included 14,249 individuals.

However, 1,011 did not have a unit identification code, which was the grouping variable

required for aggregating the individuals' data to the appropriate unit. These cases were

removed, leaving 13,238 cases in the dataset. To determine whether there was sufficient

support to aggregate the survey items for the job resources measure, aggregation indices

were calculated and showed sufficient support to aggregate to the unit level (as discussed

previously). Thus, the individual-level employee engagement survey data was aggregated

to the unit's average for each scale to run path analysis on the full hypothesized model

and its alternates. This aggregated dataset included 933 units with a mean unit size of

14.19 ($SD = 10.321$) that ranged from 5 to 93 members per unit.

As this study aims to apply the job demands-resources model in healthcare leaders

and is centered on the leaders' perceptions, those leaders who were in charge of multiple

units were excluded from further analysis, leaving 633 units with 9,288 individuals (mean

= 14.67, SD = 9.699, range: 5 – 90 members). This exclusion was further supported when

considering the leader's ratings of their unit's performance; if an individual leads

multiple separate units, it is unclear what their referent is. Thus, the removal of leaders

with multiple units negated that potential confound in the data set. However, an

additional potential confound was that the surveyor, Press Ganey, provides data only for

those units with 5 or more individuals in that unit. If there are fewer than 5 respondents in

a unit, they combine that unit with those of the supervisor a level up. To reduce the

possibility that the included units were more likely to be one cohesive unit rather than

multiple small units, those units with a high number of members (i.e., exceeding the

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mean plus 3 standard deviations; 43.77) were excluded from additional analysis. This resulted in a final sample size from the employee engagement survey of 621 units with 8,664 members (mean = 13.95, *SD* = 8.095, range: 5 to 42 members). This cleaned data file was then merged with the leadership survey data file based upon the leader's first and last name (e.g., "Jane Doe") as the only unique and shared identifying variable to create the Combined Dataset.

   Combined Dataset. Within this combined dataset, there were 50 units of which were removed as they lacked data from the leadership survey on at least three variables (e.g., challenge demands, emotional exhaustion, unit performance), reducing the final sample size to 738 leaders. Of these, 392 had the aggregated unit resources from the employee engagement survey; this may be due to a variety of factors, including the aggregation of units with fewer than five responses in the employee survey as well as the selection process for leaders, which was completed separately from delineation of leaders for the employee engagement survey (i.e., employees identified as managers or leaders through human resources). This combined dataset included 5,536 individual employees for the 392 leaders with unit-level data with a mean unit size of 14.12 individuals (*SD* = 8.207), with the largest unit containing 42 individuals. Of the 738 leaders, 56 did not answer demographic questions. For those who did, 494 (66.94%) identified as female and 188 (25.47%) as male; 17 (2.30%) were between 18 and 24 years of age, 126 (17.07%) were within 25 and 34, 198 (26.83%) were between 35 and 44, 216 (29.27%) were within 45 and 54, 117 (15.85%) between 55 and 64, and 8 (1.08%) were 65 or above. 654 (88.62%) of the respondents identified as working day shifts, 7 (0.95%) identified as

working evening shifts, and 21 (2.85%) identified as working the night shifts.

Additionally, of these respondents, 608 (82.38%) identified as Caucasian, 55 (7.45%) as

African American, 10 (1.36%) as Hispanic or Latino, 7 (0.95%) as Asian, 1 (0.14%) as

two or more ethnicities, and 1 (0.14%) as an American Indian or Alaskan Native.

Confirmatory Factor Analysis

Prior to data analysis, a confirmatory factor analysis was completed with all six

factors at the leader level (i.e., including the aggregated perceptions of unit teamwork as

the job resource); the fit indices indicated the factor structure was supported in this data:

χ^2 (237) = 787.042, $p < .001$, $\chi^2/df = 3.32$, CFI = .942, RMSEA = .056, 90% CI [.052,

.060], SRMR = .049. As context, the cut-offs for these fit indices to suggest that the

model reasonably fits the data are non-significant χ^2 values, χ^2/df that are less than 2

[although Tabachnick and Fidell (2013), suggests that values less than 5 are sufficient], a

CFI value between .95 and 1, RMSEA and the 90% CI range as less than .08, and an

SRMR value of less than .05 (Hooper, Coughlan, & Mullen, 2008). However, the χ^2, a

measure of "bad" fit, becomes a worse indicator of fit with larger sample sizes as it

artificially inflates (Hooper, Coughlan, & Mullen, 2008), thereby minimizing its

usefulness as a fit index without the context of the other indices. In context of these

additional fit indices that are less influenced by sample size (i.e., χ^2/df, CFI, RMSEA,

SRMR), there was sufficient fit.

The results of the item loadings onto their respective latent factors, however,

resulted in the removal of one item from the leader's rating of the unit's performance due

to poor loading onto the latent factor. The subsequent model shows very similar but

slightly improved fit for most indices: χ^2 (215) = 731.573, p < .001, χ^2/df = 3.40, CFI = .944, RMSEA = .057, 90% CI [.053, .062], SRMR = .048. Given the similarity in fit between the two models, the latter was retained as the performance item that was removed for the second model loaded poorly and thus necessitated its removal. A final third model was run in which challenge and hindrance demands were combined into a single demands measure; this showed significantly decreased and insufficient fit: χ^2 (220) = 1302.971, p < .001, χ^2/df = 5.92, CFI = .883, RMSEA = .082, 90% CI [.077, .086], SRMR = .081. Therefore, the confirmatory factor analyses support the theoretical distinctions between these measures and are retained separately and the analyses were conducted using the six distinct factors with one item removed from the performance measure.

CHAPTER VII

RESULTS

The following sections first discuss the type of analysis that was done, elaborating on the multiple alternative models that were included to determine the best fit for the data that was collected and then reporting the results of the best fitting model.

Descriptives and Correlations

The correlations among study variables including the control variables are reported in Table 2, along with their means and standard deviations and their Cronbach's alphas. For the main study variables, the mean ratings for hindrance demands was near the scale mid-point (mean = 2.67, SD = 0.73) whereas challenge demands was a bit higher (mean = 3.82, SD = 0.66). The mean of job resources as measured by the unit's perception of teamwork was on the higher end (mean = 4.16, SD = 0.38) as was meaningful work (mean = 5.48, SD = 0.77) and the leader's rating of the unit's performance (mean = 6.48, SD = 0.95). The mean of emotional exhaustion however hovered nearer the mid-point and had substantially more variance (mean = 3.29, SD = 1.52). For the control variables, the mean ratings tended towards the higher end for occupational stress (mean = 4.90, SD = 1.24) and resilience (mean = 5.36, SD = 0.99). Alternately, for the leader's tenure with the health system (mean = 13.04, SD = 10.61) and the size of their units' **(**mean = 13.95, SD = 8.10), there were higher means given the range for these scales and larger variances as a result. As discussed previously, the lack of correlations between these two variables and the key study constructs excluded them

from further analyses whereas the former two control variables had stronger relationships with the study variables and were retained in the following analyses.

Path Analyses

To assess the proposed relationships between the leader-level latent variables within this study, path analysis was run in MPlus on the aggregated dataset. Multiple fit indices were used to identify the extent that the model fit the data following the best practices outlined by Hooper, Coughlan, & Mullen (2008) and multiple alternative models were run to determine the best model to represent the data. Specifically, the first model run was that which has been hypothesized and resulted in the best fit: χ^2 (3) = 16.78, $p < .001$, $\chi^2/df = 5.59$, CFI = .99, RMSEA = .08, 90% CI [.05, .12], SRMR = .03. Although some of the indices indicate good fit (i.e., CFI, RMSEA, SRMR), the χ^2 may be artificially inflated due to the larger sample size as mentioned previously (N = 734 observations; Hooper, Coughlan, & Mullen, 2008). Similarly, the RMSEA confidence interval indicates that the fit is barely sufficient, however, this is likely due to the small degrees of freedom ($df = 3$), as RMSEA tends to be more positively skewed (i.e., larger) with lower sample sizes or degrees of freedom (Kenny, Kaniskan, & McCoach, 2014).

The following alternative models primarily came from adapted models from the literature, as many do not distinguish between challenge and hindrance demands or were adapted from other alternative models with relationships removed that are inconsistently represented in the literature (e.g., between affective states). All ten of the models tested (i.e., the hypothesized model and the nine alternate models) are shown in Figure 5 with their fit indices listed in Table 3, along with the cut-off values that indicate the model has

"good" fit with the dataset (for reviews of fit indices, see Hooper, Coughlan, & Mullen, 2008). All models included direct relationships from the affective states to the leader's perception of the unit's performance, which is aligned with many models in the literature, although some suggest different and unrelated outcomes for each process (e.g., Schaufeli Taris & Schaufeli, 2016; Xanthopoulou et al., 2007)

The second model tested was adapted from Schaufeli and Taris (2014) in which the authors did not anticipate a direct relationship between job demands and well-being (engagement). As such, the direct relationships hypothesized between both challenge and hindrance demands and meaningful work, the positive affective state in this study, were excluded from this analysis. The fit indices for this model showed similar fit but were not as good as Model 1: χ^2 (5) = 30.35, p < .001, χ^2/df = 6.07, CFI = .98, RMSEA = .08, 90% CI [.06, .11], SRMR = .03. The third model was the same as the second but removed the direct relationship between emotional exhaustion and meaningful work as this relationship is excluded from various different models (e.g., Schaufeli, 2017; Taris & Schaufeli, 2016). Continuing the downward trend, this model's fit indices indicated noticeably worse fit: χ^2 (6) = 74.33, p < .001, χ^2/df = 12.39, CFI = .94, RMSEA = .13, 90% CI [.10, .15], SRMR = .05.

Model 4 is based on the model in Schaufeli's (2017) work on applying the JD-R model and further removes the relationships between the demands and resources, which can be found in other research as well (e.g., Goering, Shimazu, Zhou, Wada, & Sakai, 2017; Taris, Leisink, & Schaufeli, 2017). However, the fit indices were substantially worse for this model, with only the SRMR nearing the acceptable fit threshold: χ^2 (9) =

143.64, p < .001, χ^2/df = 15.96, CFI = .88, RMSEA = .14, 90% CI [.12, .16], SRMR = .06. The following models then incorporated moderation rather just direct relationships, starting with Model 5 which was adapted from Bakker and Demerouti (2007). Their model suggested that demands moderate the relationship between resources and, in their model, motivation and that resources moderate the relationship between demands and strain and was adapted to include the challenge and hindrance demand distinction and the use of meaningful work as the affective state for the motivational process. However, the model fit indices showed increasingly worse fit: χ^2 (11) = 2209.78, p < .001, χ^2/df = 200.89, CFI = .21, RMSEA = .72, 90% CI [.70, .75], SRMR = .66.

Similarly, Model 6, based on Taris and Schaufeli's (2016) model which mirrored that from Bakker and Demerouti (2007) but excluded the direct relationship in their model between strain (burnout) and motivation (engagement). Although this model had slightly better fit indices, it was still not close to the acceptable fit thresholds: χ^2 (12) = 2225.39, p < .001, χ^2/df = 185.45, CFI = .66, RMSEA = .69, 90% CI [.67, .72], SRMR = .66. Model 7 is adapted from Model 6 but excludes the moderation of demands on the relationship between resources and meaningful work, as mirrored from Bakker, Demerouti, and Verbeke (2004). This model's fit was better than the prior two models but still did not meet the thresholds for acceptable fit: χ^2 (18) = 127.03, p < .001, χ^2/df = 127.03, CFI = .18, RMSEA = .57, 90% CI [.55, .59], SRMR = .43.

Model 8 is also similar to Model 6 in that the demands are anticipated to moderate the relationship between resources and meaningful work just as resources are anticipated to moderate the relationships between the demands and emotional exhaustion. However,

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as with Model 4, there are not interdependencies between the job characteristics in this model. Again, the fit indices showed substantially poor fit, with none approaching the acceptable thresholds: χ^2 (14) = 2266.94, p < .001, χ^2/df = 161.92, CFI = .19, RMSEA = .65, 90% CI [.62, .67], SRMR = .76. Similarly, Model 9 is adapted from Bakker, Demerouti, and Verbeke (2004) and suggests that resources moderate the relationships between demands and emotional exhaustion and no moderation to meaningful work and no interdependencies between job characteristics. Although the fit indices are much improved, none meet the acceptable thresholds: χ^2 (18) = 2277.72, p < .001, χ^2/df = 126.54, CFI = .19, RMSEA = .57, 90% CI [.55, .59], SRMR = .51.

Finally, the last alternative model that was run, Model 10, is substantially different from those proposed in the literature. Based on the basic moderated mediation model of higher demands negatively impacting affective states, which would positively impact outcomes (e.g., performance) with resources moderating the relationship between demands and affective states. This premise was tested through a direct relationship of both challenge and hindrance demands to both emotional exhaustion and meaningful work, which then impacted performance, with both demands being interrelated and the four paths being moderated by resources. However, the fit indices for this model were largely the poorest of all ten models: χ^2 (13) = 2221.73, p < .001, χ^2/df = 170.90, CFI = .21, RMSEA = .66, 90% CI [.64, .69], SRMR = .66. As the model with the best fit indices is that which was hypothesized (Model 1), the following will discuss the results of this model.

Results

The path analysis results for the control variables found occupational stress to be significantly related to challenge ($B = 0.26$, $SE = .02$, $p < .001$) and hindrance demands ($B = 0.23$, $SE = .02$, $p < .001$) as well as to emotional exhaustion ($B = 0.49$, $SE = .04$, $p < .001$) but not to job resources ($B = 0.01$, $SE = .02$, $p = .468$), meaningful work ($B = 0.01$, $SE = .03$, $p = .707$), or the leader's rating of their unit's performance ($B = -0.04$, $SE = .03$, $p = .290$). Similarly, the leader's resilience was significantly related to challenge ($B = 0.14$, $SE = .02$, $p < .001$) and hindrance demands ($B = -0.12$, $SE = .03$, $p < .001$), emotional exhaustion ($B = -0.38$, $SE = .05$, $p < .001$), and meaningful work ($B = 0.14$, $SE = .03$, $p < .001$) but not to job resources ($B = -0.02$, $SE = .02$, $p = .412$) or the leader's rating of their unit's performance ($B = 0.04$, $SE = .04$, $p = .248$).

For the hypothesized relationships as reflected in Model 1, the path analysis results with the control variables indicated that challenge and hindrance demands had a significant positive relationship ($B = 0.21$, $SE = .03$, $p < .001$), supporting Hypothesis 1a. However, challenge demands and job resources had a significant but positive relationship ($B = 0.31$, $SE = .07$, $p < .001$), which does not support Hypothesis 1b, which proposed a negative relationship between the two variables. Similarly, the relationship between hindrance demands and job resources was non-significant ($B = 0.03$, $SE = .08$, $p = .715$), not supporting Hypothesis 1c. In terms of their relationships with emotional exhaustion, neither challenge demands nor job resources were significant ($B = 0.06$, $SE = .08$, $p = .492$; $B = -0.09$, $SE = .15$, $p = .574$; respectively), not supporting Hypotheses 2a and 2c.

However, hindrance demands were significantly, positively related to emotional exhaustion ($B = 0.49$, $SE = .07$, $p < .001$), supporting Hypothesis 2b.

Additionally, the relationships between challenge and hindrance demands to meaningful work perceptions were significant and in their predicted directions ($B = 0.14$, $SE = .05$, $p < .001$; $B = -0.13$, $SE = .04$, $p = .002$; respectively), supporting Hypotheses 3a and 3b. However, job resources was not significantly related to the perceptions of meaningful work ($B = 0.16$, $SE = .10$, $p = .125$), not supporting Hypothesis 3c, although the negative relationship between emotional exhaustion and perceptions of meaningful work was significant ($B = -0.14$, $SE = .02$, $p < .001$), supporting Hypothesis 4. Finally, the relationship between emotional exhaustion and the leader's perception of their unit's performance was non-significant ($B = -0.01$, $SE = .03$, $p = .644$) although meaningful work showed a significant, positive relationship ($B = 0.18$, $SE = .05$, $p < .001$), providing support for Hypothesis 5b but not 5a. The relationships between the hypothesized relationships as well as the control variables to the primary study variables are summarized in Figure 6. A simplified model showing only the significant relationships from these analyses is shown in Figure 7.

CHAPTER VIII

DISCUSSION

This study focuses in on the application of the job demands-resources model of a population that is often overlooked – leaders in healthcare. As such, these results provide insight into the ways that challenge and hindrance demands and job resources via the unit's perception of their teamwork influence the leader's experience of emotional exhaustion and meaningful work and how they, in turn, impact the leader's perception of his or her unit's performance when controlling for the leader's resilience and perceptions of overall occupational stress. Specifically, these analyses indicate that hindrance demands, those obstacles that cannot be overcome such as unclear job tasks and administrative hassles, have a significant positive impact on emotional exhaustion and a negative effect on the leader's perception of meaningful work. Essentially, they suggest that the more hindrance demands a leader in healthcare experiences, the more emotionally exhausted they are likely to be and the less they perceive their work as meaningful. There was also a significant negative relationship between emotional exhaustion and perceptions of meaningful work, supporting the premise that those leaders who are emotionally exhausted may have less energy to find their work meaningful and those who find their work meaningful may have a buffer to becoming emotionally exhausted.

An interesting finding of these analyses is the relationship that challenge demands has with job resources. Specifically, it was anticipated based on prior research that it

would have a negative relationship with job resources via the unit's perception of teamwork, such that higher challenge demands (e.g., time pressure, multitasking) would reduce the teamwork in the leader's unit. However, these analyses found a significant, positive relationship, suggesting that these challenges may strengthen the unit's teamwork. This may be a way to compensate for the leader experiencing higher demands by providing backup behaviors as support (Marks, Mathieu, & Zaccaro, 2001). Alternatively, having more teamwork within the unit may be a bigger responsibility to manage for leaders and require more time and work from the leader to maintain, increasing their experience of challenge demands (e.g., high levels of responsibility, completing a lot of hard work). The significant, positive relationship between challenge and hindrance demands aligns with past research and provides assurance that the leaders perceived both challenge and hindrance demands as demanding, further reinforced by the positive relationship that the control variable of occupational stress has with both types of demands.

Counter to the hypothesis, there was a non-significant relationship between challenge demands and emotional exhaustion; this may in part be explained by the strength of the relationship between hindrance demands and emotional exhaustion ($B =$ .49) but it provides further support to some prior findings that indicate challenge demands do not have a significant impact on emotional exhaustion (Gomell, 218, Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). Another interesting finding is the non-significant relationships between job resources as measured by the unit's perception of their teamwork and hindrance demands, emotional exhaustion, and meaningful work.

Although the estimates for the tie with emotional exhaustion and meaningful work were in the hypothesized directions, the standard errors were comparatively large suggesting there was more noise than signal in the assessment of these relationships. The non-significance could also be due to a number of factors, including the potentially minimal effect that a unit's teamwork has on the leader that the results of this study may suggest as well as the use of unit-level self-report perceptions of their team's functioning from the employee engagement survey, rather than from objective or external sources.

Finally, the analyses indicated that emotional exhaustion did not have a significant relationship with the leader's rating of his or her unit's performance, although meaningful work did. This provides some support to the premise that leader's affective states may influence their rating of their unit's performance, although it suggests that it is primarily through the motivation processes via the leader's perception that their work is meaningful. However, the role of the leader's resilience may also influence the non-significant relationship between emotional exhaustion and the leader's rating of the unit's performance as the leader's ability to "bounce back" after hard times and their quicker recovery after stressful events may be mitigating the negative effects of demands on emotional exhaustion and emotional exhaustion on their ratings of their unit's performance. As there is a significant negative relationship between resilience and emotional exhaustion in particular ($B = -0.38$), it provides some support for the importance of the leader's ability to cope and react to the stresses he or she faces, particularly when considering the unique stressors face in healthcare.

This study and its results contribute to the existing literature by applying the job demands-resources model in the overlooked but important population of leaders in healthcare. Furthermore, it expands the JD-R model beyond the single level self-report norm by using the unit's perspective of their teamwork as a resource for the leader as well as identifying how the leader's affective states might impact their rating of the unit's performance. Although the JD-R model traditionally focuses on engagement and motivation as the affective state in the motivational process, this study includes meaningful work as it is more relevant, particularly in the context of healthcare. Altogether, this study fills numerous gaps in the existing literature surrounding the use of the JD-R model, while also accounting for the various ways in which the variables interrelate by testing a variety of alternative models within this dataset and determining which was most accurate for this data. The following sections will discuss the implications of these results for both practitioners and researchers and will then discuss the limitations of this study and how future research can build upon it.

Practical Implications

The results of this research has multiple implications. First and foremost are the effects it may have in practice. By assessing the challenge and hindrance demands that leaders in healthcare face, supervisors and organizations can address these issues to work on reducing the emotional exhaustion that is so prevalent in the healthcare industry (Shanafelt et al., 2015). However, this research suggests that a strong and more targeted impact can be made when focusing specifically on hindrance demands, including interventions around conflict management (e.g., Almost, Wolff, Stewart-Pyne,

McCormick, Strachan, & D'Souza, 2016), overcoming administrative burdens and hassles (e.g., Savage, Shuffler, Lutz, Neal, Sams, & Wiper, 2019), and creating clarity for the job by reducing conflicting requests from supervisors as well as clarifying tasks that are unclear (e.g., Carter, 2010). Such interventions may dually reduce the emotional exhaustion that healthcare leaders experience as well as increase their perceptions of meaningful work, further buffering the leader from becoming emotionally exhausted. Although challenge demands did not have a significant effect on emotional exhaustion, including it in interventions can further benefit leaders through their perceptions of meaningful work. Overall, this research helps provide some insight into what does and does not impact the affective states of leaders in healthcare so that they can be provided the support and training they need to avoid burnout and maintain perceptions of meaningful work as well as provide organizations with directions for changes that can be made to target more systematic issues (e.g., administrative hassles).

Additionally, this study only considered the unit's perception of their teamwork as a resource for the leader but there are others important constructs that may have significant impacts on the affective states of emotional exhaustion and meaningful work. For instance, Schaufeli and Taris (2014) include autonomy, appreciation, task variety, social climate, positive patient contacts, and opportunities for development as job resources, all of which are potential resources that may have more of a consistent impact on the leader's affective states than the unit's teamwork did in this study. In part, this may be due to the way in which the data were measured (i.e., aggregated self-report from the unit members) or may be a result of the salience of teamwork (a positive construct)

compared to conflict (a negative construct and hindrance demand; Baumeister, Finkenauer, & Vohs, 2001).

It is also important to consider the role of the leader's resilience, which was significantly tied to a variety of the variables included in this study, particularly the leader's emotional exhaustion. There has been an abundance of literature surrounding resilience (see Britt, Shen, Sinclair, Grossman, & Klieger, 2016 for an overview) including research assessing its relationship with emotional exhaustion in healthcare (e.g., Manzano Garcia & Ayala Calvo, 2012; Rushton, Batcheller, Schroeder, & Donohue, 2015). Again, given the prevalence of burnout and emotional exhaustion in healthcare, identifying the factors that cause and mitigate it are integral to the well-being of the providers and leaders within this environment, as well as the patients that they serve. Although resilience is often conceptualized as an individual's ability (i.e., the ability of an individual to adapt to stressful or adverse events; Britt, Shen, Sinclair, Grossman, & Klieger, 2016), it is still something that can be supported and strengthened through trainings and additional resources (e.g., Reivich, Seligman, & McBride, 2011; Sood, Prasad, Schroeder, & Varkey, 2011), particularly geared towards the unique demands that leaders in healthcare may encounter, therein reducing and mitigating the development of emotional exhaustion that leaders in healthcare experience.

Research Implications

The results of this study also have implications in a research setting. Specifically, using the job demands-resources model to understand the health impairment and motivational processes in healthcare leaders is a novel contribution and expands its usage

to a new population. However, it also provides some insight into a few of the unresolved

issues identified by Schaufeli and Taris (2014). First and foremost, by testing a multitude

of models, many based on models used in published studies, this study provides a better

understanding of the relationship among the constructs in the JD-R model as well as

between the two key processes on which the revised models are based. In particular, these

analyses identified that, by and large, the relationships among challenge and hindrance

demands and job resources ought to be included in analyses using the JD-R model and

the health impairment and motivational processes are directly interrelated as evidenced

by the relationship of hindrance demands and emotional exhaustion to the perceptions of

meaningful work, providing some insight into the fourth unresolved issue with the JD-R

model as identified by Schaufeli and Taris (2014): whether the two processes are

interdependent of one another. As this study shows, it is likely that the constructs within

these models interact with one another and thus, the two processes are, at least partially,

interdependent.

Another implication for research that this study provides is the first look into the

processes by which demands and resources impact the affective states of leaders in

healthcare. Despite a lower frequency of hindrance demands compared to challenge

demands as evidenced by means of each (2.67 vs. 3.82, respectively), hindrances had

much more stable effects on the leaders' affective states than challenge demands did.

This may be a function of hindrances being more frustrating as they are obstacles that

they cannot overcome, thereby making them more salient and having a bigger impact

than challenge demands. This may potentially provide insight into the inconsistencies in

the literature regarding the relationship of challenge demands to emotional exhaustion. Similarly, the negligible relationships of the unit's perception of their teamwork as a resource to the other variables in this study (i.e., hindrance demands, emotional exhaustion, meaningful work) suggests that the importance of the unit's ability to work together may not have a meaningful impact on leader's affective states until it becomes an inability to work together (e.g., conflict, a hindrance demand).

Finally, this study's use of meaningful work as the affective state for the motivational process as well as the leader's perception of their unit's performance are novel contributions to the literature. The meaningfulness of work is particularly important in a healthcare setting and its inclusion in this study supported its use as a functional alternative affective state in the JD-R model to engagement and motivation. In particular, the results of this study help clarify the importance of meaningful work for healthcare leaders as it relates to emotional exhaustion and the leader's perception of their unit's performance as well as understanding the effects that challenge and hindrance demands have in this population. The use of the leader's perception of their unit's performance adds additional nuance to the more common "performance" outcomes in the JD-R model. This is due, in part, to the importance of the unit's performance to leaders, especially in healthcare. As a leader, they are often held accountable for how their unit performs and they must monitor and manage their units to ensure successful performance, which in healthcare can mean the quality of care that patients receive. Similarly, by using the leader's perception of their unit's performance, which can be the primary indicator of performance in some settings (e.g., performance reviews), the use of this as the outcome

variable for the JD-R model in healthcare leaders provides new insights into the effects of demands and resources in this population.

Limitations

As with all studies, particularly in field settings, there are limitations to this study's generalizability and its results. First, using items selected by SMEs to represent the unit's teamwork rather than a validated teamwork scale limits the conclusions that can be drawn around this variable. Although the included items were selected via the ratings of teamwork experts and through factor analyses, there is no specific evidence for validity to ensure that the items and their aggregate accurately represent the quality of the unit's teamwork, particularly as it is self-report, rather than more objective indicators. Additionally, the units' ratings of their teamwork having been collected approximately 7 months prior to the main data collection with leaders in the health system may confound these results. For instance, there may have been substantial member changes in that time frame for unit members and who their leader is. As such, the ratings of the unit's teamwork may not represent the current state of the unit when the leader's completed the main survey, which may partially explain the lack of relationships it has with other study variables.

Furthermore, the use of survey data for all study variables, with all but one collected at one time point, is a limitation for the generalizability of this research. There is a risk of same-source, same-timepoint effects when the majority of data are collected in this manner, although the concern is slightly mitigated as few of the variables are highly correlated, suggesting there is discrimination among the included measures. Additionally,

these results are unable to suggest causality given the primarily cross-sectional nature of the data; rather, these results are only able to indicate whether there are relationships between the constructs used here. This also means that this data is unable to determine reciprocal causality, the fifth unresolved issue identified for the JD-R model in the review by Schaufeli and Taris (2014). Without longitudinal (and ideally multisource) data, this study is unable to test whether more hindrance demands *cause* healthcare leaders to be more emotionally exhausted nor can it confirm that emotional exhaustion does not cause higher hindrance demands, even if just by making them more salient.

Another limitation of this study is with the exclusion of personal resources as a key part of the hypothesized model. As Schaufeli & Taris (2014) describe, personal resources have been tested and have confirmed influences on various relationships within the JD-R model. Although the leader's resilience was included as a control variable, it was not assessed in terms of potential moderating or mediating mechanisms in the overall model analyses. This was done to ensure that the models tested and their results were focused on organizationally relevant factors, rather than the role of an individual's ability to react and cope with adverse events in the model. However, this does limit the generalizability of the results of this study, especially given the strength of its relationship to emotional exhaustion. Had this study's aim encompassed healthcare leaders' personal resources, it might have been able to provide a more comprehensive understanding of the health impairment and motivational processes that occur within this population, further clarifying the relationships within the JD-R model.

Future Research

       This study sheds light on numerous directions for future research, the primary one being the need to continue conducting research on healthcare leaders to better understand how demands and resources impact their affective states and the outcomes therein. As described previously, there are very few studies that consider this particular population with the majority of healthcare research focusing on front-line providers (e.g., nurses, physicians). Although the front-line providers are an important and large population, accounting for these processes in the leaders, who are a key population that faces unique demands and resources, is important given their position in the organization to influence upward (e.g., upper level management) and downward (i.e., to the members of their units). Furthermore, it is necessary to better understand how these and other job characteristics interact with one another as well as how they affect the health impairment and motivational processes as proposed by the JD-R model. This study provides an initial insight into these processes but there is still much more work that needs to be done with this important group.

       Additionally, research ought to be done to better understand the role of challenge demands in this model and to clarify their relationship with affective states; although some studies have found significant effects, others, like this one, have not and additional work should determine why there is this discrepancy. For instance, there may be different boundary conditions such as specific populations or measures in which there is a significant relationship and others in which there is not. There should also be additional work to identify whether, in a healthcare context, perceptions of meaningful explain more

of the variance than engagement or motivation. As perceiving work as meaningful is a key component in human service positions, the role that different demands and resources have on that perception compared to the traditional constructs of engagement or motivation will be key to better understanding the stress and burnout that healthcare employees and leaders face.

There is also potential for additional research to confirm or refute the lack of relationship that the unit's teamwork has on leaders with the JD-R model. This study used the perceptions of the unit members from items selected by subject matter experts in a self-report survey conducted 7 months prior to the main data collection, leaving many opportunities to retest this relationship. Specifically, objective indicators (e.g., observations) of the unit's teamwork or the perceptions of individuals outside of the unit could be used rather than their own ratings. Additionally, collecting that data at a time point closer to the main data collection would potentially have provided a more accurate representation of the unit's teamwork and its relationship with the model's other constructs.

Another avenue for future research is to test the JD-R in a multilevel context, as stipulated by Schaufeli and Taris (2014). Although some research has looked at the JD-R beyond the individual level (e.g., in teams; Xanthopoulou et al., 2009), additional work is needed to better understand the interplay of variables within units, including the role of teamwork and leadership on affective states and outcomes including, but not limited to, performance. As Schaufeli and Taris (2014) describe, conducting research beyond the individual must follow best practices for assessment at those levels, including following

the compatibility principle (i.e., all model variables must be at the same level of specificity; Ajzen, 2005) and ensuring appropriate support for aggregation (LeBreton & Senter, 2008). This would potentially provide insight into the dynamic relationships across levels (e.g., unit members and their leader) and address the sixth unresolved issue with the JD-R model as identified by Schaufeli and Taris (2014).

Finally, it would also be of value to compare the results of the JD-R model in high vs. low stress healthcare positions and departments. Although this study attempted to control for this by using the occupational stress measure, conducting separate analyses for those departments that have higher stress (e.g., emergency medicine) compared to those with lower stress (e.g., general pediatrics; Shanafelt et al., 2015) may shed light the importance of the JD-R model in explaining the development of burnout in each of these areas. For instance, there may be certain demands (e.g., uncertain job tasks) that are more relevant in certain departments (e.g., emergency medicine) than in others and may have a stronger impact on the affective states of the individuals within those areas. This information can then be used to develop targeted interventions to relieve the demands and provide resources that are department-specific and can address the issues unique to their environment. Alternatively, research that considers these environmental effects may also find that there are specific demands and resources that are important regardless of the department, thereby enabling organizations to create broad interventions and changes that may have broader effects.

Conclusions

Overall, this study used the JD-R model to assess the relationships for leaders in healthcare of challenge and hindrance demands and the unit's teamwork as a job resource on their emotional exhaustion and perceptions of meaningful work, both of which relating to the leader's rating of their unit's performance, while controlling for the leader's occupational stress and individual resilience. By assessing these relationships using path analyses and a series of alternate models, this study provides a much-needed insight into interplay between these constructs by first identifying the best fitting model and then being able to use these results to better understand these processes for leaders in healthcare. Additionally, this research incorporated novel representations of different variables (i.e., unit perception of teamwork as a resource for the leader, the leader's perception of meaningful work as the affective state in the motivational process, and the leader's rating of their unit's performance), expanding the applicability of the JD-R model as a whole and particularly within this population.

This study was also able to consider how the unit's functioning impacts the leader's affect, particularly in relation to the meaningfulness of work, which is a key construct in healthcare positions and was shown to potentially have significant and meaningful effects in relation to burnout reduction. Finally, the use of the leader's rating of the unit's performance allows for a better understanding of how a leader's affect may influence their perception of the performance of their units through potentially influencing the behaviors of their team members (e.g., emotional contagion, behavior modeling) as well as how the way in which the leader rates that performance (e.g.,

potentially influenced by biases). There are a multitude of implications as a result of this study for both practice and research and many directions for future research are discussed to better understand the job demands-resources model and it's constructs as well as the effects of these variables on the health impairment and motivational processes experienced by leaders in healthcare.

CHAPTER IX

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CHAPTER X

APPENDICES

Appendix A

Job Resources

Please indicate the extent to which you agree with the following statements.

	Strongly Disagree (1)	(2)	(3)	(4)	Strongly Agree (5)
[Item removed due to proprietary nature.]	○	○	○	○	○
[Item removed due to proprietary nature.]	○	○	○	○	○
[Item removed due to proprietary nature.]	○	○	○	○	○
[Item removed due to proprietary nature.]	○	○	○	○	○

Similar measures:

de Jong, B. A., & Elfring, T. (2010). How does trust affect the performance of ongoing teams? the mediating role of reflexivity, monitoring, and effort. *Academy of Management Journal, 53*(3), 535-549. doi:10.5465/amj.2010.51468649

Intrateam Trust - *Cronbach's alpha = 0.91*

1. I am able to count on my team members for help if I have difficulties with my job.
2. I am confident that my team members will take my interests into account when making work-related decisions.
3. I am confident that my team members will keep me informed about issues that concern my work.
4. I can rely on my team members to keep their word.
5. I trust my team members.

Langfred, C. W. (2004). Too much of a good thing? negative effects of high trust and individual autonomy in self-managing teams. *The Academy of Management Journal, 47*(3), 385-399. doi:10.2307/20159588

<u>Trust</u> – *Cronbach's alpha = 0.83*

1. We trust each other a lot in my team.
2. I know I can count on the other team members.
3. The other team members know they can count on me.
4. I trust all of the other team members.

Appendix B

Challenge Demands **(**Zhang, LePine, Buckman, & Wei, 2014**)**

Please indicate the frequency you experience the following items at work.

	Never (1)	(2)	(3)	(4)	Extremely Often (5)
Having to complete a lot of hard work.	○	○	○	○	○
Time pressure.	○	○	○	○	○
Having to perform complex tasks.	○	○	○	○	○
Having to multitask your assigned projects.	○	○	○	○	○
Having high levels of responsibility.	○	○	○	○	○

Excluded item:

1. Having to work very hard.

Appendix C

Hindrance Demands (Zhang, LePine, Buckman, & Wei, 2014)

Please indicate the frequency you experience the following items at work.

	Never (1)	(2)	(3)	(4)	Extremely Often (5)
Administrative hassles.	○	○	○	○	○
Unclear job tasks.	○	○	○	○	○
Conflicting requests from your supervisor(s).	○	○	○	○	○
Disputes with co-workers.	○	○	○	○	○
Office politics.	○	○	○	○	○

Excluded items:

1. Bureaucratic constraints to completing work (red tape).
2. Conflicting instructions and expectations from your boss or bosses.

Appendix D

Emotional Exhaustion Measure (Maslach, Jackson, & Leiter, 1996)

The following questions capture information related to your experience as a leader at work. Please indicate your level of agreement with each statement.

	Strongly Disagree (1)	Disagree (2)	Some-what Disagree (3)	Neither Agree nor Disagree (4)	Some-what Agree (5)	Agree (6)	Strongly Agree (7)
Working with people all day is really a strain for me.	○	○	○	○	○	○	○
I feel emotionally drained from my work.	○	○	○	○	○	○	○
I feel fatigued when I get up in the morning and have to face another day on the job.	○	○	○	○	○	○	○

Appendix E

Meaningful Work

Please indicate the extent to which you agree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Somewhat Agree (4)	Agree (5)	Strongly Agree (6)
My work has a positive impact on others. [b]	○	○	○	○	○	○
[Item removed due to proprietary nature.]	○	○	○	○	○	○
[Item removed due to proprietary nature.]	○	○	○	○	○	○

[a] Grant, A. M. (2008). Does intrinsic motivation fuel the prosocial fire? Motivational synergy in predicting persistence, performance, and productivity. Journal of Applied Psychology, 93(1), 48-58.

Meaningful Work Measures Similar to Proprietary Items:

Steger, M. F., Dik, B. J., & Duffy, R. D. (2012). Measuring meaningful work: The work and meaning inventory (WAMI). *Journal of Career Assessment, 20*(3), 322-337. doi:10.1177/1069072711436160

Cronbach's alpha = .93

1. I have found a meaningful career. (Positive Meaning)
2. I view my work as contributing to my personal growth. (Meaning Making Through Work)
3. My work really makes no difference to the world. (R) (Greater Good Motivations)
4. I understand how my work contributes to my life's meaning. (Positive Meaning)
5. I have a good sense of what makes my job meaningful. (Positive Meaning)

6. I know my work makes a positive difference in the world. (Greater Good Motivations)
7. My work helps me better understand myself. (Meaning Making Through Work)
8. I have discovered work that has a satisfying purpose. (Positive Meaning)
9. My work helps me make sense of the world around me. (Meaning Making Through Work)
10. The work I do serves a greater purpose. (Greater Good Motivations)

Bunderson, J. S., & Thompson, J. A. (2009). The call of the wild: Zookeepers, callings, and the double-edged sword of deeply meaningful work. *Administrative Science Quarterly, 54*(1), 32-57. doi:10.2189/asqu.2009.54.1.32

Cronbach's alpha = .89 in two different samples

1. The work that I do is important.
2. I have a meaningful job.
3. The work that I do makes the world a better place.
4. What I do at work makes a difference in the world.
5. The work that I do is meaningful.

Appendix F

Performance (Edmondson, 1999)

Please indicate the extent to which you agree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
The unit I supervise meets or exceeds expectations.	○	○	○	○	○	○	○
The unit I supervise does superb work.	○	○	○	○	○	○	○
Critical quality errors rarely occur in the work done by the unit I supervise.	○	○	○	○	○	○	○

Excluded item:
3) Compared to other work groups in your (organization, department, etc.), please list at what

percentile you believe the work group you are supervising would be ranked based on their

performance?   [Scale of 1 – 99%]

Appendix G

Occupational Stress (Motowidlo, Packard, & Manning, 1986)

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	(2)	(3)	(4)	Strongly Agree (5)
I feel a great deal of stress because of my job.	○	○	○	○	○
My job is extremely stressful.	○	○	○	○	○
Very few stressful things happen to me at work.	○	○	○	○	○
I almost never feel stressed at work.	○	○	○	○	○

Appendix H

Resilience (Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008)

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree (1)	(2)	(3)	(4)	Strongly Agree (5)
I tend to bounce back quickly after hard times.	○	○	○	○	○
I have a hard time making it through stressful events. (reverse coded)	○	○	○	○	○
It does not take me long to recover from a stressful event.	○	○	○	○	○
It is hard for me to snap back when something bad happens. (reverse coded)	○	○	○	○	○
I usually come through difficult times with little trouble.	○	○	○	○	○
I tend to take a long time to get over setbacks in my life.	○	○	○	○	○

Table 1. Summary of Hypotheses.

			Summary of Hypotheses
1		A	Healthcare leaders' challenge demands are positively related to their hindrance demands.
		B	Healthcare leaders' challenge demands are negatively related to their resources (i.e., their unit's teamwork).
		C	Healthcare leaders' hindrance demands are negatively related to their resources (i.e., their unit's teamwork).
2		A	Healthcare leaders' challenge demands are positively related to their emotional exhaustion.
		B	Healthcare leaders' hindrance demands are positively related to their emotional exhaustion.
		C	Healthcare leaders' resources (i.e., their unit's teamwork) are negatively related to their emotional exhaustion.
3		A	Healthcare leaders' challenge demands are positively related to their perceptions of meaningful work.
		B	Healthcare leaders' hindrance demands are negatively related to their perceptions of meaningful work.
		C	Healthcare leaders' resources (i.e., their unit's teamwork) are positively related to their perceptions of meaningful work.
	4		Healthcare leaders' emotional exhaustion and perceptions of meaningful work are negatively related.
5		A	Healthcare leaders' emotional exhaustion is negatively related to their perceptions of their unit's performance.
		B	Healthcare leaders' perception of meaningful work is positively related to their perceptions of their unit's performance.

Table 2. Table of Means, Standard Deviations, and Correlations.

	Mean (SD)	1	2	3	4	5	6	7	8	9	10
1. Challenge Demands	3.82 (.66)	(.87)									
2. Hindrance Demands	2.67 (.73)	.402	(.76)								
3. Job Resources	4.16 (.38)	.179	.047	(.92)							
4. Emotional Exhaustion	3.29 (1.52)	.332	.488	.023	(.81)						
5. Meaningful Work	5.48 (.77)	.000	-.250	.068	-.355	(.96)					
6. Leader Rating of Unit Performance	6.48 (.95)	-.077	-.183	.159	-.126	.180	(.80)				
7. Occupational Stress	4.90 (1.24)	.536	.439	.058	.589	-.179	-.103	(.85)			
8. Resilience	5.36 (.99)	-.001	-.271	-.047	-.421	.316	.114	-.281	(.86)		
9. Health System Tenure	13.04 (10.61)	-.065	-.082	.081	-.009	.105	.131	-.001	-.059	n/a	
10. Unit Size	13.95 (8.10)	.038	-.003	-.233	-.106	-.028	-.121	.098	-.053	-.063	n/a

Note. Cronbach's alpha for each scale are listed on the diagonal; correlations .100 and greater are significant.

Table 3. Fit Indices for the Various Measurement Models.

		df	p-value	χ^2/df	$\Delta\chi^2$ with Model 1*	RMSEA [90% CI]	CFI	SRMR
Model 1	16.78	3	< .001	5.59		.08 [.05, .12]	.99	.03
Model 2	30.35	5	< .001	6.07	p < .005	.08 [.06, .11]	.98	.03
Model 3	74.33	6	< .001	12.39	p < .001	.13 [.10, .15]	.94	.05
Model 4	143.64	9	< .001	15.96	p < .001	.14 [.12, .16]	.88	.06
Model 5	2209.78	11	< .001	200.89	p < .001	.72 [.70, .75]	.21	.66
Model 6	2225.39	12	< .001	185.45	p < .001	.69 [.67, .72]	.20	.66
Model 7	2286.62	18	< .001	127.03	p < .001	.57 [.55, .59]	.18	.43
Model 8	2266.94	14	< .001	161.92	p < .001	.65 [.62, .67]	.19	.76
Model 9	2277.72	18	< .001	126.54	p < .001	.57 [.55, .59]	.19	.51
Model 10	2221.73	13	< .001	170.90	p < .001	.66 [.64, .69]	.21	.66
Acceptable Cut-offs	*Non-significant value*			< 2		< .08	> .95	< .05

Cut-off values identified from Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods, 6*(1), 53-60.

*Significance values for $\Delta\chi^2$ determined through Tabachnick & Fidell, 2013.

Figure 1. Job Demands-Resources Model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).
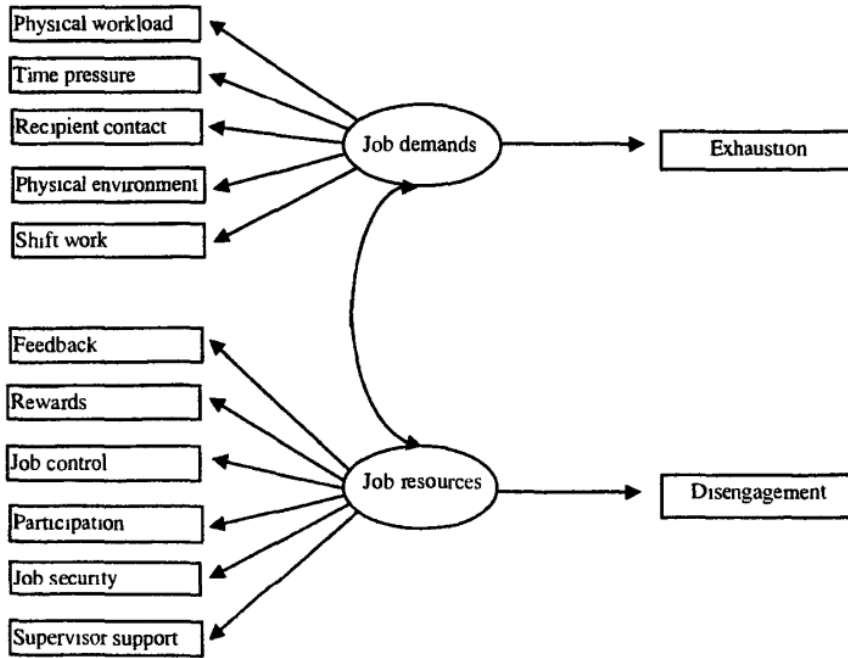
Figure 2. Revised Job Demands-Resources Model (Schaufeli & Taris, 2014).
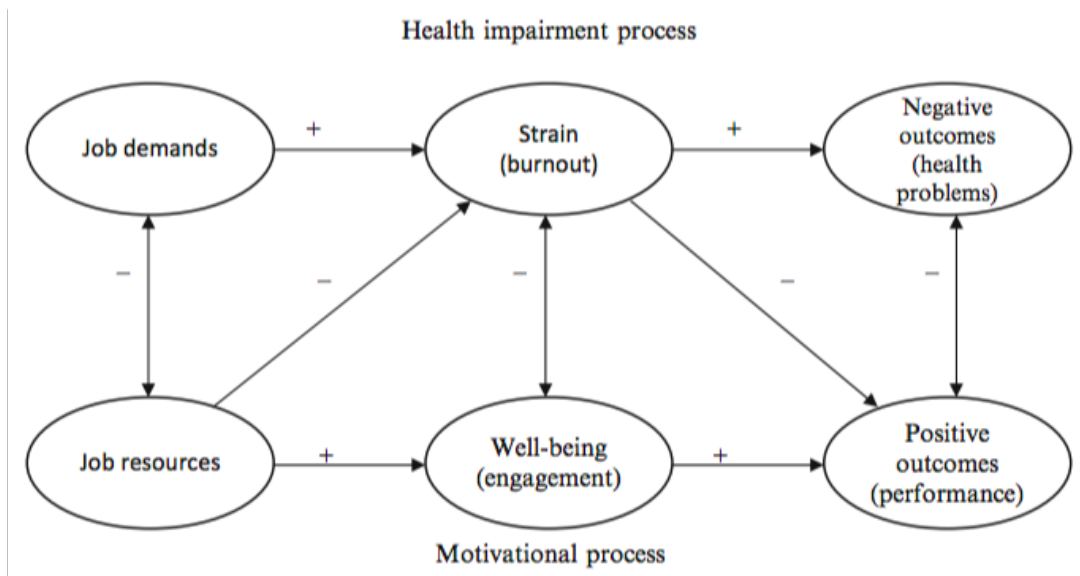
Figure 3. Differentiated Job Demands-Resources Model (Goering, Shimazu, Zhou,

Wada, & Sakai, 2017).
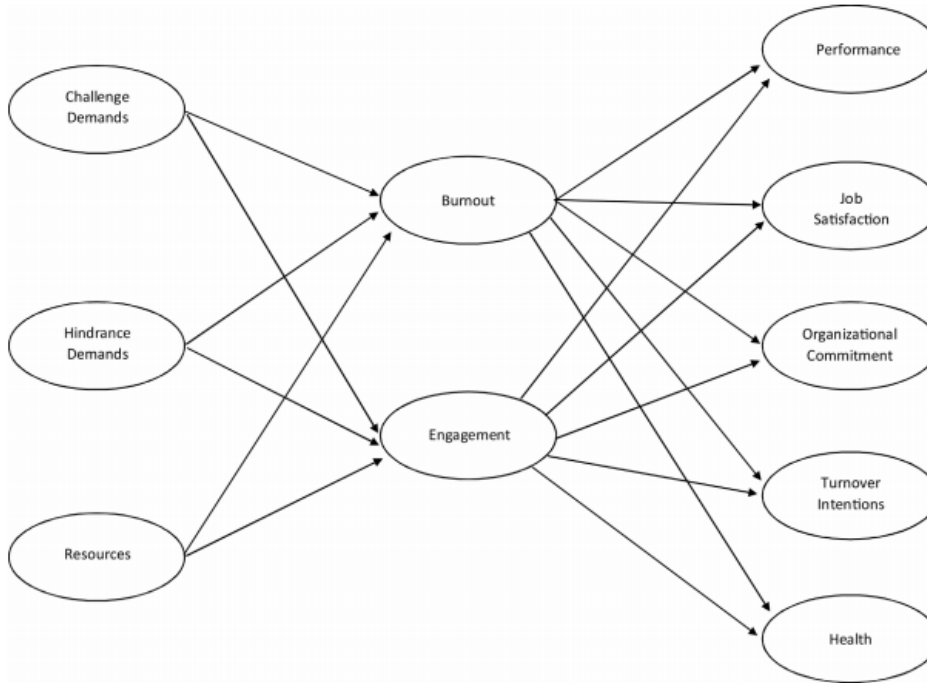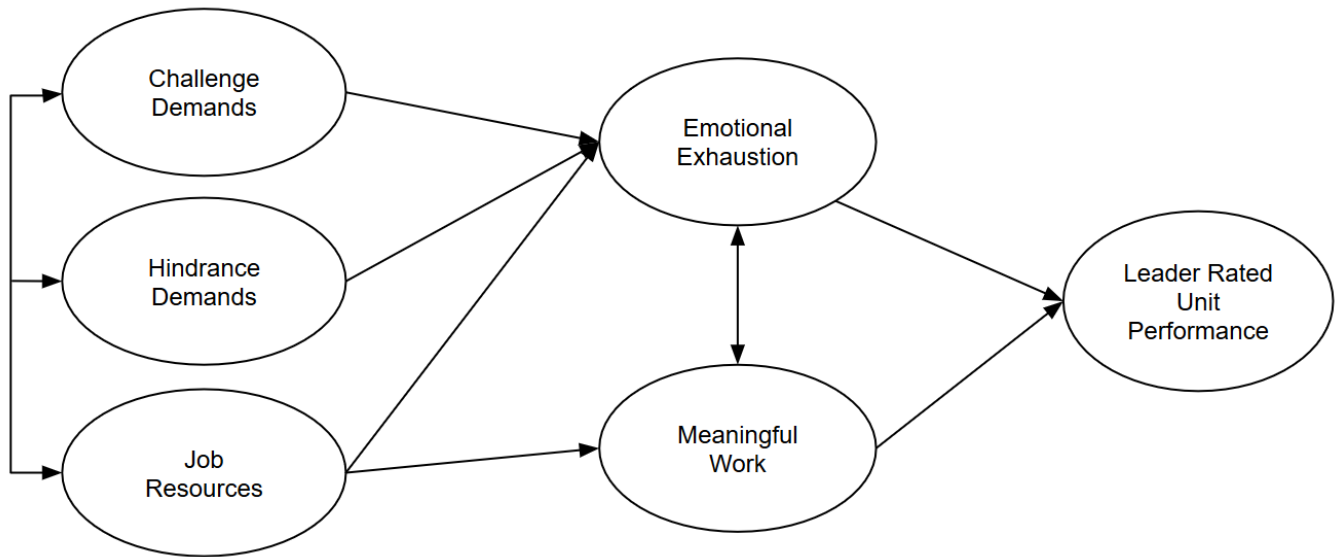
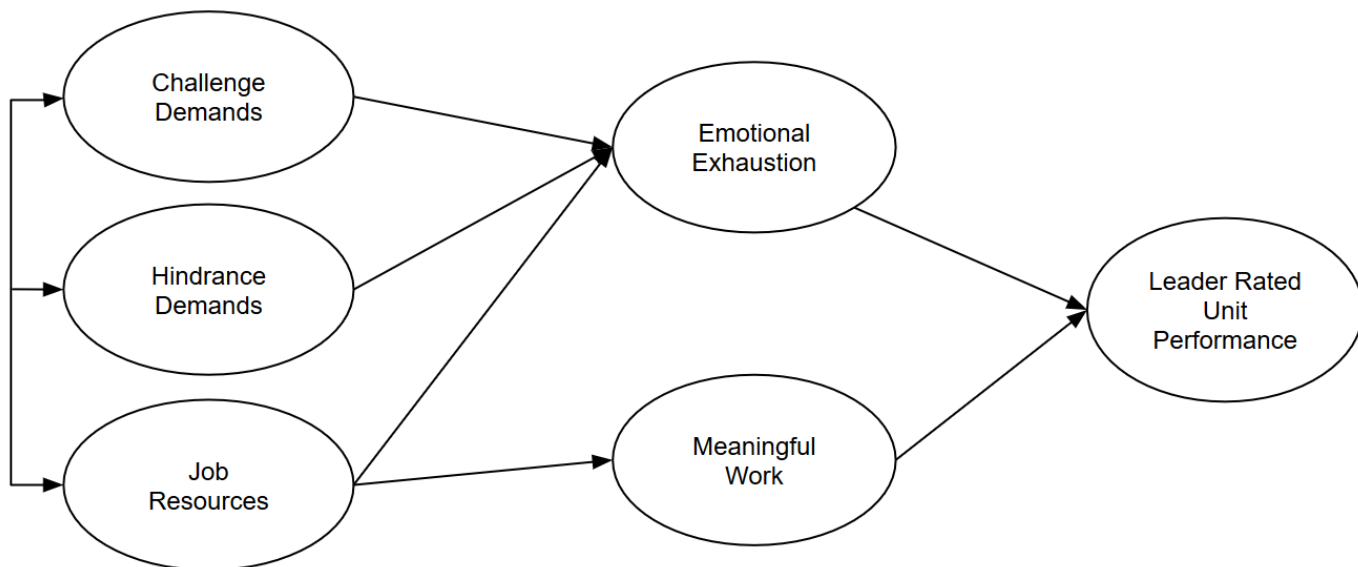*Figure 4.* Hypothesized Research Model for the Current Study.
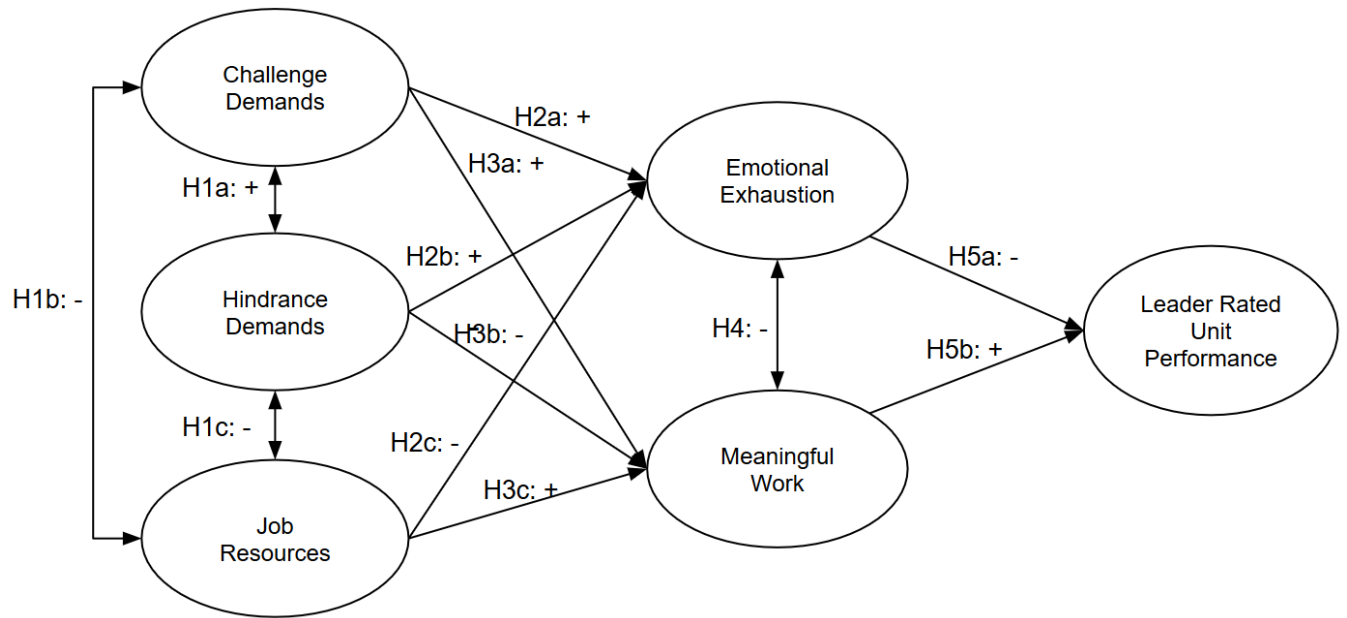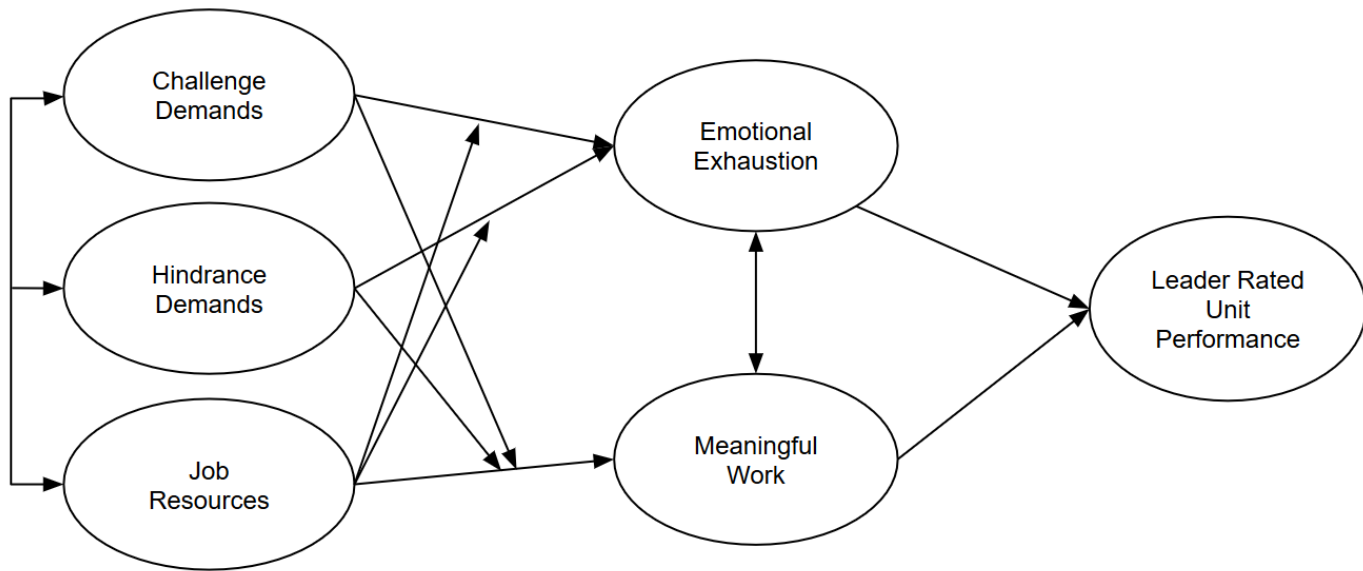
Figure 5. Alternate Models.
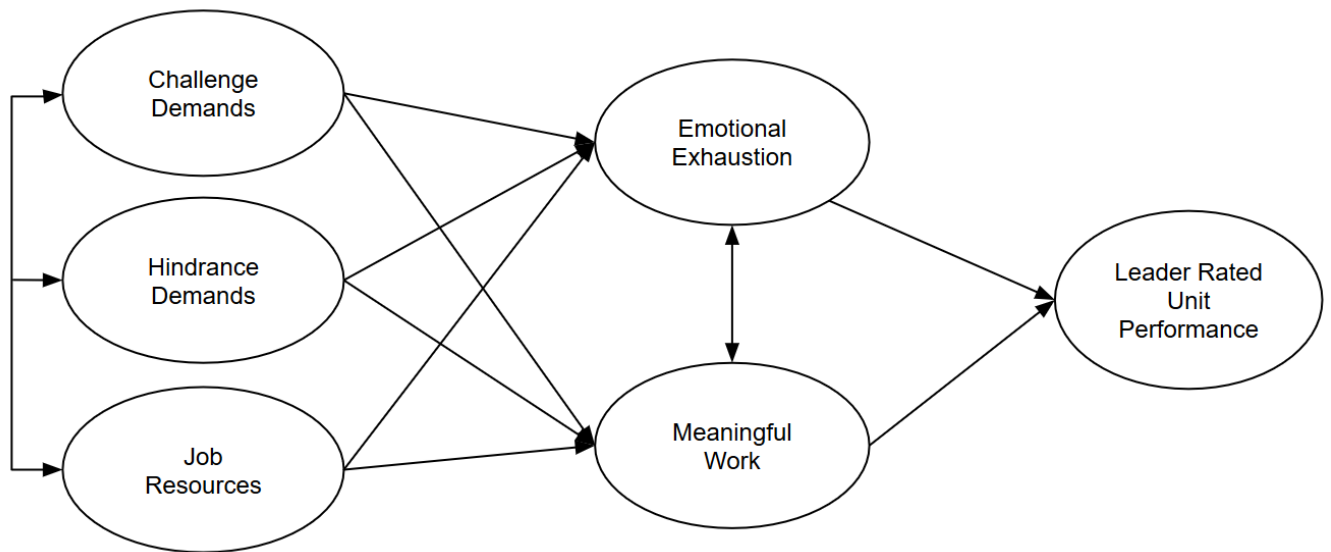
Model 1 – Hypothesized Model

Model 2 – adapted from Schaufeli & Taris (2014)

Model 3 – Model 2 without a connection between Meaningful Work and Emotional Exhaustion, similar to Model 4
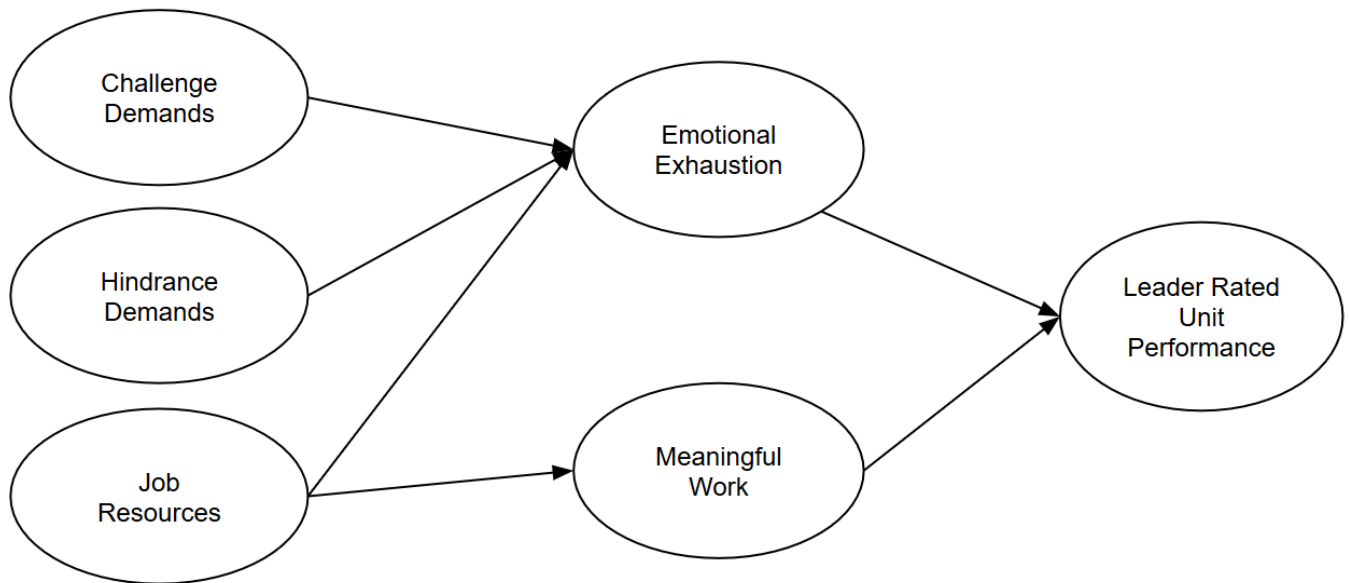
Model 4 – adapted from Schaufeli (2017)

Model 5 – adapted from Bakker & Demerouti (2007)
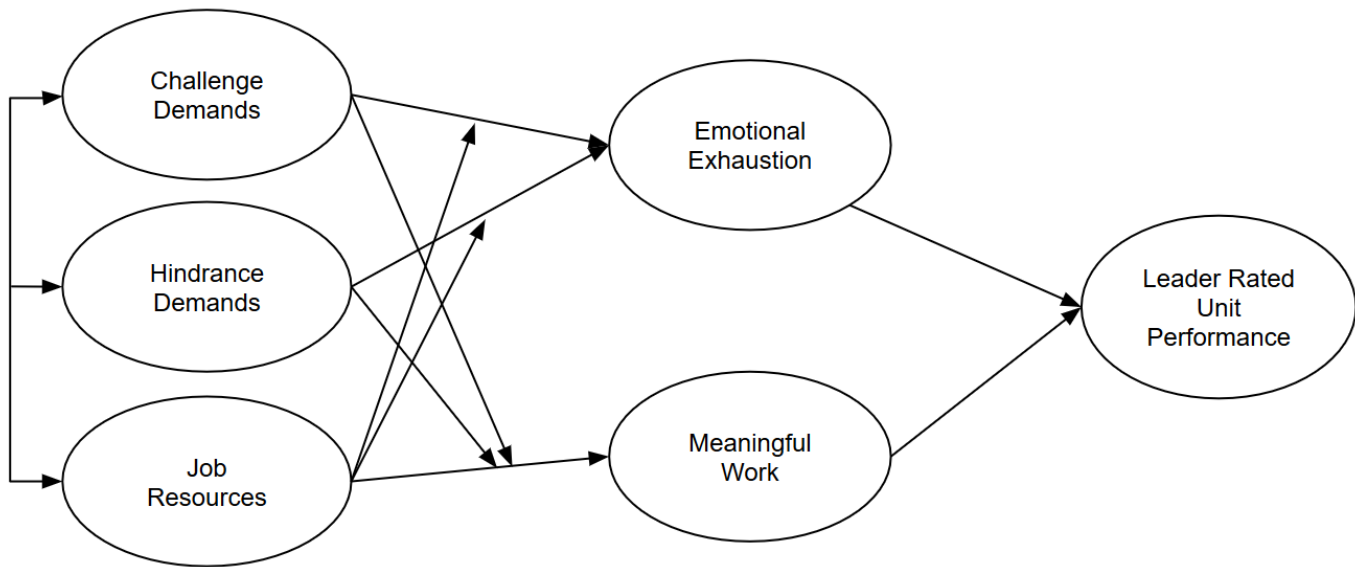
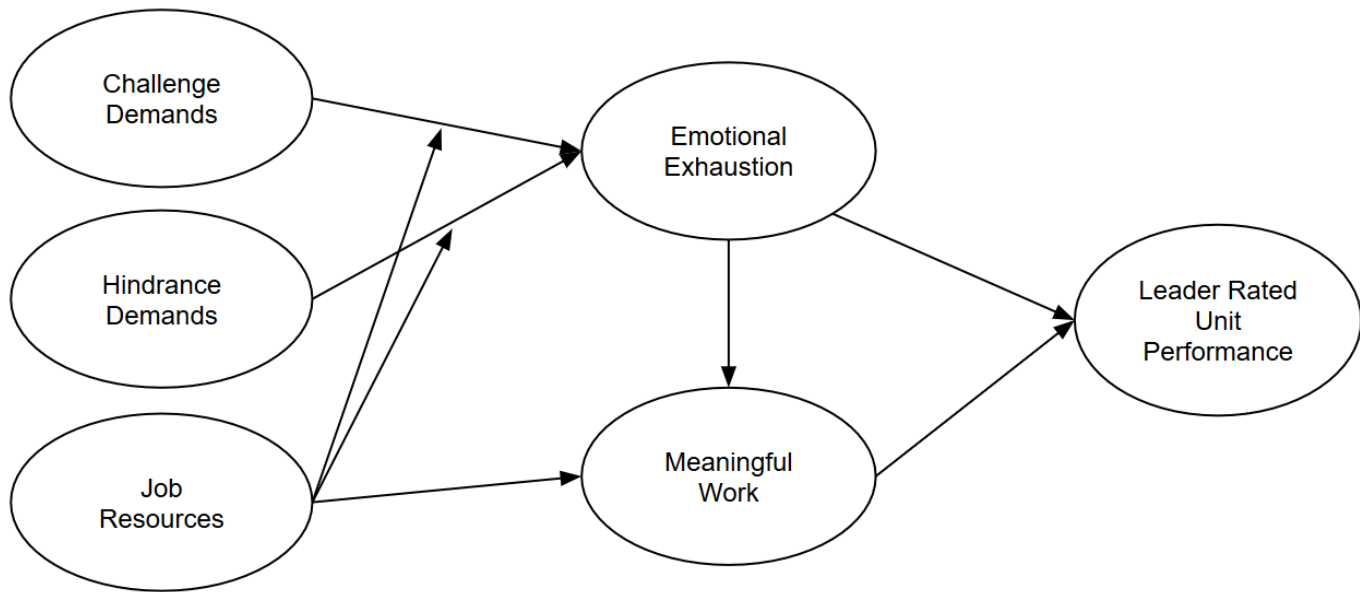*Model 6 – adapted from Taris & Schaufeli (2016)*
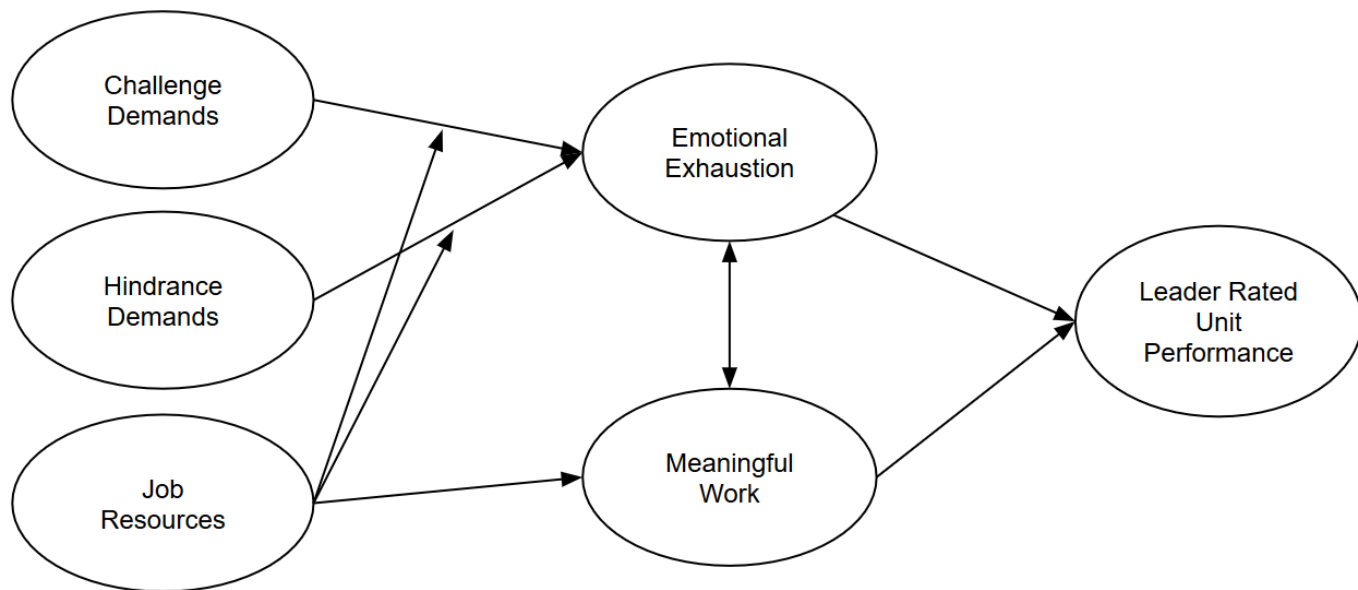
Model 7 – Model 6 without Demands moderating relationship between Resources and Meaningful Work, similar to Model 2
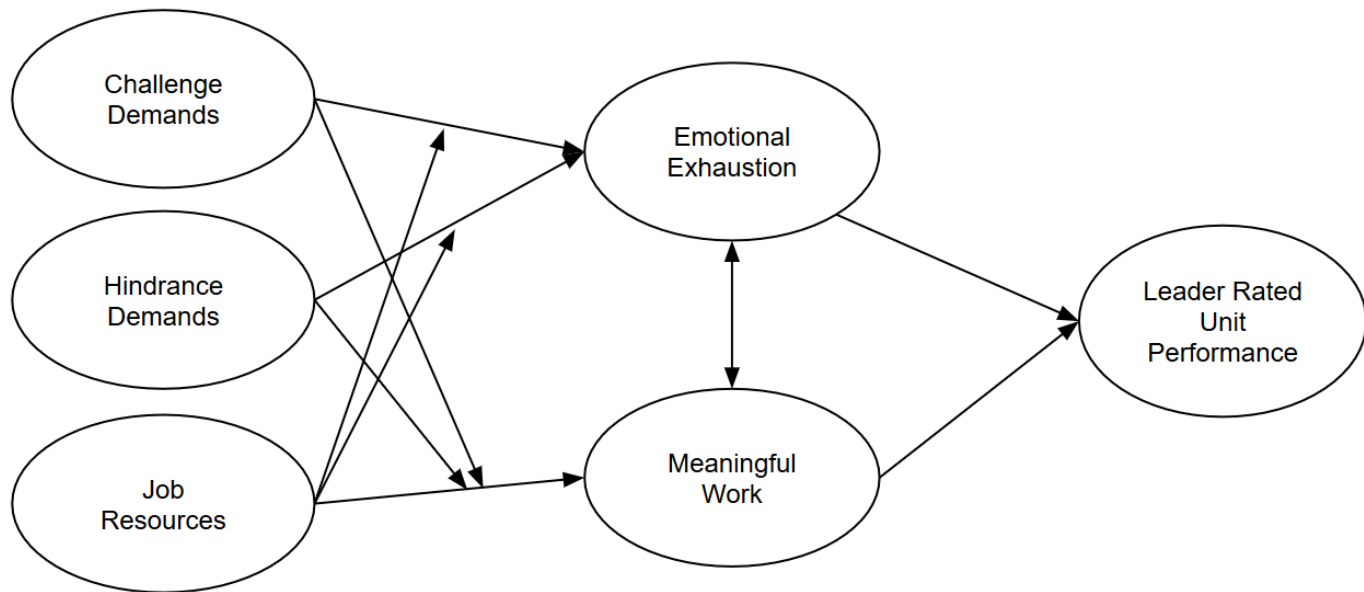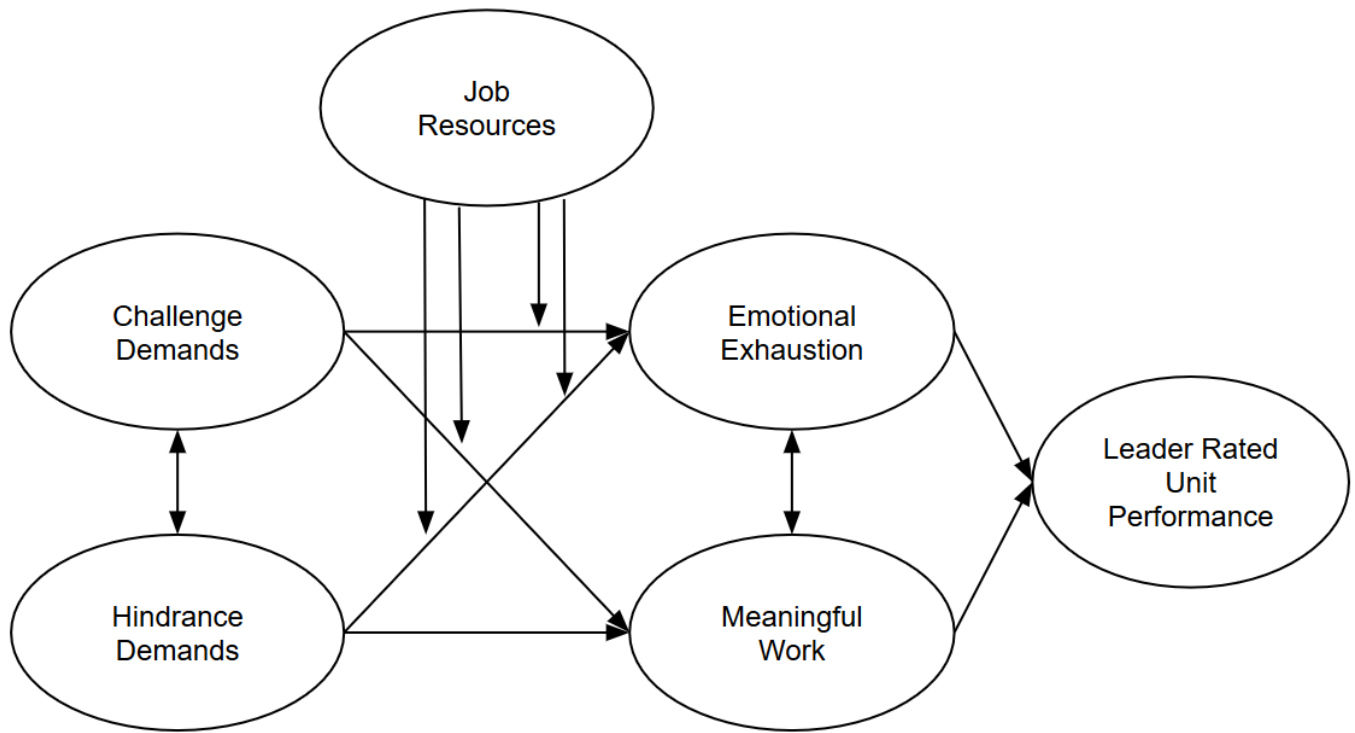
Model 8 – Model 6 without connections between Demands and Resources, similar to Model 4

*Model 9 – adapted from Bakker, Demerouti, & Verbeke (2004)*

Model 10 – Possible simplified moderated mediation model

Figure 6. Path Analysis Results of Hypothesized Model (Model 1).

Note. Values indicate the estimate with standard errors in parentheses. Dashed lines indicate non-significant relationships; italics indicate relationships in the opposite direction from hypotheses. Control variables assessed during the model's path analysis.

Figure 7. Final Model.
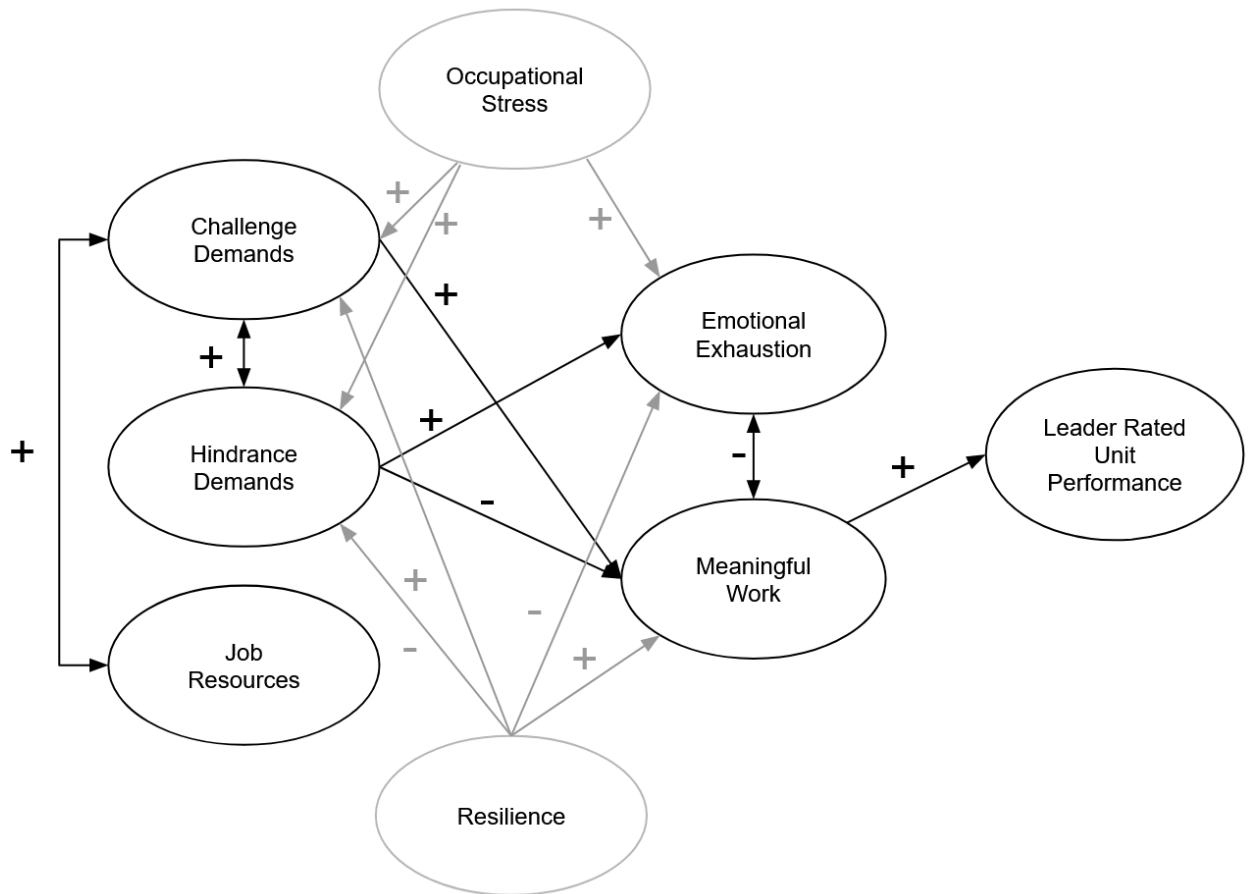
Note. Control Variables notated in grey.