Spring 5-25-2024

Demands at Work: The Moderating Influence of Motivation on the Relationship between Challenge Demands and Employee Work Engagement

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DEMANDS AT WORK: THE MODERATING INFLUENCE OF MOTIVATION ON THE RELATIONSHIP BETWEEN CHALLENGE DEMANDS AND EMPLOYEE WORK ENGAGEMENT

by

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A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

COLLEGE OF EDUCATION AND HUMAN SCIENCES
LOUISIANA TECH UNIVERSITY

May 2024

LOUISIANA TECH UNIVERSITY

GRADUATE SCHOOL

March 28, 2024
Date of dissertation defense

We hereby recommend that the dissertation prepared by

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entitled **Demands at Work: The Moderating Influence of Motivation on the Relationship Between Challenge Demands and Employee Work Engagement**

be accepted in partial fulfillment of the requirements for the degree of

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ABSTRACT

Work engagement is a popular topic due to the positive outcomes linked to it. For example, engaged workers are shown to be more productive workers and better organizational citizens. The Job Demands-Resources (JD-R) Theory has been the most widely accepted explanatory model for work engagement due to its flexibility to be applied to all work environments. While the JD-R does not argue that motivation is fixed, it does not account for moment-to-moment changes in motivation. A state theory of motivation that examines how motivation may impact the relationships between demands and work engagement has yet to be examined. This study employed a cross-sectional survey design to examine whether certain motivational states (i.e., paratelic-conforming and mastery) moderated the relationship between the propensity to see demands as challenges and work engagement. The analysis did not reveal any significant interactions. The paratelic-conforming interaction was non-significant (B = 0.0488, 95% CI [-0.0914, 0.1845], p = 0.5). The mastery interaction was also non-significant (B = 0.0363, 95% CI [-0.1344, 0.2069], p = 0.68). The direct effects were examined, and conflicting results were found between the scales employed to establish the individual's state. The direct effects and subsequent follow-up analyses are discussed.

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DEDICATION

This dissertation is dedicated to my husband, Sam, whose encouragement and belief in me never allowed doubt to cloud my path. Sam, your faith in me has been a foundation upon which I've built not just this work, but my confidence and aspirations. I love you.

Equally, this work is dedicated to my parents, whose support has been nothing short of foundational. From the earliest days, you instilled in me the belief that I could be anything I desired, setting me on a journey of endless possibilities. This degree, a testament to your unwavering support and love, would not have been possible without you. You allowed me to dream, to pursue those dreams with tenacity, and to realize them with your guidance and encouragement at every step.

To my family and friends, this achievement is not just mine but ours, a reflection of the collective faith, love, and support that has surrounded me. Thank you for letting me follow my dreams and for being my rock through this journey.

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ACKNOWLEDGMENTS

First, I extend my deepest gratitude to my dissertation committee members, Dr. Mitzi Desselles, Dr. Tilman Sheets, and Dr. Matthew Johnson, for their invaluable guidance, patience, and support throughout the journey of my dissertation. Their encouragement in the face of challenges, willingness to engage with my incessant inquiries, and ability to instill self-confidence within me have been consequential to my academic and personal development.

I extend my heartfelt thanks to Dr. Mitzi Desselles, Dr. Tilman Sheets, Dr. Frank Igou, and Dr. Steven Toaddy for their unwavering guidance and support throughout this program, which has been instrumental in my growth and success. The collective wisdom, encouragement, and support have guided me toward achieving my academic goals. Your contributions to my journey, which started in Psychology 102 in Woodard Hall in 2016, are deeply appreciated and will always be remembered with gratitude and respect.

I would be remiss if I did not extend my deepest gratitude to my family and friends, whose unwavering support and love have been the foundation of my resilience and determination throughout this program. Their understanding and encouragement never waned, and their constant presence has been a source of strength and motivation. To all of you, I say thank you from the bottom of my heart.

CHAPTER 1

REVIEW OF LITERATURE

Work engagement is a popular topic within organizations largely because of the positive associations linked with high work engagement. For example, research has shown that engaged workers are more productive (Rich et al., 2010) and better organizational citizens (Sonnentag, 2003). Work engagement has also been linked to positive employee outcomes such as increased job satisfaction (Schaufeli et al., 2006), self-efficacy (Schaufeli et al., 2006), happiness (Demerouti et al., 2001), and connection (Lewig et al., 2007); and negatively related to burnout (Bakker et al., 2023). Additionally, work engagement has been linked to greater organizational financial returns (Xanthopoulou et al., 2009). This study aims to contribute to theory and practice by examining whether motivational states moderate the relationship between how an individual perceives the demands they face at work and work engagement.

Work Engagement

In 1990, in his seminal article, Kahn defined work engagement as the "harnessing of organization members' selves to their work roles: in engagement, people employ and express themselves physically, cognitively, emotionally and mentally during role

performances" (p. 694). Kahn's original conception lays out work engagement as a unique multidimensional motivational construct where engagement refers to the extent to which individuals allocate personal resources to role performance (Rich et al., 2010). Kahn provided the conceptual map for work engagement, theorizing what work engagement is and the antecedents of work engagement. Since this article, the popularity of work engagement in organizations and research has grown, and various definitions of work engagement have been proposed. For example, Gallup defines work engagement as "the involvement and enthusiasm of employees in their work and workplace" (2023), and Forbes defines it as "the emotional commitment the employee has to the organization and its goals" (Kruse, 2012). As is exhibited, these definitions lost sight of the unique characteristics of work engagement and conflated work engagement with other constructs like job involvement, organizational commitment, and job satisfaction. While it is exciting that work engagement is receiving attention from organizations, it could be helpful for practitioners and researchers to have a unifying definition and measurement tool.

Schaufeli et al., (2002) saw this need and developed an operational definition and measurement tool for work engagement, which has since become the most employed definition and assessment method in research. They define work engagement as a "positive, fulfilling, work-related state of mind composed of vigor, dedication, and absorption" (Schaufeli et al., 2006, p. 702). According to this definition, vigor is characterized by high energy and mental resilience, the willingness to invest effort in one's work, and persistence; dedication refers to being involved in one's work and seeing one's work as significant and important; and absorption is characterized by being

concentrated and happily engrossed in one's work (Schaufeli et al., 2006, p. 702). Overall, work engagement is characterized by high energy and identification with one's work. While this conceptualization also fails to address the motivational underpinnings of work engagement that Kahn proposed, it is the most used in research.

Once this operational definition was accepted in the literature, the research on work engagement as a disposition flourished. Research topics include identifying positive relationships with work engagement (Sonnentag et al., 2012; Xanthopoulou et al., 2009), the effectiveness of work engagement interventions (Knight et al., 2017), what work engagement looks like in a team setting (Costa et al., 2014), and work engagement in remote work (Mäkikangas et al., 2022), just to name a few. One topic organizations and academics alike were interested in understanding was what leads some people to be more engaged in their work than others. Knowing this would allow organizations to hire those who are more predisposed to becoming engaged and create a work environment that fosters engagement in employees, while academics would be able to build sound theoretical models on the antecedents and between-individual differences of work engagement. This is in line with the conceptualization of work engagement as a disposition. In addition to between-individual differences in work engagement, researchers have also found that there are within-individual differences in work engagement. (Sonnentag, 2003; Xanthopoulou et al., 2008). Due to the observed within-individual differences in work engagement, work engagement can also be examined as a construct with state tendencies. A state reflects how an individual feels about themselves and their environment at certain points in time (Xanthopoulou et al., 2008). Looking at the state level, we may be able to understand within-person differences in work

engagement better. In addition, viewing work engagement as a construct with state tendencies aligns with Kahn's original proposition that work engagement is a momentary experience (Bakker & Oerlemans, 2019).

Job Demands-Resources Model

The model most widely accepted as an effective explanatory model for work engagement is the Job Demands-Resources Model (JD-R; Demerouti et al., 2001). This model has been impactful in understanding factors that lead to work engagement, and components of this model will be used in this study. The Job Demands-Resources Model has been regarded as one of the most effective theories for explaining work engagement (Bakker & Albrecht, 2018). One reason the JD-R is so popular is its ability to be applied to all working environments (Bakker & Demerouti, 2014). This theory, by Bakker and Demerouti, places work engagement into a broader theoretical context and posits that a combination of job characteristics and personal resources predicts job performance through work engagement (2014). Job demands are defined as the "physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological effort and are associated with certain physiological and/or psychological costs" (Demerouti et al., 2001, p. 501). Job resources are defined as "those physical, psychological, social, or organizational aspects of the job that: (a) are functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; or (c) stimulate personal growth, learning, and development" (Demerouti et al., 2001, p. 501). They theorize that job resources help fulfill basic psychological needs, leading to positive work outcomes. In contrast, job demands have

often been regarded as negative, leading to decreased employee well-being and work engagement and increased burnout (Schaufeli et al., 2009).

Job resources and demands comprise the JD-R model and are proposed to interact in two ways. The first is that job resources (e.g., social support and performance feedback) can minimize the impact of the strain associated with job demands. For example, several studies have shown that job resources can reduce the impact of various job demands on strain, including psychological distress, burnout, and psychosomatic complaints (e.g., Bakker et al., 2005; De Jonge & Huter, 2021; Lavoie-Tremblay et al., 2014). The second interaction proposes that resources become more salient and have a stronger positive impact when job demands are high (Bakker & Demerouti, 2014; Bakker et al., 2023). While there are interactions between resources and demands, researchers theorize that job demands and resources are distinct processes where demands make up a health-impairment process, and job resources make up a motivation process (Bakker & Demerouti, 2014). The health-impairment process implies that demands are negative and lead to undesirable results for the person and the organization (i.e., sickness and lower job performance) (Bakker & Demerouti, 2014). Even though in their early work, Bakker and Demerouti briefly point out that not all demands are necessarily negative, yet they do not explicitly categorize these demands. While appreciating the importance of and the positive attributes of job resources, the current study will focus on the two types of demands that were later distinguished within the JD-R model, hindrance and challenge demands, and examine how they impact work engagement.

As mentioned, demands were originally classified as a unidimensional component within the model. However, researchers began to find inconsistencies in research

regarding the effects demands have on outcomes where demands did not always lead to negative employee and organizational outcomes. The Challenge-Hindrance Stressor Framework (CHSF) provided an explanatory model for these discrepancies (Cavanaugh et al., 2000). Challenge stressors promote the accomplishment of work tasks and personal development, and hindrance stressors prevent or thwart the accomplishment of job tasks or work goals (Podsakoff et al., 2023, p. 166). The CHSF argued that stress from certain types of demands can positively affect employee outcomes (Cavanaugh et al., 2000; Podsakoff et al., 2023). Since then, several meta-analyses have provided additional support that hindrance stressors are negatively related to employee work engagement, vigor, and positive work affect, whereas challenge stressors can be positvely related to these outcomes (Bennett et al., 2018; Crawford et al., 2010; Podsakoff et al., 2023; Webster & Adams, 2020). The distinction between these stressors allowed the JD-R model to explain discrepancies in results on the relationships between job demands, work engagement, and performance (Webster et al., 2011). The JD-R incorporated the stressors of the CHSF but termed them challenge and hindrance demands. Both types of demands fall under the larger umbrella of demands in the JD-R (Bakker & Sanz-Vergel, 2013; Cavanaugh et al., 2000; LePine et al., 2004).

Challenge and Hindrance Demands

Challenge demands are demands that promote personal growth and development. Though both challenge and hindrance demands induce strain, challenge demands can stimulate positive emotions and attitudes that offset strain's adverse effects, resulting in positive employee outcomes like increased work engagement, examples include time pressure and job responsibility (Rodell & Judge, 2009; Rosen et al., 2020). Challenge

demands are sometimes positively related to work engagement and negatively related to burnout (Bakker & Oerlemans, 2019). This relationship is theorized to occur because challenge demands provide opportunities for the employee, which can then be construed as a resource.

On the other hand, hindrance demands are negative stressors that thwart goal attainment; typical examples include role ambiguity, organizational politics, job insecurity, and administrative hassles (Podsakoff et al., 2023; Rosen et al., 2020; Webster et al., 2011). Hindrance demands are perceived as obstacles, and employees who encounter these demands may be disengaged from work and experience high exhaustion, frustration, and distress (Sawhney & Michel, 2021). It is proposed that motivation is decreased as individuals are not likely to believe that their efforts to deal with the demands are likely to succeed in dealing with them (Bakker & Oerlemans, 2019; LePine et al., 2005).

Demand Perception

As the literature on work demands has evolved, it has become increasingly evident that the a priori classification of demands needed further investigation (Al Hajj et al., 2023; Rodell & Judge, 2009; Webster et al., 2011). The differentiation between challenge and hindrance stressors underscores the complexity of work demands. Individuals' appraisals of stressors as either challenging - offering opportunities for growth and development - or as hindrances - representing obstacles to goal achievement - are not fixed (Gerich, 2017; Li et al., 2022; Webster et al., 2011). Instead, a critical determinant of whether a demand acts as a challenge or a hindrance lies in the individual's perception of that demand (Al Hajj et al., 2023; Lazarus & Folkman, 1984;

Li et al., 2022**)**. In understanding work-related stress and its impact on employee engagement, it seems that the individual's perception of work demands plays a pivotal role (Al Hajj et al., 2023). Al Hajj et al.'s research supported previous assumptions in the stress literature, namely, that individuals can appraise a demand as either/both a challenge or/and a hindrance (2023; Lazarus & Folkman, 1984). Additionally, they found that individuals who appraised demands as challenges reported greater work engagement, whereas hindrance appraisals had the opposite relationship (Al Hajj et al., 2023). This appraisal process seems critical, as it determines whether a stressor will lead to positive outcomes, such as increased work engagement.

Reversal Theory

While the JD-R framework does not argue that motivation is fixed, it does not account for moment-to-moment changes in motivation. As mentioned, the original conceptualization of work engagement by Kahn described work engagement as a motivational concept with behavioral consequences, yet more recent literature seems to ignore the momentary motivational processes of work engagement (LePine et al., 2005; Rich et al., 2010). This study will aim to contribute to the literature by accounting for these momentary motivational processes missing in the JD-R.

Reversal theory is a structural, phenomenological theory of motivation that proposes one's experience of motivation is organized in a specific framework (Apter, 2001). Reversal theory posits a framework consisting of eight motivational psychological states, four of which are active at any given time. Reversal theory is a dynamic state theory of motivation suggesting that people change states throughout the day and that these changes can occur at any moment (Apter, 2005, p.1). These pairs of states, each of

which has a toggle switch, flipping between settings, resulting in a reversal to the opposing state. Imagine a panel of four toggle switches; each connected to a bulb that may light up in one of two colors. Each toggle switch controls a pair of colors that are unique to it. The motivations experienced by an individual are captured by the combination of four colors. The four pairs are telic and paratelic, mastery and sympathy, alloic (other) and autic (self), and conformist and negativist (rebellious). Each state is driven by certain motives and enables specific emotions. The telic and paratelic pair is concerned with goals and the process of achieving these goals. The telic state embodies the value of achievement, where the goal is the focus, and the paratelic state embodies the value of enjoyment, where the activity for the sake of the activity is the focus (Apter, 2005, p. 8). The second pair, mastery and sympathy, deals with how we interact with our environment, including the people in those environments. In the mastery state, the person desires to control their environment, and the underlying value is power. Whereas in the sympathy state, the underlying value is love, and people seek connection (Apter, 2005). As Apter points out, the third pair, self and other, deals with "orientations – on whose behalf we are doing what we are doing" (2005, p. 11). As one might imagine, when one is in the self state, they are concerned with themselves, and when one is in the other state, they are concerned with and can identify with others. The last pair, conformist and negativistic, deals with how we relate to rules (Apter, 2005). The person in the conformist state desires to follow the rules, and the person in the negativistic state, also often called the rebellious state, desires to break free of the rules. An important note is that even though four states are active at all times, certain states may be more focal to us at different times. Previous work found significant relationships between motivational

states and specific components of work engagement, such that the self-mastery state was related to vigor, the paratelic and self-mastery states were related to absorption, and the self-mastery and telic states were related to dedication (Dinnat & Desselles, 2022).

A Note on Self-Determination Theory

I have not chosen to examine the motivational processes with self-determination theory (SDT), a prominent theory of motivation in organizational psychology. SDT was created by Ryan and Deci (2000) and proposes people have "innate psychological needs that are the basis for their self-motivation and personality integration." They identified three needs: competence, relatedness, and autonomy. The idea is that when those internal needs are met, people are more motivated. Researchers have examined the relationship between the JD-R and SDT, which has been helpful in understanding job demands and resources.

While SDT provides useful information and is a popular motivation theory that many are familiar with, I decided to move forward in this study with reversal theory. The main reason for choosing reversal theory is because it has robust explanatory power for state-like phenomena, and it examines the underlying drivers of an individual's behavior. Theories that attempt to explain mental states consider that individuals change throughout the day; they are not static. Work engagement is comprised of both trait- and state-based components: Although individuals have a certain propensity to be engaged at work, there are also within-individual variations in work engagement (Sonnentag et al., 2012). Reversal theory allows researchers to examine within-individual differences through what internal drivers of behavior are active at any given moment. It, therefore, makes sense to use a state theory of motivation that may account for more of the observed

within-individual differences when hypothesizing the impacts of motivation on work engagement. While SDT does allow for the examination of needs, it is limited in that it only examines autonomy, competence, and relatedness, which do not capture as full a range of motivations as reversal theory. When considering which theory to move forward with, a construct comparison was completed that revealed that while SDT does account for the RT equivalents of self, mastery, other, and sympathy, it does not appear to account for the telic and paratelic state pair and the rebellious conforming state pair (Apter, 2005). These additional motivational states may better explain motivation's impact on work engagement when faced with challenge or hindrance demands.

Summary

Since its appearance in the early 1990s, work engagement has been a topic of interest among researchers and practitioners (Bakker et al., 2023). The positive associations between work engagement and other desirable variables like productivity, commitment, and financial successes (Rich et al., 2010; Xanthopoulou et al., 2009), make it a matter of practical interest to organizations, whereas the reported benefits engaged workers exhibit—greater happiness, more satisfied, healthier (Demerouti et al., 2001; Schaufeli et al., 2006) – add to the interest of psychologists. The job demands-resources theory provides an impactful explanatory model for work engagement that has played an influential role in expanding research on this topic. The original theory proposed that job resources lead to a motivational pathway that results in higher work engagement, whereas demands evoke a strain process resulting in decreased work engagement. The Challenge-Hindrance Stressor Framework was then integrated into the JD-R theory to differentiate between types of demands – challenge and hindrance demands. Hindrance demands

thwart one's goals and only lead to negative outcomes. In contrast, challenge demands provide opportunities for growth and learning and can lead to positive outcomes in addition to negative ones. Additionally, it is becoming evident that how the individual perceives their work demands is a key factor in how their demands impact positive work outcomes. Even with this distinction, the JD-R does not account for an individual's fluctuating motivations. A state theory of motivation that examines how the experience of motivation may impact the relationships between demands and work engagement has not yet been examined, and reversal theory provides a theoretical foundation to further the work researchers have done examining engagement and work demands.

Hypotheses

Research suggests that appraising work demands as challenges rather than hindrances is related to higher reported levels of work engagement (Al Hajj et al., 2023). This appraisal process is essential for understanding how individuals perceive and interact with their work demands. Perceiving demands as hindrances seems to be aligned with a longer-term, end-goal perspective, aligning with the telic state's focus on planning ahead (Apter, 2001; Bakker & Sanz-Vergel, 2013). On the other hand, workers perceive challenge demands as obstacles that lead to learning, which aligns with a shorter-term, in-the-moment perspective (Bakker & Sanz-Vergel, 2013; Cavanaugh et al., 2000). This perspective aligns with the paratelic state, which is characterized by engaging in activities for the intrinsic and immediate feedback they provide.

Research shows a close connection between demand appraisal and emotion, where challenge appraisals are related to "eagerness, excitement, and enthusiasm" (Lazarus & Folkman, 1984, p. 33). This emotional response aligns with the experiences

associated with the paratelic-conforming state, which, as Apter (2001) posits, often manifests as excitement. Moreover, the established positive correlation between being in a paratelic state and facets of work engagement, such as absorption (Dinnat & Desselles, 2022), reinforces the idea that being in the paratelic-conforming state may enhance the positive relationship between appraising demands as challenges and work engagement.

Like Sonnentag et al. (2012), the present study focused on the experience of work engagement at the level of a specific day. They reported that day-specific intra-individual variation in work engagement may be explained by day-level events. In the present research, participants were asked to describe what percentage of their demands that day were challenge versus hindrance using a 100-point scale. Since any work demand may be perceived as either a challenge or a hindrance, I provided a full definition of challenge and hindrance when measuring day-level demands. Motivational state was aggregated to the level of the day as well, using questions on the frequency with which individuals experienced each state that day.

H1: The relationship between experiencing challenging work demands and work engagement will be stronger for individuals who are more often in the paratelic (vs. telic) and conforming (vs. rebellious) states.

As previously mentioned, when work demands are comprised of more challenges than hindrances, higher reported levels of work engagement have been observed (Al Hajj et al., 2023). Challenge demands, which are perceived as opportunities for personal growth and achievement, invoke a different response compared to hindrance demands, which are seen as obstacles to progress (Bakker & Sanz-Vergel, 2013). Challenge demands not only require energy expenditure but also provide potential gains and have

been linked to work engagement (Gerich, 2017). Previous work found significant relationships between motivational states and work engagement, such that the self-mastery state was related to vigor, dedication, and absorption (Dinnat & Desselles, 2022). The underlying motives of the self-mastery pairing are to personally be in control over ideas, objects, or people and grow competency (Apter, 2001). Challenge demands provide the opportunity for individuals to exert control, grow skills, or demonstrate competency. Additionally, the self-mastery state is hypothesized to be experienced positively when the individual feels like they are gaining in a transaction (Apter, 2001). I propose that the individual in the self-mastery state will be driven by a desire to overcome or exert power over challenges, thus enhancing the already positive relationship between appraising demands as challenges and work engagement. Therefore,

> **H2:** The relationship between experiencing challenging work demands and work engagement will be stronger for individuals who are more often in the mastery (vs. sympathy) state.

CHAPTER 2

METHOD

Participants

The participants in this study consisted of individuals in the United States who were at least 18 years of age, employed full-time and had a Prolific approval rate of at least 95%. Participants were recruited using the Prolific platform and were compensated at a rate of $12 per hour, with the amount prorated based on their participation time. Before their participation, all potential participants were provided with a detailed explanation of the study's purpose, procedures, risks, and benefits. Informed consent was obtained from each participant before their involvement in the study.

Power Analysis

An a priori power analysis was conducted using G*Power version 3.1.9.7 (Faul et al., 2007) for sample size estimation. Reviewing several studies examining the relationships between work engagement and challenge and hindrance demands, effect sizes were often considered medium (Al Hajj et al., 2023; Gerich, 2017). A *p*-value of 0.025 was calculated for the hypotheses by utilizing a Bonferroni Correction of the original *p*-value of 0.05. This correction attempts to account for the number of analyses being run and helps control for Type I errors. The widely acknowledged standard for power is set at 0.80, representing an 80% probability

of finding a significant result when it is there. This guideline is derived from Cohen's advice, emphasizing the need to strike a balance between robust statistical power and the researcher's efforts in participant recruitment (Collins & Watt, 2021). With a significance criterion of $\alpha = .025$, a medium effect size, and power = .80, the minimum sample size needed with this effect size is $N = 81$. Research has suggested that there is a careless response rate between 10-12% in survey data (Meade & Craig, 2012). With the goal of collecting data from 180 participants, the careless response concern is minimized, and the power of the study is increased.

Materials

Demands

Respondents responded to a single sliding scale item designed to assess individuals' propensity to perceive work demands either as challenges or hindrances. This scale recognizes that individuals' interpretations of work demands (such as workload, time pressure, workplace politics, and task complexity) may vary. Respondents were asked to reflect on the work demands they faced on a specific day. They were then asked to evaluate what percentage of the demands were either hindrances, which they see as obstacles or counterproductive to their professional development, or challenges, which they view as opportunities for growth, learning, or achievement. The scale was structured to capture a range of perceptions, from seeing demands exclusively as challenges, through a balance of challenges and hindrances, to viewing them entirely as hindrances.

Motivation

The Apter Motivational Style Profile (AMSP; Apter et al., 1998) is a questionnaire designed to measure personality in terms of individuals' ways of orienting

themselves in the world as these correspond with certain fundamental psychological needs (Apter et al., 1998). The AMSP is derived from the longer Motivational Style Profile (MSP; Apter et al., 1998) and comprises forty Likert-scale items with five questions for each motivational state. Sample items include "I wanted to do things that I consider important" and "I liked to break the rules." Items are rated on a 6-point Likert scale ranging from 1 = *never* to 6 = *always*. Subscales were calculated by summing all five items for each subscale. The scale has good internal consistency, with all subscales reporting Cronbach's alphas of at least .70 (Apter et al., 1998).

Additionally, I used The Reversal Theory State Measure (RTSM; Desselles et al., 2014), a self-report questionnaire designed to assess an individual's motivational state. The RTSM bundled version has three items. In each item, anchors for each state are shown as a group (i.e., in one bundle). The RTSM is a forced-choice scale that asks participants to pick which bundle of anchors best represents what they wanted at a particular moment. The scale is intentionally brief as it was intended to capture state of mind in experience sampling. The respondent chooses which bundle within an item is most descriptive of their state of mind. The scale consists of three items: one conforming versus negativistic item, one telic versus paratelic item, and one item whose four options are the crossed transactional pairs. The RTSM was initially included in the study as a supplement to the AMSP, to determine state when opposing state subscales have equal scores on the AMSP. As the analysis progressed, the RTSM was deployed in follow-up analyses of hypotheses, as will be explained in a later section.

Work Engagement

The Utrecht Work Engagement Scale (UWES-9) is a 9-item self-report questionnaire to assess participants' work engagement (Schaufeli et al., 2006). The items of the UWES are grouped into three subscales that reflect the underlying dimensions of engagement. Each dimension is measured with three items. All items are scored using a 7-point Likert scale ranging from 0 (*never*) to 6 (*always*) (Schaufeli et al., 2006). An example of an item is, "At my work, I feel bursting with energy." The total work engagement score was calculated by adding all nine items. The scale has good internal consistency (total scale median =.92; Schaufeli et al., 2006).

Attention Check Items

One attention check item was added to the survey to identify careless responders, as Meade and Craig (2012) recommended. An example item is, "Respond with 'strongly agree' for this item." Those identified as careless (e.g., responding with anything other than "strongly agree" in the example provided) were removed from the study.

Procedure

Recruited participants received an explanation of the research study, which informed them that their responses were confidential to the researchers. The names of the participants were not collected, and individual data was viewed only by the researchers. Participants interested in participating in the study followed the link to the Qualtrics survey. After reading and agreeing to the informed consent, the participants took the survey inclusive of the above measures and several demographic items. At the end of the survey, the respondents were presented with a screen thanking them for participating. The

survey was estimated to take 12 minutes to complete. Actual median duration was 6.12 minutes.

After data collection, the motivational state subscale scores were calculated by summing the five items for each of the eight states. After subscale scores were calculated, the moderating variable was created by converting the states into binary format, 0 or 1, denoting the absence or presence of the hypothesized state, respectively. To accomplish this conversion, a two-step coding process was employed. Initially, the raw scores from the motivational state pairs assessed in the AMSP were standardized by converting them into *z*-scores using the means and standard deviations from a normative sample of over 400 respondents from the United States (Desselles, 2009; Desselles & Lovell, 2017). Following the standardization to *z*-scores, each pair of motivational states was assessed by subtracting one state's *z*-score from the other within the pair. This subtraction process identified the relative dominance of one motivational state over the other. Specifically, for each pair, the state with the larger *z*-score after the subtraction was determined to be the dominant or present state, coded as '1', while the lesser state was considered absent, coded as '0'. For example, an individual in the self- or other-mastery state (indicated by 1) was included in the focal group, whereas individuals in either sympathy state (indicated by 0) placed the individual in the comparative cohort. This coding strategy aligns with the hypotheses and is congruent with the theory. Based on the reported norms, an imbalance between the focal and comparison groups was expected (Desselles & Lovell, 2017) in which there was a six-point difference between the means between telic (23.6) and paratelic (17.2; Desselles & Lovell, 2017), suggesting individuals report being in the telic state more often than the paratelic state. In the present study, this was expected to

result in low numbers of respondents in the paratelic-conforming state combination. Despite initial concerns, however, the sample size proved to be sufficient for conducting a moderation analysis.

Data Cleaning

Data was examined for careless responders by examining the attention items (Meade & Craig, 2012). If respondents provided incomplete data, they were not included in the study. Additionally, those who did not correctly code the attention checks were removed from the set. Nine respondents failed the attention check. Data was also examined for the presence of multivariate outliers by examining Mahalanobis distance, with $p = 0.001$(Tabachnick & Fidell, 2018) and $df = 8$, a chi-square threshold of 26.13 was established, resulting in one respondent being removed from the dataset (Mahalanobis, 1936). After cleaning for careless responding and multivariate outliers, the total sample for all subsequent analyses was 179.

Data Analysis

Data analysis was conducted utilizing R version 4.3.3 (R Core Team, 2023). Before hypothesis testing, the data were examined to ensure adherence to the assumptions of a moderated multiple regression analysis. This assessment included an examination for compliance with the assumptions of linearity, homoscedasticity, normality of residuals, multicollinearity, and independence of errors. After these assumptions were examined, the research hypotheses were investigated using Hayes's Process Analysis method (PROCESS; Hayes, 2022). PROCESS is "an observed variable OLS and logistic regression path analysis modeling tool" (Hayes, 2022, p. 587). PROCESS recognizes the dichotomous model and estimates the conditional effect of X

for each of the two values of the moderator (Hayes, 2022). To analyze the moderators, I transformed the raw scores of motivational states into *z*-scores to facilitate a comparison of individual tendencies against the average population levels, which was particularly pertinent for states such as the paratelic, which typically manifest at the lower end of the scale. If the motivational state combination interaction was significant at a *p*-value of .025 or lower, the interaction between the demand and motivational experience was considered significant. The interpretation of the data included an examination of the 95% confidence interval, and the R^2 and beta values were analyzed to assess the practical significance of the findings (Spatz, 2019).

CHAPTER 3

RESULTS

Descriptive Statistics

The sample of 179 respondents was 47% Female and 52% Male. The mean age was 38, and the racial composition was 67% White, 12% Black, 12% Asian, 7% mixed, and 2% other. Summary statistics were calculated for the perception of demands as challenges, motivational states (AMSP subscale scores standardized as described above), and work engagement (summed UWES score). The summary statistics are in Table 1 and the bivariate correlations are in Table 2. The values in the diagonal of Table 2 are the Cronbach α of each subscale. An interesting point to note in Table 1 is that the average score for demands was 6.19, indicating a balanced perception of daily work demands as both hindrances and challenges. A score of 6 on the demand scale corresponds to "Both equally." In Table 2, all subscales of the AMSP and UWES had Cronbach's α values of 0.70 or greater, with the exception of the paratelic scale, which had an $\alpha = 0.69$ suggesting the scales are acceptably reliable (Tavakol & Dennick, 2011). Work engagement significantly and positively correlated with all AMSP subscales except rebelliousness ($r = -0.09$), and perceptions of demands as challenges were notably linked to the work engagement ($r = 0.46$), telic ($r = 0.24$), and mastery ($r = 0.18$) subscales. However, this strong interrelation raised concerns about multicollinearity in the planned regression analyses, potentially complicating the interpretation of how individual states

uniquely contribute to work engagement outcomes. In order to test the hypotheses, two dichotomous moderator variables were created based on the classification of motivational state. The paratelic-conforming moderator group consisted of 60 respondents and the mastery moderator group consisted of 64 respondents.

Table 1

Summary Statistics for Study Variables

Variable	*n*	*M*	*SD*	SE_M	Min	Max	Skewness	Kurtosis
Demands	179	6.19	2.40	0.18	1.00	11.00	-0.13	-0.77
Paratelic	179	-0.54	1.18	0.09	-3.59	3.18	0.12	0.65
Telic	179	-0.60	1.35	0.10	-3.87	2.13	0.03	-0.58
Conforming	179	0.12	1.23	0.09	-3.92	2.19	-0.44	-0.11
Rebellious	179	-0.94	1.01	0.08	-2.09	1.97	0.74	-0.13
Mastery	179	-1.56	1.46	0.11	-5.29	2.21	-0.07	-0.09
Sympathy	179	-1.22	1.34	0.10	-4.79	1.76	-0.08	-0.41
Work Engagement	179	4.03	1.33	0.10	1.00	7.00	-0.12	-0.24

Table 2

Descriptive Statistics and Correlations for Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Demands	6.19	2.40								
2. Paratelic	-0.54	1.18	0.13	(.69)						
3. Telic	-0.60	1.35	0.24***	0.25**	(.76)					
4. Conforming	0.12	1.23	0.15	0.15	-.56***	(.82)				
5. Rebellious	-0.94	1.01	-0.07	0.42**	-0.12	-0.37***	(.77)			
6. Mastery	-1.56	1.46	0.18**	0.40***	0.65***	0.52***	0.00	(.84)		
7. Sympathy	-1.22	1.34	-0.09	0.51***	0.35***	0.40***	0.12	0.62**	(.78)	
8. Work Engagement	4.03	1.33	0.46***	0.32***	0.52***	0.47***	-0.09	0.56***	0.24*	(.94)

Note. All $n = 179$. $p \leq 0.05$*, $p \leq 0.01$**, $p \leq 0.001$***

Hypothesis 1

A moderation analysis was conducted to examine if the relationship between the propensity to see demands as challenges and work engagement will be stronger for individuals who are more often in the paratelic (vs. telic) and conforming (vs. rebellious) states.

Assumptions

Normality of Residuals

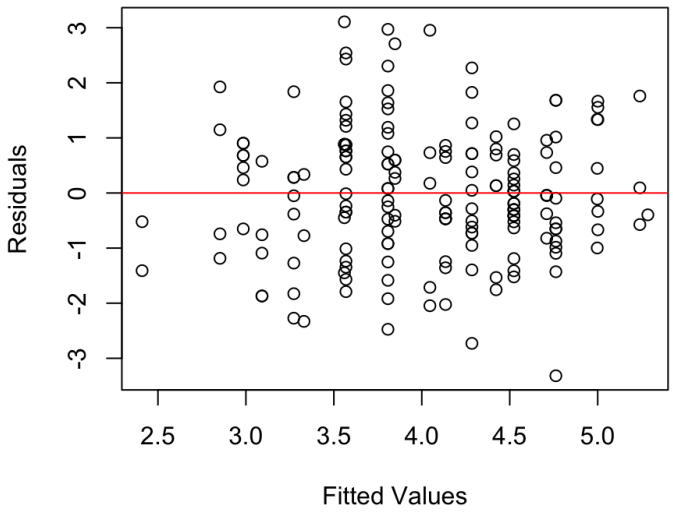
To evaluate this assumption, a Quantile-Quantile (Q-Q) plot was generated for the residuals obtained from the fitted model. The Q-Q plot is a graphical technique used to assess if the residuals from the model follow a normal distribution. The residuals were observed to align with the reference line closely, indicating that they conform well to a normal distribution, thus fulfilling one of the key assumptions underlying the linear modeling approach (Field, 2013).

Homoscedasticity

Homoscedasticity was evaluated by plotting the residuals against the predicted (fitted) values. The plot generated showed a random dispersion of residuals around the horizontal axis, with no apparent pattern or systematic structure. This uniform spread indicated that the variance of the residuals was consistent across the range of predicted values, affirming the assumption of homoscedasticity (Hayes, 2022). The plot of the residuals can be found in Figure 1.

Figure 1

Residuals vs. Fitted Values



Multicollinearity

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. VIF values between 5 and 10 indicate a moderate correlation, whereas VIF values larger than 10 indicate a sign of high multicollinearity (James et al., 2013). Demands VIF =1.49, paratelic-conforming VIF = 7.83, and the interaction term VIF = 8.40. The observed VIF values were all under 10.

Independence of Errors

A Durbin-Watson test was conducted on the regression model, yielding a D-W statistic of 1.96 with a corresponding *p*-value of 0.76, indicating no significant evidence of first-order autocorrelation in the residuals of the model (Field, 2013).

Hypothesis 1 Results

The hypothesis was tested using the PROCESS macro Model 1 (Hayes, 2022) using percentile bootstrap confidence intervals (5000). The analysis incorporated mean

centering and heteroscedasticity-consistent standard errors. The results are based on an α of .025. The results are presented in Table 3. The overall model was significant, F (1, 175) = 17.68, $p < .001$, $R^2 = 0.2152$.

Table 3

Regression Analysis of the Numerical Effects of Demands, Paratelic-Conforming, and Their Interaction on Work Engagement

Predictor	β	*p*	95% CI
Constant	4.0914	<.001	[3.8696, 4.3170]
Demands	0.2387	<.001	[0.1415, 0.3303]
Paratelic-Conforming	-0.1894	0.29	[-0.5451, 0.1663]
Interaction	0.0488	0.50	[-0.0939, 0.1916]

Interaction

The analysis revealed that the interaction between the perception of demands as challenges and the paratelic-conforming state on work engagement was not significant, B = 0.0488, 95% CI [-0.0914, 0.1845], p = 0.5. The results did not show a significant effect, and thus H1 was not supported.

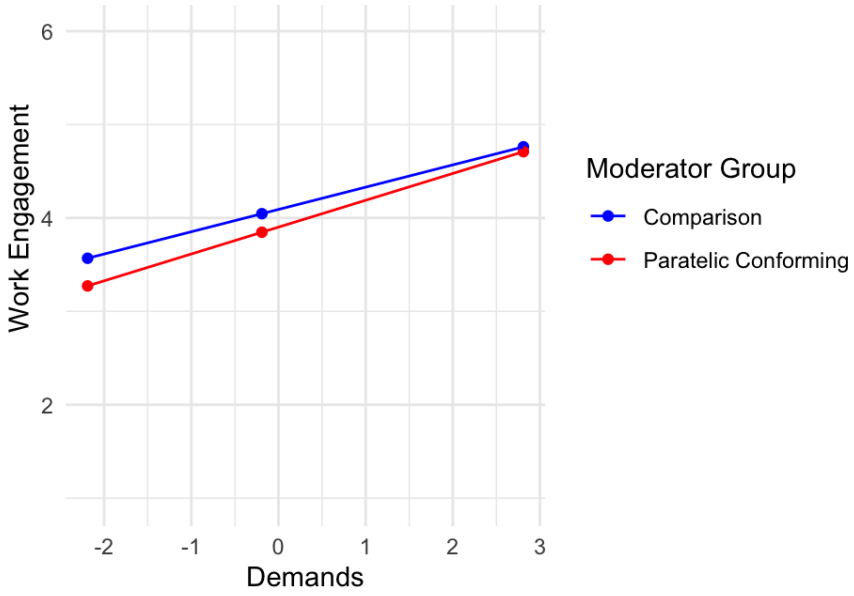
Direct Effects

After finding the interaction effect non-significant, I examined the two direct effects in the model: a) the propensity to view demands as challenges and b) the paratelic-conforming state on work engagement. The propensity to see demands as challenges was positively related to work engagement, B = 0.2387, 95% CI [0.1443, 0.3300], $p < 0.001$. The paratelic-conforming state showed a non-significant relationship with work engagement, B = -0.1894, 95% CI [-0.5352, 0.1765], p = 0.29. These results

are illustrated in Figure 2. In Figure 2, respondents in the paratelic and conforming states (n = 60) are represented by the red line. The blue line represents all other respondents (n = 119).

Figure 2

Conditional Effect of Demands on Work Engagement



The graph illustrates the propensity to see demands as challenges on work engagement at different levels of the moderator variable (paratelic-conforming versus telic-conforming, telic-rebellious, and paratelic-rebellious). The lines for the moderator groups do not cross or diverge, visually supporting the absence of a significant interaction effect.

Hypothesis 2

A moderation analysis was conducted to examine if the relationship between the propensity to see demands as challenges and work engagement will be stronger for individuals who are more often in the mastery (vs. sympathy) states.

Assumptions

Normality of Residuals

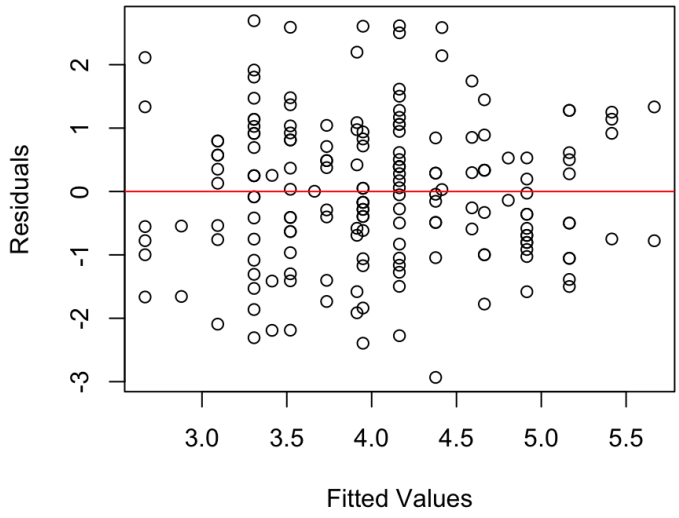
To evaluate this assumption, a Quantile-Quantile (Q-Q) plot was generated for the residuals obtained from the fitted model. The residuals were observed to align with the reference line, indicating that they conform well to a normal distribution, thus fulfilling one of the key assumptions underlying the linear modeling approach (Field, 2013).

Homoscedasticity

I evaluated homoscedasticity by plotting the residuals against the predicted (fitted) values. The plot, as seen in Figure 3, showed a fairly uniform spread, indicating that the variance of the residuals was consistent across the range of predicted values, affirming the assumption of homoscedasticity (Hayes, 2022).

Figure 3

Residuals vs. Fitted Values



Multicollinearity

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. VIF values between 5 and 10 indicate a moderate correlation, whereas VIF values larger than 10 indicate a sign of high multicollinearity (James et al., 2013). Demands (1.56) and mastery (8.95) had values less than 10. The interaction term had a VIF value of 10.24, suggesting an issue with multicollinearity. PROCESS aids in addressing issues of multicollinearity by employing techniques such as centering predictor variables, which can reduce multicollinearity among interaction terms, thereby enhancing the stability and interpretability of the regression coefficients (Hayes, 2022).

Independence of Errors

A Durbin-Watson test was conducted on the regression model, yielding a D-W statistic of 1.94 with a corresponding *p*-value of 0.748, indicating no significant evidence of first-order autocorrelation (Field, 2013).

Hypothesis 2 Results

The hypothesis was tested using the PROCESS macro Model 1 (Hayes, 2022) using percentile bootstrap confidence intervals (5000). The analysis incorporated mean centering for demands and robust standard errors. The results are based on an α of .025. The results are presented in Table 4. The overall model was significant, $F(1, 175) = 22.40$, $p < .001$, $R^2 = 0.2705$.

Table 4

Regression Analysis of the Numerical Effects of Demands, Mastery, and Their Interaction on Work Engagement

Predictor	β	*p*	95% CI
Constant	3.7756	<.001	[3.5740, 3.9771]
Demands	0.2141	<.001	[0.1281, 0.3001]
Mastery	0.6862	<.001	[0.2845, 1.0879]
Interaction	0.0363	0.676	[-0.1344, 0.2069]

Interaction

The analysis revealed that the interaction between the perception to view demands as challenges and the mastery state on work engagement was non-significant, $B = 0.0363$, 95% CI [-0.1344, 0.2069], $p = 0.68$. The results reveal an absence of a significant effect, and thus H2 was not supported.

Direct Effects

After finding the interaction effect non-significant, I examined the direct effects of (a) the propensity to view demands as challenges and (b) the mastery state on work engagement. Demands were positively related to work engagement, $B = 0.2141$, 95% CI [0.1281, 0.3001], $p < 0.001$. The mastery state also showed a significant positive relationship with work engagement, $B = 0.6862$, 95% CI [0.2845, 1.0879], $p < .001$. The results are illustrated in Figure 4. The red line represents respondents in the mastery state ($n = 64$), whereas the blue line represents respondents in the sympathy state ($n = 115$). The direct effect of the mastery state on work engagement is illustrated in Figure 5.

Figure 4

Conditional Effect of Demands on Work Engagement

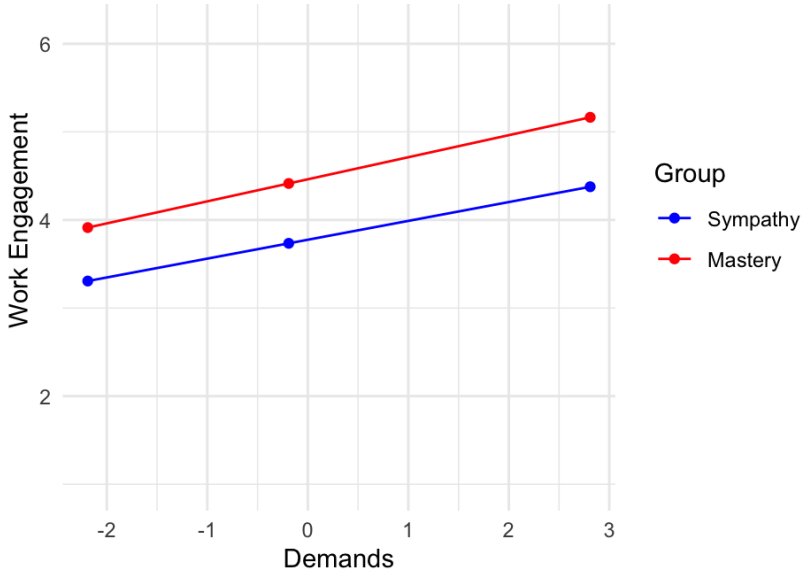


Figure 5

Direct Effect of Mastery on Work Engagement

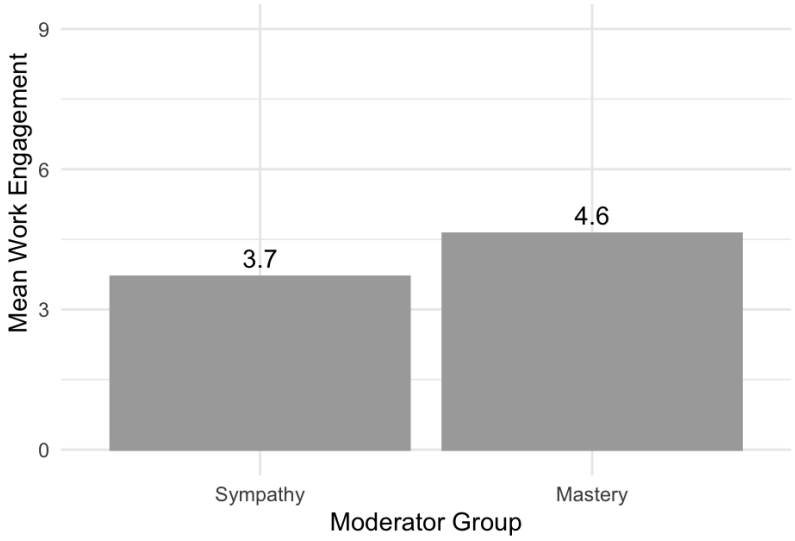


Figure 4 illustrates the relationship between the propensity to see demands as challenges on work engagement at different levels of the moderator variable (mastery vs. sympathy). The lines do not cross or diverge, visually reflecting the non-significant

interaction effect. The slopes of the lines reflect the significant positive direct effects of the propensity to see demands as challenges. As challenge perceptions increase, so does work engagement. Figure 5 illustrates the direct effect of the mastery state on work engagement, indicating that those in the mastery state exhibit higher levels of work engagement than those in the sympathy state. These visual representations underscore the importance of the direct effects of both demands and the mastery state on work engagement, suggesting that these factors independently contribute to the statistical relationship predicting engagement levels of individuals in the workplace.

Alternative Method Follow-Up Analysis

The results reported thus far were based on determining the moderator group in which respondents fell via a simple numeric difference between opposing AMSP state scores (standardized) (e.g., paratelic minus telic AMSP *z*-scores). This numerical calculation and categorization meant an individual was categorized based on the higher *z*-score of the pair, even if the magnitude of the difference was very small. This raised the question of how different is different when two *z*-scores are compared. Individuals with a large difference in *z*-score (e.g., +3.0 SD units) were classified the same as those with extremely small differences in *z*-scores (e.g., +.0000002 SD units). When considering the potential impact of the imprecision arising from numerical difference scores and before the results were analyzed, I decided to examine an alternate approach to determine moderator group membership. The alternative approach used the RTSM, which consists of three forced-choice items that directly classify an individual as being in one state over the other based on their stated choice.

I first compared the two approaches to determine if the states into which each respondent was classified by both groups were the same across methods. The hit rate (i.e., consistent classification across methods) was very low (see Tables 5 and 6). For the paratelic-conforming moderator group, only 9 individuals were consistently classified. For the mastery moderator group, only 27 individuals were classified consistently by both the numerical and RTSM methods. This represents a 5.03% and 15.08% hit rate, respectively. I elected to explore whether and how the findings reported above would change using the RTSM measure. Results are presented below, followed by post-hoc analyses that examine the pattern arising from the use of the different methods to determine membership in the moderator groups.

Table 5

Classification into Paratelic Conforming Moderator by Method

		RTSM		
		Other	Paratelic-Conforming	Total
AMSP	Other	95	24	119
	Paratelic-Conforming	51	**9**	60
	Total	145	34	179

Table 6

Classification into Mastery Moderator by Method

		RTSM		
		Other	Mastery	Total
AMSP	Other	68	47	115
	Mastery	37	**27**	64
	Total	105	74	179

RTSM Results

Summary statistics were calculated for the perception of demands as challenges, motivational states as determined by the RTSM, and work engagement. The percentage of respondents in each state can be seen in Table 7, and the bivariate correlations in Table 8.

Table 7

Percentage of Respondents Classified by RTSM

Paratelic	Telic	Conforming	Rebellious	Mastery	Symp
22%	78%	96%	4%	41%	58%

Table 8

Descriptive Statistics and Correlations for Study Variables Using RTSM

Variable	*M*	*SD*	Demands	Paratelic/ Telic	Conforming/ Rebellious	Mastery/ Sympathy	Work Engagement
1. Demands	6.19	2.40					
2. Paratelic/Telic		1.18	-0.05				
3. Rebellious/Conforming	-0.60	1.35	-0.03	0.24***			
4. Mastery/ Sympathy	0.12	1.23	-0.04	0.15*	-0.07		
5. Work Engagement	4.03	1.33	0.46***	-0.32***	-0.09	-0.08	

Note. All n= 179. $p \leq 0.05$*, $p \leq 0.01$**,$p \leq 0.001$***,

Hypothesis 1 RTSM Version

Assumptions

Normality of Residuals

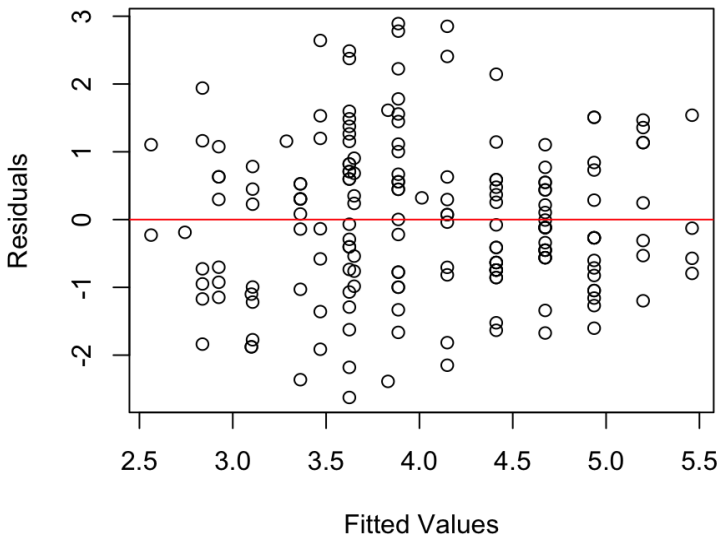
To evaluate this assumption, a quantile-quantile (Q-Q) plot was generated for the residuals obtained from the fitted model. The residuals were observed to align with the reference line, indicating that they conform well to a normal distribution, thus fulfilling one of the key assumptions underlying the linear modeling approach (Field, 2013).

Homoscedasticity

I evaluated homoscedasticity by plotting the residuals against the predicted values. The plot, as seen in Figure 6, showed a uniform spread, indicating that the variance of the residuals was consistent across the range of predicted values, affirming the assumption of homoscedasticity (Hayes, 2022).

Figure 6

Residuals vs. Fitted Values



Multicollinearity

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. VIF values between 5 and 10 indicate a moderate correlation, whereas VIF values larger than 10 indicate a sign of high multicollinearity (James et al., 2013). Demands had a VIF = 1.16, Mastery VIF = 9.10, and the interaction term VIF = 9.18. All variables had a VIF < 10, though the variables were centered in PROCESS to account for potential issues with multicollinearity.

Independence of Errors

A Durbin-Watson test was conducted on the regression model, yielding a D-W statistic of 1.96 with a corresponding *p*-value of 0.75, indicating no significant evidence of first-order autocorrelation (Field, 2013).

Hypothesis 1 RTSM Results

The hypothesis was tested using the PROCESS macro Model 1 (Hayes, 2022) using percentile bootstrap confidence intervals (5000). The analysis incorporated mean centering for demands and robust standard errors. The results are based on an α of .025. The results are presented in Table 9. The overall model was significant, $F(1, 175) = 26.93$, $p < 0.001$, $R^2 = 0.2780$.

Table 9

Regression Analysis of the Effects of Demands, Paratelic-Conforming, and Their Interaction on Work Engagement Using the RTSM

Predictor	β	*p*	95% CI
Constant	4.1959	<.001	[4.0083, 4.3854]
Demands	0.2623	<.001	[0.1823, 0.3383]
Paratelic-Conforming	-0.8759	<.001	[-1.3192, -0.4520]
Interaction	-0.0810	0.46	[-0.2806 0.1117]

Interaction

The analysis revealed that the interaction between the perception to view demands as challenges and the paratelic-conforming states on work engagement was non-significant, B = -0.0810, 95% CI [-0.2755, 0.1186], p = 0.46.

Direct Effects

After finding the interaction effect non-significant, I examined the two direct effects in the model: a) the propensity to view demands as challenges and b) the paratelic-conforming state on work engagement. Demands were positively related to work engagement, B = 0.2623, 95% CI [0.1813, 0.3403], p < 0.001. The paratelic-conforming state also showed a significant negative relationship with work engagement, B = -0.8759, 95% CI [-1.3243, -0.4392], p <0.001, suggesting that being in the paratelic-conforming state is associated with a decrease in work engagement. The results are illustrated in Figure 7. The direct effect of the paratelic conforming state on work engagement is illustrated in Figure 8.

Figure 7

Conditional Effect of Demands on Work Engagement

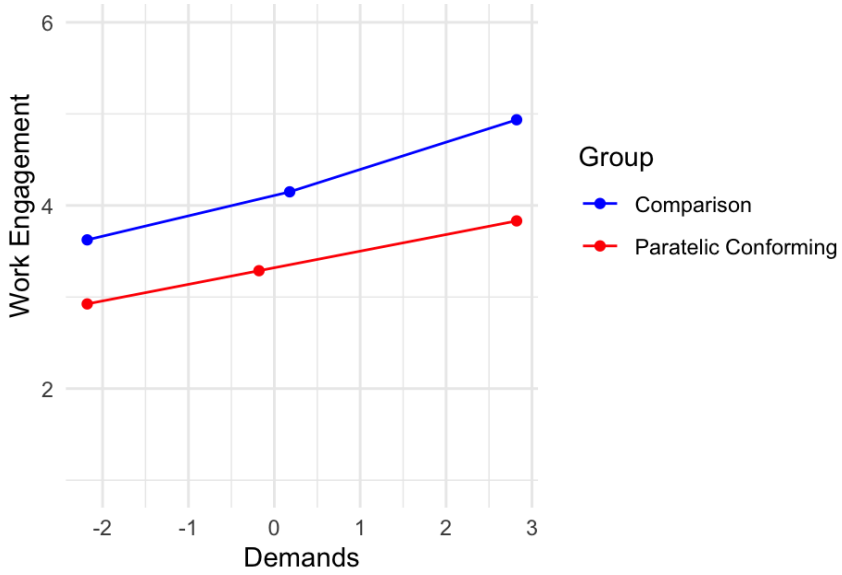


Figure 8

Effect of Paratelic-Conforming on Work Engagement

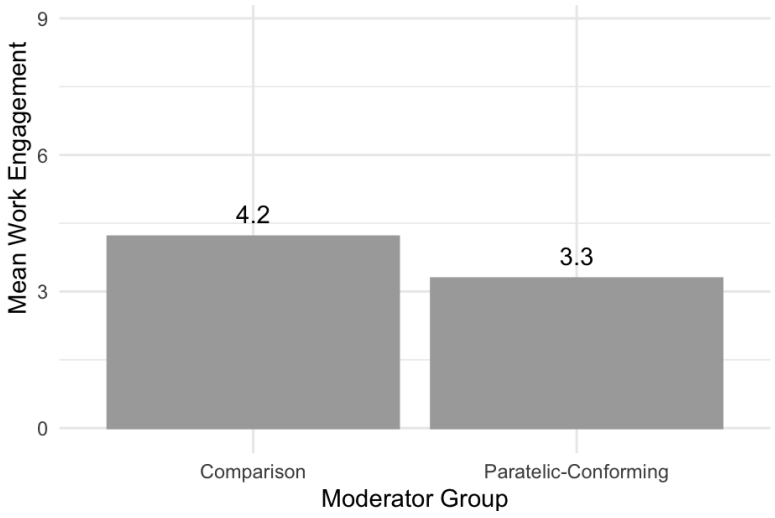


Figure 7 illustrates the relationship between the propensity to see demands as challenges on work engagement at different levels of the moderator variable. The lines of the graph do not cross or diverge, visually supporting the lack of a significant interaction

effect. The slopes of the lines suggest that, as the propensity to see demands as challenges increases, so does work engagement for both groups. Figure 8 illustrates the direct effect of the paratelic-conforming state on work engagement indicating that those in the paratelic-conforming state have a lower level of work engagement compared to the comparison group.

Hypothesis 2 RTSM Version

Assumptions

Normality of Residuals

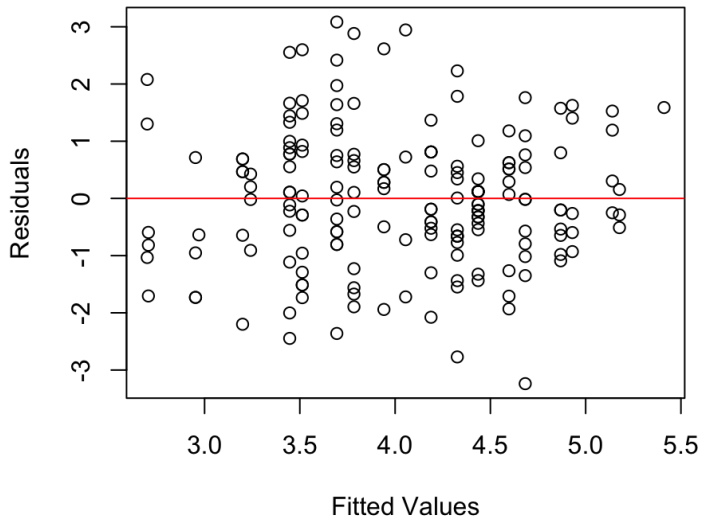
A Quantile-Quantile (Q-Q) plot was generated for the residuals obtained from the fitted model to evaluate this assumption. The residuals were observed to align with the reference line, indicating that they conform well to a normal distribution, thus fulfilling one of the key assumptions underlying the linear modeling approach (Field, 2013).

Homoscedasticity

Homoscedasticity was evaluated by plotting the residuals against the predicted values. The plot, seen in Figure 9, showed a fairly uniform spread, indicating that the variance of the residuals was consistent across the range of predicted values, affirming the assumption of homoscedasticity (Hayes, 2022).

Figure 9

Residuals vs. Fitted Values



Multicollinearity

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. VIF values between 5 and 10 indicate a moderate correlation, whereas VIF values larger than 10 indicate a sign of high multicollinearity (James et al., 2013). Demands VIF = 1.66, Mastery VIF = 7.75, and the interaction term VIF = 8.40. All variables had a VIF < 10.

Independence of Errors

A Durbin-Watson test was conducted on the regression model, yielding a D-W statistic of 1.95 with a corresponding *p*-value of 0.73, indicating no significant evidence of first-order autocorrelation (Field, 2013).

Hypothesis 2 RTSM Results

The hypothesis was tested using the PROCESS macro Model 1 (Hayes, 2022) using percentile bootstrap confidence intervals (5000). The analysis incorporated mean centering for demands and robust standard errors. The results are based on an α of .025. The results are presented in Table 10. The overall model was significant, $F(1, 175) = 15.71$, $p < .001$, $R^2 = 0.2135$.

Table 10

Regression Analysis of the Effects of Demands, Mastery, and Their Interaction on Work Engagement Using the RTSM

Predictor	β	*p*	95% CI
Constant	3.9829	<.001	[3.7704, 4.2044]
Demands	0.2472	<.001	[0.1489, 0.3311]
Mastery	0.1180	0.53	[-0.2417, 0.4642]
Interaction	0.0240	0.76	[-0.1230, 0.1784]

Interaction

The analysis revealed that the interaction between the propensity to view demands as challenges and the mastery state on work engagement was non-significant, $B = 0.0240$, 95% CI [-0.1249, 0.1766], $p = 0.18$.

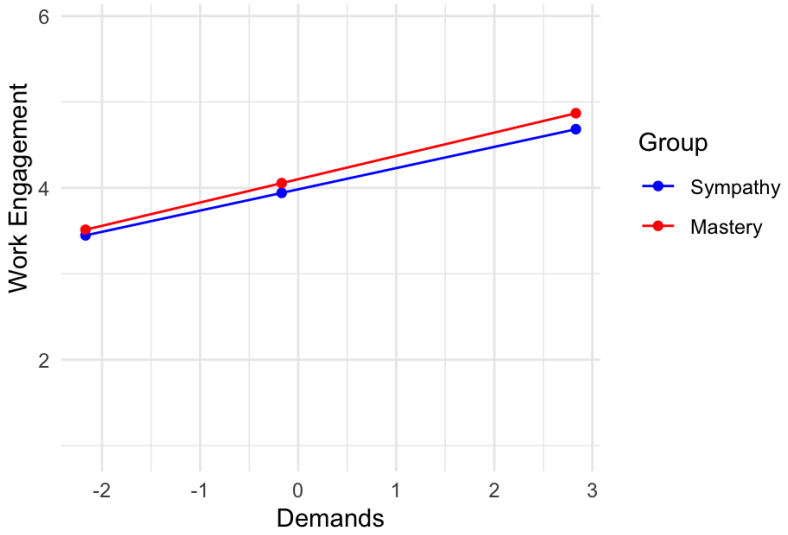
Direct Effects

After finding the interaction effect non-significant, I examined the direct effects of a) the propensity to view demands as challenges and b) the mastery state on work engagement. Demands were positively related to work engagement, $B = 0.2472$, 95% CI [0.1489, 0.3318], $p < 0.001$. The mastery state showed a non-significant relationship

with work engagement, *B* = 0.1180, 95% CI [-0.2490, 0.4713], *p* = 0.53. The results are illustrated in Figure 10.

Figure 10

Conditional Effect of Demands on Work Engagement



The graph illustrates the propensity to see demands as challenges on work engagement at different levels of the moderator variable. The graph supports the statistical analysis, indicating that the interaction between demands and the paratelic-conforming state was non-significant, as the lines do not cross or diverge. However, the graph illustrates a positive association between demands and work engagement across both groups, with the lines' slopes virtually identical.

Post-hoc Comparisons of Approaches to Classify Moderator Groups

The numerical approach (AMSP) and results derived from the RTSM demonstrated unexpectedly different results (see Table 11), prompting a deeper investigation into the potential sources of the discrepancies. I conducted a post-hoc

exploration to ascertain whether the measurement techniques could account for the differences observed across groups. To this end, I conducted two multivariate analyses of variance (MANOVAs) designed to evaluate the presence of significant disparities in the outcomes based on the method of measurement employed. This step helped shed light on the extent to which the methodology might influence the interpretation of the data.

Table 11

Comparison of Results by Moderation Classification Method

Hypothesis	AMSP	RTSM
Paratelic-Conforming Moderation	Non-significant	Non-significant
Demands (Direct effect)	**Significant**	**Significant**
Paratelic-Conforming State (Direct effect)	Non-significant	**Significant**
Mastery Interaction Moderation	Non-significant	Non-significant
Demands (Direct effect)	**Significant**	**Significant**
Mastery State (Direct effect)	**Significant**	Non-significant

Paratelic-Conforming

In the post-hoc analyses, the impact of different measurement methodologies on the classification of individuals according to their paratelic state was explored. A MANOVA was conducted to determine whether significant differences exist among groups classified by the different measurement methods. The grouping variable for this analysis categorized individuals into four distinct groups based on their classification outcome: (1) individuals not classified as paratelic-conforming by either measure (neither measure) (n=95), (2) individuals classified as paratelic-conforming by the RTSM only (n=24), (3) individuals classified as paratelic-conforming by the AMSP only (n=51), and (4) individuals classified as paratelic-conforming by both the RTSM and AMSP (n=9).

The dependent variables considered in this analysis include the paratelic *z*-score, conforming *z*-score, perceived demands, and work engagement.

Assumptions

Preliminary analyses were conducted to ensure that the data met the necessary assumptions for MANOVA. Q-Q plots were examined to check for normality, and correlations were examined to check for multicollinearity (Field, 2013). The tests of multivariate normality and multicollinearity were satisfactory (Field, 2013). However, Box's Test of Equality of Covariance Matrices yielded significant results, indicating that the assumption of equal covariance matrices across the groups was violated. Given the observed violation of the homogeneity of variance-covariance matrices assumption, the analysis primarily focused on Pillai's Trace as the test statistic. This decision is grounded in the literature suggesting Pillai's Trace offers superior robustness against such assumption violations compared to other MANOVA test statistics (Field, 2013). Pillai's Trace is a particularly prudent choice under the present conditions, especially considering the unequal sample sizes across groups in the study. This approach ensures that the findings remain reliable and interpretable despite the unmet assumption of equal covariance matrices.

Paratelic Conforming MANOVA Results

Utilizing Pillai's Trace, the analysis revealed a significant multivariate effect of the paratelic-conforming independent variable (with four levels) on the combined dependent variables. This effect was statistically significant, Pillai's Trace = 0.024, $F(12, 166) = 1.980$, $p = 0.024$, suggesting that variations in how individuals were classified into the paratelic-conforming states were associated with significant differences

across the four measured dependent variables within the participant pool of 179 individuals. Following the significant findings from the MANOVA, I explored mean differences between groups (as defined by the paratelic-conforming independent variable) on the dependent variables. Bonferroni post hoc tests were undertaken to identify and interpret the pairwise differences between groups while controlling for the type I error rate across multiple comparisons. Based on the Bonferroni post hoc tests, the only significant difference was for the paratelic *z*-score dependent variable between Group 2 (RTSM-only) and Group 3 (AMSP-only) only. The mean difference was -0.907 (p = 0.008), indicating those in the RTSM-only group were significantly less paratelic than the AMSP-only group. One may then infer that when the RTSM was used to define the moderator groups in the present study, the focal group included respondents who were lower on the paratelic subscale of the AMSP. This result also raises important considerations for future research and practice, suggesting that the choice between RTSM and AMSP may significantly influence who is identified as being in the paratelic state.

Mastery

A second MANOVA was conducted to examine if there were significant differences in how individuals were categorized based on the measurement method used to classify them according to their mastery state. The classification involves four distinct groups, delineated as follows: (1) individuals not identified as not being in the mastery state by either measurement method (n=68), (2) those identified by the RTSM only (n=47), (3) those identified by the AMSP only (n=37), and (4) those recognized by both RTSM and AMSP as experiencing the mastery state (n=27). The dependent variables that

were examined in this analysis encompass mastery *z*-score, perceived demands, and work engagement.

Assumptions

Preliminary analyses were conducted to ensure that the data met the necessary assumptions for MANOVA. Q-Q plots were examined for normality, correlations were examined to check for multicollinearity, and Box's M Test was examined for homogeneity of variance-covariance matrices (Field, 2013). All tests were all satisfactory, allowing for the proceeding with the MANOVA.

Mastery MANOVA Results

Utilizing Pillai's Trace, the analysis revealed a significant multivariate effect of the mastery variable (with four levels) on the combined dependent variables. This effect was statistically significant, Pillai's Trace = 0.265, $F(9, 525) = 5.66$, $p < 0.001$, suggesting that variations in how individuals are classified as being in the mastery state were associated with significant differences across the three measured dependent variables within the participant pool of 179 individuals. Following the significant findings from the MANOVA, I explored mean differences between groups (as defined by the mastery independent variable) on the dependent variables. Bonferroni post hoc tests were undertaken to identify and interpret the pairwise differences between groups while controlling for the type I error rate across multiple comparisons. Based on the Bonferroni post hoc tests, there were significant differences for the mastery *z*-score dependent variable and the work engagement dependent variable. The significant differences are discussed below.

Mastery z-score

Significant differences were observed in the mastery *z*-scores among a number of the groups. Specifically, a significant difference was found between Group 1 (neither measure) and Group 3 (AMSP only), with a mean difference of -1.264 ($p < 0.001$), indicating that individuals identified through the AMSP method alone exhibited significantly higher mastery *z*-scores compared to those not identified by either method. Another difference was between Group 1 (neither measure) and Group 4 (Both RTSM and AMSP), where the mean difference was -1.731($p < 0.001$), suggesting that individuals identified by both methods had significantly higher mastery *z*-scores than those not identified by either method. A third difference was found between Group 2 (RTSM only) and Group 3 (AMSP only), where the mean difference was -1.222 ($p < 0.001$), suggesting that individuals identified by the RTSM had significantly lower mastery *z*-scores than those identified by the AMSP. Finally, differences were observed between Group 2 and Group 4, where the mean difference was -1.69 ($p < 0.001$), suggesting that individuals identified by the RTSM had significantly lower mastery *z*-scores than those identified by both the RTSM and the AMSP. One may infer that when an individual is classified as mastery by the AMSP only or when there is agreement between the AMSP and RTSM, the focal group includes respondents who are higher on the mastery subscale of the AMSP. This may help explain why the mastery state was significant when the numerical AMSP classification method was used versus the RTSM classification method.

Work Engagement

Significant differences emerged as well for the dependent variable work engagement. A significant increase in work engagement was observed for Group 4 (Both RTSM and AMSP) compared to Group 1 (neither measure), with a mean difference of 1.214 ($p < 0.001$), highlighting that individuals identified by both measurement methods reported higher work engagement levels. Similarly, Group 4 showed significantly higher work engagement than Group 2 (RTSM only), with a mean difference of 0.922 ($p = 0.017$), suggesting that individuals identified by both methods had significantly higher work engagement scores than those identified by only the RTSM. Finally, a significant increase in reported work engagement was observed for Group 3 (AMSP only) compared to Group 1, with a mean difference of 0.914 ($p = 0.003$). These findings underscore the significant impact of measurement methods on the classification of individuals into mastery states, revealing that the method of identification (RTSM, AMSP, or both) is associated with discernible differences in mastery *z*-scores and work engagement levels. When there is agreement in how a respondent was classified across both the RTSM and AMSP methods, this was associated with higher mastery *z*-scores and higher work engagement. These results contribute valuable insights into the implications of different measurement methodologies in reversal theory research.

Summary from Post-Hoc Analyses of Classification Approaches for the Moderator

When moderator groups formed using the two approaches (AMSP and RTSM) were compared, significant differences were observed.

For the paratelic-conforming states moderator group, a significant difference in paratelic *z*-scores was found between individuals classified by the RTSM only and those

by the AMSP only. Those classified using the RTSM-only method were significantly lower on the paratelic subscale of the AMSP.

For the mastery moderator group, the analysis revealed several significant differences between groups on both mastery *z*-scores and work engagement levels. Individuals identified as experiencing the mastery state by both methods or the AMSP only were significantly higher on the mastery subscale of the AMSP. Stated differently, those classified as in the mastery moderator group based on the RTSM only scored significantly lower on the AMSP mastery subscale. Individuals classified by both methods also exhibited higher work engagement levels compared to groups based on either method alone.

CHAPTER 4

DISCUSSION

Implications for Theory

For years, researchers have sought to understand what work engagement is and what factors contribute to people engaging in their work. Work engagement is a motivational construct characterized by overall energy and identification with one's work (Kahn, 1990; Schaufeli et al., 2002). The leading explanatory theory for work engagement is the job demands-resources model (Demerouti et al., 2001). In this model, resources are positively related to work engagement, and demands can impact work engagement positively and negatively (Podsakoff et al., 2023). When an individual perceives a demand to be a hindrance, it is associated with reduced work engagement; however, if an individual perceives a demand to be a challenge, it is associated with increased work engagement (Al Hajj et al., 2023; Van den Broeck et al., 2010). This model, while valuable, fails to account for the momentary fluctuations and motivational components of work engagement (Bakker & Oerlemans, 2019; Xanthopoulou et al., 2008). This study aimed to contribute to the literature by examining the influence of motivational states on the relationship between how an individual perceives their work demands and work engagement.

The study's results failed to support the hypothesis that certain motivational states moderate the relationship between the perception of demands and work engagement. Hypothesis 1, examining the influence of the paratelic-conforming state, failed to receive support (p = 0.50), and the direct effect of the paratelic-conforming state was also non-significant (p = 0.29). When the relationship using the RTSM was examined, the results were slightly different. The interaction was still non-significant (p = 0.46); however, the direct effect of the paratelic-conforming state exhibited a statistically significant negative relationship (B = -0.88, p < 0.001).

On its surface, the negative relationship between the paratelic-conforming state and work engagement may be surprising or difficult to explain. However, if one takes into account the experience of motivation and not just the motivation itself, the results may be interpretable. Individuals in the paratelic-conforming state who are experiencing this state as boredom are likely not to become engaged in their work. Incorporating measures of emotion (such as boredom or pride) from which one might infer motivational state (as suggested in reversal theory) appears a promising direction for future research. Perhaps not surprisingly, the analyses replicated previous results showing the direct effect of demands and work engagement (p <0.001).

The post-hoc analyses of the role of how moderator groups were formed and classified attempted to shed light on the study's contradictory results. Those classified as paratelic-conforming by the RTSM-only were significantly less paratelic than those classified using the AMSP-only (p = 0.008), which may also help explain the observed negative relationship with work engagement. The RTSM is a forced-choice scale where the individual must plant their flag on which state they are experiencing. One might

expect those classified using this method to have stronger scores in that state. While I cannot yet explain this difference, it opens the door to future research examining the methodology in which individuals are classified as being in one state or the other.

A similar pattern was observed for Hypothesis 2. The results failed to support the notion that the relationship between perceiving demands as challenges and work engagement is strengthened by the individual in the mastery state ($p = 0.676$). Using the AMSP *z*-scores, the direct effects of the relationship between demands ($p < 0.001$) and the mastery state ($p < 0.001$) with work engagement were supported. This suggests that seeing demands as challenges and experiencing the mastery state is related to higher work engagement. While the interaction was not supported, this contributes to the literature by supporting the theoretical relationship between motivation and work engagement. However, the RTSM results failed to find a significant interaction effect ($p = 0.76$) or direct effect of mastery on work engagement ($p = 0.53$). Examining the post-hoc analyses, I found significant differences between groups on their mastery score and work engagement. These follow-up, exploratory results suggest that those classified as mastery using both methods or the AMSP-only had significantly higher mastery scores. Similarly, those who were classified as mastery by both methods showed significantly higher work engagement than those who were not classified as mastery and those who were classified using the RTSM-only. The findings suggest it could be advantageous to categorize individuals as mastery-oriented or sympathy-oriented based on their classification by both scales as opposed to one or the other, which could lead to a more precise measurement of motivational states.

These exploratory results provide additional evidence that while the brief, forced-choice state measure and the more traditional AMSP instrument measure similarly, they are not identical. Prior research has indicated that the correlation between the two instruments is statistically significant but low (Taylor et al., 2022). Although the analysis does not allow a conclusion on which method is more valid, the method used to classify individuals into states may impact classification of groups.

Despite the study's failure to support the hypothesized moderating effects of motivational states on the relationship between perceived demands and work engagement, the findings replicate previous research suggesting how individual perceptions of work demands—either hindrances or challenges—affect engagement levels. This research scratches the surface of the complexity of motivational states and their influence on work engagement. Although the direct effects of demand perceptions and motivational states on work engagement were mixed, the study underscores the significance of motivation states in the dynamics of work engagement, opening avenues for future researchers to explore these relationships further.

Limitations and Future Research

While contributing valuable insights into the relationship between demands, motivational states, and work engagement, the study presented is subject to several limitations that warrant consideration. First and foremost, the non-experimental nature of this research inhibits the ability to ascertain the directionality of the observed effects. Without experimental manipulation, it cannot be definitively stated whether demands and motivational states influence work engagement, whether the relationship operates in the opposite direction, or even if a bidirectional relationship exists (Shadish et al., 2002).

Another notable limitation is relying on a singular measurement point to assess state motivation and work engagement. This approach captures a temporal snapshot, which may not accurately reflect the dynamic and fluctuating nature of motivational states and work engagement over time. Consequently, the findings might only partially capture the variability in these constructs that could occur in different contexts or under varying conditions. The study also utilized an online paid sample, introducing potential issues related to sample representativeness and data quality. Participants from such samples may have different motivations for participation, including a higher propensity for engagement in multiple studies for compensation, which could affect the generalizability of the findings to the broader population. Furthermore, the study employed two scales for measuring motivational states: The Apter Motivation Style Profile (AMSP; Apter et al., 1998) and the Reversal Theory State Measure (RTSM; Desselles et al., 2014). The results derived from the AMSP demonstrated enhanced statistical power for the paratelic-conforming state due to a larger number of individuals categorized within the focal group. However, this comes at the cost of less precise definitions of each state. Conversely, the RTSM offers clearer definitions of motivational states, facilitating a more straightforward classification of participants. However, this clarity might be achieved at the expense of statistical power as fewer participants were in the paratelic-conforming focal group. On the other hand, the RTSM had more power and precise definitions when examining the mastery state. This dichotomy between the two measurement tools underscores the complexity of accurately assessing motivational states and their impact on work engagement. A final limitation to note is that unplanned post-hoc analyses may suggest statistically significant relationships, yet these may simply be

coincidental outcomes (Ross & Bibler Zaidi, 2019). In light of this, the post-hoc analyses were approached with an exploratory mindset and the over-interpretation of our findings is cautioned against.

In light of these limitations, future research should consider employing experimental designs to establish causality. One such example could include inducing motivational state. Studies with multiple measurement points to capture the temporal dynamics of motivation and work engagement, and diverse sampling methods to enhance generalizability. Additionally, examining the experience of motivation and incorporating emotion is a promising area of future research. Another avenue for future research is to examine the three subscales of work engagement instead of work engagement as a whole. The current research chose to move forward with work engagement as a whole as research has indicated that the three subscales may not be distinct dimensions (De Bruin & Henn, 2013). Further exploring the comparative effectiveness and limitations of different scales for measuring motivational states could provide deeper insights into the nuanced relationship between motivation and work engagement.

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APPENDIX A

HUMAN USE APPROVAL LETTER

LOUISIANA TECH UNIVERSITY

Office of Research and Partnerships

MEMORANDUM

TO PI (s): Dr. Mitzi Desselles, Lauren Dinnat

FROM: Dr. Walter Buboltz, Professor
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SUBJECT: **Human Use Committee - Review DECISION**

DATE: January 26, 2024

In order to facilitate your project, an EXPEDITED REVIEW has been completed for your proposed study:

HUC No.: **IRB 24-033**

TITLE: **Demands at Work: The Moderating Influence of Motivational Experience on Employee Work Engagement**

HUC DECISION: **APPROVED**

The proposed study's procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined. Projects should be renewed annually. ***This approval was finalized on January 26, 2024, and this project will need to receive a continuation review by the IRB if the project continues beyond January 26, 2025,*** **ANY CHANGES** to your protocol procedures, including minor changes, should be reported immediately to the IRB for approval before implementation. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of Sponsored Projects.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research and Partnerships or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

Thank you for submitting your Human Use Proposal to Louisiana Tech's Institutional Review Board.