

How Energy Thrives:

The Relationship Between Physical and Psychological Variables and Overall Energy

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### Abstract

In order to achieve optimal functioning, it is vital for individuals to understand how certain variables, both physical and psychological, impact overall energy. Proper energy management affects individuals in all aspects of life. Through understanding how utilize energy-promoting habits and practices, one can work to achieve flourishing in daily life. Through a comprehensive literature review, I explore important findings pertaining to the current research and dialogue around physical energy maintenance practices, followed by an overview of theories and conversation surrounding psychological practices that contribute to overall vitality. A statistical analysis using data gathered by Dr. Gretchen Spreitzer and Dr. Jim Loehr is provided to test the relationship between different variables and perceived energy and thriving. Data in this study was collected through a survey, in which 342 Ross MBA students self-reported the degree to which they identified with various prompts and character traits. In the statistical analysis, I explore the relationship between these variables in greater depth. The study highlights which physical and psychological variables have a statistically significant correlation with energy and thriving at  $p \leq .05$ , and which of the statistically significant variables are most strongly correlated with individuals' energy and thriving.

## INTRODUCTION

### **A Different Kind of Energy Crisis**

The demand for energy in all aspects of life is at a premium. At any given time, there are constantly a multitude of sources relentlessly demanding our attention: work, family, chores, extra projects, classes, plans, social media. People feel busier than ever. There are a variety of explanations for this phenomenon. For one, technology, intended to make our lives simpler, is actually having a perverse effect. New technologies expedite tasks, so individuals are able to do more; consequently, our lives have gotten busier (Wolff, 2011). Another explanation for an increase in perceived busy-ness is that as economies have grown, incomes have grown as well, making time literally more valuable, and adding pressure to accomplish more (Burkeman, 2016). A third commentary suggests the “workaholic” lifestyle has become a status symbol of the modern era (Pinsker, 2017). Experiments by Dr. Silvia Bellezza (2016) reveal that today, bragging or complaining about being busy indicates “desirable human capital characteristics,” (p. 119) that signal an individual’s value in the labor market. In previous centuries, abstention from labor indicated higher status. Today, this is not longer the case; seeming busy has become a prominent status marker (Bellezza, 2016).

Whether people feel busy in response to technology, economic pressure, or status pursuit, the same bottom line holds true: individuals are being demanded to exert an incredible amount of energy everyday in order to keep up in the modern-day workforce. Additionally, since we know humans’ perceptions are ultimately their realities, then whether a human is actually being tasked with more or just feels that they have more to do, the end result will ultimately be a stress response in either scenario (Bellezza, 2016). Both “real” busyness and perceived busyness produce legitimate stress, which has psychological and physiological consequences.

The last 50 years have seen more technological and societal change than any other time in history. New innovations interfere with our ability to meet life's challenges by taxing our attention, strength, and stamina. The result is what the Johnson & Johnson Human Performance Institute calls the "Human Energy Crisis," which leads to fatigue, disengagement, judgment errors, stress, and burnout (Mason et al., 2018). Increased demands and pressures cause an increase in stress, which leads to a multitude of undesirable psychological and physiological responses that impede on one's ability to stay energized and maximize functioning in daily life.

Working long hours without managing one's energy can take a mental, physical, and emotional toll, and can result in burnout and health sacrifices. Studies validate that "the U.S. -- and the world at large -- is in the midst of an employee engagement crisis," (Gallup, 2019). In 2016, nearly 70% of American employees were not fully engaged at work, and further, a majority of employees, 51%, report they haven't been engaged for quite some time (Gallup, 2019). Executive life coaching agencies consistently report their clients feel that, "they're pushing themselves harder than ever to keep up and increasingly feel they are at a breaking point" (Schwartz & McCarthy, 2007).

Many members of the workforce spend more time at work than they do with their families (Scheffey, 2007). Given that the average worker spends over half of their waking hours, over 13 full years, or 115,704 hours at work, by the time workers leave their job, they often feel depleted with little energy left to contribute to their home lives, friends, and families (Doyle, 2018) (Campbell, 2017) (Loehr & Schwartz, 2003). The lack of energy causes those individuals to feel dissatisfied in life, creating a positive feedback loop of low energy, frustration, negativity, and lack of motivation, which cycles over and over. Exhaustion can lead to burnout, and in some extreme cases, death.

### **The Importance of Energy and Thriving**

Energy management is fundamental to humans' abilities to function and meet the demands of everyday life. "Energy, not time, is the fundamental currency of high performance" (Loehr & Schwartz, 2003, p. 5). The concept of time introduces a predicament, in which those with many obligations must contemplate where to allocate their time, since time is a finite resource (Schwartz & McCarthy, 2007). In contrast, energy is not finite, and a growing body of research suggests that individuals' energy is indeed renewable; it can be replenished, throughout the day, on a daily basis (Chopra, 2018). Humans have the power to mobilize personal resources that enable us to maintain, and even renew our energy sources. Increasing energy can positively enhance life in a multitude of ways. In the professional world, "[a leader's] energy can determine the success of a meeting, a workday, or even your overall company" (Scheffey, 2007). It's vital for individuals to understand the importance of energy management, in order to maximize attentiveness, sustain energy throughout the day, and generally improve one's life through energy management.

To increase productivity, the most effective approach is to increase the quality of work, not quantity of time working. "We think, mistakenly, that success is the result of the amount of time we put in at work, instead of the quality of time we put in" (Huffington, 2014). For many, working hours could not possibly increase without compromising other vital components of life, like time spent eating and sleeping. Eventually, the law of diminishing marginal returns kicks in and inputting more work hours yields diminishing results in output. In these instances of overwork, productivity per hour worked decreases, and additional hours spent working actually deplete individuals' energy reserves - impeding on workers' abilities to thrive. Thus, it's imperative that individuals who want to live their best lives and stay engaged, productive, and

fulfilled understand the vitality of energy management and how to prioritize and replenish their energy resources. Through understanding the processes by which energy can be maintained and increased, individuals can unlock strategies for professional enhancement and general increased quality of life (Mason et al., 2018).

Thriving is critical to energetic engagement. To really excel in all dimensions of life, it's vital that human beings don't simply exist, but that they fully thrive. A thriving workforce is one where individuals experience vitality and learning, where, "employees are not just satisfied and productive but also engaged in creating the future—the company's and their own" (Spreitzer & Porath, 2012). Creating opportunities for sustained positive energy and thriving on a regular basis allows individuals to grow beyond their current capabilities (Fredrickson, 2001). In fact, employees who report descriptions of "thriving" demonstrate 16% higher overall job performance ratings, 125% less burnout than their colleagues, 46% more job satisfaction, and 32% more commitment to their organizations (Spreitzer & Porath, 2012). Thus, a workforce that seeks to maximize employee thriving is astute from both a well-being and economic perspective. Individuals who thrive remain energized long-term, live more engaged lives, and contribute to productivity and growth.

### **My Approach**

Energy is frequently referred to as existing in four places: the body, the mind, the emotions, and the spirit. In order to reach optimal performance, one must optimize all four sources (Loehr & Schwartz, 2003). In my studies, I sought to determine which aspect of these constructs have the strongest relationship with overall perceived energy and thriving. Most of the literature I reviewed in the early stages of my thesis supported my hypotheses that physical practices: rest, nutrition, and exercise were strongly related to individuals' energy. Therefore, a

substantial portion of the literature review is focused on these elements. However, as I conducted further research, I found that psychological factors: positive emotions, feelings, flourishing, resilience, and mindfulness also have a notable relationship with one's perception of energy. Thus, the literature review expands to include a brief overview of these subjects in addition to the physical components.

Since perception of energy is both a physical and mental/emotional construct, both physical and psychological variables can be understood as impacting one's perception of their energy. As I will discuss throughout this paper, energy comes from a number of different sources, both physical and psychological. An overall energized life is best supported by positive practices in both areas. Through a comprehensive literature review, I outline various research and information surrounding practices that impact energy. A statistical analysis using data gathered by Dr. Gretchen Spreitzer and Jim Loehr is then provided in order to demonstrate which variables studied have a statistically significant relationship with energy and thriving, and how strongly correlated those variables are.

## LITERATURE REVIEW

### PHYSICAL ENERGY SOURCES

Humans are oscillatory beings, and our lives are run by a number of self-regulating, rhythmic systems (Hirshowitz et al., 2015) (Loehr & Schwartz, 2003). An important element of studying physical energy considers chronobiology, a study of humans' various biological rhythms and their relationships with time (Buzzard, 2017). By understanding the importance of these various systems and how they work, namely rest, nutrition, and exercise, individuals develop personal strategies to work with these cycles to strengthen periods of recovery and maximize energetic engagement.

#### **Sleep: Overview**

In "The Power of Full Engagement," Jim Loehr and Tony Schwartz explain that "the most fundamental source of energy is physical," and that sleep serves as the main source of fuel for the body (Loehr & Schwartz, 2003). Getting sleep is a basic human need, one of the most important practices in recovery, and a key component in living a meaningful, purposeful life (Strecher, 2016). Dr. Deepak Chopra suggests that the quality of one's energy is most strongly impacted by good sleep; lack of sleep is one of the greatest energy exhausters. However, individuals often underestimate the true value of getting enough sleep, and the vitality of positive sleep practices is often ignored (Chopra, 2018). Between 7-19% of U.S. adults report not getting enough sleep or rest every day ("Sleep", 2019). Lack of sleep, known as sleep deficiency, can lead to a plethora of problems, including physical and mental ailments, loss of productivity, and even increased risk of death ("Sleep Deprivation and Deficiency", 2019). If someone doesn't get enough sleep, sleeps at the wrong times, or throws off their circadian rhythm, they may not wake up feeling alert and refreshed ("Circadian Rhythm", 2019). "Research shows that getting enough

quality sleep at the right times is vital for mental health, physical health, quality of life, and safety,” (“Sleep Deprivation and Deficiency”, 2019). Questions of how much sleep is enough, when to sleep to feel most rested, and the value of a consistent bedtime are growing bodies of research, and are important to our expanding understanding of this topic. While a large amount of the literature on sleep remains varied, the universal takeaway is that lifestyle factors can affect individuals’ quality and quantity of sleep (“How Much Sleep”, 2015).

### **Sleep: Consistent Sleep Times**

Going to sleep and waking up at a consistent time each day helps to maintain the body’s circadian rhythm, allowing the body to regulate all functions, consistently, on a daily basis. The human body is regulated by a 24-hour internal clock called a “circadian rhythm,” also known as the sleep/wake cycle (“Circadian Rhythm”, 2019). Sleep is the master rhythm; one’s circadian rhythm is affected most strongly by exposure to light, which sends signals to the hypothalamus, telling the brain to produce more or less melatonin, affecting how drowsy one feels; the body produces cortisol when exposed to light, telling the body to wake up (Hirshowitz et al., 2015) (“Circadian Rhythms”, 2017) (“How Much Sleep”, 2015) (Chopra, 2018). These hormones influence “sleep-wake cycles, hormone release, eating habits and digestion, body temperature, and other important bodily functions,” (“Circadian Rhythms”, 2017). These regulatory process affect how the body regulates physical, mental, and behavioral changes throughout the day (“Circadian Rhythms”, 2017).

Disruptions to one’s circadian rhythm can be harmful and have a variety of ill-effects. Certain factors can disrupt one’s circadian rhythm, making individuals feel drowsy and less attentive. Irregular rhythms can be caused by a variety of factors: artificial light, inconsistent sleep times, jet lag, stimulants like caffeine, alarm clocks and other noises, illness and injury,

shift work, and change in activity. Disrupted sleep patterns are linked to deleterious results, such as low daily energy, sleep disorders, depression, bipolar disorder, obesity, diabetes, seasonal affective disorder, and poor attention (Hirshkowitz et al., 2015) (“Circadian Rhythm”, 2017) (Hirshkowitz et al., 2015) (Seaborg, 2012). Furthermore, prioritizing regular sleep/wake times each day is valuable in maintaining the body’s circadian rhythm and promoting energy in all dimensions of one’s life.

While individuals sleep, their brains enter into active patterns of activity, another regulatory cycle. The brain goes through sleep cycles which last between 1-2 hours, 90 minutes on average (Gordon, 2013). It isn’t until the third and fourth stages of sleep that the body goes into repair and growth mode, a deep sleep. In the final REM stage of sleep, the brain consolidates information, and stores long-term memories. On average, adults have 5-6 REM cycles per night (Gordon, 2013). Disruptions to these cycles can prohibit individuals from reaching deep sleep, which can adversely affect memory pathways, immune function, body and muscle reparation, and restfulness (“Sleep Deprivation and Deficiency”, 2019). In working with our circadian rhythms and sleeping at regular times each night, individuals increase their chances of getting quality sleep each night.

### **Sleep: How Much to Sleep**

Sleep deficiency has a strong negative effect on performance and individuals’ levels of engagement at work and at home (Loehr & Schwartz, 2013). However, literature on the subject of the optimal amount of sleep remains a bit varied. New research indicates that sleep needs differ from person to person, more than originally thought (Hirshkowitz et al., 2015) (“How Much Sleep”, 2015).

The most commonly accepted sleep recommendation comes from The National Sleep Foundation (2015), which recently updated its sleep suggestions, specifying new age group categories. In “How Much Sleep Do We Really Need: Revisited,” The NSF (2015) releases results of a two-year world class study, updating sleep guidelines and national recommendations for how much sleep is needed at each age. To produce the study, eighteen leading researchers and scientists came together to form the NSF expert panel, comprised entirely of members in national leading health organizations (Hirshkowitz et al., 2015)<sup>1</sup>. To gather the research, the team reviewed 300 current publications and eventually voted on appropriate sleep amounts, based on their systematic review. The team’s consensus was that the data was inconclusive: “research cannot pinpoint an exact amount of sleep needed by people at different ages,” (Hirshkowitz et al. 2015). However, the NSF did create an updated chart which includes sleep ranges, and “rule-of-thumb” recommendations that experts agree on (“How Much Sleep”, 2015). In the updated recommendation, panelists introduced new age categories, breaking “adults” into three age groups: “younger adults” - 18-25, “adults” - 26-64, and “older adults” - 65+. They concluded that the recommended range for both younger adults and adults is 7-9 hours, and the recommendation for older adults is 7-8 hours (“How Much Sleep”, 2015) (Hirshkowitz et al. 2015).

While the NSF’s sleep guidelines are the most widely-held recommendations, some individual researchers offer more specific suggestions, based on their studies. Daniel Kripke (2011) conducted a sleep study which indicated getting approximately 7 hours of sleep is ideal. After analyzing decades of mixed research regarding adequate sleep times, Kripke (2011) sought to determine the appropriate amount of sleep for decreased chances of mortality. His findings

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<sup>1</sup> The panelists included six sleep specialists and representatives from leading organizations including the American Academy of Pediatrics, American Association of Anatomists, American College of Chest Physicians, American Congress of Obstetricians and Gynecologists, American Geriatrics Society, American Neurological Association, American Physiological Society, American Psychiatric Association, American Thoracic Society, Gerontological Society of America, Human Anatomy and Physiology Society, and Society for Research in Human Development. (Hirshkowitz et al., 2015).

suggested a U-shaped curve, indicating that the lowest mortality rate was among those who slept between 6-7 hours per night, and that a low amount of insomnia can actually be protective (Kripke et al., 2011) (Vince, 2002). However, other researchers indicated skepticism towards this conclusion, and countered Kripke's finding with evidence that more sleep is beneficial. Orfeu Buxton at the University of Chicago responded, "every other study I know of shows that sleeping longer is better for you" (Vince, 2002). Supporting Buxton's response, several other researchers recommend a bit more sleep to optimize energy and functioning. Many sources and studies indicate that 7-8 hours of sleep per night on average is optimal (Seaborg, 2012) (Loehr & Schwartz, 2003) ("Sleep Deprivation and Deficiency", 2019). Some research even indicates that most adults should be getting a full 9 hours every night to function properly (Cropley, 2018)

As seen by the manifold responses to the subject of sleep, there is no single recommendation that's best for everyone. There is evidence to support several different recommendations, which primarily range between 6.5-9 hours. However, the range itself indicates that there is not one single answer; demands vary based on the needs of individuals. The National Sleep Foundation explains, "it's important to pay attention to your own individual needs by assessing how you feel on different amounts of sleep," ("How Much Sleep", 2015). With the growing emphasis and awareness around performance maximization and attention to health prioritization, conversation and research on sleep will likely continue to increase.

### **Sleep: Early to Bed, Early to Rise**

A growing body of research suggests that both going to sleep and waking up early contributes strongly to energy management, and one's alertness and vitality throughout the day. "The specific times that we sleep also affect our energy levels, health, and performance" (Loehr & Schwartz, 2003). When our eyes perceive lightness and darkness, signals are sent to the brain,

which influence the secretion of melatonin, causing us feel awake or drowsy. When it's dark out, the hypothalamus releases melatonin, which makes the body tired, and is why circadian rhythms parallel the transition from day to night (Hirshowitz et al., 2015). The average adult faces their greatest dip in energy between 2:00am and 4:00am, while most adults are sleeping ("How Much Sleep"). For these reasons, it's often very difficult for night shift workers to feel fully energized when they have to sleep during the day and working at night (Hirshowitz et al., 2015) (Olson, 2019). Working late shifts has been shown to correlate with obesity, heart attacks, memory loss, and increased risk of early mortality. In fighting against one's natural nighttime melatonin secretions, that an individual will likely feel drowsier when awake at night.

The old adages "early to bed, early to rise, makes a man healthy, wealthy, and wise," and "every hour of sleep before midnight is worth two after midnight," have proven to hold truth (Heid, 2016). While there is no magical stroke of rejuvenation that occurs when someone is sleeping at midnight, earlier sleep patterns do tend to provide a more restful night's sleep. The reason has to do with the ratio of deep sleep to lighter REM sleep during sleep cycles at different times of the night. Those who go to bed very late, especially after 3:00am, tend to experience a higher proportion of REM sleep during their sleep cycles, contributing to less restful, restorative sleep, versus a higher proportion of deep sleep for those who go to bed earlier (Heid, 2016). Thus, those who sleep later will generally wake up feeling less rested.

For individuals who aren't required to be awake at night due to a night-shift schedule, researchers recommend a bedtime between 8:00pm and 12:00am ("What Happens While You Sleep", 2019). In understanding sleep cycles and how melatonin impacts drowsiness, this recommendation makes logical sense. If an individual gets the NSF's recommended 7-9 hours of sleep, waking up too late into the day limits that person's sunlight exposure. In that scenario, it

would become dark outside earlier into that person's day, meaning increased hours of melatonin secretion, causing drowsiness and difficulty staying attentive ("How Much Sleep", 2015). Later wake and sleep times can lead to decreased productivity, contributing to feelings of depression and anxiety.

Drowsiness due to insufficient sleep, as a result of either lack of sleep or not getting restful sleep, can lead to unfortunate consequences such as injuries or accidents. In the U.S., accidents due to insufficient sleep have caused a "substantial economic burden...due to accidents and lost productivity," ("Sleep Deprivation and Deficiency", 2019). While the subject of "productive sleep hours" remains an area for further study, going to sleep and waking up early certainly increases one's chances of having greater energy and restfulness.

### **Sleep: In Summary**

Just as individuals are unique, so are their sleep needs and circadian rhythms. There is no one-size-fits-all model for the perfect time to sleep and wake up, and circadian rhythm can change with age (Hirshkowitz et al., 2015) ("How Much Sleep", 2015). Through being observant to one's own feelings of alertness versus inattentiveness, individuals can develop consistent sleep patterns that allow them to feel most awake, allowing them to work with, not against, their body's natural energy rhythms.

### **Breaks**

Though it may initially sound counterintuitive, taking breaks actually contributes to getting more done throughout the day (Fritz & Berinato, 2015). Breaks provide opportunities to reduce stress and refocus, allowing individuals to perform better. Brief, frequent stretch breaks and routine longer breaks allow individuals to replenish their energy and increase their attentiveness (Loehr & Schwartz, 2003). Recent attention to the value of breaks has examined

various strategies to maximize breaks, looking at activities workers do during their breaks, and the effect of those activities on energy management. In general, health-conscious breaks are linked to employees feeling more energized throughout the day (Fritz & Berinato, 2015). The literature on the subject of breaks indicates that breaks do not deter from productivity; they simply have no effect if spent ineffectively, or a substantial positive effect, when spent effectively engaging in replenishing, energizing activities (Fritz & Berinato, 2015) (Genaidy, Delgado, & Bustos, 1995). Further, in “The Power of Full Engagement,” Jim Loehr and Tony Schwartz (2003) emphatically emphasize the value of “replenishing rituals,” advocating for the implementation of restorative “rituals” that become so automatic that they don’t require any willpower. They explain that positive energy rituals during breaks, such as walking, talking to a friend, meditating, exercising, and napping, “are the key to full engagement and sustained high performance,” (Loehr & Schwartz, 2003, p. 14).

In the same way that rhythms control our sleep/wake cycles, rhythms also cause our energy to fluctuate throughout day. “Ultradian rhythms” play out in shorter daily increments, and are responsible for the rise and fall of energy during the day (Buzzard, 2007). This typically looks like 90 minutes that are energetic, with a 20-minute dip (Loehr & Schwartz, 2003). When one reaches the end of a cycle, the body begins to crave recovery, as signaled through “physical restlessness, yawning, hunger, and difficulty concentrating,” (Schwartz & McCarthy, 2007). While most of us think the strongest approach is to push through and keep working, by ignoring these signals, we actually deplete our reserves throughout the day. In recognizing and listening to signals from these natural rhythms, individuals can minimize their stress to maximize performance (Rossi, 2002). To work with these rhythms, individuals should work for 90 minutes, followed by 20 minutes of break time. Edmund Rossi (2002) suggests that individuals will

accomplish more when they work with their ultradian rhythms, and take healing breaks at the end of short work cycles.

The other type of break is a “microbreak” which can be done more frequently, for shorter time, and help individuals to refocus and alleviate physical discomfort (Fritz & Berinato, 2015). Microbreaks often take the form of a stretch break, which should be performed approximately every 30 minutes, for those who have been sitting at a desk. Neck, shoulder, arm, back, and leg stretches help to relieve tension that builds while humans are sedentary (Genaidy, Delgado, & Bustos, 1995). Taking just a few moments to reset one’s mind allows individuals to come back to their task clearer-minded, contributing to sustained energy throughout the day (Ingraham, 2018). Additionally, getting up allows the lymphatic system to function properly, as sitting all day can restrict the flow of blood to muscles (Chopra, 2018).

Results from a study of business consulting and software development employees illustrate that work-related microbreak activities are “strongly related to employees’ sense of feeling energized at work,” (Fritz & Berinato, 2015). Dr. Fritz goes on to explain, that in her research non-work-related microbreaks didn’t contribute to greater sense of energy throughout the day, but were not harmful either. Research in blue collar occupations suggested that short rest breaks either had no impact or a positive impact on energy, depending on activities during breaks (Fritz & Berinato, 2015). Another study regarding meat packing plant workers indicated a strong positive correlation between taking microbreaks and reduced physical discomfort (Genaidy, Delgado, & Bustos, 1995). Many sources indicate that taking frequent microbreaks to relieve physical tension and refocus the mind has short-term energizing effects, and long term benefits for physical health (Fritz & Berinato, 2015) (Ingram, 2018).

**Nutrition**

In order to function, all parts of our body require energy, which comes from the food that we eat (McCulloch, 2014). Perhaps one of the best-known solutions to energy management is eating a balanced diet and replenishing throughout the day. Proper nutrition not only promotes physical health and helps to prevent disease, but it also provides an indisputable way to boost and sustain energy (“The Impact of Nutrition”, 2018). Several dietary choices have been identified, studied, and proven to promote sustained energy throughout the day. Though specifics on daily recommendations regarding meal times, food proportions and meal frequency vary slightly depending on each individual’s needs, there is general agreement that meals should represent a balanced, varied, diet, avoiding unhealthy fats, processed foods, and alcohol, and meals/snacks spread throughout the day.

Macronutrient needs vary for each individual but in general, recommendation are typically to eat 45-65% carbohydrates, 10-35% proteins, and 20-35% fats, with limited saturated and trans fats (Manroe, 2005). It’s important for individuals to eat a variety of non-bleached whole grains, fruits, and vegetables to obtain necessary vitamins and minerals (McArdle, Katch, & Katch, 2014). When individuals’ stomachs digest carbohydrates, comprised of sugars and starches, food is broken down by our stomach acids and enzymes, and turned into glucose. The glucose is then absorbed into the bloodstream, where it can be used for energy immediately or stored for later (McCulloch, 2014). Complex carbohydrates are typically the most nutrient rich carbs, that come from a variety of sources including high fiber cereals, grains, and whole grain breads and pastas, which take longer to be digested and metabolized, and, therefore provide a more sustained energy (McCulloch, 2014). Contrastingly, simple carbohydrates like those found in sugary snacks and highly processed foods are absorbed more quickly, causing a short burst of

energy, followed by a crash (McCulloch, 2014). Similarly depleting, alcohol, a depressant, reduces energy levels and should therefore be avoided for those trying to maintain energy (Rodriguez). In order to avoid crashes, individuals who aspire to maintain energy all day should stay away from depleting foods (Rodriguez, 2012).

While carbs provide instant energy, fats also provide a substantial amount of energy, and are stored as fat cells (Gebel, 2011). In more recent years, fats have lost their negative connotation, as studies have revealed their benefits. Polysaturated and monosaturated fats, found in a variety of foods including avocados, olives, nuts, fatty fish, and soy can reap plentiful benefits, such as being a source of stored energy (Youdim, 2016). Proteins, which break down into amino acids, are vital to “maintain and replace tissues and to function and grow,” (Youdim, 2016). The body can turn protein into energy if there are not enough carbs or lipids to break down. Alternatively, excess protein is stored as fat cells for later use.

In order to sustain energy throughout the day, individuals should replenish their energy reserves frequently, maintaining a constant supply of glucose. Dr. Matthew Galliot (2012) explains that glucose intake impacts self-control, as willpower is a limited energy source. Thus, by depleting one’s physical reserves, they also take from their mental reserves and willpower throughout the day. Therefore, instead of waiting until a breaking point, individuals should replenish with small, healthy snacks to maintain sustained energy throughout the day (Galliot et al., 2012). To support this idea, Jim Loehr and Tony Schwartz (2003) explain that eating 5-6 smaller meals during the day does a better job sustaining energy, because it keeps a relatively constant flow of glucose, as opposed to peaks in energy and extreme drops. Further, Loehr and Schwartz (2003) recommend that breakfast should be eaten every day, to maintain blood sugar and avoid a crash during the day. Sufficient hydration, is additionally important for energy

maintenance and fighting fatigue, because it which helps “digestion, absorption, and the transport of nutrients for energy,” (Rodriguez, 2012) (“How Much Water” 2018). Proper nutrition not only helps with physical health and weight maintenance, but it contributes strongly to energy management and well-being overall.

### **Exercise**

Exercise has energizing benefits, both physiological and psychological. More exercise increases blood flow throughout the body, including to the brain, which helps to regulate oxygen flow and toxic waste removal. During exercise, muscles demand more oxygen, so heart and breathing rates elevate to pull more oxygen into the bloodstream (Inaba, 2019). In addition, exercise stimulates increased levels of BDNF (Sleiman et al., 2016), which encourages neurogenesis and exerts a growth effect on brain neurons (Medina, 2008) (Sleiman et al., 2016). BDNF is associated with enhancing mental abilities, and also decreased anxiety and depression (Sleiman et al., 2016). Furthermore, exercising forces muscles to work harder, and therefore relax more deeply afterward, which helps to relieve tension (Stibich, 2018). Overall, exercising enables greater mobilization of oxygenating and regulatory resources throughout the entire body, allowing individuals to physically become energized (Medina, 2008).

There are four main types of physical activity an individual can engage in: aerobic, resistance, flexibility, and balance (Strecher, 2016). Aerobic activity, typically thought of as cardiovascular strengthening exercise, causes the lungs and heart to move harder and faster, increasing blood flow through the body oxygenating the brain. Resistance, or strength training is exercise which strengthens the muscles by causing them to work against a resistor, a weight or force, which could include free weights, weight machines, bands, or body weight (“Resistance Training”, 2018). Flexibility training increases range of motion, which encourages blood flow to

tissues throughout the body. Finally, balance exercises, such as yoga or acrobatics, involve brain and muscle coordination (Strecher, 2016). Each type of exercise provides a valuable contribution to overall health and body regulation, especially through increasing the flow of blood and oxygen.

Exercise provides numerous, powerful psychological benefits, that allow individuals to feel energized and happier overall, contributing positively to thriving. Current dialogue around prioritizing physical health, emphasizes the importance of exercise in replenishing one's mental capacity, hence the proverb "a healthy mind lives in a healthy body". When individuals exercise, their brains release endorphins, serotonin, dopamine, and adrenaline, which, simply put, make people feel good (Stibich, 2018). Additionally, exercise helps to manage stress, which can lead to anxiety and depression, by helping to regulate cortisol levels (Natarjan, Northrop, & Yamamoto, 2016). Exercise allows individuals to take a break from daily stressors and concentrate on something else, allowing them to return more focused. Additionally, it often improves self-confidence, promotes relaxation, and helps with sleep (McArdle, Katch, & Katch, 2014). Increased serotonin and dopamine in the brain combined with endorphin release and improved stress response creates happier individuals, who feel more energized.

Corporate giants like Nike, Microsoft, Google, Kaiser Permanente, and Boeing, who received a Platinum Award in *Best Employers for Healthy Lifestyles* from the The National Business Group, have identified exercise as a critical component of worker energy and productivity (Thorpe, 2015). These companies house on-site workout facilities or pay for their employees gym membership costs in order to prioritize keeping their employees fit and energized for work (Weidel, 2016). Boeing's Director of Well Being, Demi Hannon, explains, "Our goal is engage the right employees in the right programs at the right time because quality of

life is the most important thing for our employees,” (Weidel, 2016). In order to ensure optimal productivity for employees, Boeing and other corporations emphasize that physical health prioritization is fundamental, and helps to avoid burnout and sustain mental energy.

### **PSYCHOLOGICAL ENERGY SOURCES**

To fully thrive is distinct from simply passing through life; to function optimally, human beings require energy beyond what they can obtain solely from external sources. Energy comes from four main sources for humans, which are the physical body, as previously discussed, as well as the emotions, the mind, and the spirit (Schwartz & McCarthy, 2007). Positive emotions, resilience, mindfulness, feelings, and flourishing are all psychological energy sources. Dr. Deepak Chopra (2018) explains that energy is a lot more than just eating well and exercising. Chopra articulates the concept of the “mindbody,” and explains that quality of energy is strongly impacted by sense of fulfillment, and that those who feel fulfilled have enough energy for everything they need. “We only thrive when our lives have meaning, purpose, achievement, self esteem, positive core beliefs, and trust in something higher than ourselves,” (Chopra, 2018). Sustainable, thriving energy comes from optimizing not only physical sources, but psychological energy sources as well.

#### **Positive Emotions and Feelings, Resilience, and Mindfulness**

Emotional energy is often thought of as the greatest motivator, because in utilizing this type of energy, one taps into “intrinsic motivation” (Loehr & Schwartz, 2003) (Mason et al., 2018). Intrinsic motivation is a type of motivation that stems from “doing something for its inherent satisfactions, rather than for some separable consequence,” and is correlated with more sustainable behavior change, in comparison to extrinsic motivation, doing something for an external reward (Ryan & Deci, 2000, p. 56).

Positive emotions are not merely an indicator of flourishing, but rather, a mechanism to encourage flourishing, thriving, and overall life satisfaction. In “The Broaden and Build Theory of Positive Emotions,” Barbara Fredrickson (2001) argues that positive emotions not only signal optimal functioning, but also “produce optimal functioning, not just within the present, pleasant moment, but over the long term as well,” (Fredrickson, 2001, p. 218). Dr. Fredrickson explains how positive emotions increase individuals’ abilities to think expansively and widen their scope of awareness. In a global-local processing test, she found that exposing individuals to stimuli that prompted positive emotions: joy, love, interest, contentment, etc., resulted in more expansive, big-picture thinking abilities, indicating that positive emotions “broaden peoples’ momentary thought–action repertoires and build their enduring personal resources,” (Fredrickson, 2001, p. 220).

Further studies on action responses to positive emotions indicate the broadening of visual openness. In one such study, conducted by Wadlinger and Isaacowitz (2006), half of the participants received candy as a positive emotional stimulus, whereas the other half received no stimulus. Then, participants viewed several photographs and their eye movements were recorded. The variable group was shown to have an increased expanse of peripheral vision (Fredrickson, 2001), which indicates that by introducing positive emotions, people literally see more (Wadlinger & Isaacowitz, 2006). Positive emotions trigger broadened mindsets, in comparison to more narrow mindsets resulting from no stimuli.

Beyond literally seeing more as the result of positive emotions, individuals who experience positive emotions are able to see more possibilities. Positive emotions broaden the awareness of individuals and promote expansive, new ways of thinking (Fredrickson, 2001). Fredrickson’s studies indicate increases in participants’ abilities to see the bigger picture and

new possibilities that would not otherwise be considered. Those with positive emotions are more likely to see past cultural and racial differences, find win-win solutions, and be more trusting in others (Fredrickson, 2001). In addition to increasing individuals' personal resources and enabling expansive thinking, peoples' positive to negative emotional ratios contribute to subjective well-being (Diener, Oishi, & Lucas, 2003). Positive emotions lead to a multitude of benefits, including greater wellbeing, health, and improved quality of life (Pennock, 2017).

Barbara Fredrickson's (2005) longitudinal intervention studies indicate that positive emotions have a significant role in developing long-term resources and response patterns that increase resilience and optimism. Those who develop a positive emotional thought-action repertoire develop a habit of positive response, which increases their resilience and ability to bounce back after faced with challenging situations (Tugade, Fredrickson, & Barrett, 2005). Positive emotions aid the body in combatting the harmful effects of stress (Lawson, 2016). Thus cultivating positivity over time can help us become, more resilient when faced with stress or crisis (Lawson, 2016). The role of positive feelings and emotions is not to be overlooked in its significant positive implications on health, psychological growth, energy, and well-being optimization (Tugade, Fredrickson, & Barrett, 2005) (Diener, Oishi, & Lucas, 2003).

Contrastingly, persistent negative feelings can lead to chronic stress, which can cause a variety of problems including hormone imbalance, decreased immunity, hypertension, digestive problems, cardiovascular complications, and infections (Natarajan, Northrop, & Yamamoto, 2016) (Lawson, 2016). Further, stress responses have been found to shorten telomeres in DNA strands, causing quicker aging, and potentially decreased lifespan (Natarajan, Northrop, & Yamamoto, 2016). Failure to develop positive strategies to cope with negative affect, feelings, and emotions can lead to a host of physical and psychological problems.

Resilience can be boosted throughout an individual's lifetime, through introducing positive practices in strengthening one's social network, practicing spirituality and strengthening a personal connection to a greater power which can be religious or not, and implementing new stress management techniques (Tugade, Fredrickson, & Barrett, 2005). In finding the right individualized strategies that train individuals to bend but not break in the face of stress, stress can ultimately be turned into a mental strengthening exercise. In cultivating an awareness of what triggers stress, learning to manage one's attitude in a positive way, and practicing the right techniques to stay resilient in the face of stress, coping with stress can help individuals become mentally stronger and capable of bouncing back when faced with adversity (Tugade, Fredrickson, & Barrett, 2005). Furthermore, through increasing one's expression of positive emotions and strengthening one's resilience, individuals can combat the damaging results of negative emotions and stress, creating a life filled with greater health and flourishing (Fredrickson, 2001).

As discussion around the mechanisms for maintaining energy increases, emphasis on the benefits of mindfulness has become more prevalent. Aimless energy is not effective, instead intention and attention to the present moment helps to direct energy in order to be productive (Chopra, 2018). A mindful person does not mindlessly pass through life, unaware of their surroundings and interactions. Instead, mindfulness focuses on living a present life, energized, engaged, and aware of the present moment. By cultivating awareness of one's presence, and devoting attention to increasing personal engagement, individuals can utilize mindfulness as a mechanism through which energy and focus can be increased.

In terms of increasing presence and mindfulness, there are a number of strategies that can be implemented. Dr. Vic Strecher (2016) explains that presence is fundamental to energy

maintenance, and can be achieved through focus on accepting without judgment, observing internal and external experiences, and acting with awareness, often through meditation.

Meditation specifically promotes self awareness and regulation of biorhythms that align the mind, body and spirit. Dr. Deepak Chopra (2018) advocates that meditation increases energy, and is more than a fast relaxation technique, but a way increase qualities that enhance life such as joy, creativity, alertness, and freshness (Chopra, 2018). In addition to meditation, practices such as mindful walking, gratitude, mindful eating, body awareness exercises, journaling, and breathing exercises are just a few of the many ways individuals can improve presence in everyday life. Through prioritizing daily mindfulness, individuals can improve their focus, clarity, energy, and overall quality of life.

### DEFINITIONS OF KEY VARIABLES

The following definitions come from the survey prompts in the study conducted by Dr. Spreitzer and Dr. Loehr. Participants self-reported how strongly they identified with the variables being analyzed, by responding to prompts that included components of the definitions below. Participants ranked how strongly they identified with each statement using a 1-7 scale. Variables used in this study are defined below. The full breakdown of survey questions answered by participants is available in Appendix 1.

**ENERGY:** Someone with energy feels energetic, eager, alive, invigorated, excited, vital, enthusiastic, lively, and zestful.

**FEELINGS, (FLOURISHING):** Intrapersonal. Someone who is flourishing feels happy, satisfied, interested in life, in control, on top of things, that they are coping well, that life has a sense of direction or meaning to it, that they like most parts of their personality.

**FLOURISHING:** Interpersonal. Someone who is flourishing feels that society is becoming a better place for people, that society makes sense, that they belong to a community, that people are basically good, that they have trusting relationships with others, that they can manage the responsibilities of daily life, that they have the confidence to express ideas and opinions, that they have something to positively contribute to society.

**FOOD, (HEALTH HABITS):** Someone with positive food health habits eats 3 meals daily, eats 2 snacks daily, eats breakfast daily, never goes over 4 hours without food, eats 40% grains, 40% fruit and vegetables, and 20% protein in a typical meal, keeps the size of protein under the size of their palm, limits snacks to 100-150 calories, eats until satisfied not full, drinks water regularly throughout the day, limits alcohol intake to meal times, limits alcohol consumption to 2 servings per day.

**POSITIVE EMOTIONS, (FLOURISHING):** Interpersonal and intrapersonal. Someone with positive emotions is amused, fun-loving, silly, content, serene, peaceful, hopeful, optimistic, encouraged, surprised, amazed, astonished, in awe, in wonder, in amazement, grateful, appreciative, thankful, loving, closeness, trusting, interested, alert, curious, glad, happy, joyful, proud, confident, self-assured.

**RESILIENCE:** Someone with resilience is generous with their friends, quickly gets over and recovers from being startled, enjoys dealing with new and unusual situations, succeeds in making favorable impressions on people, enjoys trying new foods, is regarded as an energetic person, takes different paths to familiar places, is more curious than most, likes most of the people they meet, thinks before acting, likes new and different things, has a daily life full of things that keep them interested, would describe their personality as “strong, and gets over anger at someone reasonably quickly.

**EXERCISE, (HEALTH HABITS):** Someone with positive rest habits does some form of daily physical activity, does at least two strength training workouts per week, does at least two cardiovascular interval workouts per week, pushes themselves to discomfort when they work out, exercises at moderate to high intensity.

**REST, (HEALTH HABITS):** Someone with positive rest health habits gets up and takes breaks every 90 to 120 minutes, routinely stretches and moves every 30-45 minutes, goes to bed and wakes up early, goes to bed and wakes up at the same consistent times, and gets 7-8 hours of sleep each night.

**THRIVE, (ENERGY):** Someone with thrive energy experiences vitality, aliveness, thriving, energy, spirit, alertness, awakens, and looks forward to each new day.

**MINDFULNESS(R):** Mindfulness prompts consider the *absence* of mindfulness in daily life.

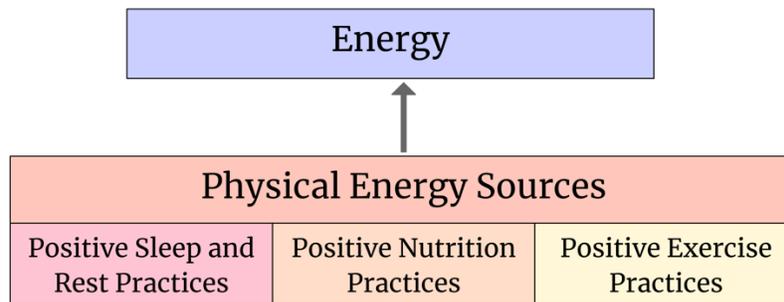
Questions using this prompt consider the reverse of mindfulness, thus a greater correlation with this variable indicates a stronger absence of mindfulness. Someone who lacks mindfulness could be experiencing some emotion and not be conscious of it until sometime later, breaks or spills things due to carelessness, not paying attention, or thinking of something else, has difficulty staying focused on what's happening in the present, walks quickly without paying attention to what's happening along the way, doesn't notice feelings of physical tension or discomfort usually, forget a person's name after they're told the first time, seems to be "running on automatic", rushes through activities without attention, gets so focused on an end goal that they lose touch with the current moment, is distracted, drives places on "autopilot" and forgets why they drove there, is preoccupied with the future or past, does things without attention, and snacks without awareness that they're eating.

**HYPOTHESES**

In the following section, I present twelve hypotheses that seek to identify which variables have the strongest effect on energy management throughout the day.

A majority of these hypotheses are based around the idea that physical health is at the foundation of energy management. Many of these hypotheses indicate that prioritization of the physical health practices: rest, nutrition, and exercise, would hypothetically contribute to greater energy management throughout the day. A model portraying a framework for my thinking in writing these hypotheses is illustrated below:

**Model 1 (Hypothesis)**



To research my hypotheses, I analyzed the following ten variables: Energy, Feelings, Flourishing, Health - Rest, Health - Exercise, Health - Food, Mindfulness, Positive Emotions, Resilience, and Thrive. These variables, defined in *Definitions of Variables Analyzed*, were analyzed through studying responses to several different questions. Variables were analyzed averaging of all questions pertaining to each variable (unless specifically noted). Questions used for each variable can be found in Appendix 1.

In light of the evidence previously discussed in the literature review, I expect to find the relationships between the variables described in the following hypotheses:

**Hypothesis 1:** Positive sleep practices (going to bed at the *same time* every night and waking up at the same time every morning, going to bed and waking up *early*, and getting between 7-8 *hours of sleep*) are positively correlated with self-reported sense of thriving and self-reported energy.

**Hypothesis 2:** Positive rest practices including positive sleep practices and taking breaks (getting up for a break every 90-120 minutes and routinely stretching to reduce tension every 30-45 minutes) is positively correlated with self-reported thriving and self-reported energy.

**Hypothesis 3:** Positive nutrition habits (eating 3 meals and 2 snacks per day, eating breakfast, eating at least every 4 hours, eating 40% grains, 40% fruits and vegetables, and 20% protein with protein no larger than the size of one's hand, limiting snacks to 100-150 calories, not overeating, drinking water, and limiting alcohol to meal times and no more than two drinks per day) is positively correlated with self-reported thriving and self-reported energy.

**Hypothesis 4:** Positive exercise practices (daily activity, two strength training and two cardiovascular workouts per week, pushing oneself and exercising at moderate to high intensity) are positively correlated with self-reported thriving and self-reported energy.

**Hypothesis 5:** Self-reported positive emotions are positively correlated with self-reported thriving and self-reported energy.

## METHODS

### Sample and Scale

A total of 342 individuals participated in this study ( $M_{\text{age}} = 28.3$  years), collected by a UM research team lead by Dr. Gretchen Spreitzer and Dr. Jim Loehr. Participants in the study were MBA students in the Ross School of Business at the University of Michigan. Participants in this study completed an extensive survey, in which they were asked how strongly they agree with or identify with given prompts. Participants were asked to respond how strongly they identified with each statement, using a 1-7 Likert-type scale, 1 being the weakest and 7 being the strongest.

### Measures

Many different variables were measured in this study. The variables analyzed that pertain to my specific studies are identified and defined in the “Definitions of Key Variables” section. Each variable is comprised of several different prompts. The full list of survey prompts and their corresponding variable can be found in Appendix 1. I tested the relationship between variables using a Pearson Product-Moment Correlation test.

### Approach

In my statistical analysis, I took a novel approach to analyzing the data, to try to identify new correlations between variables that were not previously tested for correlation. Initially, I primarily analyzed physical variables and their relationship with energy, as most of my hypotheses focused on these concepts. Throughout the statistical analysis, I expanded my analysis to look at every combination of the 10 variables, including more specific breakdowns of variables. The studies further analyze correlations between variables which have a statistically significant relationship with energy or thrive. The most relevant findings are noted and explained in the following statistical analysis.

### **STATISTICAL ANALYSIS: HYPOTHESIS SIGNIFICANCE AND CORRELATIONS**

In the following statistical analysis, any p-value less than  $p=0.05$  is considered statistically significant. In later sections, I analyze several significant correlations more deeply, by considering the strength of correlation.

**Significance: All hypotheses were statistically significant at a p-value of .05.**

(\*= $p\text{-value} \leq 0.05$ , \*\*= $p\text{-value} \leq 0.01$ , \*\*\*= $p\text{-value} \leq 0.001$ , (x)= $p\text{-value} > .05$ , x = not statistically significant)

**Hypothesis 1:** Positive sleep practices are positively correlated with self-reported thriving and self-reported energy.

#### **I. Positive Sleep Practices and Self-Reported Thriving**

- a. **Correlation:** The correlation between the positive sleep practices and self-reported thriving is  $0.1544415^{**}$
- b. These findings show a statistically significant positive correlation between individuals in this study engaging in positive sleep practices: going to bed at the *same time* every night and waking up at the same time every morning, going to bed and waking up *early*, and getting between *7-8 hours of sleep*, and self-reporting they are thriving.

#### **II. Positive Sleep Practices and Self-Reported Energy**

- a. **Correlation:** The correlation between the positive sleep practices and self-reported energy is  $0.1635842^{**}$ .

- b. These findings show a statistically significant positive correlation between individuals in this study engaging in positive sleep practices: going to bed at the *same time* every night and waking up at the same time every morning, going to bed and waking up *early*, and getting between *7-8 hours of sleep*, and self-reporting having energy.

**Hypothesis 2:** Positive rest practices are positively correlated with self-reported thriving and self-reported energy.

**I. Positive Rest Practices and Self-Reported Thriving**

- a. **Correlation:** The correlation between the positive rest practices and self-reported thriving is 0.1665839\*\*.
- b. These findings show a statistically significant positive correlation between individuals in this study engaging in positive rest practices: going to bed at the *same time* every night and waking up at the same time every morning, going to bed and waking up *early*, and getting between *7-8 hours of sleep*, and self-reporting having energy, taking breaks every 90-120 minutes, and routinely stretching every 30-45 minutes, and self-reporting that they are thriving.

**II. Positive Rest Practices and Self-Reported Energy**

- a. **Correlation:** The correlation between the positive rest practices and self-reported energy is 0.2198562\*\*\*.
- b. These findings show a statistically significant positive correlation between individuals in this study engaging in positive rest practices: going to bed at the *same time* every night and waking up at the same time every morning, going to bed and waking up *early*, and getting between *7-8 hours of sleep*, and self-

reporting having energy, taking breaks every 90-120 minutes, and routinely stretching every 30-45 minutes, and self-reporting having energy.

**Hypothesis 3:** Positive nutrition habits are positively correlated with self-reported thriving and self-reported energy.

**I. Positive Nutrition Practices and Self-Reported Thriving**

- a. **Correlation:** The correlation between the positive nutrition practices and self-reported thriving is 0.2615085\*\*\*.
- b. These findings show a statistically significant positive correlation between individuals in this study engaging in positive nutrition habits (eating 3 meals and 2 snacks per day, eating breakfast, eating at least every 4 hours, eating 40% grains, 40% fruits and vegetables, and 20% protein with protein no larger than the size of one's hand, limiting snacks to 100-150 calories, not overeating, drinking water, and limiting alcohol to meal times and no more than two drinks per day), and self-reporting they are thriving.

**II. Positive Nutrition Practices and Self-Reported Energy**

- a. **Correlation:** The correlation between the positive nutrition practices and self-reported energy is 0.1964625\*\*\*.
- b. These findings show a statistically significant positive correlation between individuals in this study engaging in positive nutrition habits (eating 3 meals and 2 snacks per day, eating breakfast, eating at least every 4 hours, eating 40% grains, 40% fruits and vegetables, and 20% protein with protein no larger than the size of one's hand, limiting snacks to 100-150 calories, not overeating, drinking

water, and limiting alcohol to meal times and no more than two drinks per day), and self-reporting having energy.

**Hypothesis 4:** Positive exercise practices are positively correlated with self-reported thriving and self-reported energy.

**I. Exercise and Self-Reported Thriving**

- a. Correlation:** The correlation between exercise and self-reported thriving is 0.2470671\*\*\*.
- b.** These findings show a statistically significant positive correlation between individuals in this study engaging in positive exercise practices (doing some form of physical activity daily, doing at least two strength training workouts per week, doing at least two cardiovascular interval workouts per week, pushing oneself to discomfort when I work out, and exercising at moderate to high intensity), and self-reporting they are thriving.

**II. Exercise and Self-Reported Energy**

- a. Correlation:** The correlation between exercise and self-reported energy is 0.3044609\*\*\*.
- b.** These findings show a statistically significant positive correlation between individuals in this study engaging in positive exercise practices (doing some form of physical activity daily, doing at least two strength training workouts per week, doing at least two cardiovascular interval workouts per week, pushing oneself to discomfort when I work out, and exercising at moderate to high intensity), and self-reporting having energy.

**Hypothesis 5:** Self-reported positive emotions are positively correlated with self-reported thriving and self-reported energy.

**I. Positive Emotions and Self-Reported Thriving**

- a. Correlation:** The correlation between the positive emotions and self-reported thriving is 0.5391441\*\*\*.
- b.** These findings show a statistically significant positive correlation between individuals self-reporting experiencing positive emotions and self-reporting they are thriving.

**II. Positive Emotions and Self-Reported Energy**

- a. Correlation:** The correlation between the positive emotions and self-reported energy is 0.7152966\*\*\*.
- b.** These findings show a statistically significant positive correlation between individuals self-reporting experiencing positive emotions and self-reporting they are thriving.

### STATISTICAL ANALYSIS - EXPANDED

After testing the significance and correlations between of all my hypotheses, I considered that it is possible there may be other correlations among variables in the data that are stronger than the correlations between the variables that I had sought to analyze. Since many of my hypotheses focused on physical practices for energy management (rest, nutrition, and exercise) I compared those three variables with each of the ten variables in my analysis, to see if there were any strong correlations I hadn't yet seen.

#### Key for the following data:

	= 0.0 - .099 correlation
	= .1 - .199 correlation
	= .2 - .299 correlation
	= .3 - .399 correlation
	= .4 - .499 correlation
	= .5 - .599 correlation
	= .6 - .699 correlation
	= .7 - .799 correlation
	= .8 - .899 correlation
	= .9 - 1.0 correlation

#### REST AND THRIVE/ENERGY: *CORRELATIONS AND SIGNIFICANCE*

Health - Rest Item 3: Both go to bed early and wake up early.

Health - Rest Item 4: Go to bed and wake up consistently at the same times.

Health - Rest Item 5: Get 7 to 8 hours of sleep each night.

Average Sleep - Rest (3,4,5): The average of these three variables

Average Breaks – Rest (1,2): The average of taking breaks every 90-120, and stretch breaks every 20-30 minutes.

	<b>Thrive</b>	<b>Energy</b>
<b>Average Sleep – Rest (3,4,5)</b>	0.1544415**	0.1635842**
<b>Sleep - Early Bed and Wake</b>	0.1809133***	0.180261***
<b>Sleep - Consistent Times</b>	0.1484172**	0.1687478**
<b>Sleep - 7-8 hours per Night</b>	0.02330524 (x)	0.0256377 (x)
<b>Average Breaks – Rest (1,2)</b>	0.1051641 (x)	0.1905374***

\*=p-value ≤ 0.05, \*\*=p-value ≤ 0.01, \*\*\*=p-value ≤ 0.001, (x)=p-value > .05, x = not statistically significant

**REST AND THRIVE/ENERGY: FINDINGS**

After analyzing the individual and combined factors of positive sleep practices, I found that all correlations were statistically significant with a p-value of .05 or less, except for the correlation between Thrive and getting 7-8 hours of sleep, the correlation between Energy and getting 7-8 hours of sleep, and the correlation between Breaks and Thrive.

**THRIVE AND ENERGY: PHYSICAL AND PSYCHOLOGICAL CORRELATIONS**

In order to answer my ultimate question of lifestyle components that maximize energy and thriving, I decided to find the strength of correlation between all 10 variables and Thrive/Energy. Thrive and Energy target similar concepts, as noted in the “Variables” section, thus I analyzed the relationship between all variables with both Thrive and Energy. The following statistical analysis looks at correlations between the averages of all ten variables analyzed: Energy, Feelings, Flourishing, Health - Rest, Health - Exercise, Health - Food, Mindfulness, Positive Emotions, Resilience, Thrive, and their correlation with Thrive and Energy.

	Thrive	Energy
Health - Rest	0.1665839**	0.2198562***
Health - Nutrition	0.2615085***	0.1964625***
Health - Exercise	0.2470671***	0.3044609***
Energy	0.719097***	-
Feelings	0.5155248***	0.6591889***
Flourishing	0.5294592***	0.69935***
Mindfulness	-0.3694325***	-0.3250594***
Positive Emotion	0.5391441***	0.7152966***
Resilience	0.5415021***	0.4844475***
Thrive	-	0.719097***

\*=p-value ≤ 0.05, \*\*=p-value ≤ 0.01, \*\*\*=p-value ≤ 0.001, (x)=p-value > .05, x= not statistically significant

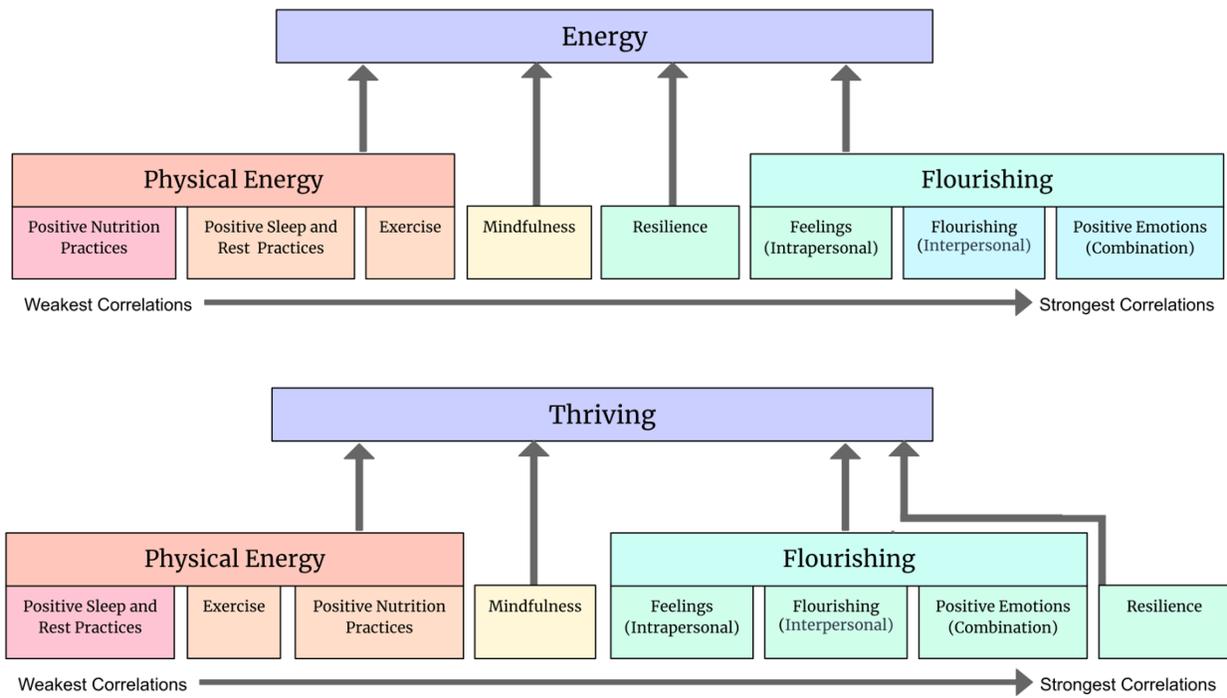
### THRIVE AND ENERGY: FINDINGS

From running correlation tests on the physical factors of health: rest, nutrition, and exercise, I found that all correlations were statistically significant with a p-value of .05 or less. After analyzing these correlations, it can be seen that the strongest correlations with Energy are between Positive Emotions, Flourishing, Feelings, and Resilience, respectively. The strongest correlations with Thrive, are between Resilience, Positive Emotions, Flourishing, and Feelings, respectively. The weakest correlations for both Thrive and Energy are with Exercise, Food, and Rest.

**DISCUSSION**

All of my hypotheses proved to be statistically significant at a p-value of 0.05. The following correlations with energy and thriving were statistically significant at a p-value of 0.05: Rest, Food, Exercise, Feelings, Flourishing, Mindfulness, Positive Emotion, Resilience. However, among statistically significant correlations, certain variables had a greater correlational strength than others. The following graphic illustrates the statistically significant variables from the study that had the strongest correlation with Thriving and Energy.

**Model 2 and 3: Statistical Analysis Findings for Energy and Thriving**



Both models indicate findings of the physical and psychological variables that impact overall self-reported energy and thriving. Interestingly, the charts do include my original hypotheses, however, they indicate that there are many more variables that impact overall perception of energy and thriving than just physical variables. The variables possessing the

strongest statistically significant correlation with Thrive and Energy were constructs of Flourishing: Positive Emotions, Flourishing (interpersonal), Feelings (intrapersonal), as well as Resilience and Mindfulness. Physical health habits: Exercise, Food, and Rest proved to have a statistically significant correlation with Thrive and Energy as well, although a weaker correlation than the psychological variables. After analyzing the correlations, it can be seen that the strongest correlations with Energy and Thriving are between Positive Emotions, Flourishing, Feelings, and Resilience, respectively. And for thrive, resilience, positive emotions, feelings, flourishing, and mindfulness, respectively. Interestingly all subsets of flourishing were more strongly correlated with energy than thriving. I would argue this is because flourishing is similar to energy, but a stronger feeling, more specific, and just slightly more effortful to attain.

I was surprised to learn that the physical health habits had the weakest correlations with Thrive/Energy, compared to other variables. Although physical variable correlations were statistically significant, they did not have the strongest correlations in comparison to psychological variables. I was particularly interested in the value of rest, which I actually analyzed one question at a time. But this had far less of an impact than I had expected. And studying exclusively the correlation between 7-8 hours of sleep and thrive was actually not even statistically significant at a p-value of .05, nor was the correlation between 7-8 hours of sleep and self-reported energy, or the correlation between taking breaks and thriving.

There is evidence of statistically significant correlation between Thrive/Energy and eight variables studied. However, this study is limited in that it does not prove causation, and only indicates strong correlations. Although the evidence from this research does not validate whether improving these variables in one's life will cause greater energy and thriving. Another limitation exists in that through collecting self-reported data, there is room for bias. However, these effects

are at least somewhat lessened because I was looking to learn more about perceived energy. However, other variables such as Exercise and Food may be somewhat skewed due to the self-reporting biases. Other limitations exist in the fact that variables in this particular study were defined using certain terminology that may not be consistent with other studies. Finally, since this study focused exclusively on Ross MBA students, the sample does not proportionately all workplaces.

## **CONCLUSIONS**

This thesis is useful preliminary research and does not attempt to determine causation. This type of analysis highlights relationships that can be used in predictive models. I believe the biggest takeaway from this research, is that personal energy and thriving are subjective. Although physical energy variables had statistically significant correlations with self-reported energy and thriving, in this study, physical variables were the least strongly correlated with overall energy. This shows that physical is not all that determines humans' energy. Since perception of energy is both a physical and mental/emotional construct, both physical and psychological variables can be understood as impacting one's perception of their energy.

Through reviewing literature on the subject of energy maintenance, I found that energy management is multidimensional and can be impacted by several different variables. Through testing my hypotheses, I discovered that there are a variety of variables that have a significant relationship with thriving and energy. I learned that while each hypothesis had a statistically significant relationship with energy, a majority of my hypotheses focused on the impact physical energy has on overall perceived energy, and physical energy was only one part of the equation. Through my statistical analysis, it became clear that psychological energy variables also have a very strong relationship with one's perception of energy. In fact, although all of the variables have a correlation with Thrive and Energy, the psychological components actually had an even stronger correlation with Thrive and Energy.

In my curiosity to identify which other components within the data were most strongly related to energy and flourishing, I found that traits such as daily Mindfulness and Resilience have a strong relationship with Energy and Thrive. Components of Flourishing (Feelings, Positive Emotions, and Flourishing) have an even stronger relationship with Energy and Thriving. One

commonality shared among the most prominent statistically significant variables with a correlation strength greater than .5 is that they are all intangible. The most influential factors of energy management from strongest correlation to weakest are: Positive Emotions, Flourishing (interpersonal), Feelings (intrapersonal), Resilience, Mindfulness.

Although there is no causation proven by this research, there is evidence that various components of energy have a strong relationship with one another. Through my research, I conclude that physical health practices are only partially indicative of perceived energy throughout the day. Though physical energy habits are important to overall energy as I hypothesized, they are not necessarily the most strongly related to overall energy, and are certainly not the only variables related to Thrive and Energy.

In order to achieve optimal functioning, it is vital for individuals to understand how certain variables, both physical and non-physical, impact overall energy. Proper energy management affects individuals in all aspects of life. Through understanding how utilize energy-promoting habits and practices, one can work to thrive in daily life.

### **LOOKING FORWARD**

The purpose of my thesis was to create preliminary research for future models, and to bring several variables into conversation that had previously been treated as independent variables, not as variables that impact energy. The research has limitations in that only evidence of correlation is proved through the literature review and statistical analysis. Additionally, this study focused exclusively on Ross MBA students, which helps to keep results consistent, but it is not a proportionate representation of all workplaces or academic institutions, in terms of age, intellect, or occupation.

Energy is both physiological and psychological. Although causation cannot be proven from this study, it appears that psychological variables could be the most impactful on one's perceived energy. A self-reported feeling of thriving is ultimately a mental construct, because it is just that: a feeling. However, that feeling can be moderated by physical practices, which serve a physiological and psychological purpose; individuals likely feel that they should have more energy because they have taken certain tangible steps, and therefore their perception of having energy could likely increase. Furthermore, seeing which variables correlate most strongly with energy and thriving, it would seem that energy and thriving are more subjective than objective.

I would be interested to conduct further research and testing on the validity of whether perception of energy and thriving are more impacted by psychological factors than physical factors. Assuming that both physical and psychological energy practices *do cause* perceived energy to increase or decrease, a further step for discovery would be to study how individuals can *most* effectively increase the variables in their lives which most strongly correlate with Thrive and Energy, in order to maximize energy and thriving.

Additionally, the literature review highlighted that research on the amount of sleep needed is still being studied. There is not one definitive or universal agreement on the ideal amount of sleep needed to function optimally. Evidence from the statistical analysis also revealed that maybe 7-8 hours aren't most indicative of energy, since it showed that there was not a statistically significant relationship between 7-8 hours of sleep and self-reported thriving or self-reported energy. It would be beneficial to conduct additional research on self-reported energy and thriving at other quantities of sleep.

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**APPENDIX****Appendix 1: Survey Questions**

<b>Variable Prompts</b>			
<b>Tab</b>	<b>Item</b>	<b>Question #</b>	<b>Question</b>
<b>Thrive Energy</b>	THRIVE01	1	I feel alive and vital.
	THRIVE02	2	I am really thriving.
	THRIVE04	4	I have energy and spirit.
	THRIVE06	6	I am looking forward to each new day.
	THRIVE08	8	I feel alert and awake.
<b>Positive Emotions (Flourishing)</b>	POSEMOT01	2	Amused, fun-loving, silly.
	POSEMOT02	5	Content, serene, peaceful.
	POSEMOT03	6	Hopeful, optimistic, encouraged
	POSEMOT04	8	Surprise, amazed, astonished.
	POSEMOT05	11	Awe, wonder, amazement.
	POSEMOT06	12	Grateful, appreciative, thankful.
	POSEMOT07	19	Love, closeness, trust.
	POSEMOT08	25	Interested, alert, curious.
	POSEMOT09	26	Glad, happy, joyful.
	POSEMOT10	29	Proud, confident, self-assured.
<b>Flourishing</b>	FLOUR01	3	That our society is becoming a better place for people.
	FLOUR02	10	That you are confident to think or express your own ideas and opinions.
	FLOUR03	13	That you have experiences that challenge you to grow and become a better person.
	FLOUR04	16	That you had something important to contribute to society.
	FLOUR05	17	That the way our society works makes sense to you.
	FLOUR06	21	That you belonged to a community (like a social group, your neighborhood, your city).
	FLOUR07	22	That people are basically good.
	FLOUR08	23	That you had warm and trusting relationships with others.
	FLOUR09	32	That you are good at managing the responsibilities of your daily life.

<b>Feelings (Flourishing)</b>	FEEL01	1	Happy.
	FEEL02	4	I was coping well, in control, on top of things.
	FEEL03	9	Satisfied.
	FEEL04	28	That you liked most parts of your personality.
	FEEL05	35	Interested in life.
	FEEL06	37	That your life has a sense of direction or meaning to it.
<b>Energy</b>	ENERGY1	31	Energetic, eager, and alive.
	ENERGY2	33	Invigorated, excited and full of vitality.
	ENERGY3	38	Enthusiastic, lively and zestful.
<b>Resilience</b>	RESIL01	1	I am generous with my friends.
	RESIL02	2	I quickly get over and recover from being startled.
	RESIL03	3	I enjoy dealing with new and unusual situations.
	RESIL04	4	I usually succeed in making a favorable impression on people.
	RESIL05	5	I enjoy trying new foods I have never tasted before.
	RESIL06	6	I am regarded as a very energetic person.
	RESIL07	7	I like to take different paths to familiar places.
	RESIL08	8	I am more curious than most people.
	RESIL09	9	Most of the people I meet are likeable.
	RESIL10	10	I usually think carefully about something before acting.
	RESIL11	11	I like to do new and different things.
	RESIL12	12	My daily life is full of things that keep me interested.
	RESIL13	13	I would be willing to describe myself as a pretty "strong" personality.
	RESIL14	14	I get over my anger at someone reasonably quickly.
<b>Mindfulness</b>	RMINDFUL01	1	I could be experiencing some emotion and not be conscious of it until some time later.
	RMINDFUL02	2	I break or spill things because of carelessness, not paying attention, or thinking of something else.
	RMINDFUL03	3	I find it difficult to stay focused on what's happening in the present.
	RMINDFUL04	4	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.
	RMINDFUL05	5	I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
	RMINDFUL06	6	I forget a person's name almost as soon as I've been told

			it for the first time.
	RMINDFUL07	7	It seems I am "running on automatic" without much awareness of what I'm doing.
	RMINDFUL08	8	I rush through activities without being really attentive to them.
	RMINDFUL09	9	I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.
	RMINDFUL10	10	I do jobs or tasks automatically, without being aware of what I'm doing.
	RMINDFUL11	11	I find myself listening to someone with one ear, doing something else at the same time.
	RMINDFUL12	12	I drive places on "automatic pilot" and then wonder why I went there.
	RMINDFUL13	13	I find myself preoccupied with the future or the past.
	RMINDFUL14	14	I find myself doing things without paying attention.
	RMINDFUL15	15	I snack without being aware that I am eating.
<b>Health Habits - Food</b>	HLTHF01	1	Eat 3 meals daily.
	HLTHF02	2	Eat 2 snacks, no more, no less, daily.
	HLTHF03	3	Eat breakfast every day.
	HLTHF04	4	Never go longer than 4 hours without food.
	HLTHF05	5	Eat 40% grains, 40% fruit and vegetables and 20% protein in a typical meal.
	HLTHF06	6	Keep the size of protein in a meal to no greater than the palm of one's hand.
	HLTHF07	7	Limit snacks to 100-150 calories.
	HLTHF08	8	Eat until you are satisfied, not full.
	HLTHF09	9	Drink water regularly throughout the day.
	HLTHF10	10	Limit alcohol intake to meal times.
	HLTHF11	11	Limit alcohol, consumption to 2 servings/day.
<b>Health Habits - Rest</b>	HLTHR1	13	Routinely stretch and move every 30 to 45 minutes to reduce tension.
	HLTHR2	14	Get up and take a break every 90 to 120 minutes.
	HLTHR3	15	Both go to bed early and wake up early.
	HLTHR4	16	Go to bed and wake up consistently at the same times.
	HLTHR5	17	Get 7 to 8 hours of sleep each night.
<b>Health Habits - Exercise</b>	HLTHX1	18	Do some form of physical activity daily.
	HLTHX2	19	Do at least two strength training workouts per week.

	HLTHX3	20	Do at least two cardiovascular interval workouts per week.
	HLTHX4	21	Push myself to discomfort when I work out.
	HLTHX5	22	Exercise at moderate to high intensity.