6-2020

The Myers-Briggs Personality System and its Moderating Effects on the Relationship Between Job Characteristics and Job Satisfaction

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THE MYERS-BRIGGS PERSONALITY SYSTEM AND ITS MODERATING

EFFECTS ON THE RELATIONSHIP BETWEEN JOB CHARACTERISTICS AND

JOB SATISFACTION

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A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

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In Partial Fulfillment

of the Requirements for the Degree

Master of Science

in

Psychology:

Industrial/Organizational

_____

by

Rebecca Arlene Marshall

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ABSTRACT

In this research, I examined how characteristics of the job, namely task significance and task identity, predicted job satisfaction and how those relationships were moderated by one's Myers-Briggs type. It was hypothesized that the thinking/feeling dichotomy would moderate the relationship between task significance and job satisfaction and the sensing/intuition dichotomy would moderate the relationship between task identity and job satisfaction. In the study, I sought to understand how these moderated relationships would differ for people with good and poor psychological health. There were 945 people who participated which required them to answer questions about their job, personality, psychological health, life, and demographic information of which 788 participants with usable data were included in the analysis. Results indicated the Myers-Briggs dichotomies did not moderate the relationship between job characteristics and job satisfaction for both participants with good and poor psychological health. Job characteristics were predictive of job satisfaction over participants' personalities, suggesting organizations should prioritize structural change, such as increasing task significance, without regard to individual differences. Implications for organizational culture, policy, job design, employee autonomy, well-being, and societal implications are discussed.

Keywords: Myers-Briggs personality system, job characteristics, job satisfaction, psychological health, personality, and meaningfulness of work.

ACKNOWLEDGEMENTS

Lastly, a big thank you also goes to all 945 participants! The point of this thesis and science in general is to obtain a greater understanding of our world and to use this newfound knowledge to improve the lives of others. Scientific research would not be possible were it not for people like you who take time out of your busy lives to participate in research. Completing this thesis is an important requirement of my graduate education of which I would not have been able to complete without your help. From the bottom of my heart, thank you.

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CHAPTER ONE

INTRODUCTION

Everyone is on a journey to learn about themselves and find work that

utilizes their natural talents while earning a living. There are numerous studies

concerning the importance of a variety of different types of job fit, such as

person-job fit, person-environment fit, person-organization fit, and person-

supervisor fit, and how these different fits predict important work outcomes such

as performance and job satisfaction (see Kristof-Brown et al., 2005; Kristof-

Brown & Guay, 2011). However, this research on fit is only concerned with how

personality relates to work outcomes. In the field of industrial-organizational

psychology, the focus of this fit research is on helping organizations find

employees that fit their environment and the job, rather than helping individual

employees find organizations and jobs that fit their personalities and needs. This

most likely is the case because as industrial-organizational psychologists, our

client is the organization, not the individual employee within that organization

(Lefkowitz, 2005). The lack of balance in our field conflicts with our code of ethics

as psychologists. According to the APA (2002) code of ethics, our jobs as

psychologists is to improve the lives of individuals, organizations, and society.

Joel Lefkowitz shares my concern in the second edition of his book, *Ethics and

Values in Industrial-Organizational Psychology*, in that there is very little research

in the field that focuses on individual employees' interests and needs without

regard to organizational outcomes. Further, Lefkowitz (2017) argues our field should take steps to correct this imbalance. Thus, to correct the imbalance of research that focuses on   organizational outcomes, I argue that more research is needed to address the intersection of personality, vocational interests, and job characteristics that benefits individual employees instead of organizational interests.

My research is answering Leftkowitz's (2017) call to action to conduct research that serves the employee within the organization. In the present study, I examine how characteristics of the job and personality interact to predict job satisfaction. The first goal is to understand how personality, specifically using the Myers-Briggs personality framework, moderates the relationship between job characteristics and job satisfaction. The second goal is to understand how that moderated relationship is impacted by one's psychological health. Broadly speaking, I hope to shed light on how individual differences (one's Myers-Briggs personality type) and contextual factors (one's psychological health) interact to moderate the relationship between what people need in their work and job satisfaction. Utilizing Hackman and Oldham's (1976) job characteristics theory to assess employee's needs and the Myers-Briggs personality system to examine employee's personality and values, and the outcome of interest will be job satisfaction.

I examined the relationship between aspects of job characteristics theory, a social psychology phenomenon that is based on the idea that the job task itself

is key to employee motivation and job satisfaction, with a focus on how that relationship changes as a function of one's Myers-Briggs personality. The lack of research examining social psychological phenomenon and personality in the same study is due to both theoretical and practical challenges. Theoretically, it is hard to hypothesize how all the conceivable personality traits (e.g., the five-factor model of personality: openness, conscientiousness, extraversion, agreeableness, and neuroticism, Goldberg, 1992; McCrae & Costa, 1987) interact with each other, as well as the social environment, to produce behavior or an outcome. For example, it is easier to hypothesize that in jobs with considerable social interactions (e.g., a sales position), employees reporting higher extraversion would also report higher job satisfaction (Judge et al., 2002) than people low on extraversion. Practically, even if we could come up with a model that hypothesizes how the interaction of different traits manifest in certain social situations to produce a certain behavior or outcome, testing that would be time-consuming, expensive, and require advanced statistical methods that researchers either do not know how to perform or do not have time to perform and analyze due to pressure to publish.

Specifically, there are two practical challenges that make conducting comprehensive personality research that looks beyond one trait difficult. The first challenge is that you need a large sample to detect interaction effects in personality. In fact, you need very large samples to detect an effect for any interaction. Even researchers studying small to moderate effects in epigenetics,

which looks at the interaction of multiple genes based on the environment (Dupont et al., 2009), note that the more genes studied in an interaction, the larger the sample you need (e.g. between 1,206-1,255, Hong & Wan, 2012). If you need approximately 1,000 people to detect a small to moderate interaction effect in something as robust as DNA, one can infer that you would need a similar sample size to detect interaction effects in personality, especially since the effect sizes for personality research looking at one trait at a time are so small (Arthur et al., 2006; Funder, 2015, Judge et al., 2002). Thus, obtaining a large sample size needed to conduct comprehensive personality research that looks at the interaction of many traits is difficult to obtain, even if you are only using a student sample. The second challenge is that it is difficult for personality researchers to recruit a large sample of employees needed to detect the interaction of multiple personality traits predicting work outcomes.

Thus, another contribution this research makes is that it is one of few to address how personality variables interact with a social psychological phenomenon (i.e., job characteristics) to predict a work outcome. Additionally, one's psychological health moderates the relationship between one's Myers-Briggs personality type and job satisfaction, and job task (job characteristic theory) and job satisfaction, such that if one is psychologically unhealthy, one's Myers-Briggs type or job task will have no influence in job satisfaction, resulting in no relationship with job satisfaction.

Why This Project Matters and Potential Implications

This project matters because if my theory and hypotheses are supported, the results will have several theoretical and practical implications. The first implication concerns trait-situation interactions. Trait-situation interactions explain that it is both one's personality traits and the social situation that produce behavior (Funder, 2015). Research on trait-situation interactions stems from the person-situation debate in personality and social psychology. In this debate, personality psychologists argued that personality entailed stable traits within the person that produced behavior whereas social psychologists argued that it was the situation and environment a person was in that produced behavior. Currently, both fields acknowledge that it is both the personality within the individual and the social situation they are in that interact with each other to produce behavior (Fleeson, 2004). However, while both fields acknowledge trait-situation interactions, there is still a debate regarding how much one is more influential than the other, with personality psychologists thinking personality is more important that the social situation and vice versa (Funder & Colvin, 1991; Funder, 2015).

Thus, if my theory and hypotheses are supported, it would provide further evidence supporting the idea of trait-situation interactions. Specifically, we would be able to see if: A) personality, B) three factors related to psychological health (negative affectivity, mental health, and stress), or C) the situation, is more or equally influential in predicting the outcome of interest, job satisfaction.

Understanding the extent personality and situations interact to predict an outcome such as job satisfaction has important theoretical implications because it would advance research on trait-situation interactions conducted by personality, social, and industrial-organizational psychologists. For industrial-organizational psychologists, knowledge on how the Myers-Briggs personality system influences trait-situation interactions would have implications for vocational counseling and selection. For example, industrial-organizational psychologists could use the Myers-Briggs personality system in competency modeling.

Additionally, if my theory and hypotheses are supported, it would show that the Myers-Briggs personality system does not operate the same for people with poor psychological health, such as those with mental health issues or those experiencing stress. For industrial-organizational psychologists or Myers-Briggs practitioners, the fact that poor psychological health changes how the Myers-Briggs personality system predicts outcomes would mean that researchers and practitioners would need to account for respondent's psychological health before utilizing the Myers-Briggs personality system. Also, if industrial-organizational psychologists implementing the Myers-Briggs personality system in organizations measure psychological health, they can detect mental health issues. While most industrial-organizational psychologists would not have the training to treat employees with mental health issues, they can refer them to the appropriate mental health practitioners and services.

A second implication is that if my theory and hypotheses are supported, organizations could add the Myers-Briggs when utilizing job characteristics theory for job redesign as a motivational tool for their employees. The value the Myers-Briggs personality system brings to organizations is that it explains how people: A) learn information, B) make decisions, C) what they become defensive about and what defense mechanisms they use, D) what they become stressed about and how they respond to that stress, which in turn shed light on E) what people need and value (Myers & Myers, 1980; Witt & Dodge, 2018). A short coming of job characteristics and job redesign theories are that they take a social psychological and situationist approach while ignoring individual differences. While there is empirical support that increasing characteristics of the job as described in Hackman and Oldham's (1976) job characteristics theory modestly improve satisfaction for all employees (Freid & Ferris, 1987), the results could be stronger if they took individual differences, such as employee's Myers-Briggs personality type into account. Thus, if my theory and hypotheses are supported, this would justify organizations using the Myers-Briggs personality system to individualize job redesign and job enrichment for their employees. Further, this would also advance the job characteristics and job redesign literatures by specifying which job characteristics are more salient to certain individuals based on their Myers-Briggs personality type.

Similar to using the Myers-Briggs personality system as a motivational tool for employees, another implication if my theory and hypotheses are supported is

that it would advance theory and practice in employee growth, development, and

insight. The value the Myers-Briggs personality system brings to the workplace

are that it increases self-awareness and awareness of differences and similarities

in coworkers (Myers & Myers, 1980; Witt & Dodge, 2018). In other words, the

value of the Myers-Briggs is that the process of self-discovery gets people to

think about their behavior and life choices, as well as it gives them language to

communicate their conflict styles, life-style choices, values, and needs with

others. When you give people any personality test, it helps them with their self-

concept and self-discovery. While increased awareness does not guarantee

personal growth (Witt & Dodge, 2018), it is the first step for personal and

professional development for employees. This means that employees cannot

improve their performance without first becoming aware how their mind learns

and makes decisions, as well as their strengths and blind spots (Witt & Dodge,

2018). Once employees are aware of how their mind works, as well as their

strengths and blind spots, they can engage in activities that will help them grow

as people and improve their lives (Witt & Dodge, 2018), which in turn will improve

performance (Aguinis, 2013).

Additionally, if my theory and hypotheses are supported, this would justify

vocational counselors and placement centers using the Myers-Briggs personality

system to help their clients find jobs that will satisfy them. Many vocational

counselors already use the Myers-Briggs personality system to determine clients'

interests and skills and then match clients to jobs that align with those. Rather

than providing information on employee's interests and skills, my research is using the Myers-Briggs personality system to measure employees' needs, motivations, and values. One of the values of vocational counseling is not just matching clients to jobs based on their skills and preferences (Demands-Ability fit, Edwards, 1996; Kristof-Brown et al., 2005), but in addition providing a space for clients to learn and become curious about their behavior and to become more process oriented (Needs-Supply fit, Kristof-Brown, & Guay, 2011). Thus, rather than using the Myers-Briggs personality system to measure clients' interests and skills, given there is no empirical support for doing the latter (Gardner & Martinko, 1996; Pittenger, 1993; 2005), vocational counselors can use the Myers-Briggs personality system to understand their client's needs, motivations, and values on a deeper level and help them find jobs that better fulfill those needs.

The last implication if my theory and hypotheses are supported relates to personality and selection. It could be tempting for organizations to use the Myers-Briggs personality system in selection for determining skills and fit. While it may be tempting for organizations to use the Myers-Briggs personality system in selection, there are many scientific, legal, and ethical reasons why doing so is problematic.

While the Myers-Briggs Type Indicator (MBTI), developed by Isabel Myers Briggs during WWII to place women in jobs based on their interests, is related to career interests (Myers & McCaulley, 1985; Myers & Myers, 1980), there is no empirical support suggesting that certain MBTI types are more skilled in certain

jobs (Gardner & Martinko, 1996; Pittenger, 1993; 2005). The original MBTI developed by Isabel Myers Briggs was meant to be used as a placement tool, not a selection tool for organizations to determine which candidates have the right knowledge, skills, and abilities to perform jobs. Thus, from a scientific standpoint, the MBTI should not be used to predict performance since there is no empirical evidence correlating MBTI type to performance of specific jobs. Since the MBTI does not predict performance, this also means that the MBTI is not legally defensible, which is another reason why organizations should not use the MBTI in selection.

Most problematic with using the MBTI in selection, however, are the ethical concerns. The first is that people's personality and job fit do not always go together. While certain MBTI types are more attracted to certain professions, such as ESTJs and ISTJ[1] being more attracted to law enforcement jobs compared to other types (Myers & McCaulley, 1985; Myers & Myers, 1980), it is important to remember these are trends and are not 100% accurate for everyone. For instance, while there is a trend of ESTJs and ISTJs being attracted to law enforcement jobs more than other types, it doesn't mean that other types, such as an INFJ[2], could not also be attracted to a job in law enforcement. Further, Myers and Myers (1980) explain that individuals of types not commonly

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[1] ESTJ – Extraverted, Sensing, Thinking, Judging and ISTJ – Introverted, Sensing, Thinking, Judging. More information on the Myers-Briggs personality types can be found beginning in The Four Myers-Briggs Dichotomies section.
[2] INFJ – Introverted, Intuition, Feeling, Judging, refer to the section The Four Myers-Briggs Dichotomies for more information.

found in certain occupations, such as the low occurrence of INFJs in law enforcement, bring unique gifts and contributions to that occupation that are rare among their coworkers. This suggests that if organizations are focused on using the Myers-Briggs personality system to select for occupational or job fit, they might miss out on talent that brings unique insights and contributions to the job not otherwise found in typical job incumbents.

It is important to remember that the Myers-Briggs personality system is just one model for explaining one's identity: it is not meant to be complete or exhaustive. Because the Myers-Briggs personality system is just one of many tools for explaining one's identity (other examples include the Enneagram, Gallup Strengths Finder, cultural differences), it should not be used as the only tool organizations use to measure job fit since it does not capture the entirety of a person (Witt & Dodge, 2018). As such, I argue that determinations of fit and considerations about selection be made using past competencies and present demonstrations of knowledge, skills, and abilities. I also argue that personality (e.g., the Myers-Briggs) should be used for vocational counseling, and once employees are hired using competencies, personality assessments can be used for developmental and educational purposes for current employees. This position is consistent with the conclusions of Arthur et al. (2006) that selection based on individual differences (e.g., personality) is difficult to justify given the low criterion-related validity evidence for personality predicting job performance.

My second ethical concern is that as psychologists, our goal is to understand and predict people for the betterment of the individuals whom we are predicting, and society (APA, 2000), and using the Myers-Briggs personality system in selection does not benefit society. This is because as mentioned earlier, the MBTI was not developed to predict aptitude or performance, and since there is no empirical evidence linking certain Myers-Briggs personality types to job performance, using it in selection would be unethical.

The next sections will describe the Myers-Briggs personality system theory and will provide the necessary background to understand the hypothesized relationships being tested.

Background of Myers-Briggs Personality System

The Myers-Briggs personality system is based on psychologist Carl Jung's 1923 book, titled *Psychological Types,* where he observed patterns in how people perceived information and how they evaluate that information. According to Jung (1923), there are perceiving processes, sensing and intuition, that deal with how we learn information and there are judging processes, thinking, and feeling, that deal with how we evaluate information. The four processes of sensing, intuition, thinking, and feeling are modified by an attitude of extraversion, placing greater importance on the outer world, or introversion, placing greater importance on the inner world. For example, the judging process of feeling can be modified by extraversion ("Extraverted Feeling"), being

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concerned with the feelings of others in the external world, or the process of feeling can be modified by introversion ("Introverted Feeling"), being concerned with your feelings in your inner world.

Jung's (1923) theory of personality types was expanded upon by novices Katherine Briggs and her daughter Isabel Briggs Myers who did not have a psychology or research background. They believed conflicts between individuals could be avoided if people understood and appreciated individual differences, which inspired them to study Jung's (1923) work. In response to WWII when organizations were facing a shortage of workers, Myers took her knowledge on Jung's typology developed with her mother and developed the Myers-Briggs Type Indicator (MBTI) as a placement tool to help organizations place women in jobs once held by men. The MBTI determines the cognitive functions one is predisposed to use. It is based on the four letters, called dichotomies, that make up one's Myers-Briggs personality type and are a code for the cognitive functions that make up one's personality type. The dichotomies, the four letters that make up one's type are E/I (Extraversion versus Introversion), S/N (Sensing versus iNtuition), T/F (Thinking versus Feeling), and J/P (Judging versus Perceiving). As mentioned earlier, the perceiving processes of sensing and intuition and the judging processes of thinking and feeling are modified by an attitude of extraversion (concerned with the outer world) and introversion (concerned with the inner world), resulting in eight cognitive functions. The eight cognitive functions, which will be further explained in a later section, are Extraverted

Sensing, Introverted Sensing, Extraverted Intuition, Introverted Intuition, Extraverted Thinking, Introverted Thinking, Extraverted Feeling, and Introverted Feeling (Myers & Myers, 1980, Witt & Dodge, 2018).

In 2018, Myers-Briggs practitioners Joel Mark Witt and Antonia Dodge published their book, *Personality Hacker* which added to Myers', Briggs', and Jung's work on type by devising a conceptual framework, the car model (explained in a later section), where they explain how one's cognitive functions interact with each other to produce a personality type, such as ENFP or ISTJ. Witt and Dodge (2018) add to Myers and Myers' (1980) work by explaining how the role of psychological stress causes us to be defensive, and how this defensiveness changes the manifestation of one's Myers-Briggs personality type.

Now that you have a background and a basic understanding of the Myers-Briggs personality system, the next sections will describe the four dichotomies and eight cognitive functions in detail, how to determine one's cognitive functions from the dichotomies, how one's cognitive functions interact with each other in what Witt and Dodge (2018) have coined, the car model. The Myers-Briggs section of this paper will conclude with a summary of past research and criticisms of the MBTI.

The Four Myers-Briggs Dichotomies

Introversion versus Extraversion. A common oversimplification of Jung's (1923) definition of introversion and extraversion is that introverts gain their

energy from being alone and extroverts gain their energy from being around others. While correct, this is overly simplistic because it does not account for introverts who are outgoing and love to be around people or extraverts who do not like to be around others. According to Jung (1923), for introverts, their inner world of thoughts and feelings (the world inside themselves) is the "real world" that truly matters, while for extraverts, the external world of people, places, things, and systems (the world outside of themselves) is the real world. Witt and Dodge (2018) expand on Jung's (1923) conception of introversion and extraversion by adding that the distinction between introverts viewing their internal world as the "real world" explains why introverts pause slightly before they speak, while extraverts do not. Witt and Dodge (2018) explain that for introverts, they pause slightly before they speak to ensure what they are saying is in alignment with their inner world, since for them that is the only world that truly matters. On the other hand, extraverts do not pause before they speak and instead, speak while they are thinking because since the external world outside themselves is the real world, extraverts need to hear their thoughts out loud in order to determine the value and validity of their statements (Witt & Dodge, 2018).

As mentioned previously, energy management is another component of the introversion versus extraversion dichotomy that is rooted into what constitutes the "real world". The reason why introverts need more time alone to recharge is because their inner world is the real world, which means they are

constantly reviewing information and reconciling it with what they know to be true. By contrast, for extraverts, since the outer world is the real world, they are energized by it and are constantly looking for new stimuli in the outer world and feel at home when interacting with their environment (Witt & Dodge, 2018). This distinction between what introverts and extraverts consider to be the real world is important for understanding the difference between introversion and extraversion beyond the energy management explanation that is common in popular and academic psychology. While the energy management explanation is correct, it is not a complete understanding of Jung's (1923) conception of introversion and extraversion.

A misconception I often come across regarding Jung's (1923) conception of introversion and extraversion is people thinking that because they need to be alone that they are introverts and because they need to be around others, they are extraverts. This is grossly incorrect because we all need to be alone and "recharge" and we all need to be around others. Jung (1923) explains that while we all prefer either our inner world (introversion) or the external world (extraversion), that we need to have a balance of both and that solely focusing on one is unhealthy. In other words, it is unhealthy for introverts to spend all their time alone and it is unhealthy for extraverts to only spend time in the outside world without taking time for reflection (Jung, 1923; Myers & Myers 1980; Witt & Dodge, 2018).

To summarize, the introversion versus extraversion dichotomy boils down to what constitutes the real world: for introverts, the real world is their internal world and for extraverts the real world is the external world outside of them. From this is where other behavioral manifestations of introversion and extraversion, such as energy management, originate from (Witt & Dodge, 2018).

Sensing versus iNtuition. The sensing versus intuition dichotomy concerns how we learn and perceive reality (Myers & Myers, 1980; Witt & Dodge, 2018). Sensors prefer reliable and verifiable information they can observe through their five senses and intuitives prefer pattern recognition to help them understand information quickly as well as to speculate on the unobservable. Intuitives engage in pattern recognition based on a few data points they observe in the outside world and form connections between seemingly disparate things (Witt & Dodge, 2018). For example, let's say it's 2007 when more people were beginning to use social media websites such as Facebook where they post photos and have a platform to communicate to many people within and outside their social network. In the 2007 social and cultural climate, everyone thinks Facebook is a great way to share photos and keep in touch with family and friends across the country and world. Both intuitives and sensors observe the same facts regarding Facebook use, such as people using Facebook to post photos, share personal and political opinions, and both are aware that anyone with a Facebook account can read what you post on Facebook. The difference between the sensor and the intuitive is the sensor will take the facts as they are whereas the intuitive wants to

understand things on a deeper level and uses pattern recognition to speculate on what is happening "behind the curtain", so to speak. Thus, the intuitive may pair facts about Facebook and how people use it (e.g., post photos, share political opinions, anyone with a Facebook account can read what you post) with what they know about employer and labor markets and conclude employers may exploit Facebook to make judgements on candidates prematurely before evaluating their qualifications to perform the job. At the time in 2007, privacy concerns over Facebook use was not in the national dialogue and was not an issue, meaning the intuitive was able to perceive hidden connections others could not see at the time in 2007.

By contrast, unlike intuitives who engage in pattern recognition based on what they're observing in the outside world and make speculative leaps in logic, sensors stick to observable facts and reality as it is, rather than as it could be (Myers & Myers, 1980; Witt & Dodge, 2018). Because privacy concerns over Facebook were not present in 2007, the sensor would most likely conclude that Facebook is a great way to express oneself and stay in touch with family and friends, because that's what it was used for in 2007. The sensor would not have privacy concerns about Facebook in 2007, because there were no facts, no privacy breaches, or cases where employers used Facebook to screen candidates in 2007. Essentially, sensors look at reality for what it is in the present moment whereas intuitives look at reality for what it could be, and thus are more future and possibility oriented than sensors (Witt & Dodge, 2018).

The sensor versus intuition dichotomy also influences values and basic interests. Because sensors are grounded in reality and what is knowable, values such as family, tradition, living for the present moment, and responding to current problems are important, because they are based on reliable facts and can therefore be trusted. On the other hand, intuitives value what is theoretical and abstract, and are more focused on what things mean, are more possibility-oriented, and are more likely to question reality rather than accepting reality for what it is the way a sensor would (Witt & Dodge, 2018).

To summarize, the sensing versus intuition dichotomy is concerned with how we learn and perceive the world around us. Sensors learn by observing the world around them through their five senses and prefer reliability of information, whereas intuitives learn by taking what they observe in the world through their five senses and engage in pattern recognition to arrive at deeper meanings and insights (Witt & Dodge, 2018).

Thinking versus Feeling. The thinking versus feeling dichotomy concerns how we evaluate the information gathered by the perceiving processes of sensing or intuition. In other words, the thinking versus feeling dichotomy concerns how we make decisions. Thinkers prefer to use impersonal metrics to objectively evaluate information and feelers prefer to use personal, human-based considerations to subjectively evaluate information (Witt & Dodge, 2018). Essentially, thinkers prefer to use objective, impersonal data to make decisions whereas feelers prefer to use subjective information that considers people's

emotions and interpersonal dynamics. A misconception concerning the thinker versus feeler dichotomy is that because thinkers use impersonal data, the quality of their decisions are better than feelers. However, the quality of a thinker's decisions depends on the quality of the objective data on which those decisions are based. For example, a thinker may decide which blender to buy based on how many four-star reviews each has on Amazon and buy the blender with the most four-star reviews. However, using the impersonal metric of buying the blender with the most four-star reviews is not effective if half of those four-star reviews were paid for by the maker of the blender, making half the reviews invalid. By contrast, a feeler may decide which blender to buy based on which company they perceive to be more ethical. The point in these two examples is to illustrate that one decision-making style is not intrinsically better than the other, they are just different ways of evaluating information and making decisions.

Another misconception novices make when first learning about the Myers-Briggs personality system is believing that thinkers do not feel and feelers do not think. Of course, this is grossly incorrect; all thinkers feel and all feelers think. The true distinction between the thinker versus feeler dichotomy is that thinkers use impersonal data and metrics whereas feelers use personal human-based considerations. This means that thinkers can decide their values using emotion-based considerations and feelers can be analytical when evaluating how a decision impacts people. For example, thinkers can become emotional and irate when people ignore the systems they put in place and what they believe to be

accurate, effective, and true. By contrast, a feeler can ignore their emotions to keep the harmony in the group (Witt & Dodge, 2018).

To summarize, the thinker versus feeler dichotomy concerns how we evaluate information and make decisions. Thinkers use impersonal metrics and data, whereas feelers use personal, human-based considerations (Witt & Dodge, 2018).

Judging versus Perceiving. The judging versus perceiving dichotomy explains how one wants to organize their world, with judgers wanting to organize their outer world to allow inner-world freedom and perceivers wanting to organize their inner world to allow outer world freedom. When judgers think, they explore many possibilities in their mind, which means they need a calm distraction free environment. When a judger is interrupted, the flow of ideas goes away. This is why judgers desire structure and organization in their external environment: so that they can freely wander their minds and not "lose" any good ideas (Witt & Dodge, 2018).

Perceivers are the opposite. Their internal world of thoughts and feelings are organized and if they are interrupted, they do not have an issue picking up where they left off. This can be thought of as having an internal file system where thoughts and feelings are well-organized and remembering where one left off is just a matter of finding the file. This internal organization allows perceivers to engage in spontaneity in the outer world which generates great satisfaction for them (Witt & Dodge, 2018).

To summarize, judgers prefer structure and outer-world organization to compensate for their lack of internal organization so that they can concentrate and think clearly. On the other hand, perceivers' thoughts and feelings are well organized, which means they do not need the same structure and outer-world organization a judger would to be productive. This allows the perceiver to be spontaneous and more open-minded than the judger who prefers to have things planned (Witt & Dodge, 2018).

Why We Need Both Learning and Decision-Making Functions in Our Personalities

As mentioned before, the four-letter dichotomies are "codes" for the cognitive functions that make up our personality type. There are eight cognitive functions which can be divided into "learning functions", how we perceive and take in information, and "decision-making functions", how we evaluate information and make decisions (Witt & Dodge, 2018). The attitude of extroversion and introversion determines the direction the cognitive function points to, with extraverted functions focusing on the outer world as the ultimate reality and introverted functions focusing on the inner world as the ultimate reality (Myers & Myers, 1980; Witt & Dodge, 2018). We all need access to learning functions and decision-making functions to be balanced and healthy individuals. Perception without judgement results in indecisiveness and judgement without perception results in decisions made in haste without information. We also all need access to the outer world and our inner world. Using only extraverted functions and only relying on outer-world feedback results in neglecting your own

thoughts and feelings while relying solely on introverted functions and reflecting on your own thoughts and feelings results biased thoughts and beliefs that are self-serving and not based in reality (Witt & Dodge, 2018).

The next section describes how to determine the cognitive functions that make up your Myers-Briggs type from the four-letter dichotomy. This is important to understand because it explains the order and logic behind the cognitive function pairings which will help the reader understand the sixteen Myers-Briggs types.

Determining Cognitive Functions from the Four-Letter Dichotomies

Your four-letter personality type, such as INTJ, are the four-letter code for something called your cognitive function stack. Your cognitive function stack consists of four cognitive functions. Myers-Briggs practitioners Joel Mark Witt and Antonia Dodge wrote a book, titled *Personality Hacker,* where they describe a tool called the car model which succinctly outlines how one's four cognitive functions interact with each other to make up one's personality type.

The idea behind the car model is that there are four cognitive functions in your car: the Driver which is your greatest natural talent and flow state, your Copilot that sits next to the Driver which is your second greatest talent and the thing to develop to grow yourself, your 10-Year-Old which sits behind the copilot and is a weakness and the opposite function of the Copilot, and your 3-Year-Old which is opposite of the Driver and sits behind them and is your greatest

weakness. To determine the cognitive functions in the car of an INTJ, the first step is to isolate the two middle dichotomies (aka the two middle letters) N for iNtuition and T for Thinking. As mentioned earlier, each cognitive function is modified by an extroverted and introverted attitude. When determining type, we always figure out which of the two middle dichotomies is extraverted first. This means the second step is to figure out whether iNtuition or Thinking will be extraverted. We do this by looking at the last dichotomy J or P to figure out if it will be the judging or perceiving process that will be extraverted. Since this is an INTJ, the J means that the judging process of thinking will be extraverted, known as extraverted thinking. In the two middle dichotomies, one dichotomy represents an extraverted process while the other represents an introverted process. By default, this means that the N in the INTJ is introverted, known as introverted intuition, since the T in the INTJ was extraverted.

At this point, we know that an INTJ has extraverted thinking and introverted intuition, which will be the Driver and Copilot for the INTJ. We just do not know which is which. To figure this out, we look at the E/I dichotomy, the first letter in the INTJ's type to determine whether the extraverted attitude or introverted attitude will be the Driver for the INTJ. Since the INTJ is an introvert, this means that the introverted attitude is the Driver and the extraverted attitude is the Copilot. For the INTJ, introverted intuition is the Driver and extraverted thinking is the Copilot.

The last two child-like cognitive functions of the INTJ can be figured out through the law of polarity. As mentioned before, the 10-Year-Old and 3-Year-Old functions are opposites of the Copilot and Driver, with the 10-Year-Old being opposite to the Copilot and the 3-Year-Old being opposite to the Driver. Since the Copilot for the INTJ is extraverted thinking, the opposite of extraversion is introversion and the opposite of thinking is feeling. Thus, the 10-Year-Old function for the INTJ is introverted feeling. Lastly, since the Driver for the INTJ is introverted intuition, the opposite is of introversion is extroversion and the opposite of intuition is sensing. Thus, the 3-Year-Old function for the INTJ is extraverted sensing. The cognitive function stack for the INTJ is introverted intuition as the Driver, extraverted thinking as the Copilot, introverted feeling as the 10-Year-Old, and extraverted sensing as the 3-Year-Old. The next section will look at type dynamics in the car model continuing our example with the INTJ.

Type Dynamics in the Car Model

As mentioned in the previous section, one's cognitive function stack in the car model consists of a Driver, Copilot, 10-Year-Old, and 3-Year-Old. Table 1 contains brief descriptions of the cognitive functions and may be helpful for readers to refer to throughout this section. It provides the technical name for each cognitive function, its abbreviation, and a helpful nickname developed by practitioners Joel Mark Witt and Antonia Dodge in their book, *Personality Hacker*.

Table 1. Brief Descriptions of Cognitive Functions

Learning Functions	Decision-Making Functions
Extraverted Sensing (Se): "Sensation" Learns new information by using their five senses to obtain verifiable information in real time. *Healthy:* Lives in present, good at quickly taking action. *Unhealthy:* Self-indulgent, impulsively takes action.	**Extraverted Thinking (Te): "Effectiveness"** Makes decisions by figuring the most effective and productive way to accomplish tasks that get people's logistical needs met. *Healthy:* Organizes people and resources to accomplish goals. *Unhealthy:* Will do whatever works at any cost to accomplish a goal.
Introverted Sensing (Si): "Memory" Learns by using five senses to obtain reliable information, observations are captured and reviewed later. *Healthy:* Uses precedent to create stability and order. *Unhealthy:* Refuses to try new things, retreats to comfort zones.	**Introverted Thinking (Ti): "Accuracy"** Makes decisions by figuring out what makes the most logical sense. *Healthy:* Understands frameworks and evaluates information empirically to make decisions. *Unhealthy:* Cannot be reasoned with, can only see their own logic
Extraverted Intuition (Ne): "Exploration" Learns by engaging in pattern recognition in the outside world to understand the unobservable. *Healthy:* Learns quickly by trying new combinations. *Unhealthy:* Impulsive and uses pattern recognition to justify erroneous conclusions.	**Extraverted Feeling (Fe): "Harmony"** Makes decisions by figuring out the best way to get people's emotional needs met. *Healthy:* Understands people's needs and connects emotionally with them. *Unhealthy:* Uses emotional intelligence to manipulate people.
Introverted Intuition (Ni): "Perspectives" Learns by engaging in pattern recognition in their own mind by shifting to different perspectives to understand how different people interpret reality. *Healthy:* Shifts perspectives to understand self and others *Unhealthy:* Becomes paranoid and fearful of the future and assumes worst case scenarios.	**Introverted Feeling (Fi): "Authenticity"** Makes decisions by evaluating one's feelings, ethics, and values to figure out which outcome is congruent with who they are. *Healthy:* Recognizes how experiences impact emotions and how those influence individuals. *Unhealthy:* Self-obsessed, convinced of rightness regardless of evidence.

The Driver is the dominant part of your personality where you have natural talent. Note that just because you have talent in this cognitive function does not mean you have developed skill using it. The same way a singer who has a natural talent for singing fine tunes their voice through training, one needs to develop their Driver cognitive function so that the best qualities of that function come out. If one does not use and develop their Driver process, they become depressed and dysthymic. The health of a person explains some of the individual variation between the sixteen Myers-Briggs personality types and it is why two people of the same type have different behaviors. In examining the INTJ, their Driver process is introverted intuition. This means they primarily engage in pattern recognition in their own mind by creating theoretical mental frameworks and they use those frameworks to shift to different perspectives to understand how different people interpret reality.

The Copilot is your second strongest strength and developing the Copilot is key to growing yourself and becoming a more balanced and successful individual. Even though the Copilot is a talent and its use is key to our growth, we are less likely to use it because of the fact that it has the opposite attitude of extroversion or introversion as our Driver function. Since the INTJ's Copilot is extraverted thinking, using extraverted thinking and developing it will not be as natural or comfortable for the INTJ, who is an introvert. Jung (1923) explained that even though we all have a preference toward introversion or extroversion, to be balanced and healthy individuals, we need to develop the opposite part of

ourselves. Too much introversion is unhealthy; we need to be engaged with the outer world, and too much extroversion is unhealthy: we need to reflect on our internal thoughts and feelings. This means that use and development of the Copilot function gives an introvert access to the external world and an extravert access to their internal world which they both need to become healthy and balanced individuals. This means for the INTJ, in order for their introverted intuition which creates theoretical mental frameworks to be useful, they need to develop extraverted thinking which is about figuring out what works in the outside world and creating and maintaining systems that get people's logistical needs met.

The 10-Year-Old and 3-Year-Old functions can be thought of as children because they are valued and important part of our personalities but have child-like capacities. These functions still have something to contribute, but we should not let them make important decisions or have great responsibility. For example, you may ask a 10-year-old to help you set the table for a dinner party, but you would not trust them to host the dinner party on their own. The same is true for our personality: the 10-Year-Old function should help and be in service to the Copilot function, but it should not run the show.

The 10-Year-Old should be in service to the Copilot rather than the Driver function because the Copilot represents your growth state and is the hardest part of your personality to develop since it has the opposite attitude of the Driver, where we are most comfortable. The 10-Year-Old is the opposite of the Copilot

and we engage with our 10-Year-Old when we feel defensive and want to stay in our comfort zones. As mentioned before, it is not comfortable for us to develop our Copilot process because we like to stay in our comfort zones. For introverts this means staying in the internal world and for extroverts this means staying in the external world. Also, as mentioned before, we all need a way to access new information (which is what perceiving functions do) and we all need a way to evaluate that new information (which is what judging functions do). Since the 10-Year-Old is the opposite of the Copilot and has the same attitude as the Driver, it means if someone leads with a perceiving function, they can bypass the Copilot and access a judging function that has the same attitude as the Driver function which is more comfortable for them. Conversely, if the Driver is a judging function, meaning the Copilot is a perceiving functions, they can bypass the Copilot and access a perceiving function that has the same attitude as the Driver function which is more comfortable for them.

For example, for the INTJ, since their Copilot is extraverted thinking, their 10-Year-Old would be the exact opposite, which would be introverted feeling. Since the INTJ is an introvert who leads with a perceiving function called introverted intuition, they need a way to access a judging function in order to make decisions with the information they've gathered from their perceiving function. Since an introvert is more comfortable in their internal world and since developing their Copilot function is not as natural for them because we all prefer to do things that are comfortable, it means that the INTJ can access a judging

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function of introverted feeling that has the same attitude of introversion without leaving their comfort zones. When the Driver function bypasses the Copilot and goes straight to the 10-Year-Old, this is known as a loop and it is not healthy because the 10-Year-Old function is the unhealthy and less developed aspect of that function.

For the INTJ, their loop is between introverted intuition, a perceiving process, and introverted feeling, a judging process. Instead of the positive aspects of introverted feeling, making decisions that are authentic to who you are, the INTJ uses introverted feeling to do what feels right and to avoid responsibility if something is not as it "should be". The key to getting out of the loop is through development of the Copilot function. For the INTJ, it would be development of their Copilot extraverted thinking which is focused on doing what works in the external world in the most effective way possible (hence the nickname for extraverted thinking "effectiveness"). Specifically, INTJs get out of the loop by getting out of their head and vetting their ideas in the external world, instead of theorizing on how things should be, resulting in the loop between introverted intuition and introverted feeling.

It is only when we bypass the Copilot and exclusively use our 10-Year-Old to make decisions, if our Copilot is a decision-making process, or exclusively use our 10-Year-Old to learn new information, if our Copilot is a learning process, that it becomes a problem and when we become unhealthy. As mentioned earlier, the 10-Year-Old is best use when it helps and in service to the Copilot instead of in

replacement with the Copilot. For the INTJ, they should only use introverted feeling and make decisions based on what feels right to them after they have carefully scrutinized what is rational and objective. Lastly, the 10-Year-Old can be used in times of play and intimacy. For the INTJ, 10-Year-Old introverted feeling makes them enjoy ethical debates and "good versus evil" stories and it allows them to show sympathy to loved ones during times of distress.

The last function is the 3-Year-Old which has the maturity of a 3-year-old child. It is a weakness and the most vulnerable part of our personality. The 3-Year-Old comes out in times of stress when the Driver is overwhelmed or when you have been neglecting the 3-Year-Old function. The 3-Year-Old is the opposite of your Driver function and is the part of you that has your dreams and aspirations. This means you need to give opportunities to express your 3-Year-Old so that it does not become neglected and take over your personality.

The relationship between the Driver and 3-Year-Old is analogous with the cost of specialization. The cost of specialization is the idea that being highly skilled in one area means that you are less skilled in other areas, because of the fact that you are not paying attention to things outside of your area of expertise. For the INTJ, their 3-Year-Old is the opposite of introverted intuition, which is being in their inner world of theories and ideas, is extraverted sensing, which is being present in the external world of facts. When neglected, or if the Driver becomes extremely overwhelmed, unhealthy ways extraverted sensing manifests itself is when the INTJ indulges in food and drink. Healthy expression of

extraverted sensing for the INTJ could be engaging in some physical activity,

such as yoga or dance classes, that would get the INTJ out of their head and into

their body.

Now that we have laid the foundation of the Myers-Briggs theory and how

the cognitive functions work and interact with each other, I will conclude this

section with an overview of past research on the Myers-Briggs personality

system as well as criticisms on the Myers-Briggs personality system theory.

History of Katherine Cook Briggs, Isabel Briggs Myers and The Development of the Myers-Briggs Personality Theory and MBTI

One misconception is that there is no research supporting the reliability

and validity of the Myers-Briggs personality system. Many academics and

personality psychologists claim the MBTI was developed by a "mother-daughter

duo in their kitchen", as if the Myers-Briggs personality system was a casual idea

thought up by a mother and daughter having tea in their kitchen. This is not true,

and such statements and beliefs ignore the fact Katherine Cook Briggs and

Isabel Briggs Myers, though not academics with Ph.Ds, applied the scientific

method of observation, consulting previous research, coming up with a theory

and hypotheses to test the theory, collecting data, analyzing the data, discussing

the implications of that data, and distributing the results to the general population.

Criticism of the Myers-Briggs personality system is unfair because they are

based on an incomplete or inaccurate understanding of the Myers-Briggs

personality system. Specifically, unsupportive research findings on the reliability

and validity of the Myers-Briggs personality system are because of a misapplication of the Myers-Briggs personality system and a misalignment between theory and measurement.

Before diving into specific research findings on the Myers-Briggs personality system, a brief history of the founders of the Myers-Briggs personality theory Katherine Cook Briggs and Isabel Briggs Myers is in order for the reader to understand and appreciate the work and scientific process that went into developing the theory and MBTI. The following paragraphs are a summary from the section of Myers and Myers' (1980) book, *Gifts Differing*, which discusses the life of Isabel Myers and the development of Myers-Briggs personality theory and the MBTI.

The Myers-Briggs personality theory begins with Isabel Briggs Myers' mother, Katherine Cook Briggs, who educated Isabel at home while pursuing a writing career. Inspired to develop the characters for her novels, Briggs read autobiographies and formed her own typology based on the patterns she found. From her study of autobiographies, Briggs identified four types: "meditative", "spontaneous", "executive", and "sociable". The four types Briggs originally envisioned correspond with the MBTI's I's (all introverts), EP's (all extraverted intuition and extraverted sensing Drivers), ETJ's (all extraverted thinking Drivers), and the EFJ's (all extraverted feeling Drivers). When Briggs found and began studying Jung's work, she traded her typologies for Jung's whose typologies were similar to what she originally observed from her studies on autobiographies.

Briggs along with her daughter studied Jung's work and became keen observers of type.

Like her mother, Isabel was an avid reader and excelled in school, graduating with the highest honors from Swarthmore College in 1915. Swarthmore College is also where she met her husband, Clarence G. Myers and the two married in 1915 as well. While raising two small children, Isabel Briggs Myers continued her writing career and won a mystery novel writing contest in 1928. After writing her second mystery novel, she took eight years off from writing to focus on raising her children.

The emergence of WWII made Myers realize the consequences misunderstanding people's individual differences could have – with the worst-case scenario being destroying an entire civilization. The conflict in WWII motivated Myers to develop an instrument to help people understand and accept each other's differences rather than destroying and thinking less of people who are different from themselves. Another motivation for the development of the MBTI instrument was the fact that organizations were short on labor and needed a way to effectively place women in jobs once held by men. Using the work on Jung's typology developed with her mother, Myers created the first version of the MBTI to help place women in jobs once held by men based on their interests and skills as evidenced by the Myers-Briggs personality system theory in 1944.

Myers' contribution and educational background are by no means conventional. She was homeschooled by her mother and did not have a Ph.D nor work in academia. Myers did not limit herself nor was she discouraged by the fact that she did not have a traditional education or Ph.D; she realized she did not need formal training to accomplish a goal. It is with her sheer human will and perseverance that Myers conducted research to gather reliability and validity evidence for the MBTI. Myers spent many hours in the library reading everything she could on statistics and psychometrics and began developing an item pool that captured the attitudes, feelings, perceptions, and behaviors of the different psychological types.

Her first step in the test validation process was doing an apprenticeship with Edward N. Hay, the director of personnel for a large Philadelphia bank, where he taught her everything she needed to know about test construction and validation. To gather data for her validation studies, Myers convinced several principles of schools in eastern Pennsylvania to permit her to administer early versions of the MBTI to thousands of students.

Myers' second milestone was persuading the dean of the George Washington School of Medicine to administer the MBTI to freshmen medical students. The sample from the George Washington School of Medicine included 5,355 students and is one of the largest longitudinal studies in medicine to date. Entirely on her own, she also obtained a sample of 10,000 nursing students from 71 different schools to collect validity evidence on the MBTI.

Her third major milestone was in 1956 when Henry Chauncey, the president of the Educational Testing Service (ETS), learned of her work and had David Saunders, a psychologist on his staff, collaborate with Myers to gather validity evidence for the MBTI. Saunders was impressed by Myers' statistical knowledge, especially since she did not have formal training in statistics and psychometrics.

In 1956, ETS published the official 166 item MBTI that is still in use today. In 1975, CPP, Inc. became the official publisher of the MBTI, which was also when the MBTI became available for practitioners. Today, the MBTI is the most widely known and used personality test. CPP, Inc.'s founder John D. Black encouraged Myers to write *Gifts Differing* which explained the theory behind the MBTI. To date, *Gifts Differing* remains the foundational book to read in order to become well-versed in the theory behind the Myers-Briggs personality system, and it is Myers and Myers (1980) *Gifts Differing,* of which Witt and Dodge's (2018) car model explaining the dynamics of the cognitive functions, is based upon.

Now that you understand the history of Isabel Briggs Myers and the Myers-Briggs personality system, the next section will describe previous research on the Myers-Briggs personality system and occupational interests and values.

Previous Research on the Myers-Briggs Personality System

Despite not having a psychology research background or coming from academia, Myers took it upon herself to contact various schools and employers to gather validity evidence for the MBTI and her Myers-Briggs personality theory. Table 2 depicts the frequencies between the Myers-Briggs dichotomies and occupational interests, depicted by areas of study by college students and actual occupational data. Since this data is on the dichotomies, this means for each occupation, there will be a percentage between each of the four dichotomies, such that the percentage of extraverts and introverts for each occupation will add to 100% and so on.

Table 2. Frequencies of Myers-Briggs Dichotomies and Occupational Interests

Occupational Interest	Sample	N	Extravert	Introvert	Sensor	iNtuitive	Thinker	Feeler	Judger	Perceiver
Business Administration	Graduate Students from the Centre of Macquarie University in New South Wales	228	44.3%	55.7%	47.4%	52.6%	89.0%	11.0%	69.3%	30.7%
Liberal Arts	High School males	3,676	54.3%	45.7%	40.9%	59.1%	54.4%	45.6%	52.4%	47.6%
Engineering	College Students	2,188	48.7%	51.3%	35.2%	64.8%	67.2%	32.8%	64.8%	35.2%
Finance & Commerce	College Students	488	70.3%	29.7%	71.9%	28.1%	68.6%	31.4%	52.9%	47.1%
Science	Cal Tech College Students	705	38.0%	62.0%	16.7%	83.3%	68.8%	31.2%	48.8%	51.2%
Fine Arts	University of Florida College Sample	33	24.2%	75.8%	9.1%	90.9%	39.4%	60.6%	33.3%	66.7%
Occupational Therapy	University of Florida College Sample	29	75.9%	24.1%	34.5%	65.5%	17.2%	82.8%	41.4%	58.6%
Art Education	University of Florida College Sample	31	48.4%	51.6%	12.9%	87.1%	22.6%	77.4%	29.0%	71.0%
Counseling Education	College Students	118	54.2%	45.8%	15.2%	84.8%	14.4%	85.6%	35.6%	64.4%
Law Students	University of Pennsylvania	2,248	55.2%	44.8%	40.8%	59.2%	73.4%	26.6%	57.0%	43.0%
Urban Police		280	58.9%	41.1%	79.6%	20.4%	66.8%	33.2%	66.4%	32.6%
School Administration	Canadian Sample	124	59.7%	40.3%	58.9%	41.1%	54.8%	45.2%	86.3%	13.7%

Source: Myers & McCaulley, 1985; Myers & Myers, 1980

There are several patterns between type and occupational interest. For engineering, NTJs (ENTJs and INTJs) make up most of the MBTI types enrolled in that program at 26.8%. Engineering encompasses creating something from nothing and with the cognitive function combination of having introverted intuition, which is good at pattern recognition, and future implications paired with extraverted thinking, which is focused on making an impact on the outside world by creating or enforcing streamlined systems. Thus, it would make sense that ENTJs and INTJs would show greater interest in engineering compared to other types.

For finance and commerce, the biggest take-away is that 50.8% are STs (ESTJs, ISTJs, ESTPs, ISTPs). The two middle letters in one's MBTI type are called function pairs, and they indicate your motivations, how you influence others, and how others can influence you. Since STs value efficiency, focus their attention on facts, and handle those facts with impersonal analysis, it makes sense that half of students in a finance and commerce program would be STs.

For science, an overwhelming majority of 83.3% were intuitives, and of those intuitives 50.2% were introverted intuitives (INFJ, INTJ, INFP, INTP). Myers and Myers (1980) explains the combination of being an introvert, where one is able to focus for longer periods of time without human interaction, paired with being an intuitive and being able to make patterns among seemingly disparate concepts and form new connections sheds light on why half of students in the science program are introverted intuitives.

For occupational therapy, 75.9% are extraverts and 82.8% are feelers. This makes sense that more extraverts would be interested in occupational therapy compared to introverts, because for extraverts, taking action in the moment is something they are more skilled at than introverts who need more time to process situations (Myers & Myers, 1980; Witt & Dodge, 2018). Since feelers are motivated by wanting to help people more than thinkers (Myers & Myers, 1980; Witt & Dodge, 2018), it also makes sense why a higher percentage of feelers would study occupational therapy.

For art education, 87.1% are intuitives, 77.4% are feelers, and 71.0% are perceivers, with 48.3% of all students in the art education program being NFPs (ENFPs, INFPs). NFPs have the same decision-making process of introverted feeling either as their Driver or Copilot. Introverted feeling makes decisions based on conviction and inner-alignment, and out of all the cognitive functions, it is most concerned with identity and self-expression (Witt & Dodge, 2018). Thus, it makes sense why the highest proportion of MBTI types pursuing art education would be NFPs.

For the counseling education program, 84.8% are intuitives and 85.6% are feelers. Additionally, 76.4% of the students enrolled in the counseling education program were NFs. NFs value empowering others and are enthusiastic and insightful, making them good at understanding and connecting with people – two skills essential for counseling. While this data is based on interest not skill, it makes sense that NFs who are skilled at understanding and connecting with

people would show a higher interest compared to other types to pursue counseling education.

For the law program at the University of Pennsylvania, 73.4% were thinkers, and 57.0% of them were judgers. Further, another interesting finding was that the TJs (ENTJs, INTJs, ESTJs, ISTJs) had the lowest drop-out rate of 48% compared to the TPs (ENTPs, INTPs, ESTPs, ISTPs) who had a 70% drop-out rate. This suggests that the judger/perceiver dichotomy, which explains whether we prefer outer (judger) or inner (perceiver) world organization is influential in determining who is more likely to drop-out of law school.

For urban police, 79.6% of them were sensors, 66.8% of them were thinkers, and 66.4% of them were judgers. Out of all the urban police sampled, 39.6% of them were STJs (ESTJs and ISTJs), making them the most represented out of all the types. Both STJs use the cognitive functions of introverted sensing, which takes in sensory information and compares it to what is already known, and extraverted thinking, which is focused on making an impact on the outside world by creating or enforcing streamlined systems. Essentially, STJs prefer to apply precedent impartially, which sheds light on why STJs would be especially interested in policework compared to other types.

Lastly, for school administrators, the only notable difference was that 86.3% of them were judgers and only 13.7% were perceivers. As mentioned earlier, the judger/perceiver dichotomy encompasses the preference for either

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outer world organization (judgers), or inner world organization (perceivers) (Witt & Dodge, 2018). Thus, since school administrators' tasks entail creating and maintain structure and making plans, it makes sense why more judgers than perceivers would be interested in school administration.

There are several limitations of this research. The first is that some of the samples obtained are small (e.g. $N = 31$ for the art education student sample). Second, these are reported frequencies, no formal hypotheses were made, and no statistical significance tests were performed, which means all inferences and interpretations of the data made in this paper were speculative rather than definitive. Third, these are only self-report preferences; they do not account whether these respondents were successful or happy with their career choices. However, the reader should not infer that these limitations suggest we cannot use this data in a meaningful way. The biggest take-away from this research on the frequencies of the MBTI dichotomies, and type patterns on occupational interest is that there are meaningful patterns between personality and occupational interest that the Myers-Briggs personality system is capturing.

Other notable research was conducted by W. Harold Grant (1965) titled, *Behavior of MBTI types*. He created a questionnaire for his freshmen classes where he asked students, "What do you consider the most important feature of the ideal job?" and offered five choices. The five choices were:

a.) Provides an opportunity to use one's special abilities.

b.) Permits one to be creative and original.

c.) Enables one to look forward to a stable and secure future.

d.) Provides one with a chance to earn a good deal of money.

e.) Gives one an opportunity to be of service to others.

Grant (1965) did find notable patterns between the student's Myers-Briggs personality types and their choices to his question indicating the most important feature of their ideal job. The majority of Grant's (1965) findings were around the sensing versus intuition dichotomy, which encompasses how we perceive the world and take in new information. Grant (1965) found that sensors were more likely to favor choice C, "Enables one to look forward to a stable and secure future" than intuitives. As mentioned previously, the sensing/intuition dichotomy depicts how we learn and take in new information, with sensors learning by observing their world though their five senses, and intuitives learning through pattern recognition and (Myers & Myers, 1980; Witt & Dodge, 2018). This means that sensors are more grounded in reality, *what is*, and intuitives are focused on possibilities, *what could be*. Thus, it makes sense why a job with security would be more appealing to sensors than intuitives. Simply put, this is because sensors strive to be comfortable in the world as it is, whereas intuitives want to change the world to what it could be.

By contrast, security seems to be less important to intuitives and being able to use their abilities and have a job where they can be creative and original seem to be more important to them. Grant (1965) found that more intuitives than

sensors endorsed choices A and B. This makes sense as the use of their special abilities and being creative and original are more important to intuitives in a job than sensors since intuitives are more possibility oriented and want to change the world. Essentially, for sensors, the nature of the job was less important for them as long as the job provided security, as evidenced by more sensors than intuitives endorsing choice C, while for intuitives, fulfillment in a job and doing something creative seem to be especially important to them, as evidence by more intuitives than sensors endorsing choice B.

As with Myers' research on type and occupational interest frequencies, the take-away the reader should take from Grant's (1965) research is that there are meaningful differences between personality and what people value in their jobs, and the Myers-Briggs personality system is capturing that difference.

Regarding the reliability of the MBTI, the biggest issue previous research has attempted to tackle is whether people who take the MBTI twice will come out as the same type. In the *Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator*, which is the official Myers-Briggs handbook containing previous research on the Myers-Briggs personality system as well as describing the theory and how to administer and score the MBTI, Myers and McCaulley (1985) explain that MBTI reliability estimates depend on respondents' intelligence, understanding of themselves, and the quality of their perception and judgement. Put another way, this means that the accuracy of MBTI scores assumes the respondent has good psychological health. A person with good

psychological health is more likely to have an accurate understanding of themselves, and thus correctly identity their learning and decision-making preferences on the MBTI. Also, a person with good psychological health is more likely to use learning and decision-making cognitive functions in the most effective, healthy way.

Myers and McCaulley (1985) explain that good psychological health of respondents is an assumption that must be met in order to obtain accuracy of MBTI results. Despite this major assumption, previous research that administers the MBTI or that has evaluated the reliability of the MBTI does not consider or measure respondent's psychological health. This suggests that criticism of the MBTI on the notion of poor test-retest reliability may be unwarranted if previous research did not take into account respondent's psychological health, which is a major assumption of the accuracy and usefulness of the MBTI test and results.

Aside from ignoring the assumption of psychological health, other attempts to assess test-retest reliabilities have been problematic and inconsistent with the Myers-Briggs personality system theory. Many reliability estimates do not come from assessing how often respondents test as the same type multiple times. Instead, previous research has calculated product moment correlations where they took the four dichotomies and made them continuous variables, and then used the Spearman-Brown prophecy formula correction. For example, instead of classifying respondents as extraverts or introverts, consistent with

Myers-Briggs theory, they made extraversion and introversion one variable on a continuum (Myers & McCaulley, 1985).

The problem with using split-half reliabilities of continuous scores of the Myers-Briggs is that the MBTI is dichotomous, not continuous. Reliability coefficients of dichotomies depend on the reliability scores near the cut points. This means making the variables of extravert versus introvert, sensing versus intuition, thinking versus feeling, and judging versus perceiving continuous variables will underestimate the reliability.

Additionally, the problem with examining test-retest reliabilities for each dichotomy individually rather than looking at the likelihood a type (e.g., ENFP) will come out the same is that the dichotomies that make up your four-letter type, like ENFP, are a code for your cognitive function stack. Therefore, if an ENFP tests the same on all dichotomies except for the N and retests as ESFP, that is a huge problem because the N versus S difference for ESFP depicts their Driver function, which is the main part of their personality. This would indicate the MBTI test has poor reliability, since it was not able to accurately capture this person's personality. Alternatively, this could also indicate the person has poor intelligence, self-awareness, or poor psychological health, and are thus incapable of accurately reporting their preferences on the MBTI test. In addition to the reliability estimates being measured incorrectly, we do not know whether they reflect actual reliabilities of the MBTI, or measurement error in the sense that a

respondent's poor psychological health may be contributing to poor test-retest reliabilities.

Because we do not have good reliability estimates for the MBTI, this also means we do not have good validity estimates as well. This is because the previous research gathering validity evidence made the dichotomies continuous variables. Additionally, the reliability evidence focused on the likelihood respondents would retest as each of the four dichotomies separately instead of looking at the likelihood they would retest as the same type, which also contributes to the lack of accurate validity evidence. To be clear, a lot of meaningful research, prediction, and utility of the Myers-Briggs personality system can focus on the dichotomies – my research is focusing on how the dichotomies of being a thinker versus feeler and sensor versus intuitive change the relationship between what one needs in a job, as described in job characteristics theory and job satisfaction. The problem lies in conceptualizing good reliability of the MBTI by showing that 63% of respondents who take the MBTI will retest as three of the four preferences (Myers & McCaulley, 1985).

Despite incorrect methods to measure the reliability and validity of the MBTI, I argue that we do have some evidence of criterion-related and construct-related validity. Criterion-related validity evidence is the extent a test or instrument correlates with a criterion of interest. Since Myers did find patterns of MBTI types showing higher frequencies in some occupations over others (e.g., 86.3% of school administrators were judgers versus only 13.7% of school

administrators were perceivers) this suggests that there may be a relationship between type and occupational research which should be followed up by confirmatory research. Construct-related validity evidence is the extent that our construct(s) is related or unrelated to other constructs. Grant's (1965) research where he found differences between what sensors and intuitives wanted in their ideal jobs suggests that the constructs of sensing and intuition are related to what people value in work.

To summarize, many of the criticisms of the utility of the Myers-Briggs personality system and the MBTI are unwarranted, because they boil down to a misapplication of the Myers-Briggs personality system (e.g., using the MBTI to predict job performance which it was not intended for), and a misalignment between measurement and theory (e.g., looking at the test-retest reliabilities of one dichotomy at a time rather than the whole four-letter type). My research adds value to the field of personality psychology because I am indirectly following up on Myers' and Grant's work on the Myers-Briggs personality types, occupational interests, and what one values in a job by conducting confirmatory research testing these hypotheses. Because I am considering respondent's psychological health, the results of their MBTI test will have less measurement error because I will only be using respondents who have good psychological health in the analysis. If my hypotheses are supported, this would provide validity evidence in that it would show the Myers-Briggs personality system is able to influence

outcomes such as job satisfaction through its moderating effect on task

significance and task identity.

The next section will describe task significance and task identity, as well

as Hackman and Oldham's (1976) job characteristics theory.

Job Characteristics Theory

Job Characteristics Theory is a work motivational theory that explains that

the task itself is key to employee motivation, which in turn influence meaningful

work outcomes such as job performance and job satisfaction (Hackman &

Oldham, 1976). Hackman and Oldham in their 1976 paper, *Motivation through*

the Design of Work: Test of a Theory, describe a model with five job

characteristics that predict work outcomes through the mediating process of

three critical psychological states. The five job characteristics are skill variety,

task identity, task significance, autonomy, and feedback. Skill variety is using an

appropriate variety of your skills and talents. Task identity is being able to identify

with the work at hand as whole and complete, which Hackman and Oldham

(1976) explain enables more pride to be taken in the outcome of that work. Task

significance is being able to identify the task as contributing to the betterment of

society. Autonomy is the extent the job provides substantial freedom,

independence, and discretion to the individual in scheduling the work and in

determining the procedures to be used in carrying out that work. Feedback is the

extent employees have awareness of how effective they are at converting their efforts into performance.

All five characteristics influence the three psychological states of meaningfulness of work, responsibility, and knowledge of outcomes, and it is these three psychological states that predict work outcomes such as job performance and job satisfaction. The presence of skill variety, task identity, and task significance predict meaningfulness of work, which is the extent to which the work means something to you, and it is something you can relate to. The presence of autonomy predicts responsibility, which is the extent you have been given the opportunity to be a success or failure are your job because sufficient freedom of action has been given to you. Lastly, the presence of feedback predicts knowledge of outcomes, which is the extent employees know how successful their work has been, which enables them to learn from their mistakes and it connects them with the customer of their outputs (Hackman & Oldham, 1976).

The work outcomes the presence of these job characteristics is theorized to predict high internal work motivation, high job performance, high job satisfaction, low absenteeism, and low turnover. To determine the probability that a job will be high on internal motivation, Hackman and Oldham (1976) devised the Motivating Potential Score (MPS) formula, depicted in Figure 1.

$$\text{Motivating Potential Score (MPS)} = \left[\frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \right] \text{x Autonomy x Feedback}$$

Figure 1. Motivating Potential Score (MPS) Formula.

For the MPS to be high, at least one of the three characteristics that predict meaningfulness of work must be high. Additionally, both autonomy and feedback must be high; if one of those scores are low, it will bring down the MPS, even if all three characteristics that predict meaningfulness of work are high.

Hackman and Oldham (1976) also hypothesized that there would be individual differences in how people react to their work regardless of the presence of these characteristics. They hypothesized that people high on the trait, growth need strength, where higher levels indicate individuals who have a high need for personal growth and development, will respond more positively to a job with a high MPS than people with low growth need strength. Growth need strength is thought to moderate the relationship between the job characteristic and psychological state (e.g., growth need strength moderates the relationship between task significance and meaningfulness of work) and growth need strength is thought to moderate the relationship between the psychological state and work outcome (e.g., growth need strength moderates the relationship

between meaningfulness of work and job satisfaction). In other words, it is

theorized that MPS is only relevant to people high on growth need strength.

Hackman and Oldham's (1976) model is depicted in Figure 2.
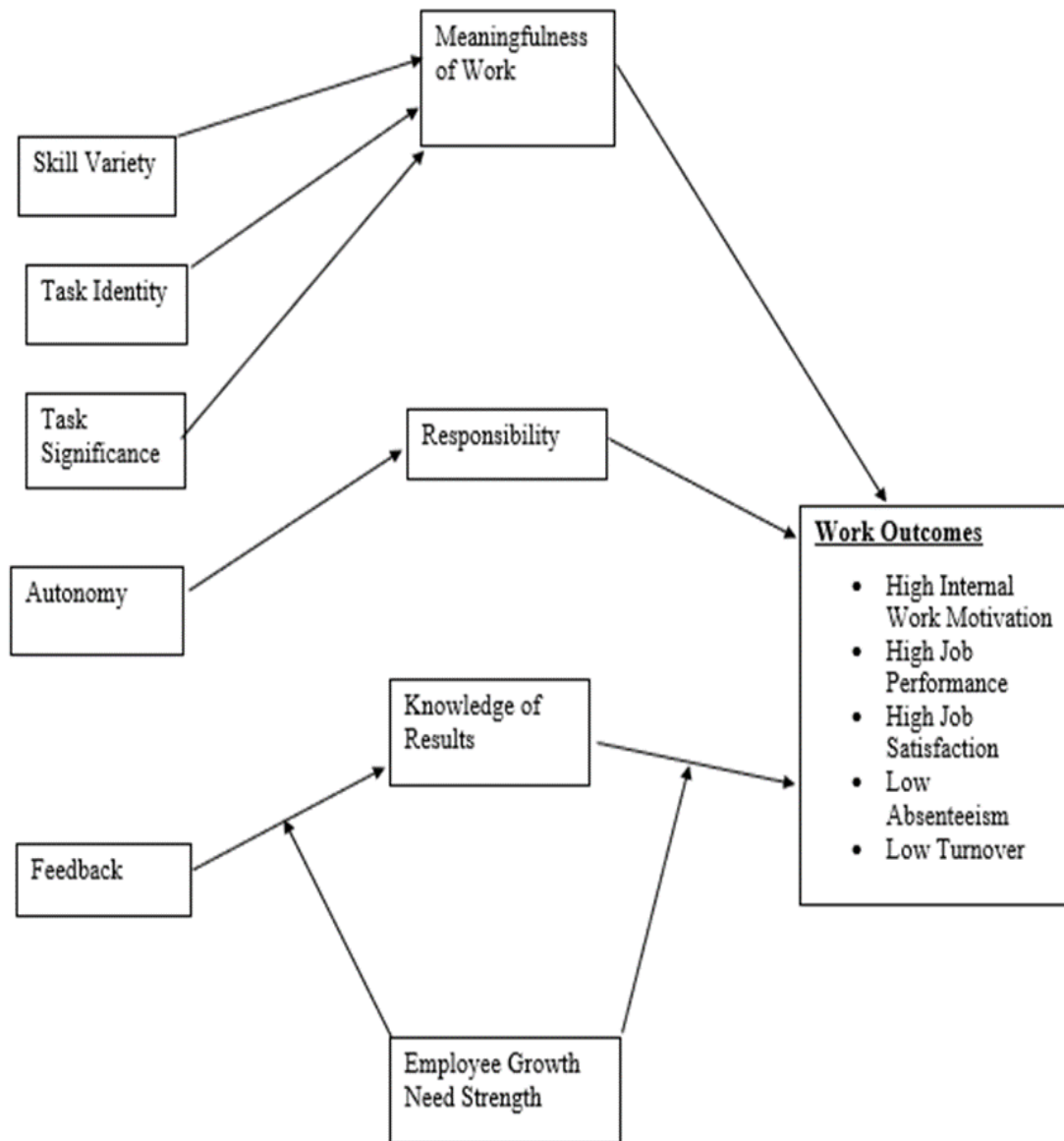
Figure 2. Hackman and Oldham's (1976) Job Characteristics Model.

In their validation study, Hackman and Oldham (1976) tested their model on 658 employees in 62 different jobs and seven different organizations. Hackman and Oldham did find support for their hypothesized model: job characteristics were positively correlated with the critical psychological states, and the critical psychological states were correlated with work outcomes as hypothesized by the model. Overall, the critical psychological states had stronger correlations with the work outcomes than the job characteristics and critical psychological states whose relationships were moderate. Support was found for growth need strength moderating the relationship for all job characteristics and the critical psychological states, except for task identity. That is, except for task identity, employees high on growth need strength responded more positively to jobs high in the job characteristics, and the presence of those characteristics predicted the three critical psychological states. Additionally, support was also found for growth need strength moderating the relationship for all the critical psychological states and work outcomes, except for the work outcome of low absenteeism. That is, employees high in growth need strength responded more positively to the critical psychological states which predicted all the work outcomes in the model except for absenteeism.

The most recent meta-analysis following up on Hackman and Oldham's (1976) job characteristics theory by Fried and Ferris (1987) found moderate to strong relationships between the job characteristics and work outcomes. Specifically, job satisfaction had the strongest relationship with autonomy, $r =$

0.48. Only a few studies have examined whether the critical psychological states mediate the relationships between the characteristics and work outcomes. Because of the limited number of studies, the results of these studies are inconclusive, suggesting partial support for the theory. Fried and Ferris (1987) also found the MPS to have stronger relationships with the critical psychological states and work outcomes more than the individual job characteristics. That is, the MPS was more predictive of the presence of the critical psychological states and work outcomes more than any one job characteristic. These results suggest that the MPS is more predictive of work outcomes, such as job satisfaction, more than an individual job characteristic, and that more research is needed to confirm whether the critical psychological states mediate the relationships between the job characteristics and work outcomes.

The next section will briefly describe job fit by examining the demands ability and needs supply fit literatures.

Demands-Abilities and Needs-Supply Fit

Drawing on fit theory, I argue that the relationship between job characteristics perceptions and outcomes is moderated by personality. Both demands-abilities and needs-supply fit come from the person-environment fit literature. Person-environment (P-E) fit is defined as the compatibility that occurs when individual and work environment characteristics are well matched (Kristof-Brown et al., 2005). P-E fit broadly encompasses two types of fit: supplementary

fit and needs-supply fit (Kristof-Brown, & Guay, 2011). Supplementary fit is when

a person fits an environmental context because they either supplement,

embellish, or possess characteristics which are similar to other individuals in their

environment (Muchinsky & Monahan, 1987). Schneider's (1987) attraction-

selection-attrition (ASA) framework, which explains that fit occurs because

individuals are attracted to organizations that fit their personalities, they self-

select and are selected into those organization, and those individuals who do not

fit the organization eventually leave through either quitting or being fired, as

based on supplementary fit (Kristof-Brown & Guay, 2011).

Needs-supply fit (also called complementary fit) refers to the degree to

which the needs of the individual, such as the need to use their skills and

abilities, are supplied by the work environment. In other words, it is the

congruence between what the individual employee and work environment need

(Kristof-Brown & Guay, 2011). Relatedly, demands-abilities fit stems from the

needs-supplies literature and it is the extent to which the job requirements match

the skills and abilities of the employee (Edwards, 1996; Kristof-Brown et al.,

2005).

In their 2005 meta-analysis, Kristof-Brown et al. found support for the

notion that job fit and job satisfaction were strongly related. Kristof-Brown et al.

(2005) found needs-supplies fit and job satisfaction to be strongly related, ρ =

0.61, and they found demands-abilities and job satisfaction to be strongly related,

ρ = 0.41. This suggests that job satisfaction may result from employees being

able to use their skills and abilities in their work environments. Such an ideal

relationship meets the needs of the employee performing the job, because they

have an opportunity to use their skills and abilities, as well as it meets the needs

of the organization, because they get to benefit from the employee's knowledge,

skills, and abilities.

The next sections discuss my models (Figures 3 and 4) and research

hypotheses.

Model 1: Myers-Briggs Thinker/Feeler Dichotomy Moderates the
Relationship Between Task Significance and Job Satisfaction
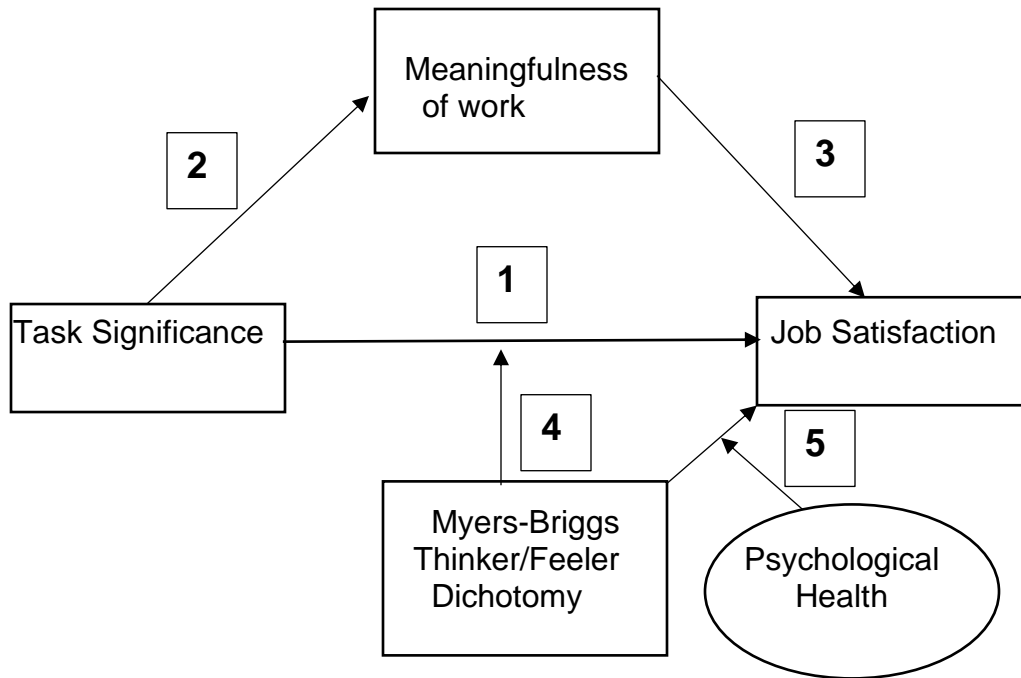
Figure 3. Model 1: Myers-Briggs Thinker/Feeler Dichotomy Moderates the

Relationship Between Task Significance and Job Satisfaction.

Note. The numbers indicate a relationship between each link in the model which will be further
explored.

Link 1: The Relationship Between Task Significance and Job Satisfaction

Fried and Ferris (1987) show support for each of the five job

characteristics being related to job satisfaction. Specifically, Fried and Ferris

found a strong correlation between skill variety and job satisfaction, $r = 0.45$, a

small relationship between task identity and job satisfaction, $r = 0.26$, a moderate

relationship between task significance and job satisfaction, $r = 0.35$, a strong

relationship between autonomy and job satisfaction, $r = 0.48$, and a strong

relationship between feedback and job satisfaction, $r = 0.43$. As you can see, all

characteristics predict job satisfaction.

Hackman and Oldham (1976) argue that the more of these characteristics

a job has, the more likely the employee will be motivated to perform. Job

Characteristics Theory is meant to apply to everyone regardless of individual

differences, such as personality. However, the small to moderate relationship

between both task identity and task significance predicting job satisfaction could

be because individual differences (e.g., personality), were not considered.

I argue that task significance is positively related to job satisfaction.

Consistent with previous work (Fried & Ferris, 1987; Hackman & Oldham, 1976),

this positive relationship is expected regardless of individual difference or specific

job. Previous research in positive psychology explains that one of the

determinants of happiness is whether one feels like there life has meaning, a

purpose that is bigger than themselves (King & Schollon, 1998; Ryff, 1989).

Some examples of having a purpose that is bigger than yourself is wanting to

work to create a better life for your children to afford them more opportunities or

wanting your work to serve the betterment of humanity. This is evidenced by the

many qualitative and quantitative studies that have found that making a positive

difference in others' lives is how many employees describe the purpose of their

work (Colby et al., 2001; Ruiz-Quintanilla & England, 1996).

Additionally, previous research suggests that people want meaning in their lives. King and Schollon (1998) found that participants rated experiencing meaning in life – defined as "having a goal or a sense of unified purpose" (p.3) , as more desirable than experiencing a life low in meaning, $M = 3.25$ versus $M = 2.18$, $F(1,253) = 76.99$, $p <.01$, $\eta^2 = .23$. Sample items for meaning in life include, "In my job, I really feel like I am touching the lives of people" and "My work will leave a legacy for future generations", which supports the notion that experiencing meaning in life is related to a desire to want your work to serve the betterment of humanity. Further, King and Schollon also found a significant interaction between happiness and experienced meaning in life, multivariate $F(3,25) = 3.43$, $p = .004$, which also supports the notion experiencing a meaningful life predicts happiness.

While happiness predicts experiencing a meaningful life, it is distinct from life satisfaction. Life satisfaction differs from happiness in that it is not temporary mood, but rather an overall evaluation on one's life holistically. Specifically, life satisfaction scholars such as Ruut Veenhoven in his 1996 work, *The study of life satisfaction*, define life satisfaction as the extent a person positively evaluates the overall quality of their life as a whole. Life satisfaction also differs from happiness in that it is broader in scope and comprised of different domains including work, romantic relationships, relationships with family and friends, personal development, health and wellness, financial resources, spiritual and religious well-being, and others (Veenhoven, 1996).

Job satisfaction, one of the domains of life satisfaction, is defined by Locke (1976) as, "…a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 1304). Like life satisfaction, job satisfaction has multiple domains including appreciation, communication, coworkers, fringe benefits, job conditions, nature of the work, organization, personal growth opportunities, policies and procedures, promotion opportunities, recognition, security, and supervision (Spector, 1997). Likewise, since job satisfaction is a facet of life satisfaction (Veenhoven, 1996), it would make sense that that the two would be strongly related. Indeed, previous meta-analytic research indicates that job satisfaction and life satisfaction are highly correlated ρ = .44 (Tait et al., 1989). Because jobs are a major facet of one's life, this suggests that one's experiences on the job can spill over onto life.

This idea of spill over – when one domain of your life effects another – is supported by previous research which states that spill over can happen from life to job and from job to life. Spill over from life satisfaction to job satisfaction is supportive of the dispositional perspective, which explains that an employee's general affective state, which encompasses their emotional states and personality, "spills over" onto evaluations of their job (Judge & Locke, 1993; Staw et al., 1986). Other researchers argue spill over from job satisfaction to life satisfaction is more common since work plays a prevalent role in people's lives (Near et al.1978).

If there's previous research saying that happiness and life satisfaction are associated with having a higher purpose to your life (Colby et al., 2001; King & Schollon, 1998; Ruiz-Quintanilla & England, 1996; Ryff, 1989) the same should hold true for job satisfaction, which is one component of life satisfaction. This means that it is universally important for everyone to feel like there job has a higher purpose and directly contributes to the betterment of society, and that this contributes to job satisfaction, which is one component of life satisfaction.

In his theoretical contribution, Grant (2007) argues that all employees are motivated to make a prosocial difference because of our desire as people to develop and maintain meaningful relationships. Grant builds on Hackman and Oldham's research on task significance by looking beyond the structural component of job tasks, and instead looking at the relational aspects of jobs and how that influences employee's motivation to make a prosocial difference. Grant argues that organizations should connect employees to the beneficiaries of their work, such as having an eligibility technician meet the citizens they helped get on food stamps who because of their work are no longer starving, and that meeting these beneficiaries will increase employee engagement. He conducted a longitudinal quasi-experimental study on fundraising callers who worked at a public university. One group of callers met a fellowship student who benefitted from the funds raised by the organization and the second group of callers were in a control group and did not meet a fellowship student. MANOVA analysis revealed that one month later, there were significant differences between the

group that met the fellowship student and the control group both in the number of pledges obtained per week, $F(1, 43) = 11.17$, $p < .001$, and on the amount of donation money obtained per week, $F(1,43) = 14.42$, $p < .001$. Paired t-tests within each group were conducted to compare each group's pretest and posttest pledges and donations per week found callers in the group that met the fellowship student significantly increased their pledges obtained per week, $t(21) = 4.87$, $p < .001$ and donation money obtained per week, $t(22) = 4.79$, $p < .001$, while callers in the control group did not significantly change in pledges obtained per week, $t(21) = 1.34$, *n.s.*, nor in donation money obtained per week, $t(21) = 1.86$, *n.s.* Grant (2008) explains that his findings confirm previous research that says making a prosocial impact and that this serves a variety of purposes for employees including cultivating a sense of meaning and purpose, building relationships, enhancing feelings of competence and value, and fulfilling core motives and values.

Grant's (2007; 2008) contributions are important because they suggest that people value engaging in meaningful work that makes a positive impact on others' lives. Thus, if there's previous research showing that people want to experience meaning in life (King & Schollon, 1998), that jobs and our work are important facets of life satisfaction (Veenhoven, 1996), and that job and life satisfaction are related (Tait et al., 1989), and that people value making a prosocial impact in their jobs (Grant, 2007; 2008), it would make sense to infer

that the more task significance a job has, the higher one's job satisfaction will be and life satisfaction will be.

Previous research examining the link between task significance and job satisfaction explain why broadly speaking, teachers, nurses, and doctors have high job satisfaction (PayScale, 2018), while jobs in the retail industry (PayScale, 2018) and wall street (Roose, 2014) are associated with low job satisfaction. Most likely, jobs in the retail industry and wall street are contributing to materialism and increasing the wealth-gap in this country and those are two things that do not improve the betterment of society, whereas the work of a teacher does better society because they are educating the next generation of citizens. Jobs such as being a teacher, nurse, or doctor have been associated with high job satisfaction because what all those jobs have in common is that their work is meaningful to many people. With this in mind, I offer my first hypotheses:

Hypothesis 1a: *Task significance will positively predict job satisfaction. Respondents who report higher levels of task significance will report higher levels of job satisfaction.*

Hypothesis 1b: *Task significance will positively predict life satisfaction. Respondents who report higher levels of task significance will report higher levels of life satisfaction.*

Meaningfulness of work is the mediating process by which skill variety, task identity, and task significance contribute to job satisfaction in Hackman and Oldham's job characteristics theory, which is the next link that will be discussed.

Link 2: The Relationship Between Task Significance and Meaningfulness of Work

Hackman and Oldham describe that the relationship between task significance and job satisfaction happens because of the process of increased meaningfulness of work. Meaningfulness of work is one of the three critical psychological states that determine job satisfaction and is defined by whether the work means something to you and whether the work is something you can relate to. Thus, meaningfulness of work is a mediator between the independent variable task significance and the dependent variable job satisfaction.

The process of meaningfulness of work is one of the three critical psychological states in Hackman and Oldham's Job Characteristics Theory that are derived from certain characteristics of the job. Hackman and Oldham argue that all jobs have different levels of the five core job characteristics (skill variety, task identity, task significance, autonomy, and feedback) and that all five of the characteristics influence the three critical psychological states, and that it's the presence or absence of these three psychological states that determine job satisfaction (the next link that will be discussed).

The three psychological states are meaningfulness of work, responsibility, which is defined as whether you have been given the opportunity to be a success

or failure at your job because sufficient freedom has been given to you, and

knowledge of outcomes which is whether employees know how successful their

work has been. Meaningfulness of work is determined by whether the job has

skill variety, task identity, and task significance, responsibility is determined by

whether the job has autonomy, and knowledge of outcomes is determined by

feedback. All three psychological states, such as responsibility, serve as

mediating variables between the job characteristic, such as autonomy, and job

satisfaction.

> **Hypothesis 2**: *Task significance will positively predict meaningfulness of work. Respondents who report higher levels of task significance will report higher levels of meaningfulness of work.*

Link 3: The Relationship Between Meaningfulness of Work and Job Satisfaction

As mentioned in the previous section, the relationship between task

significance and job satisfaction occurs because of the process of

meaningfulness of work. Thus, there is a direct relationship between

meaningfulness of work and job satisfaction. This relationship makes sense

because jobs where people feel like their work is meaningful, such as being a

police officer who feels their work is meaningful because they help protect the

citizens in their city, is higher than for jobs, such as a medical biller (Grant, 2007),

where many do not feel their work is meaningful because they are collecting

money from sick people and distributing it to a wealthy hospital or insurance

company whose main goal is to make a profit.

Likewise, since job satisfaction and life satisfaction are strongly related

(Tait et al., 1989), and since experiencing a meaningful life is an important for life

satisfaction (Colby et al., 2001; Sippola, & Phelps, 2001; King & Schollon, 1998;

Ruiz-Quintanilla & England, 1996; Ryff, 1989), it would also make sense for there

to be a direct link between meaningfulness of work and life satisfaction. With this

in mind, my hypotheses for link 3 are as follows:

> ***Hypothesis 3a***: *Meaningfulness of work will positively predict job satisfaction. Respondents who report higher levels of meaningfulness of work will report higher levels of job satisfaction.*

> ***Hypothesis 3b***: *Meaningfulness of work will positively predict life satisfaction. Respondents who report higher levels of meaningfulness of work will report higher levels of life satisfaction.*

Link 4: The Myers-Briggs Thinker/Feeler Dichotomy Moderates the Relationship Between Task Significance and Job Satisfaction

As shown in previous research, task significance positively predicts job

satisfaction universally for everyone, and this relationship has been supported in

a variety of jobs and organizations (Hackman & Oldham, 1976; Fried & Ferris,

1987). I agree with Hackman and Oldham that everyone, regardless of their

Myers-Briggs personality type, needs to have task significance to have

meaningfulness of work, which in turn predicts job satisfaction. I am arguing that

task significance is *more important* for some people based on their Myers-Briggs

personality type, and *less important* for others based on their Myers-Briggs

personality type. Specifically, I am hypothesizing that task significance is more

important for feelers than it is for thinkers in the Myers-Briggs personality system. Thus, I am not saying that task significance is not important to thinkers, I am merely saying that it is more critical for feelers.

The feeler/thinker dichotomy in the Myers-Briggs system entails with how we evaluate information and make decisions. Feelers use personal, human-based considerations when making decisions whereas thinkers use impersonal data to evaluate an object, idea, or situation. Thus, feelers prefer to take people's emotional needs when making decisions whereas thinkers prefer to take people's feelings out of the decision-making process and focus on objective facts (Myers & Myers, 1981; Witt & Dodge, 2018).

Task significance entails feeling like your work contributes to the betterment of society (Hackman & Oldham, 1976). Because people make up society, this means that bettering society involves bettering people's lives by creating and maintaining meaningful relationships (Grant, 2007; 2008). As described earlier in Grant's research on the importance of employees feeling like their work makes a prosocial difference, I argue that task significance and the desire to make a prosocial difference by creating and maintaining meaningful relationships that meet people's emotional and psychological needs is more important for feelers than it is for thinkers in the Myers-Briggs personality system. This is because feelers are more focused on people, social considerations, and are comfortable and have a desire to meet people's emotional needs whereas thinkers are more comfortable with systems and situations that rely on objective

data and are more concerned with meetings people's logistical needs rather than their emotional needs (Myers & Myers, 1980; Witt & Dodge, 2018).

I acknowledge there are jobs and many ways to better society that are less human-centered and more system-centered, making it possible for thinkers to see their job as bettering society and making a prosocial difference without interacting with the beneficiaries of their work. However, I argue that for thinkers, it's the implementation and execution of an effective, precise, and accurate system that creates job satisfaction for them rather than feeling like those systems they created are bettering the lives of the people they are serving, which would be characterized as task significance. By contrast, I argue that for feelers, a perfectly running and flawless system is not enough to generate job satisfaction if they do not know the positive impact that system is making on people's lives.

For example, let's say a thinker is a financial advisor where their job tasks include analyzing their client's income, assets and debts, discussing the client's financial goals, and coming up with a plan on how their client can build wealth. The thinker can perform this job objectively and impersonally without ever interacting with their client, understanding their client on a personal level, or meeting their client's emotional needs. For instance, rather than having an in-person meeting or talking to the client on the phone to discuss their financial goals, the thinker can ask their client to email their financial goals or create a survey with various financial goals for the client to choose from. Because thinkers use impersonal data and metrics and objective information when making

decisions (Myers & Myers, 1980; Witt & Dodge, 2018), I argue that for thinkers, their job satisfaction would come from designing a mathematically perfect financial plan for their client to execute, rather than knowing their financial plan and advice improved their client's life and well-being.

By contrast, because feelers use personal, human-based considerations when making decisions (Myers & Myers, 1980; Witt & Dodge, 2018), I argue that for feelers who are financial advisors, the design and implementation of a perfect financial plan for their client to execute is not enough to generate job satisfaction. Feelers have a desire to meet people's emotional and psychological needs more than thinkers, and they take a personal, human-based approach when making decision (Myers & Myers, 1980; Witt & Dodge, 2018). Because of this more personal approach that feelers take, this means that a feeler financial advisor would want to go beyond the facts of their client's financial situation and understand their client's personal and emotional needs. For instance, rather than asking their client's financial goals through impersonal methods such as through email, a feeler would want to have an in-person or phone conversation with their client to learn about their clients dreams and desires in order to understand the *why* behind their client's financial goals. Because feelers are more personal and prioritize social connections more than thinkers (Myers & Myers, 1980; Witt & Dodge, 2018), I argue that feelers need task significance more than thinkers, because they would need to know how their financial plan improved the lives and well-being of their clients in order to obtain job satisfaction. In other words, for

feelers, it is the personal connections with the beneficiaries of their work and

feeling like their work is bettering the lives of those beneficiaries that drive job

satisfaction, whereas for thinkers, the personal connection and the feeling that

their work betters the lives of beneficiaries is less important for them to obtain job

satisfaction since they are more focused on the design and implementation of

effective systems.

Figure 4 depicts a plot of the hypothesized moderation relationship and

describes the expected relationship patterns.
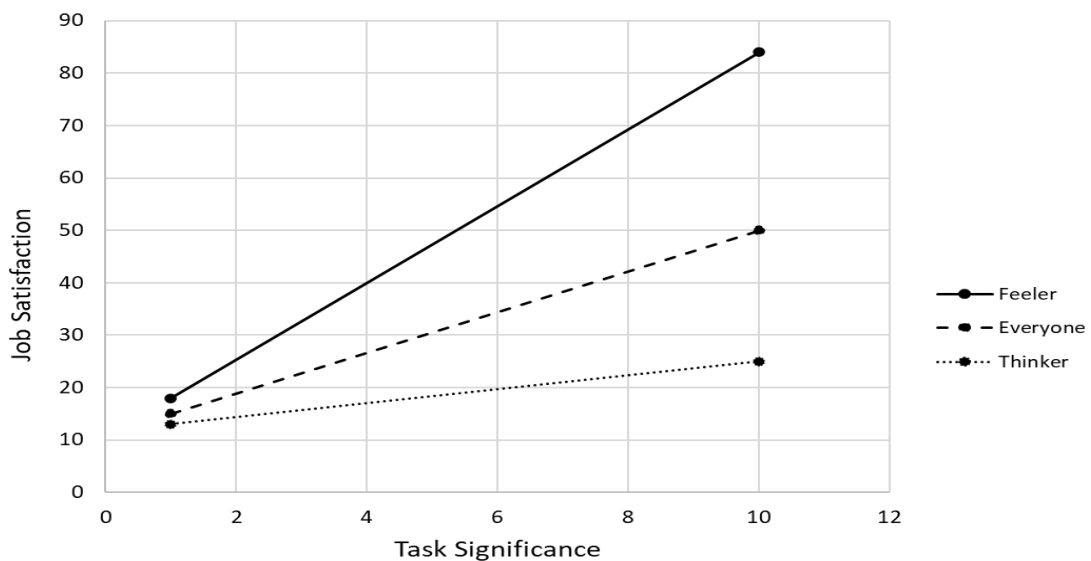
Figure 4. Hypothesized Interaction Plot Between Task Significance and Job

Satisfaction Moderated by the Thinker/Feeler Dichotomy.

Hypothesis 4: The thinker/feeler dichotomy in the Myers-Briggs personality system will moderate the relationship between task significance and job satisfaction (see Figure 4). For respondents who are classified as feelers, task significance will be a strong, positive predictor of job satisfaction. For respondents who are classified as thinkers, task significance will be a weak, positive predictor of job satisfaction. For everyone (the average of feelers and thinkers), task significance will be a moderate, positive predictor of job satisfaction.

Link 5: Psychological Health Moderates the Relationship Between the Myers-Briggs Moderation Relationship Between Task Significance and Job Satisfaction

Psychological health is thought to be a necessary condition for the Myers-Briggs thinker/feeler dichotomy to moderate the relationship between task significance and job satisfaction. As mentioned in the earlier sections on the Myers-Briggs personality system, one of the assumptions for the accuracy of MBTI results is that respondents are in good psychological health. Myers and Myers (1980) and Myers and McCaulley (1985) define good psychological health as consisting of possessing intelligence in the sense that respondents can read and understand what questions on the MBTI are asking, understanding themselves so they can accurately report the learning and decision-making cognitive functions they use, and having good quality and control of their learning and decision-making cognitive functions. While this definition of psychological health is a good start, it is problematic because it lacks specificity in terms of how to measure it. Essentially, Myers and Myers' (1980) and Myers and McCaulley's (1985) definition of psychological health is clear on the outcomes but provides no framework for how to measure those outcomes.

This lack of how to measure psychological health is a problem for the reliability, validity, and ultimately the utility of the MBTI because the accuracy of the MBTI depends on respondents having good psychological health (Myers & Myers, 1980; Myers & McCaulley, 1985; Witt & Dodge, 2018). Additionally, there exists no definition of psychological health. The closest definition to psychological health is mental health which the World Health Organization (2014) characterizes as psychological and emotional well-being. Psychological well-being, also called subjective well-being, refers to the extent people experience positive emotions and feelings of happiness (Diener, 2000). The problem with defining mental health in terms of psychological well-being is that it is not predictive of cognitive ability (Veenhoven & Choi, 2012), self-awareness (Silvia, 2002), or healthy expression of one's Myers-Briggs cognitive functions. These three conditions must be satisfied for people to accurately identify their type through the MBTI assessment (Myers & Myers, 1980; Myers & McCaulley, 1985; Witt & Dodge, 2018).

For example, one could be happy but lack the cognition and self-awareness to both understand what a question is asking on an MBTI assessment, as well as lack understanding on how they actually learn new information and make decisions, which would result in them incorrectly reporting their MBTI preferences, and thus being mistyped. Further, some people's inaccurate understanding of themselves could make them feel happy. Research on self-concept, which is comprised of a collection of beliefs about ourselves

(Leflot et al., 2010), explains that people are motivated to reach an "ideal self" (Aronson et al., 2007), which suggests that some people may distort their self-concept in order to be happy.

The problems with defining mental health in terms of psychological well-being calls for a new definition of psychological health that specifies how to measure the cognition, self-awareness, and optimal functioning of one's cognitive functions required for accurate MBTI results. It is also important my definition differ from the one clinicians use since the purpose of my research is not clinical. Thus, my definition of psychological health is as follows:

Psychological health is encompassed by mental health and emotional health. Mental and emotional health are interconnected; one cannot occur without the other. Mental health encompasses being able to cognitively process information. Emotional health encompasses being able to express and manage one's feelings. One's ability to cognitively process information affects one's ability to express and manage one's emotions and vice versa. There are internal and external factors that influence psychological health, both individually and interacting with one another. Internal factors include mental health disorders, and the trait of negative affectivity. External factors include stress, both from one's personal and work life. Figure 5 (below) shows a model of my conceptualization of psychological health.
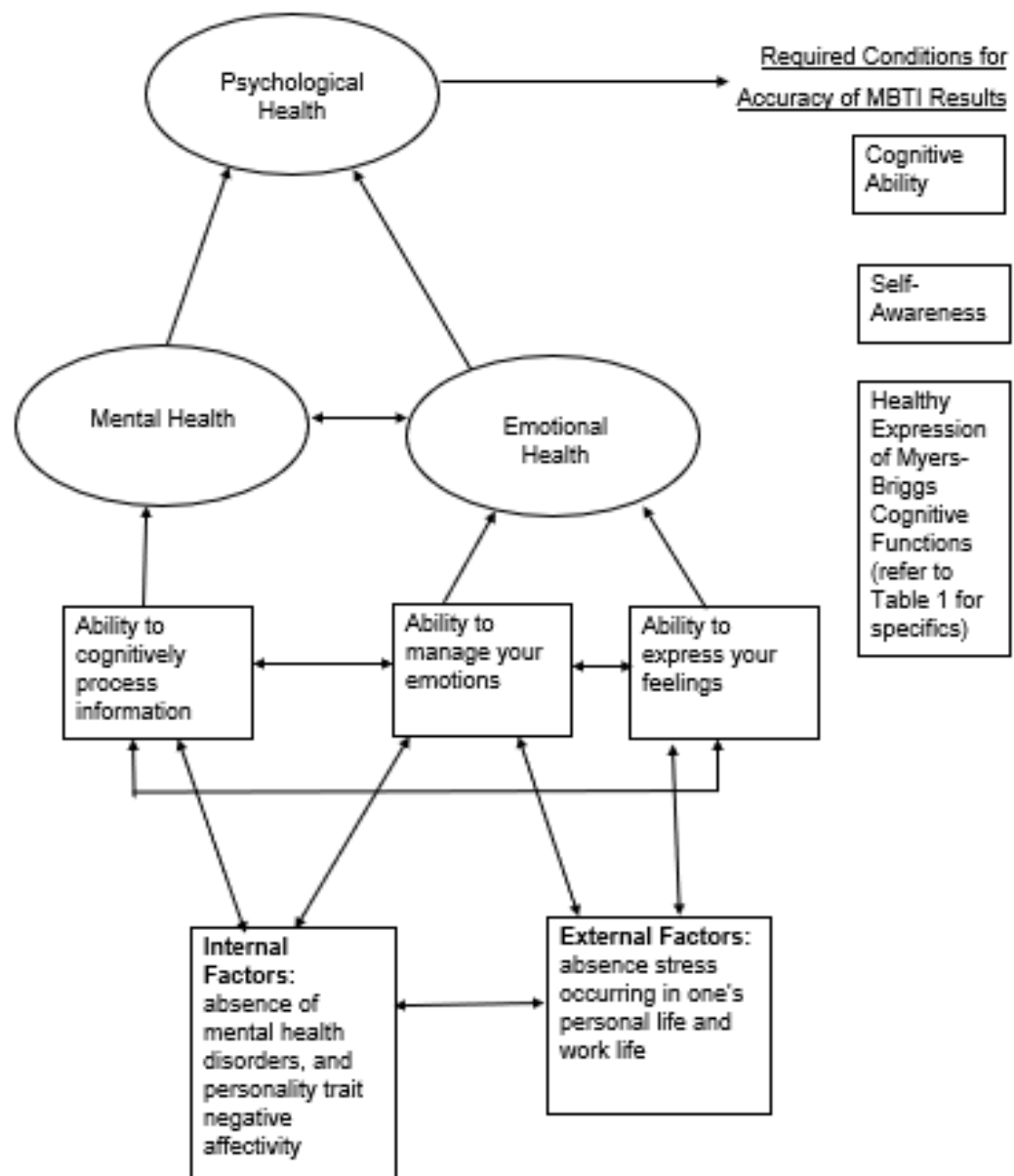
Figure 5. Psychological Health Model.

Essentially, psychological health is a necessary condition because of previous research illustrating the associations between mental health issues (which encompasses emotional health issues) and lower life satisfaction (Lombard et al., 2018; Zika & Chamberlain, 1992) and job satisfaction (Faragher et al., 2005; Nadinloyi et al., 2013), and because of measurement issues associated with poor psychological health making it difficult to accurately assess one's Myers-Briggs type (Myers & McCaulley, 1985). Simply put, if respondents report poor psychological health, comprised of either individual factors, external factors, or both, there will be no moderation of the thinker/feeler dichotomy in the Myers-Briggs personality system moderating the relationship between task significance and job satisfaction.

As my model depicts, psychological health consists of mental health and emotional health, which although are separate and distinct, are interconnected and co-occur. Poor psychological health results from experiencing one internal or external factor, or it can result from experiencing any combination of factors. Because mental and emotional health contribute to overall psychological health, this means that the internal and external factors compensate each other. This means you can experience one of the internal or external factors, such as negative affectivity, and be low on the rest of the internal and external factors, and that one experienced factor, negative affectivity, will still be bad for psychological health.

The first internal factor that can contribute to poor psychological health is the presence of a mental health disorder. Previous research shows that people suffering from mental illnesses, such as anxiety disorders, mood disorders, or psychotic disorders, are more likely to report lower life satisfaction (Lombard et al., 2018; Zika & Chamberlain, 1992). Lombard et al. (2018) found that life satisfaction was strongly associated with self-reported mental health, even when controlling for demographic variables of income, general health, and gender. Specifically, out of the five self-reported mental health groups of poor, fair, good, very good, and excellent, the poor-self-reported mental health group had the lowest life satisfaction, $M = 2.66$, CI 95% = [2.63, 2.69], while the good-, very good- and excellent-self-reported mental health groups had higher life satisfactions, $M_{Good} = 3.98$, CI 95% = [3.98, 3.98], $M_{Very\ Good} = 4.29$, CI 95% = [4.28, 4.29], $M_{Excellent} = 4.55$, CI 95% = [4.55, 4.56], $p < .0001$. Additionally, Lombard et al. (2018) conducted a logistic regression analysis and found that in the fair-self-selected mental health group, the odds of having a higher life satisfaction were 2.35, CI 95% = [2.21, 2.50] times higher than the odds in the poor-self-reported mental health group. Likewise, the odds of having higher life satisfaction were higher for each improving self-reported mental health group. Other research conducted by Zika and Chamberlain (1992) found life satisfaction and psychological distress, which measured negative mental health dimensions including anxiety, depression, and loss of behavioral and emotional control, were negatively related, $r = -0.66$, $p < .01$.

The findings in Lombard et al. (2018) and Zika and Chamberlain's (1992)

studies make sense: one cannot have life satisfaction if their psychological health

is so poor that it consumes most of their cognitive energy. This is because

mental health conditions, such as depression, negatively impact one's ability to

cognitively process information (Hammar & Ardal, 2009). Since job satisfaction is

a facet of life satisfaction (Veehoven, 1996), I am deducing that if poor

psychological health has a negative impact on one's life, it will also have a

negative impact on one's job satisfaction, even if that job has high task

significance. Thus, if one's mental health condition negatively affects their daily

functioning, we cannot expect them to have job satisfaction, regardless if their job

has task significance where they are serving the betterment of humanity which

attracted them to that job and profession in the first place. Even if a person's job

has high task significance and they feel like they are contributing to the

betterment of society, if they have poor psychological health to the point where

they have difficulty concentrating or experience other negative consequences

due to their mental illness, that will take up most of their cognitive resources,

making it difficult to enjoy the aspects of their job that attracted them to that job or

profession in the first place. Hence, if poor psychological health due to mental

illness prevents them from experiencing job satisfaction (Faragher et al., 2005;

Nadinloyi et al., 2013) regardless if their job has task significance, I would not

expect the thinker/feeler dichotomy in the Myers-Briggs personality system to

moderate that relationship as well. In other words, poor psychological health due

to mental illness is thought to have the same negative impact on feelers and thinkers in the Myers-Briggs personality system.

The second internal factor that can contribute to poor psychological health is the presence of the personality trait negative affectivity. Negative affectivity is a personality trait characterized as the tendency to be critical, have a negative outlook on life, and the tendency to experience more negative emotions such as sadness, anger, and fear (Watson & Clark, 1984; Watson et al., 1988). While negative affectivity is associated with mental health illnesses such as anxiety and depression (Watson et al., 1988), it is distinct from mental health illnesses. While negative affectivity is associated with higher frequencies of negative emotions, such as sadness and anxiety that are associated with mental health illnesses such as anxiety and depression (Watson et al., 1988), the presence of negative affectivity in a person may not be severe enough to warrant a clinical diagnosis of a mental health illness. For someone to be diagnosed with a mental health illness, such as depression or anxiety, their negative emotions of anxiety and sadness must be severe enough to negatively affect daily functioning activities (American Psychological Association, 2018). This means that some people with negative affectivity may experience more negative emotions associated with mental health illnesses such as depression and anxiety more than people without that trait, but their experiences of negative emotions may not be severe enough to warrant a diagnosis of a mental health disorder.

It is hypothesized that someone with poor psychological health due to being high on negative affectivity would have lower job satisfaction, even if their job has high task significance and they feel like their job contributes to the betterment of society. This is because one of the characteristics of negative affectivity, increased criticality (Watson & Clark, 1984), results in people high on negative affectivity paying more attention to negative events and things that go wrong more than people without the trait of negative affectivity. This increased perception to negative events results in those negative events becoming more salient, compared to individuals without the trait of negative affectivity (Spector, et al., 2000). For example, a nurse who is high on negative affectivity may have low job satisfaction because their hospital does not correctly use a patient tracking system, leading to many inefficacies they believe could be avoided. Even though the nurse's job has high task significance (Yuxiu et al., 2011) and they feel like what they do betters society, they are so critical of the fact that their hospital doesn't use the patient tracking system that that one short-coming "ruins" the rest of the job. Research on negative affectivity suggest that those high on this trait are more critical and analytical and engage in more careful, detailed processing of information, compared to people high on positive affect who rely more on preexisting knowledge and assumptions (Forgas, 2017). This critical eye makes them more critical and suspicious of everything in life, and since our job is part of our life, I am speculating that if one has a critical nature in

life, one will take that same critical nature to their job, which will lower their job satisfaction.

The internal factors of mental illness and negative affectivity are not the only things that determine psychological health. Psychological health can be viewed as trait-like, influenced by stable individual differences such as negative affectivity, and it can also be viewed as state-like, influenced by states that are temporary. External factors such as a toxic work environment and not having enough resources to perform one's job are examples of state-like poor psychological health that will be further discussed next.

An external factor that can contribute to poor psychological health is experiencing stress either in one's personal life, work life, or both. Broadly speaking, stress is defined as a physiological or psychological response to a stressor, which is defined as an event or condition an individual has challenges adapting to. There are two types of stressors: eventful and chronic. Eventful stressors are unscheduled events that show up unexpectedly and disturb an individual's equilibrium. Chronic stressors are conditions that arise insidiously and persist over time and are rooted in social structures, roles, and relationships that harm an individual's well-being (Pearlin, 1999). Examples of eventful stressors include being the victim of an attack or unexpectedly losing a job. These eventful stressors can occur either in one's personal life or on the job; someone could experience a gun being held to their head as they are putting their groceries away in their car, or they can experience a gun being held to their

head on their job as a cashier working at a gas station. Eventful stressors could contribute to poor psychological health because they negatively impact one's mental health, their ability to cognitively process information, and they negatively impact one's emotional health, their ability to express their feelings and manage their emotions (Coyne & Downey, 1991; Kilpatrick et al., 1987).

Likewise, previous research shows that experiencing chronic stress contributes to poor mental health outcomes (Aneshensal, 1999; Coyne & Downey, 1991). Examples of chronic stress include being the victim of domestic violence or working in a toxic workplace culture. A toxic workplace cultures can include experiencing bullying at work, unethical behaviors by coworkers, managers, and/or leaders in the organization, the expectation that one must work constantly – resulting in poor work-life balance, unsupportive coworkers and/or managers, and an overall environment that encourages competition and conflict rather than cooperation. Thus, as with eventful stressors, chronic stressors can occur in one's personal life or on the job.

Toxic work cultures are thought to cause stress for some individuals. I say it causes stress for some but not all individuals because there is individual variation in how people respond to stressors: two people can experience the same stressor and have different responses (Aneshensal, 1999). Additionally, research shows that social support serves as a protective barrier from experiencing the harmful impact of stress (Ozbay et al., 2007; Viswesvaran et al., 1999), making it possible that an individual in a toxic work culture would not

experience stress due to their social support system. Thus, it is thought that for some individuals, whether due to individual variation in the stress response or the protective factor of a social support system, experiencing a toxic work culture would not lead to poor psychological health.

However, since there is individual variation in how individuals respond to stress (Aneshensal, 1999), it is thought that for some individuals, a toxic work culture would cause stress, which would lead to poor psychological health. Research shows that stress has a negative relationship with life satisfaction (Hamarat, et al., 2001), and since job satisfaction is a facet of life satisfaction (Veenhoven, 1996), it is thought that stress from a toxic work culture may result in poor psychological health, which in turn would lower job satisfaction. This means that even if the job itself has high task significance and the person feels like what they do contributes to the betterment of society, if that person's work culture is toxic, job satisfaction goes out the door because of the increased stress that comes as the result of the toxic work culture. Likewise, if a person experiencing poor psychological health from a toxic work culture would have lower job satisfaction despite their job having task significance, this also means that the thinker/feeler dichotomy in the Myers-Briggs personality system would not moderate the relationship between task significance and job satisfaction.

Another workplace factor that could lead to increased stress, which in turn may lead to poor psychological health is not having enough resources to perform your job. Previous research on situational constraints, which are defined as

external factors that inhibit job performance (e.g., lack of appropriate supplies, tools, instructions, information and training to perform the job; conflicting job demands; conflicting or lack of rules and procedures; interruption by others) (Peters & O'Connor, 1980) have been associated with lower job satisfaction (Ferguson & Cheek, 2011; Peters & O'Connor, 1980). This relationship makes sense and there are many examples of people reporting low job satisfaction due to situational constraints despite their profession having a high degree of task significance. For example, many teachers, especially in poor areas such as Oklahoma where funding for public education has been dramatically cut, report low job satisfaction, even though they believe the work they do as teachers betters society, all because they don't have enough resources to perform their jobs (Balingit, 2018). Lack of resources for teachers that makes teaching children more challenging than it needs to be include not having enough teachers in a school - resulting in larger class sizes, not having enough books and supplies for students, not having enough aides and/or special education resources and being expected to teach special needs students in addition to typical, non-special needs children. Thus, as with experiencing poor psychological health due to the stress from a toxic work culture, it is thought that stress from lack of job resources may result in poor psychological health, which in turn would lead to lower job satisfaction. This means if one does not have the resources needed to perform their job, it is hypothesized that they would report lower levels of job satisfaction, due to the stress of situational constraints, despite their job having

high task significance. Likewise, if a person experiencing poor psychological health from inadequate resources to perform their job would report lower job satisfaction despite their job having task significance, this also means that the thinker/feeler dichotomy in the Myers-Briggs personality system would not moderate the relationship between task significance and job satisfaction. Thus, my hypothesis for link 5 is as follows:

> **Hypothesis 5**: *The thinker/feeler dichotomy in the Myers-Briggs personality system will not moderate the relationship between task significance and job satisfaction for respondents classified as having poor psychological health. Poor psychological health will negatively predict job satisfaction.*

To summarize, poor psychological health results from the presence of one or more internal or external factors that negatively impact mental and emotional health. The key here is the presence of these factors must have a negative impact; not everyone who has negative affectivity, a mental illness, or who experience stress due to a toxic work culture or lack of job resources report impairment in daily functioning. Thus, while poor psychological health is associated with the presence of at least one factor, it results from not being able to cognitively process information, as depicted by poor mental health, and it results from not being able to express one's feelings and manage one's emotions, as depicted by poor emotional health.

Lastly, there are measurement issues associated with poor psychological health that make it difficult to accurately assess one's Myers-Briggs type. The

next section explains why poor psychological health may lead to an inaccurate assessment of one's Myers-Briggs personality type.

<u>Why Poor Psychological Health Creates Measurement Issues For Accurately Assessing One's Myers-Briggs Type</u>

Essentially, in addition to poor psychological health causing one to mistype due to impacted cognitive ability and self-awareness (Myers & Myers, 1980; Myers & McCaully, 1985), poor psychological health can also result in unhealthy manifestations of our cognitive functions (see Table 1; Myers & Myers, 1980; Witt & Dodge, 2018). Myers-Briggs theory explains that when we engage in defense mechanisms designed to keep us in our comfort zones, or are under extreme stress, we are either using our 10-Year-Old function or 3-Year-Old function. This means we may engage in behaviors that are uncharacteristic of our type, that may cause us to incorrectly think our Driver function is our 10-Year-Old. This means that when people have poor psychological health, accurately assessing their Myers-Briggs type is difficult because we don't know whether their results are reflecting the correct version of what their Driver function looks when it's unhealthy, or, whether it's reflecting the 10-Year-Old function that is trying to take the lead, in order to protect the person (Witt & Dodge, 2018).

Essentially, when one is psychologically unhealthy, there will be no moderation between task significance and job satisfaction being moderated by the thinker/feeler dichotomy. This is because poor psychological health, whether due to individual or external factors, make it so that one does not have job

satisfaction because of the extra stress they are enduring. Lastly, poor

psychological health impacts how your Myers-Briggs types manifests, making it

hard to assess when one is psychologically unhealthy.

The next section describes Model 2, depicted by Figure 6, which concerns

task identity and how the sensing/intuition dichotomy moderates the relationship

between task identity and job satisfaction.

Model 2: Myers-Briggs Sensing/Intuition Dichotomy Moderates the
Relationship Between Task Identity and Job Satisfaction
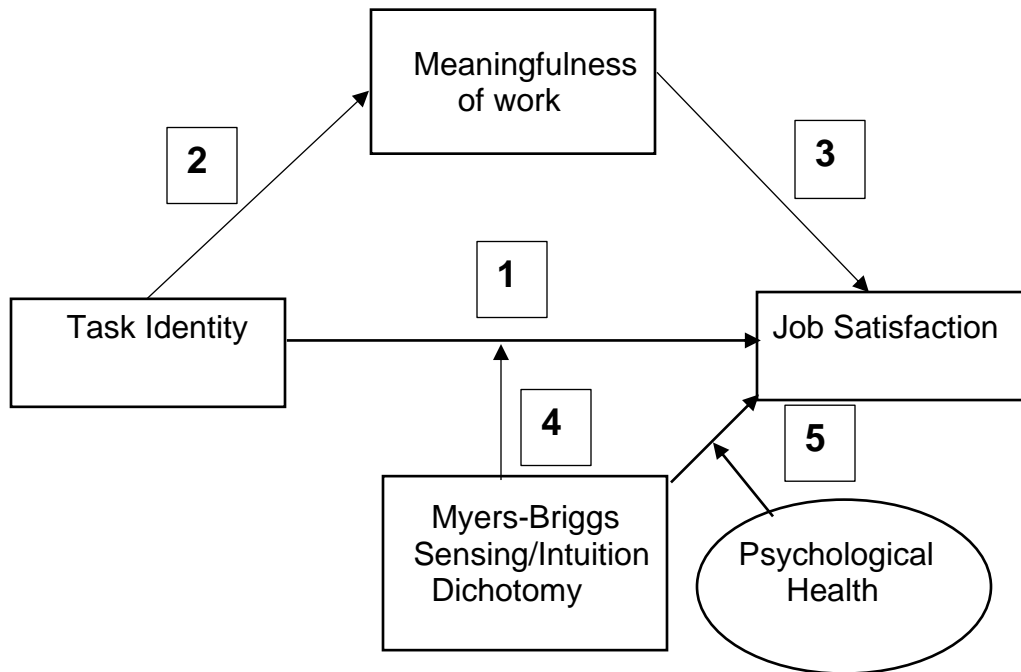
Figure 6. Model 2: Myers-Briggs Sensing/Intuition Dichotomy Moderates the

Relationship Between Task Identity and Job Satisfaction.

Note. The numbers indicate a relationship between each link in the model which will be further explored.

Link 1: The Relationship Between Task Identity and Job Satisfaction

Task identity is part of Hackman and Oldham's (1976) Job Characteristics

Theory which is based on the idea that the task itself is the key to employee

motivation. The first link of the model is from Hackman and Oldham's research

which shows task identity is positively correlated with job satisfaction. Hackman

and Oldham explain that task identity, being able to see the work you're doing as whole and complete, is associated with job satisfaction because people whose jobs have high task identity are able to see the visible outcomes of their work. Being able to see the visible product of your work, the "end product", is an important condition for job satisfaction because knowing the big picture of your work and knowing what the end product will be allows more pride to be taken in the outcome of that work. This means that more repetitive work in a factory where workers are responsible for adding one bolt in the same part of the machine would have lower job satisfaction than a job where you take all the individual parts of that machine and put them together. This is because the first worker, the one putting the bolt in one part of the machine, does not see the outcome of their work, which is the whole machine, whereas the worker putting all the parts together sees the final outcome of their work of putting all the parts of the machine together to build a whole machine. Another reason why the first worker would have lower job satisfaction than the worker who is putting the whole machine together is that the first worker does not know if the one part of the bolt in the machine they built is sitting on a shelf or being used to complete the whole machine. Hackman and Oldham (1976) explain that task identity is important because it increases motivation and pride to be taken in one's work, which are precursors to job satisfaction.

> **Hypothesis 6**: *Task identity will positively predict job satisfaction. Respondents who report higher levels of task identity will report higher levels of job satisfaction.*

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Link 2: The Relationship Between Task Identity and Meaningfulness of Work

       Hackman and Oldham (1976) describe that the relationship between task identity and job satisfaction occurs because of the process of increased meaningfulness of work. Meaningfulness of work is one of the three critical psychological states that determine job satisfaction and is defined by whether the work means something to you and whether the work is something you can relate to. Thus, meaningfulness of work is a mediator between the independent variable task identity and the dependent variable job satisfaction.

       The three psychological states are meaningfulness of work, responsibility, which is defined as whether you have been given the opportunity to be a success or failure at your job because sufficient freedom has been given to you, and knowledge of outcomes which is whether employees know how successful their work has been. Meaningfulness of work is determined by whether the job has skill variety, task identity, and task significance, responsibility is determined by whether the job has autonomy, and knowledge of outcomes is determined by feedback. All three psychological states, such as responsibility, serve as mediating variables between the job characteristic, such as autonomy, and job satisfaction.

       Hypothesis 7: *Task identity will positively predict meaningfulness of work. Respondents who report higher levels of task identity will report higher levels of meaningfulness of work.*

Link 3: The Relationship Between Meaningfulness of Work and Job Satisfaction

As mentioned previously, the relationship between task identity and job satisfaction occurs because of the process of meaningfulness of work. Thus, there is a direct relationship between meaningfulness of work and job satisfaction (Hackman & Oldham, 1976). This relationship makes sense because jobs where people feel like their work is meaningful, such as being a surgeon who feels like their work is meaningful because they can complete a surgery from start to finish and follow up with their patients to ensure the success of their surgery, is higher than for jobs, such as a medical assistant whose job is to prep the surgery room, where they don't feel their work is meaningful because they don't see the end product of their work.

Additionally, as previously stated, job satisfaction and life satisfaction are strongly related (Tait et al., 1989), and because experiencing a meaningful life is an important for life satisfaction (Colby et al., 2001; King & Schollon, 1998; Ruiz-Qunitanilla & England, 1996; Ryff, 1989; Sippola & Phelps, 2001), it would also make sense for there to be a direct link between meaningfulness of work and life satisfaction. Because meaningfulness of work occurs for both task identity and task significance, my hypotheses for link 3 are the same as my hypotheses for link 3 in Model 1 which depicted the relationship between task significance and meaningfulness of work as well as meaningfulness of work and job satisfaction.

> **Hypothesis 3a**: *Meaningfulness of work will positively predict job satisfaction. Respondents who report higher levels of meaningfulness of work will report higher levels of job satisfaction.*

Hypothesis 3b: *Meaningfulness of work will positively predict life satisfaction. Respondents who report higher levels of meaningfulness of work will report higher levels of life satisfaction.*

Thus, for both task significance and task identity, meaningfulness of work is thought to positively predicts job satisfaction.

Link 4: The Myers-Briggs Sensing/Intuition Dichotomy Moderates the Relationship Between Task Identity and Job Satisfaction

Hackman and Oldham's (1976) Job Characteristics Theory explains that the relationship between task identity and job satisfaction holds true for everyone regardless of individual differences. I agree with Hackman and Oldham in that everyone, regardless of their Myers-Briggs personality type needs to have task identity to have meaningfulness of work which in turn predicts job satisfaction. I am arguing that task identity is *more important* for some people based on their Myers-Briggs type, and *less important* for others based on their Myers-Briggs personality type.

Specifically, I am hypothesizing that task identity is more important for intuitives than it is for sensors in the Myers-Briggs personality system. Thus, I am not saying that task identity is not important to sensors, I am merely saying that it is more critical for intuitives.

The sensing/intuition dichotomy in the Myers-Briggs personality system deals with how we learn and take-in new information. Sensors use their five

senses to gather information whereas intuitives use a few data points they observe through their five senses to engage in pattern recognition where they speculate on the unknown. Thus, sensors prefer reliable and verifiable information whereas intuitives prefer deep insight and are comfortable with speculation (Myers & Myers, 1980; Witt & Dodge, 2018).

It is hypothesized that task identity is more important for intuitives than it is for sensors because intuitives are more "big-picture" thinkers whereas sensors are more detail-oriented (Myers & Myers, 1980; Witt & Dodge, 2018). For intuitives, having a job with task identity is thought to be important because it allows them to see the finished product of their work, which is hypothesized to be critical for intuitives' job satisfaction because of their tendency to be a "big-picture" thinker as opposed to having an intense focus on a few details of a job or task, such as putting the same nut in the same bolt. On the other hand, sensors are more detail-oriented and prefer reliable and verifiable information (Myers & Myers, 1980; Witt & Dodge, 2018). Thus, it is hypothesized that for sensors, as long as they understand the instructions of their task and feel like they have the ability and resources to carry it out, knowing the big picture and end result of their task is not as critical for them to have job satisfaction. Since sensors prefer reliable and verifiable information, they are more likely to have consistent daily routines than intuitives who are less attuned to the present moment and are busy speculating about the future (Myers & Myers, 1980; Witt & Dodge, 2018). Thus, for sensors, doing a repetitive, monotonous job, such as putting the same nut in

the same bolt to build one small part of a machine, is part of their routine of doing a job to earn a living. When they go home from their repetitive job, they go home to their families and lives outside of work; it is thought that they do not care as much about the outcome of the big picture of their work (e.g., the whole machine), as long as there are no complaints from their boss about their work and as long as they have the resources and know how to perform their work. Sensors are focused on the present and in making their lives as comfortable as possible (Myers & Myers, 1980; Witt & Dodge, 2018), which means that as long as their task of repetitively putting the nut in the bolt is a job well done, they are less concerned with the impact of that nut in the bolt on the end product, which is the whole machine.

Intuitives are the opposite. Rather than being focused on the present and thinking about making their lives as comfortable as possible with what is, they are focused on what *could* be. They are more future-oriented than sensors which is one of the reasons why they need to know the "big picture" – the greater purpose of what they are doing (Myers & Myers, 1980; Witt & Dodge, 2018). Thus, for intuitives, task identity is thought to be critical to their job satisfaction, because they need to know the implications of the work they are doing. Unlike sensors who are satisfied with a job well done, intuitives crave deep insight, which means they need to see the big picture of the work they are doing (i.e., they need to know the end product; Myers & Myers, 1980; Witt & Dodge, 2018).

As mentioned previously, Hackman and Oldham (1976) argue that task identity is needed for everyone, regardless of personality differences, to obtain job satisfaction, and I agree that task identity is needed for both sensors and intuitives. The sensor who is satisfied in a job well done by repetitively putting the same nut in the same bolt probably knows that the part of the machine they are building is part of a bigger machine. Consistent with Hackman and Oldham's argument, if the sensor had no idea what the nut and bolt was for, I would hypothesize that their job satisfaction would be lower. However, I am arguing that sensors need less information about what the end results of their work will be, whereas intuitives need more. Thus, I am hypothesizing that for the sensor, knowing their nut and bolt is part of a bigger machine is enough task identity for them; they don't need to know how the machine will be used or who it is being built for. On the other hand, I am hypothesizing that for the intuitive, merely knowing that the nut and bolt is going towards some machine will not be good enough. They will need to know how the machine is being used and who it is being built for, which both touch to the purpose of the machine and the "big picture" of their work.

Figure 7 depicts a plot of the hypothesized moderation relationship and describes the expected relationship patterns.
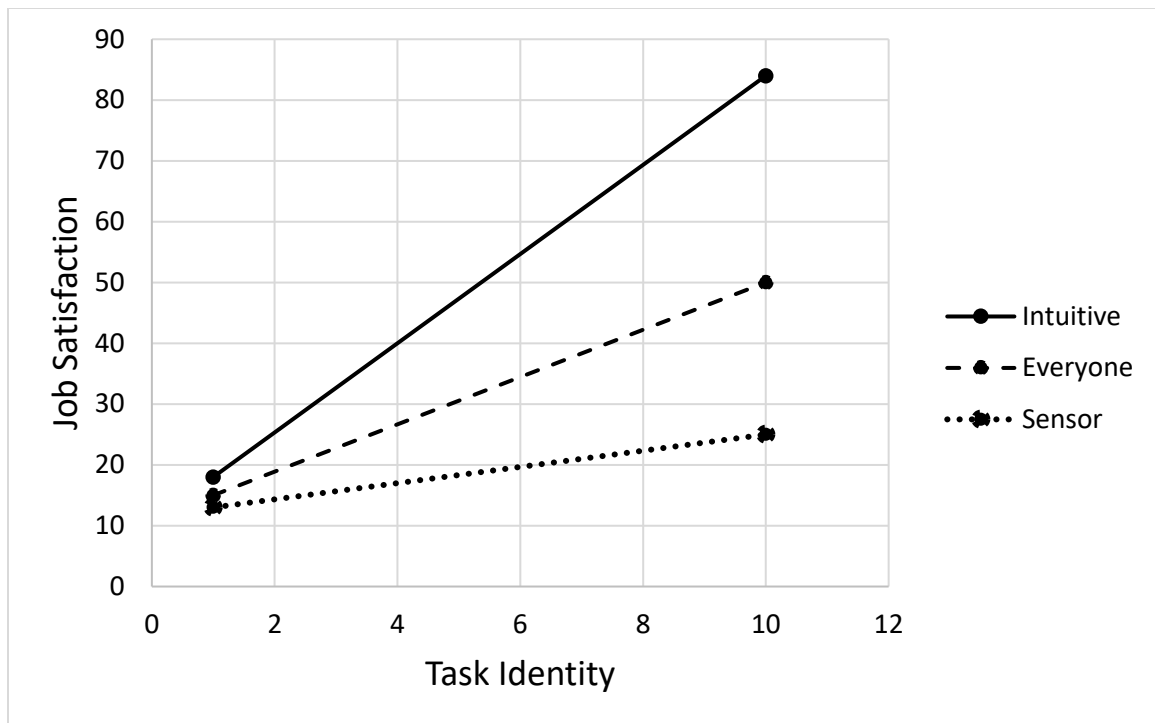
Figure 7. Hypothesized Interaction Plot Between Task Identity and Job

Satisfaction Moderated by the Sensing/Intuition Dichotomy.

Hypothesis 8: *The intuition/sensing dichotomy in the Myers-Briggs personality system will moderate the relationship between task identity and job satisfaction (see Figure 7). For respondents who are classified as intuitives, task identity will be a strong, positive predictor of job satisfaction. For respondents who are classified as sensors, task identity will be a weak, positive predictor of job satisfaction. For everyone (the average of intuitives and sensors), task identity will be a moderate, positive predictor of job satisfaction*

Link 5: Psychological Health Moderates the Relationship Between the Myers-Briggs Moderation Relationship Between Task Identity and Job Satisfaction

As in Model 1, psychological health is thought to be a necessary condition

for the Myers-Briggs intuition/sensing dichotomy to moderate the relationship

between task identity and job satisfaction. As depicted in Figure 5, psychological health encompasses mental health, being able to cognitively process information, as well as emotional health, being able to express one's feelings and manage one's emotions. Mental health and emotional health are made up of internal factors, such as the personality trait of negative affectivity, characterized by the tendency to be critical and experience more negative emotions (Watson & Clark, 1984; Watson et al., 1988), and mental health illnesses such as anxiety and depression. Mental health and emotional health are also made up of external factors, namely stress experienced in one's personal or work life. Poor psychological health can occur from the presence of just one factor or multiple factors interacting with each other.

Psychological health is a necessary condition because of previous research illustrating the link between psychological health and job satisfaction (Faragher et al., 2005; Nadinloyi et al., 2013), and because of measurement issues associated with poor psychological health making it difficult to accurately assess one's Myers-Briggs type (Myers & Myers, 1980; Myers & McCaulley, 1985). There are three ways having poor psychological health would be associated with lower job satisfaction even if the job itself is high on task identity. The first two are experiencing poor psychological health due to internal factors of experiencing mental illness and being high on the trait negative affectivity and the third is experiencing the external factor of stress.

As mentioned earlier, previous research shows that people suffering from mental health illnesses, such as anxiety and mood disorders, are more likely to report lower life satisfaction (Lombard, et al., 2018; Zika & Chamberlain, 1992). Because job satisfaction is a facet of life satisfaction (Veenhoven, 1996), I am deducing that if poor psychological health has a negative impact on one's life, it will also have a negative impact on one's job satisfaction, even if that job has high task identity. Thus, even if a person's job has high task identity and they know the bigger picture and end result of the work they are doing, if they are suffering from a mental health illness which causes them to have difficulty concentrating or experience other negative consequences due to their mental illness, that will take up most of their cognitive resources, making it difficult to take pride in the work they are doing which is an outcome of jobs with task identity. In other words, poor psychological health means people are less likely to care about the outcome of their work, even if their job has high task identity.

As with task significance, it is also hypothesized someone high on the trait negative affectivity would experience lower job satisfaction. This is because experiencing negative emotions such as sadness, anger, and fear, both make it harder to concentrate on the task at hand and make it so that you do not care as much, resulting in diminished pride in one's work. For example, an app developer who is high on negative affectivity may have low job satisfaction because they are not able to find joy in the work they are doing, because of the fact they are experiencing negative emotions. Even though their job as an app developer has

high task identity and they know the end result of their app, because they are experiencing negative emotions, they are unable to experience pride in their work, and thus, do not care about the outcome. This lack of pride and not caring about the outcome means that even though the job itself has high task identity, this person will have lower job satisfaction.

Lastly, people can experience poor psychological health due to experiencing stress. One example of a how a chronic stressor can lead to poor psychological health, and thus lower job satisfaction is not having enough resources to perform your job. Previous research on situational constraints have been associated with lower job satisfaction (Ferguson & Cheek, 2011; Peters & O'Connor, 1980). This relationship makes sense, because even if you see the big picture of what the end product of your work is supposed to be, if you do not have the tools and resources to carry out that work, that means you are not able to perform your work to your highest potential, which in turn has been shown to lower job satisfaction (Peters & O'Connor, 1980).

Like in the previous example describing how teachers in Oklahoma report low job satisfaction despite their jobs having high task significance, they also report low job satisfaction despite seeing the "big picture" of their work. Teachers in Oklahoma see the end result at the end of the year in smarter children, and yet they still report low job satisfaction all because they do not have enough resources to perform their jobs (Balingit, 2018). Hence, if one does not have the resources needed to perform their job, it is hypothesized that they would report

lower levels of job satisfaction, due to the stress of situational constraints, despite the job having high task identity.

No matter the cause of poor psychological health, be it mental illness, negative affectivity, or experiencing stress from a toxic work culture, lack of resources to perform one's job, or another stressor, the sensing/intuition dichotomy in the Myers-Briggs personality system would not moderate the relationship between task identity and job satisfaction for someone with poor psychological health. Thus, my hypothesis for link 5 is as follows:

> **Hypothesis 9**: The sensing/intuition dichotomy in the Myers-Briggs personality system will not moderate the relationship between task identity and job satisfaction for respondents classified as having poor psychological health. Poor psychological health will negatively predict job satisfaction.

The next section discusses the only research to date that specifically looked at the relationship between job characteristics and job satisfaction being moderated by one's Myers-Briggs personality type.

Previous Research on Interaction Between Job Characteristics and Myers-Briggs on Job Satisfaction

To date, only one study has been conducted to see if job characteristics and the Myers-Briggs personality system interact to predict job satisfaction. Thomas, Buboltz, and Winkelspect (2004) in their article, *Job Characteristics and Personality as Predictors of Job Satisfaction* hypothesized that job characteristics

would be a better predictor of job satisfaction than the MBTI or the interaction between the MBTI and job characteristics on job satisfaction. They used Schneider's (1987) attraction, selection, attrition (ASA) framework, which explains people who attracted to organizations self-select and are selected into those organizations and those who do not fit the organizational culture eventually leave by quitting or being fired, to justify personality, as measured by the MBTI, as not being predictive of job satisfaction. Thomas et al. (2004) argued that personality would be most predictive of the attraction phase, meaning any affect personality would have on worker affectivity is already accounted for. Using hierarchical regression, Thomas et al.'s (2004) hypothesis was supported: only job characteristics predicted job satisfaction, $R^2 = 0.24$, $p < .001$, while MBTI and the interaction between MBTI and job characteristics did not, $R^2 = 0.02$, $n.s$, and $R^2 = 0.11$, $n.s.$ However, the dimensions of job characteristics theory that I am interested, task identity and task significance, were the only two of the job characteristics that did not have significant betas, and hence, did not contribute to job characteristics being predictive of job satisfaction.

A caveat to note to the Thomas et al. (2004) study was that use of the MBTI for their measure of personality was not based on theory, but rather based on convenience, since their sample already took the MBTI prior to their study. This poses several issues. The first issue concerns their lack of theoretical justification for why specifically the MBTI would be a poor predictor of job satisfaction and would not interact with job characteristics to predict job

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satisfaction. Using Schneider's (1987) ASA framework to justify why personality as a whole would not predict job satisfaction or interact with job characteristics to predict job satisfaction is equivalent to saying mental health does not predict job satisfaction. Like mental health, personality is something everyone has, and can be conceptualized in many ways. Thus, the lack of theoretical justification concerning the use of the MBTI in Thomas et al.'s (2004) study begs the question as to whether another personality model, such as the Five Factor Model, would have been a better measure of personality, or, if personality in general is not predictive of job satisfaction nor interacts with another variable.

The second issue is that because Thomas et al. (2004) did not measure their participant's Myers-Briggs personality, it is unclear whether administration of the MBTI took into account participant's psychological health. As discussed earlier, one of the assumptions concerning the accuracy of MBTI results is that participants are in good psychological health to be able to accurately report their preferences (Myers & Myers, 1980; Myers & McCaulley, 1985, Witt & Dodge, 2018). Since we do not know whether Thomas et al.'s (2004) participants were in good psychological health when they took the MBTI, it could be possible that measurement error contributed to the MBTI not being predictive of job satisfaction as well as the absence of an interaction between the MBTI and job characteristics predicting job satisfaction.

Present Study

The purpose of the present study was to investigate how job characteristics, specifically task significance and task identity, interact with the Myers-Briggs dichotomies, to influence job satisfaction. One goal of this study was to understand the extent one's Myers-Briggs personality type influences the relationship between job characteristics and job satisfaction, while the second goal was to understand how that relationship is impacted by psychological health. Psychological health, encompassed by mental health – cognitively being able to process information, and emotional health – being able to express one's feelings and mange one's emotions, is thought to be a necessary but insufficient condition for the hypothesized models.

CHAPTER TWO

METHOD

Participants

Multiple, non-probabilistic sampling methods were used to recruit participants who were 18 years of age or older and who worked one hour or more per week. Out of a total of 945 participants, 496 were students who participated to fulfill course requirements and 449 were recruited from a convenience sample. For the student sample, a combination of purposive and self-selection sampling techniques were utilized because even though students were required to participate in research to fulfill course requirements (purposive sampling), they could still choose from several studies and decide which one they wanted to participate in (self-selection).

For the convenience sample, a combination self-selection and snowball sampling methods were utilized to recruit participants to voluntarily participate from my network of friends, family, and social and professional acquaintances. I recruited participants from my network via the social media websites Facebook and LinkedIn, as well as by sending invitations via email and in-person.

To incentivize people to participate in my study and to provide participants an opportunity to learn about their personality, participants were provided their Myers-Briggs personality type along with a brief description of their type at the

end of the survey. Participants were also given access to a Dropbox link that had articles, YouTube videos, and podcasts about their Myers-Briggs type and the Myers-Briggs personality system for those who were interested. Participants from the student sample received credit for their participation as part of their course requirement and no participant received monetary compensation for their participation. My study complied with the APA Code of Ethics (2017) regarding voluntary participation, right to know nature of study, right to withdraw at any time, assurance of anonymity of responses, and no harm.

Design

A non-experimental correlational design was utilized to determine whether relationships existed between job characteristics and job satisfaction, whether those relationships were moderated by the Myers-Briggs dichotomies, and whether the hypothesized moderation was impacted by psychological health. Data was gathered through online survey questionnaires using Qualtrics survey software.

A correlational design was employed instead of an experimental design due to the nature of the variables under investigation: you cannot conduct an experiment to induce participants' Myers-Briggs personality type. The downside of a correlational design is that it lacks internal validity, meaning causal relationships could not be inferred. Instead, inferences were made in terms of how changes in one variable corresponded to changes in another variable.

Measures

The variables under study were task significance, task identity, meaningfulness of work, life satisfaction, job satisfaction, the thinker/feeler dichotomy in the Myers-Briggs personality system, the intuition/sensing dichotomy in the Myers-Briggs personality system, negative affectivity, mental health, and stress. All measures of the variables testing my hypotheses can be found in Appendix A.

Variables Under Study

Task significance, task identity, and meaningfulness of work were measured using items from Hackman and Oldham's (1974) Job Diagnostic Survey (see Appendix A). In total, there were six items measuring task significance, three measuring task identity, and four measuring meaningfulness of work. Job characteristics (task significance and task identity) were measured using Section 1 and Section 2 of the Job Diagnostic Survey; both used 1-7 Likert response scales that were slightly different. In Section 1, a 1 represented "Very little", a 4 represented "Moderately", and a 7 represented "Very much" and the description after those words differed slightly depending on the question. For example, an item measuring task significance using this rating scale asked, "To what extent does your job require you to work closely with other people (either clients, or people in related jobs in your own organization)?", where a 1 represented, "Very little; dealing with other people is not at all necessary in doing the job.", a 4 represented, "Moderately; some dealing with others is necessary.",

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and a 7 represented, "Very much; dealing with other people is an absolutely essential and crucial part of doing the job.". The ratings of 2, 3, 5, and 6 did not have verbal descriptions next to them for Section 1. Higher ratings of the scale in Section 1 indicated higher levels of the job characteristics.

Section 2 of the Job Diagnostic Survey also measured job characteristics by asking participants to rate "How accurate is the statement in describing your job?" using a 1-7 Likert response scale where 1 indicated "Very Inaccurate" and 7 indicates "Very Accurate", with higher scores indicating higher levels of job characteristics. The difference between the rating scales in Section 1 and Section 2 was that Section 2 did not have elaborate verbal descriptions next to the numbered ranking beyond "Slightly Inaccurate" or "Slightly Accurate". An example of an item measuring task identity includes, "The job provides me the chance to completely finish the pieces of the work I begin.", where a 1 indicated "Very Inaccurate" and a 7 indicated "Very Accurate".

Section 3 and Section 5 of the Job Diagnostic Survey measured the critical psychological state meaningfulness of work. In both sections, meaningfulness of work was measured by asking participants to indicate their level of agreement with each statement using a 1-7 Likert response scale where a 1 indicated "Disagree Strongly" and a 7 indicated "Agree Strongly", with higher scores indicating higher levels of meaningfulness of work. An example of an item measuring meaningfulness of work includes, "The work I do on this job is very meaningful to me."

Reliability and validity estimates were obtained from Fried and Ferris'

(1987) meta-analysis. The reliability for task significance (Cronbach's α = 0.67)

and task identity (Cronbach's α = 0.69) is not ideal, while the reliability for

meaningfulness of work (Cronbach's α = 0.78) is acceptable. One possibility for

the low reliabilities for task significance and task identity could be due to the

shortcomings of meta-analytic techniques. A meta-analysis takes effect sizes

from multiple studies and combines them to get an average effect size that is

thought to be the best estimate of the population effect size (Shultz et al., 2014).

This means when researchers conducting a meta-analysis take the effects from

multiple studies and combine them to get an average effect, they are also

combining each study's systematic and unsystematic error. Thus, it is possible

reliability estimates for task significance and task identity found in Fried and

Ferris' (1987) meta-analysis may be higher than reported.

For validity estimates, Fried and Ferris (1987) used 90% credibility values

to estimate the true validity coefficients for task significance, task identity and

meaningfulness of work in the population. Task significance (0.26), task identity

(0.35), and meaningfulness of work (0.87) were all related to job satisfaction,

which demonstrates acceptable validity evidence.

Scores for task significance, task identity, and meaningfulness of work

were obtained by averaging participants' responses to scale items for each

variable, making all three continuous variables in the analysis.

Life satisfaction was measured using the Satisfaction With Life Scale (SWLS; Diener et al., 1985). SWLS measures cognitive judgements of one's life satisfaction. There are five items and they are anchored on a 1-7 Likert response scale where a 1 indicated "Strongly Disagree" and a 7 indicated "Strongly Agree". Higher scores on the SWLS indicated higher levels of life satisfaction. A sample item from the SWLS states, "The conditions of my life are excellent.", where endorsing this item positively is indicative of higher life satisfaction. In their validation study of the SWLS, Diener et al. (1985) tested and retested participants during a two-month period and found their scale had high test-retest reliability (coefficient α = 0.87). Additionally, recent research using the SWLS found a Cronbach's α coefficient of 0.88 (Maroufizadeh et al., 2016), suggesting the SWLS is a reliable measure of life satisfaction.

Diener et al. (1985) also demonstrated construct validity evidence and found their SWLS had a strong, positive relationship with six subjective well-being scales (r = 0.50), and that it had a strong, negative relationship with neuroticism (r = -0.48), which suggests those satisfied with life are free from psychopathology. Lastly, the SWLS was not related to the Marlowe-Crowne measure of social desirability (r = 0.02), which suggests the scale is not evoking a social desirability response set.

Job satisfaction was measured using a modification Diener et al.'s (1985) SWLS. Because the modifications of the SWLS to measure job satisfaction are very minor and only replace the word "life" with "job" (e.g. "I am satisfied with my

job." instead of "I am satisfied with my life."), I assumed the modified version of the SWLS would have very similar psychometric properties as Diener et al.'s (1985) original. The modified SWLS for job satisfaction was preferred over the job satisfaction scale in the Job Diagnostic Survey because it is shorter; modified SWLS for job satisfaction is five items versus fourteen items for the job satisfaction scale in the Job Diagnostic Survey. I wanted to keep my survey as short as possible to prevent participants from experiencing survey fatigue and increase the likelihood of survey completion.

Both life and job satisfaction were ordinal variables and were created by summing participants' scores per item, making the scores whole numbers ranging from 5 (Extremely Dissatisfied) to 35 (Extremely Satisfied). Even though life and job satisfaction are technically ordinal variables, they were treated as if they were continuous in the analysis.

The thinking/feeling and sensing/intuition dichotomies in the Myers-Briggs personality system were measured using Witt and Dodge's (2018) questionnaire from their book *Personality Hacker*. Witt and Dodge's (2018) questionnaire is different from the official MBTI but it is based on the MBTI and Myers and Myers (1980) conceptualization of the dichotomies, as well their experience as practitioners implementing the Myers-Briggs personality system in their coaching work. There are two reasons why Witt and Dodge's (2018) version of the Myers-Briggs assessment was used over the official MBTI. The first concerns the length of the MBTI which is 150 questions compared to Witt and Dodge's (2018) Myers-

Briggs assessment which is only 60 questions. As mentioned earlier, attempts were made to keep this survey as short as possible for participants. The second concerns the proprietary nature of the MBTI which makes it difficult and expensive to obtain.

Witt and Dodge's (2018) Myers-Briggs assessment had statements where participants were given a choice between A and B where they indicated which they agree with. A sample item assessing the sensing/intuition dichotomy is, "It is better to be…" where participants choose between A) Practical (sensing) or B) Inventive (intuition). A sample item assessing the thinking/feeling dichotomy is, "I have stronger…" where participants choose between A) Social skills (feeling) or B) Analytical skills (thinking). The scoring of Witt and Dodge's (2018) Myers-Briggs assessment is based on the dichotomies where there are 15 items for each dichotomy (introversion/extraversion, sensing/intuition, thinking/feeling, judging/perceiving). Dichotomies for participants are determined by a simple majority for each of the four dichotomies. For example, if a participant chooses eight choices indicative of sensing and seven choices indicative of intuition, they would be classified as a sensor. More information on how participants were classified into each of the dichotomies can be found in the Creation of Composite Variables section.

Due to the recent publication of Witt and Dodge's book *Personality Hacker*, which was published in November of 2018, the psychometric properties of the Myers-Briggs assessment, including Cronbach's α coefficient, are not

available. My study was the first to assess the Cronbach's α coefficient along with validity evidence for Witt and Dodge's (2018) Myers-Briggs assessment.

Negative affectivity was measured using the Positive Affectivity and Negative Affectivity Schedule (PANAS, Watson et al., 1988). The scale had 20 words (10 for Positive Affectivity and 10 for Negative Affectivity) describing emotions and feelings, such as "upset" and "scared", where participants indicate on a Likert response scale from 1-5 where a 1 indicated "Very slightly or not at all" and a 5 indicated "Extremely" how often they felt that emotion or feeling during a certain time period. Scores for negative affectivity range from 10-50, with higher scores indicating higher levels of negative affectivity.

The PANAS had the option to choose different time instructions from this moment (you feel this way right now, that is, at the present moment), today (you have felt this way today), past few days (you have felt this way during the past few days), week (you have felt this way during the past week), past few weeks (you have felt this way during the past few weeks), year (you have felt this way during the past year), and in general (you generally feel this way, that is, how you feel on the average). Test-retest reliabilities after an eight-week retest interval range from 0.39 to 0.71, with the reliabilities for the earlier time instructions, such as "moment" and "today" were lower and the reliabilities for the later time instructions, such as "in general" and "over the past year" were higher (Watson et al., 1988). This makes sense because when you ask participants how they feel over longer periods of time, such as in general or a year, participants are

aggregating how they feel over multiple occasions. Thus, I used the time instruction of "in general", instead of shorter interval time instructions such as "this moment" or "today", because I was interested in measuring participants' level of negative affectivity as a stable trait as opposed to measuring temporary moods.

Recent research using the PANAS demonstrated strong reliability for negative affectivity (Cronbach's α = 0.88) (von Humbolt et al., 2017), which provides further evidence that the PANAS is a reliable measure of negative affectivity. The PANAS also demonstrates strong validity evidence. The average correlation between the negative affectivity items of the PANAS scale and measures of psychological distress was $r = 0.61$, and there were no practically significant differences between the time instructions, suggesting that negative affectivity and psychological distress are positively related (Watson et al., 1988).

Mental health was measured using the Mental Health Inventory (MHI, Veit & Ware, 1983). The MHI has two dimensions: psychological well-being and psychological distress that measure general positive affect, emotional ties, anxiety, depression, and loss of behavioral/emotional ties. Veit and Ware's (1983) original MHI has thiry-eight items. However, because Veit and Ware's (1983) MHI is proprietary and I did not have access to the official MHI with all thrity-eight items, I had to use a 15 item version provided by my advisor, Ismael Diaz, who used it for his 2013 dissertation. The 15 item version of the MHI (MHI-15) measured both psychological well-being and psychological distress, where

the items for psychological well-being are reversed scored. MHI-15 asked

participants about how they have felt over the last six months where participants

use a 1-5 Likert scale where a 1 indicates "None of the time" and a 5 indicates

"All of the time". An example item on the MHI-15 asked," [During the last 6

months] how much of the time have you been in low or very low spirits?" where

stronger endorsement indicates more mental health issues. Higher scores on the

MHI-15 indicated more mental health issues.

Previous research by Diaz (2013) provide excellent reliability evidence for

the MHI-15 (average Cronbach's α = 0.93). To determine the validity of the MHI-

15, I calculated the average correlation between Diaz's (2013) samples and

seven outcome variables including mistreatment, positive treatment, physical

well-being, burnout, satisfaction with graduate program, satisfaction with

graduate advisor, and intention to stay in graduate program, to get an average

correlation of r = 0.20, suggesting the MHI-15 is predictive of a variety of positive

and negative outcomes.

Stress was measured using the Perceived Stress Scale (PSS, Cohen et

al., 1983). The PSS measures one's perception of stress by measuring the

degree to which situations in one's life are appraised as stressful. The PSS was

ten items where participants were asked about their feelings and thoughts during

the last month and asked to indicate how often they have felt or thought a certain

way using a 0-4 Likert scale where a 0 indicates "Never" and a 4 indicates "Very

Often", where higher scores indicate higher levels of perceived stress. Example

items include, "In the last month, how often have you felt nervous and 'stressed'?" and "In the last month, how often have you been upset because of something that happened unexpectedly?". The PSS scale demonstrates excellent reliability (coefficient $\alpha = 0.85$) and has been shown to be related to the number of life events, $r = 0.18$, depression symptoms, $r = 0.70$, and physical symptoms, $r = 0.58$, which suggests the PSS is a valid measure of stress (Cohen et al., 1983).

Note that the measures for negative affectivity, mental health, and stress were combined to create the composite variable of psychological health. More information on how psychological health was created can be found in the Creation of Composite Variables section.

<u>Variables Used for Statistical Control</u>

Age, socioeconomic status (SES), tenure at their current job at their current organization (tenure), and hours-per-week worked (hours) were the variables used for statistical control. Age was a continuous variable. SES was a composite of the variables of SES Actual Wealth, which was measured by respondent's reported income and how many months of savings they reported having in the bank, and SES Perceived Wealth, which was measured by asking participants to self-identify which social class they belonged to as well as asking them how secure they felt with the money they had. SES was created by adding SES Actual Wealth and SES Perceived Wealth and averaging them. This

resulted in six categories of social classes where a 1 represented poor, a 2 represented working class, a 3 represented lower-middle class, a 4 represented middle class, a 5 represented upper-middle class, and a 6 represented wealthy. SES was an ordinal variable but was treated as a continuous variable when added to the analysis to look at the covariates.

Tenure was an ordinal variable where a 1 indicated tenure of less than 6 months, a 2 indicated tenure between 6-12 months, a 3 indicated tenure between 1-2 years, a 4 indicated tenure between 3-4 years, a 5 indicated tenure between 5-6 years, and a 6 indicated tenure of more than 6 years. Hours was a ordinal variable where a 1 indicated the respondent worked part-time less than 20 hours per week, a 2 indicated the respondent worked part-time between 20-39 hours per week, a 3 indicated the respondent worked full-time at 40 hours per week, and a 4 indicated the respondent worked full-time more than 40 hours per week. SES, tenure, and hours were treated as continuous variables when added to the analysis to look at the covariates.

Demographic Variables

Gender, race, student/non-student status, highest educational level completed, job industry, work environment (work at home, work in an organization, or both), and full-time between one of two or more jobs (only for participants who indicate full-time employment) were the demographic variables collected.

<u>Other Variables</u>

Other variables measured include participants' job title, description of their job, religious affiliation, and positive affect. These variables were originally going to be used as statistical control variables in the analysis. However, I decided to only include a small sub-set of control variables in the analysis due to the preliminary nature of this research. In future research for publication, I hope to include more statistical control variables in order to create a more comprehensive model.

Procedure

Participants completed a survey using Qualtrics and were able to access the survey on any computer or mobile device that had internet access and could take the survey anywhere they liked. Participants were first presented with informed consent that explained the nature of the study, how long the survey would take (30 minutes), and it informed them they would receive their personality results at the end of the survey (participants did not know which personality assessment was being used or how personality was being studied). The informed consent was consistent with the APA Code of Ethics (2017) in assuring participants of anonymity of their responses, voluntary participation with the right to withdraw at any time, and the right to skip any questions they did not wish to answer. At the bottom of the informed consent, participants had to

acknowledge that they read and agreed to the informed consent and confirm they were at least 18 years of age or older.

After the informed consent, participants were presented with the secondary screening question which asked if they worked at least one hour or more per week. Work was defined broadly to encompass volunteer work and the work of stay-at-home parents. Participants had to confirm that they at least worked one hour per week to move forward in the survey. The survey ended for people who indicated they did not work at least one hour per week.

After the screening question, the survey began with demographic questions. The demographic questions included asking about participants' gender, race, age, SES, religious affiliation, job industry, job title, job description (participants had to describe in 1-2 sentences), work environment, hours worked, and job and organization tenure. The Myers-Briggs personality assessment was presented after the demographic questions and at the beginning of the survey since it was the longest assessment out of all the study scales; I wanted to ensure participants were not affected by survey fatigue when answering questions about their personality. With the exception of the PANAS which measured positive and negative affectivity, the rest of the scales asked participants to evaluate their job and life, which I argue is less cognitively demanding than answering questions about your personality, which is why I opted to put those scales at the middle and end of the survey. Additionally, the survey was divided into five sections that informed participants when they hit the

25%, 50%, and 75% survey completion rates in order to mitigate survey fatigue and increase the participant survey completion rate[3]. Sections 1 and 5 did not have a numerical percentage mark and just had messages saying participants were at the beginning or end of the survey.

After the Myers-Briggs questionnaire, participants completed the remaining scales measuring the study variables in the following order: the Job Diagnostic Survey which measured task significance, task identity, and meaningfulness of work, the job satisfaction scale, PANAS, MHI-15 which measured mental health, PSS which measured stress, and lastly the SWLS which measured life satisfaction. The last two demographic questions asked of participants included the highest education level completed and whether they were currently a student. Education level and student status were asked last because they were considered the least important in terms of demographic questions: I did not want to overwhelm participants with too many demographic questions at the beginning before they completed the Myers-Briggs personality assessment and scales assessing the test variables which were the most important.

Because my survey asked many questions and my survey was 30 minutes long which is on the longer side, I also had three attention checks throughout the

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[3] Note: I did not include a progress bar because Qualtrics in their researcher support page advises against it as it encourages participants to rush through your survey. Instead, the 25%, 50%, and 75% survey marks appeared at the top of the page when participants hit that mark with a verbal message (e.g. "You have completed 25% of this study!").

survey to check for careless responding. An example of one of my careless

responding items include, "If you are reading this, select 'Some of the time.'",

where participants must select "Some of the time.", in order to pass that attention

check. Two attention checks were placed in the middle of the Myers-Briggs

personality assessment, which occurred at the beginning and middle of the

survey, and the last was placed in the middle of the MHI-15 which occurred at

the end of the survey. Participants who did not pass all three attention checks

were excluded from the analysis.

The survey concluded with a thank you statement as well as the results of

the Myers-Briggs personality assessment for each participant. Participants were

also presented with a brief description of their Myers-Briggs personality type in

addition to a Dropbox link where they could learn more about their personality

type as well as the Myers-Briggs personality theory. Participants were also

provided the contact information of my advisor, Ismael Diaz, and informed they

could contact him if they had any concerns or questions from participation in my

study.

Creation of Composite Variables

Before data screening and the analysis could be conducted, composite

variables needed to be created for the Myers-Briggs variables of thinking, feeling,

sensing, intuition, and psychological health, which was a composite of scores on

negative affectivity, mental health, and stress. For the Myers-Briggs dichotomies

of thinking/feeling and sensing/intuition, scores for each variable within the dichotomy (e.g., feeling in the thinking/feeling dichotomy) ranged from 0-15, with 0 indicating the respondent answered 0 items endorsing that variable within the dichotomy (e.g., feeling) and a 15 indicating the respondent answered all 15 items endorsing that variable within the dichotomy. The 0-15 score range represents respondents' raw scores on each of the Myers-Briggs variables within the dichotomies (introversion/extraversion, sensing/intuition, thinking/feeling, judging/perceiving). This means within the introversion/extroversion dichotomy are the variables of an introvert score and an extrovert score, within the sensing/intuition dichotomy are the variables of a sensor and intuitive score, within the thinking/feeling dichotomy are the variables of a thinker and feeler score, and within the judging/perceiving dichotomies are the variables of a judger and perceiver score. Therefore, all respondents no matter what their Myers-Briggs type had eight variable scores, each ranging from 0-15.

Recall that Witt and Dodge's (2018) Myers-Briggs questionnaire is 60 items total with 15 items testing each dichotomy. To be classified for each dichotomy, respondents must endorse a minimum of 8 items for each preference and can endorse a maximum of 15 items for each preference. For example, in order to be classified as a feeler and not a thinker, a respondent would need to endorse at least 8 items measuring the feeling variable within the thinking/feeling dichotomy, leaving 7 items endorsed as thinking which totals the 15 items that measured the thinking versus feeling dichotomy. Likewise, a respondent can also

be classified as a feeler by endorsing all 15 items measuring the thinking versus feeling dichotomy as a feeler, leaving 0 items endorsed as a thinker. In other words, any score between 8 to 15 would be classified as a feeler, and to calculate the respondent's thinker score, you subtract the total number of questions asked measuring the dichotomy (15) from their feeler score. This means that even though that respondent is classified as a feeler, they still have a thinker score. To classify each respondent as a thinker or a feeler and a sensor or an intuitive, four dummy variables were created from the Myers-Briggs raw score variables which measured how many items respondents endorsed for each of the Myers-Briggs dichotomies; a "thinker" dummy variable, a "feeler" dummy variable, a "sensor" dummy variable, and an "intuitive" dummy variable (Thinking Dummy, Feeling Dummy, Sensing Dummy, Intuition Dummy). Each dichotomy has two dummy variables; the thinking/feeling dichotomy has the Thinking Dummy and Feeling Dummy variables associated with it and the sensing/intuition dichotomy has the Sensing Dummy and Intuition Dummy variables associated with it.

Thinking Dummy was created by coding respondents who endorsed 8-15 items as a thinker on the Myers-Briggs items measuring the thinking/feeling dichotomy as a 0 and coding the 0-7 items endorsed as a feeler as a 1. Feeling Dummy was created by coding respondents who endorsed 8-15 items as a feeler on the Myers-Briggs items measuring the thinking/feeling dichotomy as a 1 and coding the 0-7 items endorsed as a thinker as a 0.

Sensing Dummy was created by coding respondents who endorsed 8-15 items as a sensor on the Myers-Briggs items measuring the sensing/intuition dichotomy as a 0 and coding the 0-7 items endorsed as an intuitive as a 1. Intuition Dummy was created by coding respondents who endorsed 8-15 items as an intuitive on the Myers-Briggs items measuring the sensing/intuition dichotomy as a 1 and coding the 0-7 items endorsed as a sensor as a 0.

Respondents' dummy scores within the dichotomies are the same. For example, if a respondent is classified as a feeler, then their Thinking Dummy and Feeling Dummy scores will be 1. This means for the simplicity of the analysis, only one dummy variable per dichotomy is needed. However, the raw scores for thinking and feeling will be different. The raw scores can be thought of as respondent's continuous scores ranging from 0-15 on each of the eight Myers-Briggs variables. Because of the differences in the Myers-Briggs raw scores which represent different ways for respondents to be classified for each preference in the dichotomies, the descriptive statistics for the Myers-Briggs dummy variables within the dichotomies were slightly different. For example, the mean for Thinking Dummy was 0.64 and the mean for Feeling Dummy was 0.63.

Paired t-tests were performed between Thinking Dummy and Feeling Dummy as well as Sensing Dummy and Intuition Dummy to ensure the means were not statistically different from each other, using $\alpha = 0.0001$. A stringent alpha level was used because I only wanted to reject the null hypothesis, which would indicate there is no difference between the means, if the differences

between the means were large, as opposed to only being marginally different from each other. In other words, I did not want to use a higher alpha level because I did not want to risk rejecting the null hypothesis for marginal differences between the means that are not practically meaningful. This means for the paired t-tests performed, I wanted to fail to reject the null hypothesis, which would indicate the means between the Myers-Briggs dummy variables were not statistically different from each other.

For Thinking Dummy and Feeling Dummy, the paired t-tests revealed the means were not statistically different from each other, leading me to fail to reject the null hypothesis, $t(848) = 2.46$, $p = .014$. The mean for Sensing Dummy was 0.39 and the mean for Intuition Dummy was 0.38. The paired t-tests between Sensing Dummy and Intuition Dummy were not statistically different from each other, leading me to fail to reject the null hypothesis, $t(848) = 2.66$, $p = 0.008$.

Because the paired t-tests did not show any statistically meaningful differences between the means of Thinking Dummy and Feeling Dummy as well as between Sensing Dummy and Intuition Dummy, it does not matter which dummy variable within each dichotomy is used. Feeling Dummy and Intuition Dummy were used in the analysis for the ease of interpretation.

Additionally, the same process was repeated for the introversion/extraversion and judging/perceiving dichotomies in creating the

dummy variables and performing the paired t-tests, even though those variables were not used in the analysis.

The psychological health composite variable was created after the Myers-Briggs dummy variables were created. Psychological health is an ordinal variable and a composite of negative affectivity, mental health, and stress. Reverse scored items were recoded prior to the creation of psychological health. The scores for psychological health ranged from 25-165, where lower scores represented poor psychological health and higher scores represented excellent psychological health. As with life and job satisfaction, psychological health was treated like a continuous variable.

Additionally, the variables of good psychological health and poor psychological health were created using *z*-scores to determine the benchmarks for each category in order to conduct the sub-group analyses between respondents with good and poor psychological health. The criteria for the benchmarks that determined whether respondents would be classified as good or poor psychological health was based on the empirical rule. The empirical rule states that if the histogram of values in a data set can be reasonably well approximated by a normal curve, then approximately 68% of the observations will be within one standard deviation of the mean, approximately 95% of the observations will be within two standard deviations of the mean, and approximately 99.7% of the observations will be within three standard deviations of the mean (Peck & Devore, 2012).

Using the logic of the empirical rule, I concluded that 68% of respondents

will be in the average range of psychological health, which would be depicted by

a *z*-score of -1 to 1. This would mean that a z-score higher than 1 would indicate

excellent psychological health, and a *z*-score lower than -1 would indicate poor

psychological health. Average psychological health was created and consisted of

z-scores from -1 to 1, and excellent psychological health was created and

consisted of *z*-scores of 1.01 and higher. Good psychological health is therefore

the combination of average and excellent psychological health and consisted of

z-scores from -1 and higher.

Psychological health is thought to be a necessary but insufficient condition

in order for the Myers-Briggs dichotomies to moderate the relationship between

job characteristics and job satisfaction. This means above average levels of

psychological health are not needed for the Myers-Briggs moderation hypotheses

to be supported. Further, there were no statistical differences between average

and excellent psychological health in testing the Myers-Briggs moderation

hypotheses, which justifies using two group comparisons of poor and good

psychological health, rather than using three group comparisons of poor,

average, and excellent psychological health.

Thus for the analysis, three psychological health variables were used: the

continuous version of psychological health to test the hypotheses around the

relationships between psychological health and job satisfaction, and poor

psychological health and good psychological health to conduct sub-group

analyses for the Myers-Briggs moderation hypotheses.

Analytic Strategy

A correlational and multiple regression analysis was implemented using

IBM SPSS software version 23, to test the hypothesized relationships described

in Model 1 and Model 2. The correlational analysis tested whether task

significance was positively related to meaningfulness of work, job satisfaction,

and life satisfaction, and whether task identity was positively related to

meaningfulness of work and job satisfaction. Likewise, the correlational analyses

also tested the hypothesis that meaningfulness of work is positively related to job

satisfaction and life satisfaction, and it also tested the hypothesis that poor

psychological health would be negatively related to job satisfaction.

The multiple regression analysis tested the hypothesis that job satisfaction

could be predicted from the interaction between job characteristics (task

significance and task identity) and participant's Myers-Briggs personality type

(the thinker/feeler dichotomy for task significance and the sensing/intuition

dichotomy for task identity) for participants classified as having good

psychological health. My main analysis was divided into two groups: one group

being participants with good psychological health and the second group being

participants with poor psychological health.

Two-tailed *t*-tests were used to conduct the correlational analyses and the

significance threshold of 0.005 instead of 0.05 was used for all analyses based

on Benjamin et al.'s (2018) recommendation in their article *Redefine statistical

significance*. I agree with Benjamin et al.'s (2018) argument that an alpha level of

0.05 is too high for psychology and results in a high rate of false positives, even

in the absence of other experimental, procedural, and reporting problems.

Further, the Myers-Briggs personality system being unaccepted as a valid

measure of personality in the scientific community was another reason why I

opted for using a stringent alpha level. Geoff Cumming (2012) explains in his

book, *Understanding The New Statistics: Effect Sizes, Confidence Intervals, and

Meta-Analysis* that the best way to interpret *p*-values is to think of them as a

strength of evidence, which is how one of the statisticians of which Null

Hypothesis Significance Testing Sir Ronald Fisher proposed. From the

perspective that *p*-values are viewed as a strength of evidence, the smaller the *p*-

value, the smaller the probability of observing the Myers-Briggs dichotomies

moderating the relationships between job characteristics and job satisfaction,

given the null hypothesis of there being no moderation being true. Thus, support

for the Myers-Briggs hypotheses using a stringent alpha level of 0.005 would

provide stronger evidence for my argument that the Myers-Briggs personality

system is a valid measure of personality and should be utilized by psychologists

in research and practice than the conventional alpha level of 0.05.

CHAPTER THREE

RESULTS

Data Screening

Prior to hypotheses testing, data was screened for missing and unusable data according to screening criteria. Originally, data was collected on 945 respondents. A total of 127 cases were deleted due to either not meeting the screening criteria of being at least 18 years of age and being employed one or more hours per week (six cases), not answering any survey items concerning hypothesized variables (e.g., only answering demographic items, 85 cases). Likewise, to be included in the analysis, respondents must have answered all items on the Myers-Briggs personality assessment and all items from the Job Diagnostic Survey, which measured task significance, task identity, and meaningfulness or work. Thirty-six additional cases were deleted due to respondents not answering all Myers-Briggs personality assessment items and/or items from the Job Diagnostic Survey. This left me with 818 total cases.

Additionally, to be included in the analysis, respondents must have passed all three careless responding items. 25 respondents did not pass one or more careless responding items. The 25 respondents who did not pass the careless responding items were not deleted, but they were also not included in the analysis. Between the 25 cases who failed the careless responding items and the five outliers that were excluded from the analysis (discussed later), this left me

with 788 cases that were used in the analysis. Lastly, reverse scored items were recoded prior to the creation of variables and further analysis.

Demographic Information

Respondents were primarily female (84.1%), Hispanic or Latino (48.1%), worked part-time (73.9%), and their socioeconomic status (SES) was working-class (30.5%). Ages of respondents ranged from 18 to 75 with the mean age being 27.66 with a standard deviation of 10.70. Additionally, most respondents were students (77.9%). Looking at the frequencies in the Myers-Briggs system between the thinker/feeler and intuition/sensing dichotomies revealed that 64.1% of respondents were classified as feelers and 37.6% of respondents were classified as intuitives. Tables 3, 4, and 5 contain detailed demographic and job information as well as information on respondents' Myers-Briggs personality type.

Table 3. Demographic Information.

Variable	n	%
Gender		
Male	122	14.8
Female	693	84.1
Identify another way	7	0.8
Prefer not to state	1	0.1
Race		
American Indian or Alaska Native	4	0.5
Asian	56	6.8
Black or African American	26	3.2
Hispanic or Latino	396	48.1
Middle Eastern	25	3.0
Native American or Other Pacific Islander	6	0.7
White or Caucasian	248	30.1
Two or more races/ethnicities	56	6.8
Other	5	0.6
Education Level		
High school degree or equivalent	99	12.0
Some college but no degree	252	30.6
Associate degree	283	34.3
Bachelor degree	81	9.8
Graduate degree	94	11.4
SES		
Poor	114	13.8
Working-Class	252	30.5
Lower-Middle Class	225	27.3
Middle Class	143	17.4
Upper-Middle Class	63	7.7
Wealthy	27	3.3

Table 4. Job Information.

Variable	n	%
Job Industry		
Accommodation and Food Services	139	16.9
Administrative and Support Services	34	4.1
Agriculture, Forestry, Fishing, and Hunting	8	1.0
Arts, Entertainment, and Recreation	29	3.5
Construction	5	0.6
Educational Services	153	18.6
Finance and Insurance	14	1.7
Government	24	14.2
Health Care and Social Assistance	117	14.2
Information Technology	12	1.5
Management of Companies and Enterprises	10	1.2
Manufacturing	4	0.5
Other Services (Except Public Administration)	70	8.5
Professional, Scientific, and Technical Services	24	2.9
Real Estate and Rental and Leasing	4	0.5
Retail Industry	131	15.9
Transportation and Warehousing	23	2.8
Utilities	2	0.2
Wholesale Trade	4	0.5

Table 4 cont. Job Information.

Variable	n	%
Work Environment		
Work in an organization	686	83.3
Work at home	64	7.8
Work at both	69	8.4
Tenure at Organization and Job		
Less than 6 months	201	24.4
6-12 months	149	18.1
1-2 years	228	27.7
3-4 years	119	14.4
5-6 years	42	5.1
More than 6 years	83	10.1
Hours Worked Per Week		
Part-time, less than 20 hours per week	298	36.2
Part-time, 20-39 hours per week	311	37.7
Full-time, 40 hours per week	127	15.4
Full-time, more than 40 hours per week	87	10.6
Full-time Between 1 or More Jobs		
1 Job	179	21.7
Multiple Jobs	33	4.0

Table 5. Respondents' Myers-Briggs Personality Types.

Dichotomy	n	%
Extrovert versus Introvert		
E	253	30.7
I	571	69.3
Sensing versus iNtuition		
S	514	62.4
N	310	37.6
Thinking versus Feeling		
T	296	35.9
F	528	64.1
Judging versus Perceiving		
J	710	86.2
P	114	13.8

Myers-Briggs Type	n	%
ISTJ	147	18.7
ISFJ	193	24.5
INFJ	80	10.2
INTJ	130	16.5
ISTP	0	0
ISFP	0	0
INFP	0	0
INTP	0	0
ESTP	47	6.0
ESFP	103	13.1
ENFP	17	2.2
ENTP	71	9.0
ESTJ	0	0
ESFJ	0	0
ENFJ	0	0
ENTJ	0	0

Test of Assumptions

The large sample of $N = 788$ allows me to assume normality of the sampling distribution because of the central limit theorem which postulates that in large enough samples, estimates will come from a normal distribution regardless of the shape of the sample data (Field, 2013). Even though normality of the data was assumed due to the large sample size, I checked for outliers in variables where I thought the presence of an outlier would either exert too much influence on the regression coefficients, or where the presence of an outlier would affect the generalizability of results. The variables where the presence of outliers was examined include task significance, task identity, meaningfulness of work, job satisfaction, life satisfaction, and psychological health. Outliers cannot exist for the Myers-Briggs personality variables due to their dichotomous and descriptive nature.

Before examining the data for outliers, standardized versions of variables were created. A critical value of z ≥ +/- 3.3 was used to determine the presence of outliers. Five outliers were found for task significance with the most extreme *z*-score being -4.15. For ease of interpretation and due to the already large sample size, the five outliers were not transformed and were deleted from the dataset.

Plots of the residuals were examined among the test variables to test the assumptions of linearity and homoscedasticity. No evidence was found of non-

linearity and heteroscedasticity, allowing me to conclude the assumptions of linearity and homoscedasticity were met.

The descriptive statistics for the test variables can be found in Table 6 and the mean, standard deviations, alpha reliability estimates, zero-order, and partial correlation matrices can be found in Table 7. Please refer to Table 5 for information on the Myers-Briggs personality variables.

Table 6. Descriptive Statistics.

Variable	N	Min	Max	Mean	SD	Z Skewness	Z Kurtosis
Task Significance	788	2.00	7.00	5.47	0.99	-6.16	0.47
Task Identity	788	1.00	7.00	4.93	1.34	-2.93	-2.86
Meaningfulness of Work	788	1.00	7.00	5.03	1.41	-4.99	-3.35
Feeling Dummy*	788	0.00	1.00	1.00	0.48	-6.23	-9.83
Intuition Dummy*	788	0	1.00	0.00	0.49	5.78	-10.01
Life Satisfaction	770	5.00	35.00	22.15	6.85	-4.39	-3.22
Job Satisfaction	786	5.00	35.00	21.89	7.34	-3.15	-3.75
Psychological Health (continuous)	776	39.00	160.00	90.19	21.54	3.22	1.42
Age	785	18	75	27.79	10.76	20.77	17.00
SES	788	1.00	5.25	2.64	0.94	5.91	1.16
Tenure	787	1	6	2.88	1.55	6.25	-3.22
Hours	787	1	4	2.01	0.97	7.80	-3.00

Note. N = sample size, *Min* = minimum score observed, *Max* = maximum score observed, *SD* = standard deviation, *Z Skew* = standardized skewness, *Z Kurtosis* = standardized kurtosis.

* The mode instead of the mean was calculated for Feeling Dummy and Intuition Dummy. For Feeling Dummy, 1 = Feeler, 0 = Thinker. For Intuition Dummy, 1 = Intuitive, 0 = Sensor.

Table 7. Means, Standard Deviations, Alpha Reliability Estimates, Zero-Order, and Partial Correlations.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Task Significance	5.47	0.99	(.60)	.20 (.11*)	.52* (.50*)	.16*	.14* (-.12*)	.08 (-.10)	.33* (.31*)	.14* (.09)	.15*	.08	.10*	.08
2. Feeling Dummy**	1.00	0.48		(.78)	.02 (.05)	.01	-.05 (-.03)	.07 (.09)	.02 (.04)	-.08 (-.05)	-.07	-.08	-.04	-.08
3. Meaningfulness of Work	5.03	1.41			(.84)	.26*	.20* (.18*)	-.05 (-.09)	.67* (.67*)	.24* (.17*)	.28*	.13*	.15*	.09
4. Life Satisfaction	22.15	6.85				(.88)	.10*	-.11* (-.09)	.42*	.61*	.22*	.31*	.11*	.07
5. Task Identity	4.93	1.34					(.63)	-.04 (-.05)	.18* (.17*)	.07 (.05)	.09	.02	.14*	.09
6. Intuition Dummy**	0.00	0.49						(.78)	-.08 (-.11*)	-.06 (-.10*)	.09	.04	-.02	.06
7. Job Satisfaction	21.89	7.34							(.87)	.32* (.28*)	.19*	.15*	.08	.06
8. Psychological Health	90.19	21.54								(.95)	.36*	.30*	.18*	.14*
9. Age	27.77	10.76										.40*	.48*	.39*
10. SES	2.64	0.94											.20*	.26*
11. Tenure	2.88	1.55												.26*
12. Hours	2.01	0.97												

Note. Parentheses contain partial correlations. Cronbach alpha estimates are in parentheses in the down diagonal. M = Mean, SD = Standard Deviation. The mode instead of the mean was calculated for Feeling Dummy and Intuition Dummy. For Feeling Dummy, 1 = Feeler, 0 = Thinker. For Intuition Dummy, 1 = Intuitive, 0 = Sensor.

* Correlation is significant at $p < 0.005$ level.

** Reliability for Myers-Briggs personality assessment was used for both Feeling Dummy and Intuition Dummy variables.

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As another descriptive analysis, I conducted a means difference *t*-test comparing respondents with good and poor psychological health on the continuous test variables, namely task significance, task identity, meaningfulness of work, and job satisfaction. Because life satisfaction was not a major component in the hypothesized model, it was not included in the means difference *t*-test.

Meaningfulness of work and job satisfaction were the only two variables where there were statistically significant mean differences between respondents with poor and good psychological health. For meaningfulness or work, respondents with poor psychological health reported lower levels (*M* = 4.39, *SE* = 0.13), than respondents with good psychological health (*M* = 5.15, *SE* = 0.05), and this difference of 0.76, 95% CI [0.48, 1.03], was statistically significant, *t* (160.61) = 5.39, *p* <.005, and represented a medium-sized effect, *r* =.39. For job satisfaction, respondents with poor psychological health reported lower levels (*M* = 18.13, *SE* = 0.63), than respondents with good psychological health (*M* = 22.55, *SE* = 0.28), and this difference of 4.42, 95% CI [2.98, 5.87], was statistically significant *t*(160.11) = 6.03, *p* < .005, and represented a medium-sized effect, *r* = .43.

Test of Hypotheses

Nine analyses were conducted using IBM SPSS version 23 to test hypothesized Models 1 and 2. Model 1 hypothesized that the Myers-Briggs thinker/feeler dichotomy moderated relationship between task significance and job satisfaction and Model 2 hypothesized that the Myers-Briggs sensing/intuition dichotomy moderated relationship between task identity and job satisfaction. Analyses 1-4 tested the hypothesized relationships in Model 1 (hypotheses 1-5) and analyses 5-8 tested the hypothesized relationships in Model 2 (hypotheses 6-9). Mean-centered versions of SES, task significance, task identity, meaningfulness of work, job satisfaction, life satisfaction were used in the analyses.

Analysis 1: Task Significance and Meaningfulness of Work Predicting Job Satisfaction

A multiple regression analysis tested the hypothesized relationships between task significance and meaningfulness of work on job satisfaction, with the effects of the control variables of age, SES, tenure, and hours worked, accounted for. Specifically, Analysis 1 tested hypotheses 1a (task significance will positively predict job satisfaction) and 3a (meaningfulness of work will positively predict job satisfaction). Three steps were entered into the regression equation. The control variables were entered into Step 1, task significance was entered into Step 2, and meaningfulness of work was entered into Step 3.

Model 3 which contained all three steps, was found to be a significant predictor of job satisfaction based on task significance, meaningfulness of work, and the control variables, $R = 0.67$, $R^2 = 0.45$, $F(6, 775) = 107.45$, $p < .005$. This means that 45% of the variance in job satisfaction can be explained by task significance, meaningfulness or work, and the control variables.

Model 2 was used to test hypotheses 1a and Model 3 was used to test hypothesis 3a. As predicted, task significance was related to job satisfaction, $\beta = 0.30$, b = 0.33, $t = 8.98$, $p < .005$, providing support for hypothesis 1a. This means that for every 1 unit increase in task significance, job satisfaction increases by 0.33 units. Additionally, meaningfulness of work positively predicted job satisfaction, $\beta = 0.68$, b = 0.68, $t = 21.41$, $p < .005$. This means that for every 1 unit of meaningfulness of work, job satisfaction increases by 0.68 units. Hypothesis 3a was supported. Table 8 shows the standardized and unstandardized regression coefficients for all three steps.

Table 8. Regression Analysis Predicting Job Satisfaction from Task Significance and Meaningfulness of Work.

Variable	Step 1		Step 2		Step 3	
	β	*b*	*β*	*b*	*β*	*b*
Constant		-0.35*		-0.25		0.10
Age	0.16*	0.02*	0.12*	0.01*	-0.02	0.00
SES	0.09	0.09	0.08	0.08	0.08	0.08
Tenure	0.00	0.00	-0.02	0.00	-0.02	-0.02
Hours	-0.02	-0.02	-0.03	-0.03	0.00	0.00
Task Significance			0.30*	0.33*	-0.03	-0.03
Meaningfulness of Work					0.68*	0.68*
R^2	0.04*		0.13*		0.45*	
ΔR^2			0.09*		0.32*	

Note. *$p < .005$, estimates are standardized and unstandardized regression coefficients.

Analysis 1a: Task Significance and Meaningfulness of Work Predicting Life Satisfaction

A multiple regression analysis tested the hypothesized relationships between task significance and meaningfulness of work on life satisfaction, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, Analysis 1a tested hypotheses 1b (task significance will positively

predict life satisfaction) and 3b (meaningfulness of work will positively predict life satisfaction). Three steps were entered into the regression equation. The control variables were entered into Step 1, task significance was entered into Step 2, and meaningfulness of work was entered into Step 3.

Model 3 which contained all three steps, was found to be a significant predictor of life satisfaction based on task significance, meaningfulness of work, and the control variables, $R = 0.38$, $R^2 = 0.15$, $F(6, 759) = 21.91$, $p < .005$. This means that 15% of the variance in life satisfaction can be explained by task significance, meaningfulness or work, and the control variables.

Model 2 was used to test hypotheses 1b and Model 3 was used to test hypothesis 3b. As predicted, task significance was related to life satisfaction, $\beta = 0.12$, b = 0.13, $t = 3.56$, $p < .005$, providing support for hypothesis 1b. This means that for every 1 unit increase in task significance, life satisfaction increases by 0.13 units. Additionally, meaningfulness of work positively predicted life satisfaction, $\beta = 0.19$, b = 0.19, $t = 4.77$, $p < .005$. This means that for every 1 unit of meaningfulness of work, life satisfaction increases by 0.19 units. Hypothesis 3b was supported. Table 9 shows the standardized and unstandardized regression coefficients for all three steps.

Table 9. Regression Analysis Predicting Life Satisfaction from Task Significance and Meaningfulness of Work.

Variable	Step 1		Step 2		Step 3	
	β	b	β	b	β	b
Constant		-0.24		-0.20		-0.11
Age	0.13*	0.01*	0.12	0.01	0.08	0.01
SES	0.26*	0.26*	0.26*	0.26*	0.26*	0.25*
Tenure	0.02	0.01	0.01	0.01	0.01	0.01
Hours	-0.06	-0.06	-0.06	-0.06	-0.05	-0.06
Task Significance			0.12*	0.13*	0.03	0.03
Meaningfulness of Work					0.19*	0.19*
R^2	0.11*		0.12*		0.15*	
ΔR^2			0.02*		0.03*	

Note. *p < .005, estimates are standardized and unstandardized regression coefficients.

Analysis 2: Task Significance Predicting Meaningfulness of Work

A multiple regression analysis tested the hypothesized relationships between task significance and meaningfulness of work, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, Analysis 2 tested hypothesis 2 which stated that task significance would positively predict meaningfulness of work. Two steps were entered into the

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regression equation. The control variables were entered into Step 1 and task significance was entered into Step 2.

Model 2 which contained both steps, was found to be a significant predictor of meaningfulness of work based on task significance and the control variables, $R = 0.55$, $R^2 = 0.31$, $F(5, 778) = 69.05$, $p < .005$. This means that 31% of the variance in meaningfulness of work can be explained by task significance and the control variables.

As predicted, task significance was related to meaningfulness of work, $\beta = 0.49$, $b = 0.52$, $t = 16.10$, $p < .005$, providing support for hypothesis 2. This means that for every 1 unit increase in task significance, meaningfulness of work increases by 0.52 units. Table 10 shows the standardized and unstandardized regression coefficients for both steps.

Table 10. Regression Analysis Predicting Meaningfulness of Work from Task Significance.

Variable	Step 1		Step 2	
	β	b	β	b
Constant		-0.68*		-0.51*
Age	0.26*	0.02*	0.21*	0.02*
SES	0.02	0.02	0.01	0.01
Tenure	0.03	0.02	0.01	0.01
Hours	-0.02	-0.02	-0.03	-0.03
Task Significance			0.49*	0.52
R^2	0.08*		0.31*	
ΔR^2			0.23*	

Note. *$p < .005$, estimates are standardized and unstandardized regression coefficients.

Analysis 3: Thinking/Feeling Dichotomy Moderation

A multiple regression analysis tested whether the thinking/feeling dichotomy in the Myers-Briggs personality system moderated the relationship between task significance and job satisfaction, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, Analysis 3 tested hypothesis 4 which stated for feelers, task significance would be a strong, positive predictor of job satisfaction and that for thinkers, task significance would

be a weak, positive predictor of job satisfaction. Three steps were entered into the regression equation. The control variables were entered into Step 1, task significance, meaningfulness of work, and the feeling dummy variable (thinking = 0, feeling = 1) were entered into Step 2, and the interaction variable of task significance X feeling dummy were entered into Step 3.

Model 3 which contained all three steps, was found to be a significant predictor of job satisfaction based on task significance, meaningfulness of work, classification as a feeler, the interaction between task significance and the thinking/feeling dichotomy, and the control variables, $R = 0.55$, $R^2 = 0.31$, $F(5, 778) = 69.05$, $p < .005$. This means that 31% of the variance in job satisfaction can be explained by task significance, meaningfulness or work, being classified as a feeler, and the control variables.

The thinker/feeler dichotomy did not moderate the relationship between task significance and job satisfaction, $\beta = -0.19$, b = -0.07, $t = -1.19$, $p = .235$. Hypothesis 4 was not supported, respondents classified as feelers did not show a stronger, positive relationship between task significance and job satisfaction compared to respondents classified as thinkers. Table 11 shows the standardized and unstandardized regression coefficients for all three steps.

Table 11. Regression Analysis on T/F Dichotomy Moderation Between Task Significance and Job Satisfaction.

	Step 1		Step 2		Step 3	
Variable	β	b	β	b	β	b
Constant		-0.35*		0.08		0.09
Age	0.16*	0.02*	-0.02	0.00	-0.02	0.00
SES	0.09	0.09	0.08	0.08	0.08	0.08
Tenure	0.00	0.00	-0.02	-0.02	-0.02	-0.01
Hours	-0.02	-0.02	0.00	0.00	-0.01	-0.01
Task Significance			-0.03	-0.03	0.01	0.01
Meaningfulness of Work			0.68*	0.68*	0.68*	0.68*
Feeling Dummy			0.01	0.03	0.19	0.38
Task Significance X T/F Dichotomy					-0.19	-0.07
R^2	0.04*		0.45*		0.46*	
ΔR^2			0.41*		0.01*	

Note. *p < .005, estimates are standardized and unstandardized regression coefficients. Thinking = 0, Feeling = 1.

<u>Analysis 4: Thinking/Feeling Dichotomy Moderation Comparing Good and Poor</u>
<u>Psychological Health Groups</u>

A multiple regression analysis compared respondents with good and poor psychological health on whether the thinking/feeling dichotomy in the Myers-Briggs personality system moderated the relationship between task significance and job satisfaction, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, I wanted to see if moderation of the thinking/feeling dichotomy on task significance and job satisfaction only occurred for respondents with good psychological health. Analysis 4 tested hypothesis 5 which stated that the thinker/feeler dichotomy in the Myers-Briggs personality system would not moderate the relationship for respondents classified as having poor psychological health and that poor psychological health would negatively predict job satisfaction.

To test the differences between respondents with good and poor psychological health, a sub-group analysis was conducted, resulting in two multiple regression analyses being conducted and analyzed: one for good psychological health and one for poor psychological health. Three steps were entered into each regression equation. The control variables were entered into Step 1, task significance, meaningfulness of work, and the feeling dummy variable (thinking = 0, feeling = 1) were entered into Step 2, and the interaction variable of task significance X feeling dummy were entered into Step 3.

Model 3 which contained all three steps, was found to be a significant predictor of job satisfaction based on task significance, meaningfulness of work, classification as a feeler, the interaction between task significance and the thinking/feeling dichotomy, and the control variables for both respondents with good and poor psychological health, $R = 0.68$, $R^2 = 0.47$, $F(8, 642) = 70.28$, $p < .005$, and $R = 0.64$, $R^2 = 0.41$, $F(8, 110) = 9.47$, $p < .005$. This means that for respondents with good psychological health, 47% of the variance in job satisfaction can be explained by task significance, meaningfulness or work, being classified as a feeler, and the control variables, and for respondents with poor psychological health, 41% of the variance in job satisfaction could be explained by the model.

There were no meaningful differences between respondents with good or poor psychological health; the thinker/feeler dichotomy did not moderate the relationship between task significance and job satisfaction for both respondents with good psychological health, $\beta = -0.20$, b = -0.07, $t = -1.18$, $p = .239$, and respondents with poor psychological health, $\beta = 0.14$, b = 0.05, $t = 0.33$, $p = .741$.

Additionally, to test the second part of hypothesis 5 as to whether poor psychological health negatively predicts job satisfaction, I conducted a second multiple regression analysis where classification as poor psychological health was the main predictor. Two steps were entered into the regression equation; the control variables were entered into Step 1 and psychological health (poor psychological health = 0, good psychological health = 1) was entered into Step 2.

Model 2 which contained both steps, was found to be a significant predictor of job satisfaction based on classification of poor psychological health and the control variables, $R = 0.28$, $R^2 = 0.08$, $F(5, 764) = 12.61$, $p < .005$. This means that 8% of the variance in job satisfaction can be explained by being classified as having poor psychological having poor psychological health and the control variables.

Results from the second multiple regression analysis indicated that classification as having poor psychological health negatively predicted job satisfaction, $\beta = -0.19$, b $= -0.51$, $t = -5.25$, $p < .005$. Even though the thinking/feeling dichotomy did not moderate the relationship for respondents classified as having poor psychological health as predicted, because there was no moderation for respondents classified as having good psychological health, the pattern of results does not match my hypothesis despite poor psychological health negatively predicting job satisfaction. Therefore, hypothesis 5 was not supported. Table 12 shows the standardized regression and unstandardized coefficients for all three steps comparing respondents with good versus poor psychological health and Table 13 shows the standardized and unstandardized regression coefficients for both steps for the second multiple regression analysis on poor psychological health negatively predicting job satisfaction.

Table 12. Comparing Good vs. Poor Psychological Health on T/F Dichotomy Moderation Between Task Significance and Job Satisfaction.

Variable	Good Psychological Health						Poor Psychological Health					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	β	b	β	b	β	b	β	b	β	b	β	b
Constant		-0.20		0.15		0.15		-0.25		0.16		0.15
Age	0.18*	0.02*	-0.01	0.00	-0.01	0.00	-0.23	-0.04	-0.24	-0.09	-0.24	-0.09
SES	0.08	0.07	0.10*	0.09*	0.10*	0.10*	0.03	0.03	-0.06	-0.07	-0.06	-0.07
Tenure	-0.01	-0.01	-0.03	-0.02	-0.02	-0.01	0.01	0.01	0.02	0.02	0.02	0.02
Hours	-0.07	-0.09	-0.04	-0.04	-0.04	-0.04	0.32*	0.34*	0.24	0.26	0.25	0.26
Task Significance			-0.01	-0.01	0.04	0.04			-0.12	-0.13	-0.15	-0.17
Meaningfulness of Work			0.68*	0.67*	0.68*	0.67			0.63*	0.63*	0.63*	0.63*
Feeling Dummy			0.02	0.05	0.22	0.43			-0.01	-0.03	-0.15	-0.31
Task Significance X T/F Dichotomy					-0.20	-0.07					0.14	0.05
R^2	0.04*		0.47*		0.47*		0.09		0.41*		0.41*	
ΔR^2			0.43*		0.00*				0.32*		0.00*	

Note. *$p < 0.005$, estimates are standardized and unstandardized regression coefficients. Thinking = 0, Feeling = 1.

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Table 13. Regression Analysis Predicting Job Satisfaction from Poor Psychological Health.

Variable	Step 1		Step 2	
	β	b	β	b
Constant		-0.36*		-0.22
Age	0.02*	0.16*	0.01*	0.14*
SES	0.09	0.09	0.07	0.08
Tenure	0.00	0.00	-0.01	-0.01
Hours	-0.02	-0.02	-0.02	-0.02
Psychological Health			-0.51*	-0.19*
R^2	0.04*		0.08*	
ΔR^2			0.04*	

Note. *p < .005, estimates are standardized and unstandardized regression coefficients. Poor Psychological Health = 0, Good Psychological Health = 1

Analysis 5: Task Identity and Meaningfulness of Work Predicting Job Satisfaction

A multiple regression analysis tested the hypothesized relationships between task identity and meaningfulness of work on job satisfaction, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, Analysis 5 tested hypothesis 6 which stated that task identity would positively predict job satisfaction after controlling for the control variables of age, SES, tenure, and hours. Three steps were entered into the regression equation.

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The control variables were entered into Step 1, task identity was entered into Step 2, and meaningfulness of work was entered into Step 3.

Model 3 which contained all three steps, was found to be a significant predictor of job satisfaction based on task identity, meaningfulness of work, and the control variables, $R = 0.68$, $R^2 = 0.46$, $F(6, 775) = 108.57$, $p < .005$. This means that 46% of the variance in job satisfaction can be explained by task identity, meaningfulness or work, and the control variables.

Model 2 was used to test hypothesis 6 and as predicted, task identity was related to job satisfaction, $\beta = 0.18$, b = 0.18, $t = 4.99$, $p < .005$, providing support for hypothesis 6. This means that for every 1 unit increase in task identity, job satisfaction increases by 0.18 units. Table 14 shows the standardized and unstandardized regression coefficients for all three steps.

Table 14. Regression Analysis Predicting Job Satisfaction from Task Identity and Meaningfulness of Work.

	Step 1		Step 2		Step 3	
Variable	*β*	*b*	*β*	*b*	*β*	*b*
Constant		-0.35*		-0.29		0.12
Age	0.16*	0.02*	0.16*	0.01*	-0.01	0.00
SES	0.09	0.09	0.10	0.09	0.08	0.08
Tenure	0.00	0.00	-0.02	-0.02	-0.03	-0.02
Hours	-0.02	-0.02	-0.03	-0.03	-0.01	-0.01
Task Identity			0.18*	0.18*	0.06	0.06
Meaningfulness of Work					0.66*	0.65*
R²	0.04*		0.07*		0.46*	
ΔR²			0.03*		0.39*	

Note. *p < .005, estimates are standardized and unstandardized regression coefficients.

Analysis 6: Task Identity Predicting Meaningfulness of Work

A multiple regression analysis tested the hypothesized relationships between task identity and meaningfulness of work, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, Analysis 6 tested hypothesis 7 which stated that task identity would positively predict meaningfulness of work. Two steps were entered into the regression equation.

The control variables were entered into Step 1; task identity was entered into Step 2.

Model 2 which contained both steps, was found to be a significant predictor of meaningfulness of work based on task identity and the control variables, $R = 0.33$, $R^2 = 0.11$, $F(5, 778) = 18.80$, $p < .005$. This means that 11% of the variance in meaningfulness of work can be explained by task identity and the control variables.

As predicted, task identity was related to meaningfulness of work, $\beta = 0.18$, b = 0.18, $t = 5.20$, $p < .005$, providing support for hypothesis 7. This means that for every 1 unit increase in task identity, meaningfulness of work increases by 0.18 units. Table 15 shows the standardized and unstandardized regression coefficients for both steps.

Table 15. Regression Analysis Predicting Meaningfulness of Work from Task Identity.

Variable	Step 1		Step 2	
	β	b	β	b
Constant		-0.68*		-0.62*
Age	0.26*	0.02*	0.26*	0.02*
SES	0.02	0.02	0.03	0.03
Tenure	0.03	0.02	0.01	0.01
Hours	-0.02	-0.02	-0.03	-0.04
Task Identity			0.18*	0.18*
R^2		0.08*		0.11*
ΔR^2				0.03*

Note. *$p < .005$, estimates are standardized and unstandardized regression coefficients.

Analysis 7: Sensing/Intuition Dichotomy Moderation

A multiple regression analysis tested whether the sensing/intuition dichotomy in the Myers-Briggs personality system moderated the relationship between task identity and job satisfaction, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, Analysis 7 tested hypothesis 8 which postulated that for intuitives, task identity would be a strong, positive predictor of job satisfaction and that for sensors, task identity would be a weak, positive predictor of job satisfaction. Three steps were entered into the

regression equation. The control variables were entered into Step 1, task identity, meaningfulness of work, and the intuition dummy variable (sensing = 0, intuition = 1) were entered into Step 2, and the interaction variable of task identity X intuition dummy were entered into Step 3.

Model 3 which contained all three steps, was found to be a significant predictor of job satisfaction based on task identity, meaningfulness of work, classification as an intuitive, the interaction between task identity and the sensing/intuition dichotomy, and the control variables, $R = 0.68$, $R^2 = 0.46$, $F(8, 773) = 82.15$, $p < .005$. This means that 46% of the variance in job satisfaction can be explained by task identity, meaningfulness of work, being classified as an intuitive, and the control variables.

The sensing/intuition dichotomy did not moderate the relationship between task identity and job satisfaction, $\beta = 0.07$, b = 0.03, $t = 0.66$, $p = .509$. Hypothesis 8 was not supported, respondents classified as intuitives did not show a stronger, positive relationship between task identity and job satisfaction compared to respondents classified as sensors. Table 16 shows the standardized and unstandardized regression coefficients for all three steps.

Table 16. Regression Analysis on S/N Dichotomy Moderation Between Task Identity and Job Satisfaction.

Variable	Step 1		Step 2		Step 3	
	β	*b*	*β*	*b*	*β*	*b*
Constant		-0.35*		0.14		0.14
Age	0.16*	0.02*	-0.01	0.00	-0.01	0.00
SES	0.09	0.09	0.08	0.08	0.08	0.08
Tenure	0.00	0.00	-0.04	-0.02	-0.04	-0.02
Hours	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01
Task Identity			0.06	0.06	0.04	0.04
Meaningfulness of Work			0.65*	0.65*	0.65*	0.65*
Intuition Dummy			-0.05	-0.12	-0.11	-0.24
Task Identity X S/N Dichotomy					0.07	0.03
R^2	0.04*		0.46 *		0.46*	
ΔR^2			0.42*		0.00*	

Note. *$p < .005$, estimates are unstandardized regression estimates. Sensing = 0, Intuition = 1.

Analysis 8: Sensing/Intuition Dichotomy Moderation Comparing Good and Poor Psychological Health Groups

A multiple regression analysis compared respondents with good and poor psychological health on whether the sensing/intuition dichotomy in the Myers-Briggs personality system moderated the relationship between task identity and job satisfaction, with the effects of the control variables of age, SES, tenure, and hours accounted for. Specifically, I wanted to see if moderation of the sensing/intuition dichotomy on task identity and job satisfaction only occurred for respondents with good psychological health. Analysis 8 tested hypothesis 9 which stated that the sensing/intuition dichotomy in the Myers-Briggs personality system would not moderate the relationship between task identity and job satisfaction for respondents classified as having poor psychological health and that poor psychological health would negatively predict job satisfaction.

To test the differences between respondents with good and poor psychological health, a sub-group analysis was conducted, resulting in two multiple regression analyses being conducted and analyzed: one for good psychological health and one for poor psychological health. Three steps were entered into each regression equation. The control variables were entered into Step 1, task identity, meaningfulness of work, and the intuition dummy variable (sensing = 0, intuition = 1) were entered into Step 2, and the interaction variable of task identity X intuition dummy were entered into Step 3.

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Model 3 which contained all three steps, was found to be a significant predictor of job satisfaction based on task identity, meaningfulness of work, classification as an intuitive, the interaction between task identity and the sensing/intuition dichotomy, and the control variables for both respondents with good and poor psychological health, $R = 0.68$, $R^2 = 0.47$, $F(8, 642) = 70.74$, $p < .005$, and $R = 0.64$, $R^2 = 0.42$, $F(8, 110) = 9.75$, $p < .005$. This means that for respondents with good psychological health, 47% of the variance in job satisfaction can be explained by task identity, meaningfulness of work, being classified as an intuitive, and the control variables, and for respondents with poor psychological health, 42% of the variance in job satisfaction could be explained by the model.

There were no meaningful differences between respondents with good or poor psychological health; the sensing/intuition dichotomy did not moderate the relationship between task identity and job satisfaction for both respondents with good psychological health, $\beta = 0.01$, b = 0.00, $t = 0.08$, $p = .934$, and respondents with poor psychological health, $\beta = 0.15$, b = 0.06, $t = 0.54$, $p = .589$.

Additionally, to test the second part of hypothesis 9 as to whether poor psychological health negatively predicts job satisfaction, I conducted a second multiple regression analysis where classification as poor psychological health was the main predictor. Two steps were entered into the regression equation; the control variables were entered into Step 1 and psychological health (poor psychological health = 0, good psychological health = 1) was entered into Step 2.

Model 2 which contained both steps, was found to be a significant predictor of job satisfaction based on classification of poor psychological health and the control variables, $R = 0.28$, $R^2 = 0.08$, $F(5, 764) = 12.61$, $p < .005$. This means that 8% of the variance in job satisfaction can be explained by being classified as having poor psychological having poor psychological health and the control variables.

Results from the second multiple regression analysis indicated that classification as having poor psychological health negatively predicted job satisfaction, $\beta = -0.19$, b = -0.51, $t = -5.25$, $p < .005$. Even though the sensing/intuition dichotomy did not moderate the relationship for respondents classified as having poor psychological health as predicted, because there was no moderation for respondents classified as having good psychological health, the pattern of results does not match my hypothesis despite poor psychological health negatively predicting job satisfaction. Therefore, hypothesis 9 was not supported. Table 16 shows the standardized regression and unstandardized coefficients for all three steps comparing respondents with good versus poor psychological health and Table 13 shows the standardized and unstandardized regression coefficients for both steps for the second multiple regression analysis on poor psychological health negatively predicting job satisfaction.

Table 17. Comparing Good vs. Poor Psychological Health on S/N Dichotomy Moderation Between Task Identity and Job Satisfaction.

Variable	Good Psychological Health						Poor Psychological Health					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	β	b	β	b	β	b	β	b	β	b	β	b
Constant		-0.20		0.21		0.21		-0.25		0.21		0.22
Age	0.18*	0.02*	-0.01	0.00	-0.01	0.00	-0.23	0.04	-0.21	-0.03	-0.23	-0.04
SES	0.08	0.07	0.10*	0.09*	0.10*	0.09*	0.03	0.03	-0.06	-0.07	-0.06	-0.07
Tenure	-0.01	0.00	-0.03	-0.02	-0.03	-0.02	0.01	0.01	0.01	0.01	0.01	0.01
Hours	-0.07	-0.07	-0.04	-0.04	-0.04	-0.04	0.32*	0.34*	0.23	0.24	0.23	0.25
Task Identity			0.06	0.05	0.05	0.05			0.02	0.01	-0.03	-0.03
Meaningfulness of Work			0.66*	0.65*	0.66*	0.65*			0.55*	0.55*	0.56*	0.55*
Intuition Dummy			-0.02	-0.04	-0.03	-0.06			-0.13	-0.26	-0.27	-0.54
Task Identity X S/N Dichotomy					0.01	0.00					0.15	0.06
R^2	0.04 *		0.47*		0.47*		0.09		0.41*		0.42*	
ΔR^2			0.43*		0.00*				0.32*		0.01*	

Note. *$p < 0.005$, estimates are unstandardized regression estimates. Sensing = 0, Intuition = 1.

CHAPTER FOUR

DISCUSSION

In the present study, I examined job characteristics, specifically task significance and task identity, in relation to Myers-Briggs dichotomies, to predict job and life satisfaction. I also examined how psychological health, encompassed by mental and emotional health, effected the moderated relationship between the job characteristics, the Myers-Briggs dichotomies, and job satisfaction. The results indicated that the Myers-Briggs dichotomies did not moderate the relationship between job characteristics and job satisfaction for both participants with good and poor psychological health. Controlling for participant's psychological health did not change the moderation hypotheses between the Myers-Briggs dichotomies, job characteristics, and job satisfaction.

Hypothesis 1a stated task significance would positively predict job satisfaction and this hypothesis was supported. This finding supports Hackman and Oldham's (1976) theory that task significance predicts job satisfaction and my correlation of $r = 0.33$ is very much in line with Fried and Ferris' (1987) meta-analysis where they found an effect size of $r = 0.35$. The finding that task significance moderately predicts job satisfaction suggests that organizations could increase their employee's job satisfaction by increasing task significance in all jobs throughout the organization.

Hypothesis 1b postulated task significance would positively predict life satisfaction. Task significance predicted life satisfaction and had a small effect size of $r = 0.16$. The pattern of results suggests that a work domain, such as task significance, relates to the home domain as indicated by life satisfaction. In other words, when things are going well at work, it makes a positive difference at home in one's personal life. When people feel like their job improves the lives of others, this relates to how they view their life.

Hypothesis 2 stated that task significance would positively predict meaningfulness of work. Task significance did positively predict meaningfulness of work and the two were strongly related, $r = 0.52$, supporting Hackman and Oldham's (1976) theory that task significance predicts meaningfulness of work.

Hypothesis 3a stated meaningfulness of work would positively predicted job satisfaction. Meaningfulness of work did positively predict job satisfaction and had a large effect size of $r = 0.67$ which was the strongest bivariate relationship in my study. This finding supports Hackman and Oldham's (1976) theory that meaningfulness of work predicts job satisfaction. Additionally, meaningfulness of work was the strongest predictor of job satisfaction and was even stronger than task identity and task significance which had a small to moderate relationships with job satisfaction. This finding is consistent with Hackman and Oldham's (1976) original findings that the critical psychological states (e.g., meaningfulness of work) were stronger predictors of outcomes such as performance and job satisfaction than the job characteristics. This suggests the critical psychological

states such as meaningfulness of work are more important for predicting job

satisfaction than the job characteristics.

Hypothesis 3b stated that meaningfulness of work would positively predict

life satisfaction. Meaningfulness of work did positively predict life satisfaction and

had a small effect size of $r = 0.26$. Because meaningfulness of work has been

shown to predict both life and job satisfaction, organizations should focus on

ensuring all their jobs in their organization have high task significance to increase

meaningfulness of work universally for everyone. While it may seem like some

jobs by their very nature are mundane, such as the jobs of a cheese slicer or

night security guard, advances in automation are and will continue to make these

mundane jobs a thing of the past. The fact that many boring and mundane jobs

are being automated away provides organizations an opportunity to create jobs

that are cognitively more complex and creative and thus, more meaningful for job

incumbents.

Hypothesis 4 predicted the thinking/feeling dichotomy in the Myers-Briggs

personality system would moderate the relationship between task significance

and job satisfaction. For feelers, task significance was thought to be a strong,

positive predictor of job satisfaction and for thinkers, task significance was

thought to be a weak, positive predictor of job satisfaction. Results did not

support this hypothesis: the thinking/feeling dichotomy did not moderate the

relationship between task significance and job satisfaction. The results might not

have panned out as predicted because my theory was based on the dichotomies

in the Myers-Briggs personality system rather than the polarities or specific

cognitive functions. Hypothesizing at the dichotomy level might have been too

broad for job characteristics and job satisfaction and looking at polarities or

cognitive functions might have been better, because it would have been more

specific than the dichotomies. The challenge with researching Myers-Briggs is it

is hard to measure within type variation which could explain why the hypotheses

were not supported. Measuring at the dichotomy level is analogous to

hypothesizing that job satisfaction is lower for all women than men because of

the inequality between men and women in our society. While inequality between

men and women in our society is prevalent and does translate into mistreatment

in the workplace for many women more so than men, and thus lower job

satisfaction, this certainly is not the case for most women in the population.

Factors like educational level affect the type and quality of jobs available to

people and factors like race also affect how people are treated in the workplace,

which means exclusion of these factors in comparing job satisfaction between

men and women paints an incomplete picture. Likewise, only looking at the

thinking/feeling dichotomies when theorizing the extent the Myers-Briggs

personality system moderates the relationship between task significance and job

satisfaction excludes the cognitive functions which offers greater precision in

understanding one's Myers-Briggs personality than the dichotomies alone. For

example, the thinking/feeling dichotomy concerns how we make decisions and

while all feelers do prefer subjective as opposed to objective information, people

who use extraverted feeling are more attuned to others' needs when making

decisions whereas people who use introverted feeling are more attuned to how

things impact them on a personal level when making decisions (Myers & Myers,

1980; Witt & Dodge, 2018). In other words, only hypothesizing that all feelers in

the Myers-Briggs personality system will need higher levels of task significance in

order to experience job satisfaction may not have been specific enough because

while extroverted and introverted feeling are both feeling functions, they are still

very different.

Another possible reason why the thinking/feeling dichotomies did not

moderate the relationship between task significance and job satisfaction could

have to do with how I conceptualized task significance. My conceptualizing of

task significance needing to emotionally relate to people may have been

incorrect. Hackman and Oldham (1976) describe task significance as being able

to identify the task as contributing to the betterment of society. Perhaps task

significance only encompasses bettering society and it does not matter how

much you personally relate to people. Because the thinking/feeling moderation

hypothesis was based on the idea that because feelers make decisions based on

personal, subjective information and that they are more concerned with meeting

people's emotional needs whereas thinkers are more concerned with meeting

people's logistical needs (Myers & Myers, 1980; Witt & Dodge, 2018), it might

have been incorrect to assume that task significance mostly encompasses

meeting people's emotional needs. It is possible that task significance can

encompass either meeting people's emotional needs or logistical needs for the betterment of society, which would make the thinking/feeling dichotomy meaningless in terms of which individuals need more task significance. It seems like that as long as you feel like your work betters society in some way, it does not matter whether the work is meeting logistical or emotional needs as the Myers-Briggs theory on the thinking/feeling dichotomy would have suggested. This means organizations interested in increasing their employee's job satisfaction should focus on implementing structural change like increasing task significance, and do not need to incorporate the Myers-Briggs personality system to determine which employees need more task significance.

Good and poor psychological health did not make a difference in whether the thinking/feeling dichotomy moderated the relationship between task significance and job satisfaction, as predicted from hypothesis 5. This suggests that task significance is a stronger predictor of job satisfaction than psychological health. Further, structural components of the workplace, such as task significance, could be a protective factor for people with poor psychological health in ensuring they experience job satisfaction. In other words, organizations can foster psychological health for employees by increasing task significance and making the work more meaningful. Thus, to increase job satisfaction, organizations should focus on structural change such as increasing the task significance of their jobs, rather than individual differences such as Myers-Briggs and psychological health.

Hypothesis 6 stated that task identity would positively predict job

satisfaction. As predicted, task identity did predict job satisfaction and the two

had a small relationship of $r = 0.18$. This finding supports Hackman and

Oldham's (1976) theory that task identity predicts job satisfaction and suggests

that organizations should increase task identity in all their jobs throughout the

organization in order to increase the task identity in all their employees.

Organizations can increase task identity is by making work teams small enough

so that each employee can complete a whole task rather than part of a task[4].

Organizations interested in increasing job satisfaction should think twice

about automating aspects of employee's jobs. It may save one minute to have a

machine put ingredients into a blender in the case of a smoothie maker but over-

automating aspects of the job reduces employee's pride in the work that they do,

which is a precursor to job satisfaction. Motivated and happy employees are

more productive to the organization than unsatisfied employees who can

complete their job of making smoothies one or two minutes faster with machines.

Hypothesis 7 stated that task identity would predict meaningfulness of

work and this hypothesis was supported and had a small effect size of $r = 0.20$.

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[4] Another way organizations can increase task identity is by ensuring employees know how the end product of their work will be used. Technically, according to Hackman and Oldham's (1976) Job Characteristics Theory, knowing how the end product of one's work will be used, knowledge of results, is actually the critical psychological state for the characteristic feedback. However, I argue that knowledge of results is also important for task identity because it makes the work more meaningful. For example, for computer engineers, organizations can increase their task identity by letting them know if the computer chips they are creating are going towards video games or medical equipment. The point in this example is not that video games are better than medical equipment or vice versa but that simply knowing where the computer chip is going could increase task identity and thus job satisfaction.

This finding supports Hackman and Oldham's (1976) theory that task identity predicts meaningfulness of work and suggests that organizations can increase all employee's meaningfulness of work by arranging for all jobs to have task identity.

Hypothesis 8 predicted the sensing/intuition dichotomy would moderate the relationship between task identity and job satisfaction. For intuitives, task identity was thought to be a strong, positive predictor of job satisfaction and for sensors, task identity was thought to be a weak, positive predictor of job satisfaction. Results did not support this hypothesis: the sensing/intuition dichotomy did not moderate the relationship between task identity and job satisfaction. As with the results concerning the thinking/feeling dichotomies in hypothesis 4, the results might not have panned out as predicted for the sensing/intuition dichotomies because hypothesizing at the dichotomy level might have been too broad for job characteristics and job satisfaction. It is possible looking at polarities or cognitive functions might have been better, because it would have been more specific than the dichotomies. For example, the sensing/intuition dichotomy concerns how we learn and perceive information and while all intuitives engage in pattern recognition connecting disparate points as opposed to only observing information at face value, people who use extraverted intuition are more extensive and broad in the patterns they're forming whereas people who use introverted intuition are more convergent and deep in their pattern recognition (Myers & Myers, 1980; Witt & Dodge, 2018). In other words, only hypothesizing that all intuitives in the Myers-Briggs personality system will

need higher levels of task identity in order to experience job satisfaction may not have been specific enough because while extroverted and introverted intuition are both intuitive functions, they are still very different.

As with hypothesis 4, another reason why the sensing/intuition dichotomies might not have moderated the relationship between task identity and job satisfaction could have to do with how I conceptualized task identity. Hackman and Oldham (1976) define task identity as being able to identify with the work at hand as whole and complete, and my conceptualization of task identity also encompassing tendency to and need to see the big picture and be a big picture thinker might have been incorrect. Perhaps the sensing/intuition dichotomy, which explains how we learn new information, does not have to do with the universal need to see the work you do as a whole and complete task as opposed to just working on a small part of it. If task identity is not related to needing to see the big picture, then looking at the sensing/intuition dichotomy would be meaningless in terms of which individuals need more task identity. This means organizations interested in increasing their employee's job satisfaction should focus on implementing structural change like increasing task identity, and do not need to incorporate the Myers-Briggs personality system to determine which employees need more task identity.

Psychological health did not influence the sensing/intuition dichotomy moderation relationship between task identity and job satisfaction, as predicted in hypothesis 9. This suggests that task identity is a stronger predictor of job

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satisfaction than psychological health. Further, structural components of the workplace such as task identity could be a protective factor for people with poor psychological health in ensuring they experience job satisfaction.

Implications

Implications for Organizational Culture and Policy

Organizations should increase employee job satisfaction by increasing task significance in all jobs throughout the organization. The first way organizations should increase task significance is to first ensure the organization's mission and values are reflective of task significance and not just the profit motive, and then to ensure all jobs are connected to the organization's mission and values. Because task significance is based on the perceived impact and goals of an organization, organizations that only care about profit might not foster task significance in the same way a socially conscious organization might.

Second, it is important that middle managers are enabled by senior leadership to allow their employees to experience the parts of their jobs that are high in task significance, even if those activities sacrifice short-term efficiencies or goals. For example, Starbucks' mission statement is to "inspire and nurture the human spirit - one person, one cup and one neighborhood at a time" (Starbucks, 2020) and its business model is centered on customers feeling a sense of belonging when they go into their stores. Managers also prioritize efficiency and ringing as many customers as possible during a 30-minute period to justify labor

costs. The idea is that the more customers you ring in per 30 minute period, the more the Point of Sales system thinks your store is busy, which justifies having five employees rather than two on a shift irrespective of how many customers are actually lined up in a store. This conflict between making customers feel welcomed and speed results in some employees treating customers as though they are transactions instead of humans. While it is possible to ring-up customers efficiently while still treating them as humans, managers' preoccupation with hitting a certain number of transactions may not be worth it if it diminishes employees' sense of task significance. Task significance predicts job satisfaction and previous research shows there is a moderate relationship between job satisfaction and job performance (Judge et al., 2001). Therefore, it would be better for Starbucks' bottom line if they incentivized managers to have their employees connect with customers rather than sacrificing connection for speed and risking employees having low job satisfaction and customers feeling unwelcome.

It is equally important for organizations to ensure performance metrics do not conflict with aspects of the job that increase task significance. In the above Starbucks example, this would mean evaluating employees' performance based on the employees' friendliness and warmth towards customers in addition to efficiency, rather than prioritizing efficiency at the expense of friendliness and warmth.

Lastly, another way organizations can increase employee's task significance is by ensuring all employees feel valued and feel like their work is directly or indirectly contributing to the organization's mission, which is assumed to better society. A janitor, for example, might not feel like they are directly contributing to the organization's mission or bettering society. Nevertheless, the work they do enables their coworkers and the leaders to work in a clean environment, which enables them to do their jobs without getting sick. The work of a janitor should be as appreciated as the work of employees directly interacting with customers, clients, or constituents.

However, a prerequisite to employees being able to feel valued and appreciated by the organization lies in whether the organization pays them a living wage. This assertion is based on Maslow's (1943) hierarchy of needs, which explains that as humans, we have certain needs and fulfillment of those needs is what motivates us[5]. Maslow (1943) explains that lower level needs must be met before one is motivated to meet higher level needs such as esteem. I argue that feeling valued and appreciated by one's employer fosters employees' esteem needs. Before esteem needs can be met, employee safety needs must first be (in the form of adequate pay and fringe benefits). Essentially, you cannot feel valued if you are unable to meet your basic needs, and you cannot

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[5] At the bottom, we have physiological (e.g. food, shelter) and safety (e.g. financial security), which constitute our basic needs. In the middle are love & belonging and esteem (e.g. self-esteem and respect from others), which constitute our psychological needs. Finally, at the top is self-actualization which is defined as becoming the best version of oneself and constitutes our self-fulfillment needs.

contribute to the betterment of society if you do not feel valued as an individual.

Increasing pay and fringe benefits can also increases job satisfaction (Spector,

1997), meaning if organizations increase pay and fringe benefits, they can

increase job satisfaction both directly and indirectly. Adequate pay and benefits

indirectly increases job satisfaction, when employee's needs are met and they

feel valued, they are able to enjoy the aspects of their job that increase task

significance, thereby getting another "boost" in job satisfaction.

Theoretical Implications for Job Characteristics

The broad account of this thesis was to examine how characteristics of the

job and personality predicted job satisfaction. Overall, characteristics of the job

were predictive of job satisfaction over personality. Regarding trait-situation

interactions, results showed that the situation, which in this case was job

characteristics theory and specifically meaningfulness of work, was the most

influential in predicting job satisfaction. This means when predicting job

satisfaction, the situation is more important than traits, and suggests traits are not

important when predicting job satisfaction. Organizations looking to motivate their

employees through job redesign should utilize job characteristics theory and

emphasize increasing meaningfulness of work. Adding the Myers-Briggs to job

characteristics theory does not add value in increasing employees' job

satisfaction. In other words, you cannot tell which job characteristics are more

salient to certain individuals based on their Myers-Briggs personality type. Thus,

one of the theoretical implications of this overall finding is that it advances the job

characteristics and job redesign literatures by confirming Hackman and Oldham's (1976) argument that job characteristics predict outcomes for everyone regardless of individual differences.

Implications for Job Design

In this study, meaningfulness of work was the strongest predictor of job satisfaction, suggesting that organizations that want to increase their employees' job satisfaction should prioritize increasing meaningfulness of work over task significance and task identity. Organizations looking to use job redesign as a motivational tool for their employees should focus on making structural changes to the job, and potentially the organization, rather than only making structural change for some job incumbents based on their Myers-Briggs type. I provide two suggestions organizations can utilize to increase employee meaningfulness of work.

The first is to ensure jobs that are already high in meaningfulness do not get bogged down with meaningless tasks that are non-essential and do not contribute to job satisfaction or productivity. Organizations should get rid of busy work. For example, the job of a professors is already high on meaningfulness of work but many report low job satisfaction from having to do non-essential administrative tasks such as time allocation studies that take away from doing the meaningful work of teaching and researching (Graeber, 2018). To increase job satisfaction among professors, universities can eliminate non-essential administrative tasks.

The second suggestion is to get rid of unnecessary and meaningless jobs, as these jobs are either boring, harmful to society, or both. Anthropologist David Graeber in his 2018 book *Bullshit Jobs: A Theory*, argues that meaningless jobs are profoundly psychologically violent on job incumbents. Examples of such meaningless and potentially harmful jobs include jobs that are only there to make superiors feel important, such as the job of a receptionist or administrative assistants. A caveat to note is that the job of a receptionist or administrative assistant are not inherently meaningless if there is a legitimate need. For example, a receptionist at a hair salon that takes 10 calls a day and checks in 50 clients every day is necessary and can be meaningful for the job incumbent provided they want to do the job and are paid a living wage. The job of a receptionist is only a problem if the organization does not have a legitimate need, such as hiring a receptionist for a department that only answers 10 calls per year and only exists because all the other departments in the organization have one and the leaders in that department think it's beneath them to answer calls.

Other examples of meaningless and potentially harmful jobs include jobs where employees must act aggressively on behalf of their employers, such as the case of medical billers, telemarketers, and corporate lawyers, and jobs where employees must patch-fix systemic flaws, such as being an airline desk worker whose task is to calm angry passengers when their bags do not arrive. Essentially, it is the organization's obligation to make sure the jobs in their

organization are in fact adding value to the people and communities their organization is serving.

One way for organizations to get rid of their meaningless jobs is to change and repurpose the job. For example, in the tech industry, administrative assistants are replaced with project managers. In addition to completing the mundane scheduling and data management tasks of the administrative assistants, project managers are also given greater decision latitude, responsibility, and higher status.

Organizations that want to increase work meaningfulness should implement Johnson and Hall's (1988) Job Demand-Control-Support Model, which explains that reducing job demands, increasing employee control over job tasks, and increasing support for employees is associated with positive outcomes such as reduced burnout, increased employee engagement, and increased work meaningfulness. Ideally, organizations should address all three to foster positive work outcomes such as increased work meaningfulness.

Organizations can reduce job demands by doing a job analysis and compensation study to ensure each job in the organization, and/or the volume of tasks expected per job incumbent, is reflective of one job rather than two jobs combined into one job. Organizations may think they are saving money by combining two jobs into one, or increasing the volume of work per job incumbent and operating under a model of wanting to have as few jobs as possible, but in the long-term, they are hurting their organization's bottom line. Combining what

should be two jobs into one is detrimental to an organization's bottom line, because when employees have too many demands, they are at risk for burnout which is associated with higher healthcare costs and lower work performance.

Implications for Employee Autonomy, Support, and Growth

Organizations can increase the control part of the Job-Demand-Control-Support Model by letting employees choose how and when they do their tasks. For example, you can increase the control of retail workers by letting them choose which products to promote in the store instead of mandating that all employees must promote a certain product. This would result in increased sales, because employees would be genuinely enthusiastic about the products they are selling, which would result in authentic interactions with customers, and thus more sales.

Additionally, organizations can increase support by creating a culture that allows employees to build relationships with their coworkers. Even in jobs with high demands, coworkers showing empathy to each other can help mitigate some of the negative effects of stressful jobs – such as being a healthcare working during COVID-19.

Lastly, organizations should invest in personal and professional opportunities for their employees because personal development is a domain of life satisfaction (Veenhoven, 1996). Enabling employees to grow professionally makes their work more meaningful and increases job and life satisfaction. Some examples of how organizations could invest in their employees' development is

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by paying for their employee's professional membership fees and allowing

employees time to keep up with their professional education, paying for

employees to go to conferences, and paying and giving time for employees to do

training and continuous education. It is not enough for organizations to pay for

continuing education but expect employees to complete the requirements for that

education exclusively on their weekday evenings and weekends. People need

time to devote to their relationships, engage in recreational activities, and rest in

order live a healthy life and be the best version of themselves; do not make

employees choose between self-care activities and professional development

opportunities.

Implications for Career Interests and Job-Fit Research

Because previous research shows the Myers-Briggs personality system

relates to career interests (Grant, 1965; Myers & McCaulley, 1985; Myers &

Myers, 1980) future research should disentangle the difference between having

job satisfaction due to the job being something you're interested in versus having

job satisfaction because of structural components such as task significance and

meaningfulness of work. Future researchers should also explore the relationships

between the Myers-Briggs, career interests, and structural components of the job

such as meaningfulness of work and how those predict job satisfaction.

Even though the Myers-Briggs personality system has been shown to

relate to career interests (Grant, 1965; Myers & McCaulley, 1985; Myers &

Myers, 1980), organizations need to be careful about using the Myers-Briggs as

a tool to assess fit because it is not always predictive of fit. Instead, the Myers-Briggs test recommendations can be used to inform employee choices, and foster fit through the choices employees make. In other words, employees must be allowed to go against the Myers-Briggs recommendations without there being negative consequences.

Moreover, my results also question whether vocational counselors and placement centers should use the Myers-Briggs personality system to help clients find jobs that will satisfy them. Job satisfaction seems to be based on structural components, such as job conditions, nature of the work, policies and procedures, and promotional opportunities (Locke, 1976). Therefore, because the Myers-Briggs personality system is based on how people learn and make decisions (Myers & Myers, 1980; Witt & Dodge, 2018), it may be wise for vocational counselors to focus more on finding universally satisfying jobs for their clients that are high on task identity, task significance, and meaningfulness of work, rather than personalizing recommendations based on clients' Myers-Briggs type.

<u>Societal Implications</u>

My research found both task significance and meaningfulness of work to be predictive of life satisfaction. Future researchers should explore the inter-relatedness on task significance and the different domains of job and life satisfaction. For instance, job satisfaction is a domain of life satisfaction (Veenhoven, 1996), so future researchers should explore how much variance in

life satisfaction is explained by job satisfaction. Wellness and personal development are domains of life satisfaction (Veenhoven, 1996) and it would be interesting to see how task significance effects specific domains of life satisfaction. Perhaps task significance improves the wellness aspect of life satisfaction because maybe part of our need as humans is to be of service to others. Or, perhaps task significance improves the personal development aspect of life satisfaction because having a job that betters society inspires people to live a coherent life where they want to improve themselves as individuals so that they can better society in their professional and personal lives. Answers to these questions and a greater understanding on how task significance, life satisfaction, and job satisfaction are related would not only further research in industrial-organizational and positive psychology, but would also further theory and practice in the fields of anthropology, public policy, and health and wellness.

Implications for Health, Wellbeing, and Quality of Life

To understand the extent task significance improves the wellness aspect of life satisfaction, it would be constructive for future researchers to compare the health outcomes between people whose jobs have task significance versus those whose jobs do not have task significance. Because health and wellness are facets of life satisfaction (Veenhoven, 1996), it would be worthwhile to know whether we can improve the health of the population by increasing the number of jobs that have task significance. If there was an improvement, it would be beneficial to also examine if this improvement in health increased the other

facets of life satisfaction, such as meaningful relationships as well as spiritual and religious well-being. Perchance if there is research supporting the notion that there is spillover from our work lives to our personal lives and vice versa (e.g., see Near et al., 1978), then task significance, along with things such as a healthy diet, exercise, and access to quality healthcare, could be implemented as a part of organizations' wellness programs designed to improve the health and well-being of their employees.

As with increasing task significance to increase job satisfaction, organizations can apply the same strategies to increase life satisfaction. These strategies include ensuring the mission and values are reflective of task significance, ensuring all jobs are connected to the organizations' mission and values, empowering middle managers to allow employees to experience aspects of their jobs high in task significance, ensuring performance metrics do not conflict with employees' capacity to experience task significance, and ensuring employees feel valued and feel their work contributes to the organization's mission.

There are two main reasons why it is advantageous for organizations to take an interest in their employee's life satisfaction. The first concerns burnout. Life satisfaction encompasses health and wellness (Veenhoven, 1996) and previous research shows that jobs that are meaningful and fulfilling decrease burnout (Borritz et al., 2005). Therefore, because burnout has a negative impact on employee's health and wellness (Borritz et al., 2005), organizations should do

everything possible to prevent burnout in order to protect the health of their employees.

The second reason concerns meaningful relationships. Life satisfaction encompasses meaningful relationships with romantic partners, friends, and family (Veenhoven, 1996), and I argue that our meaningful relationships outside of work have positive consequences that are beneficial to the workplace such as increased creativity and productivity. Regarding productivity, relationships fulfill a profound psychological need to be seen and valued (Maslow, 1943) and I argue that the more of our basic and psychological needs we have met, the more creative and productive we can be in our work. Similarly, Carlson et al.'s 2006 research on positive spillover, titled *Measuring the positive side of the work–family interface: Development and validation of a work–family enrichment scale*, found that the domains of work and family life provide people with unique resources that can be used to improve the performance of the other domain. Hence, task significance increasing life satisfaction could have a positive impact on relationships, and relationships have a positive impact on work outcomes such as creativity and productivity, because doing work that benefits society fulfills us and makes us happy and the happier and more fulfilled we are as individuals, the more energy we have to devote to our relationships and the more we as individuals and our workplaces can benefit from them.

Future researchers should also compare the health outcomes between people whose jobs have task significance versus those whose jobs do not have

task significance. Because health and wellness are facets of life satisfaction (Veenhoven, 1996), it would be worthwhile to know whether we can improve the health of the population by increasing the number of jobs that have task significance. If there was an improvement, it would be beneficial to also examine if this improvement in health increased the other facets of life satisfaction, such as meaningful relationships as well as spiritual and religious well-being. Perchance if there is research supporting the notion that there is spillover from our work lives to our personal lives and vice versa (e.g., see Near et al., 1978), then task significance, along with things such as a healthy diet, exercise, and access to quality healthcare, could be implemented as a part of organizations' wellness programs designed to improve the health and well-being of their employees.

<div align="center">Limitations</div>

This study is one of few to expand on Hackman and Oldham's (1976) job characteristics research by studying how the relationships between task significance and job satisfaction and task identity and job satisfaction were impacted by individual differences measured by one's Myers-Briggs personality type. However, there were several limitations that may have constrained the generalizability of my results.

Firstly, my study relied on participants' self-report which may have been an issue when assessing participant's Myers-Briggs personality type. Relying

exclusively on self-reports when measuring personality is problematic because of self-presentation: people tend to present themselves in a positive way. Because the job characteristics, job satisfaction, and life satisfaction are capturing people's evaluations of their life circumstances rather than stable individual differences, I do not think using self-report negatively hindered those results.

It is possible participants answered the Myers-Briggs personality questionnaire in a way that reflects their desired personality and behavior instead of their actual personality and behavior. Future research can mitigate these concerns with self-reports by including reports from significant others, such as from a partner, parent, or close friend. The benefit of multiple raters is they provide more information the self-reports alone. The reports from multiple raters can either corroborate self-report data, or if there are discrepancies, the researcher can average the self and multiple raters report to obtain more accurate information of the participants' personality and psychological health.

A potential second limitation concerns the fact that it was a cross-sectional study. Cross-sectional studies measure all the variables at one point in time which means I could have missed important information that contributes to changes in job satisfaction, such as a participant getting a new boss or raise. Future research should measure the variables at multiple time points to account for changes in job satisfaction across time.

A third limitation concerns the lack of representation among the sixteen Myers-Briggs personality types. While my sample was representative in terms of

the four dichotomies, it was not representative in terms of each of the sixteen types (see Table 5). Interestingly, I only had IJs and EPs and no IPs and EJs in my sample. What IJs and EPs have in common is that they both have a perceiving function in the Driver position of their personality (either introverted sensing, introverted intuition, extraverted sensing, or extraverted intuition) whereas IPs and EJs both have a decision-making function in the Driver position of their personality (either introverted thinking, introverted feeling, extraverted thinking, or extraverted feeling). Because IJs and EPs both lead with a perceiving function, this means that they tend to be more indecisive than the IPs and EJs because they would rather take in as much information as possible before making decisions and jumping into action whereas IPs and EJs tend to have the opposite problem.

It is possible the lack of IPs and EJs in my sample could have negatively impacted the thinking/feeling dichotomy moderation hypothesis which predicted that feelers would need higher levels of task significance than thinkers to experience job satisfaction. It could be that the thinking/feeling cognitive functions do moderate the relationships between task significance and job satisfaction, but only for types where their feeling function is in the Driver position. For example, even though an ESFJ and ISFJ are both feelers, the ESFJ has their feeling function, extraverted feeling, in the Driver position of their personality, which is the dominant part of their personality, whereas the ISFJ has extraverted feeling in the Copilot position of their personality, which while also a

strength is not used as often as the Driver cognitive function. In other words, even though the cognitive functions in the Driver and Copilot positions are both considered strengths, we use our Driver more than our Copilot because it is in our flow state, which means that if your Driver function is a feeling function (either extraverted feeling or introverted feeling), you would need higher levels of task significance to experience job satisfaction. To test the possibility that the thinking/feeling dichotomy only moderates for people who have their feeling function in the Driver position, future researchers should recruit more people from different types – particularly IPs and EJs to adequately test this hypothesis and to ensure a more representative sample among the sixteen Myers-Briggs types.

It is worth noting that if the Myers-Briggs dichotomies only moderate between job characteristics and job satisfaction if the cognitive function is in the Driver position of one's cognitive function stack, this condition was met for testing whether the sensing/intuition dichotomy moderated the relationship between task identity and job satisfaction and these relationships were not supported. However, in order to know for certain whether it is the position of the intuitive function that makes a difference in whether sensing/intuition dichotomy moderates the relationship between task identity and job satisfaction, researchers would need to sample from IPs and EJs to ensure all sixteen types are represented in their sample.

A fourth limitation concerns using the Myers-Briggs dichotomies over the continuous versions of the variables. Results for the Myers-Briggs moderation

hypotheses might not have panned out as predicted because I dichotomized the thinking/feeling and sensing/intuition variables instead of examining each as continuous variables. By dichotomizing the Myers-Briggs, I lost information by collapsing the thinking/feeling dichotomy as one group and sensing/intuition dichotomy as one group rather than measuring them as four separate variables. Future researchers should address this by using continuous versions of thinking, feeling, sensing, and intuition variables instead of dichotomizing them.

Finally, the last limitation concerns the representativeness of my sample. Non-probabilistic sampling techniques were utilized and because of this, self-selection may have influenced my results. Because participants voluntarily chose to partake in my study, there may be some shared attribute or characteristics that was over-represented in my sample that is not representative of the general population. For example, 84.1% of my sample were women which is not representative of the general population. Future research should correct for this by using a different sampling technique that would ensure more men and other gender identifications are represented in the sample in order to improve the generalizability of results.

Conclusion

In the present study, I examined how characteristics of the job, namely task significance and task identity, predicted job satisfaction and how those relationships were moderated by one's Myers-Briggs personality type. In this

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study I also aimed at understanding how these moderated relationships were impacted by one's psychological health. Results indicated that the Myers-Briggs dichotomies did not moderate the relationship between job characteristics and job satisfaction for both participants with good and poor psychological health. Interestingly, meaningfulness of work was found to be the single strongest predictor of job satisfaction for both participants with good and poor psychological health, suggesting organizations can foster psychological health for employees by increasing task significance and making the work more meaningful. Results also suggest organizations should focus on structural changes such as increasing task significance and meaningfulness of work to increase job satisfaction for all employees and do not need to consider individual differences such as employees' Myers-Briggs personality type or psychological health. Conclusively, the present study confirms Hackman and Oldham's (1976) job characteristics theory in that structural components of the job are much more influential on job satisfaction than individual differences such as personality, and this overall finding has several implications for organizational culture, policy, job design, employee autonomy, employee well-being, and even societal implications for how work should be structured.

APPENDIX A

MEASURES

Demographics

Participants were asked to select the option that represented them best.

1. What is your gender?

      o Male

      o Female

      o I identify another way

      o Prefer not to state

2. What is your race/ethnicity?

      o American Indian or Alaska Native

      o Asian

      o Black or African American

      o Hispanic or Latino

      o Middle Eastern

      o Native Hawaiian or Other Pacific Islander

      o White or Caucasian

      o Two or more races/ethnicities

      o Other

3. What is your age? (Please write your age in whole numbers - e.g. 43.)

4. Which of the following is your household income range?

      o $31,000 or less

      o $31,001-$42,000

      o $42,001-$75,000

o $75,001-$126,000

o $126,001-$188,000

o $188,001 or more

5. How many months of your living expenses do you have saved?

   o None, I have no savings

   o Less than 1 month

   o Between 1-2 months

   o Between 3-5 months

   o Between 6-9 months

   o Between 10-12 months

   o More than 12 months

6. Which social class would you describe yourself as?

   o Poor

   o Working Class

   o Lower-Middle Class

   o Middle Class

   o Upper-Middle Class

   o Wealthy

7. Identify the options that best describes how secure you feel with the money you have.

   o I DO NOT feel secure with the money I have; I do not or barely have enough money to meet my basic needs.

   o I feel OKAY with the money I have; I wish I had more money, but I have enough to meet my basic needs.

o I DO feel very secure with the money I have; I have more than enough money to meet my basic needs and I am able to buy and do the things that I want.

8. Which of the following religious affiliations do you identify with?

  o Agnostic

  o Atheist

  o Baha'i Faith

  o Buddhism

  o Catholicism

  o Christianity

  o Hinduism

  o Islam

  o Judaism

  o Zoroastrianism

  o Other religion not listed here

  o I DO NOT have a religious affiliation

9. Please select your job industry from the drop-down menu.

  o Accommodation and Food Services

  o Administrative and Support Services

  o Agriculture, Forestry, Fishing, and Hunting

  o Arts, Entertainment, and Recreation

  o Construction

  o Educational Services

  o Finance and Insurance

  o Government

  o Health Care and Social Assistance

o Information Technology

o Management of Companies and Enterprises

o Manufacturing

o Mining, Quarrying, and Oil and Gas Extraction

o Other Services (Except Public Administration)

o Professional, Scientific, and Technical Services

o Real Estate and Rental and Leasing

o Retail Industry

o Transportation and Warehousing

o Utilities

o Wholesale Trade

10. What is your current job title?

11. Briefly describe the nature of your job in 1-2 sentences. If you think most people are familiar with your job (e.g. teacher, doctor, lawyer, stay-at-home parent, etc.), you may skip this question.

12. Where do you work?

o I work in an organization.

o I work at home.

o I work both in an organization and at home.

13. How many hours per week do you work?

> o Part-time, less than 20 hours per week.

> o Part-time, between 20-39 hours per week.

> o Full-time, 40 hours per week.

> o Full-time, more than 40 hours per week.

14. Is your full-time work between 1 job, or multiple jobs? (Asked only to participants who indicated they worked full-time in previous question.)

> o 1 job

> o Multiple jobs

15. Of the time you have worked at your current organization, how long have you held your current job role?

> o Less than 6 months

> o 6-12 months

> o 1-2 years

> o 3-4 years

> o 5-6 years

> o More than 6 years

16. Including the time you have worked outside your organization, how long have you worked in your current job role? (e.g. If you've been a plumber for 6 years, but have only worked as a plumber in your current organization for 1 year, you should select "5-6" years".)

> o Less than 6 months

> o 6-12 months

> o 1-2 years

> o 3-4 years

> o 5-6 years

> o More than 6 years

17. How long have you worked at your current organization in any capacity/role?

      o Less than 6 months

      o 6-12 months

      o 1-2 years

      o 3-4 years

      o 5-6 years

      o More than 6 years

18. What is the highest degree or level of school you have completed?

      o Less than high school

      o High school degree or equivalent (e.g. GED)

      o Some college but no degree

      o Associate degree

      o Bachelor degree

      o Graduate degree

Careless Response Checks

The following items were interjected throughout the survey to check for careless responding.

1. 2+2 =

    o 1

    o 3

    o 8

    o 2

    o 0

    o 6

    o 4

2. If you are reading this, please select A.)

    o A.) I am reading this

    o B.) I am not reading this

3. If you are reading this, select "Some of the time".

    o 1 - None of the time

    o 2 - A little of the time

    o 3 - Some of the time

    o 4 - A lot of the time

    o 5 - All of the time

Job Diagnostic Survey

(Hackman & Oldham, 1974)

Part 1 – Assessing Task Significance and Task Identity

The following questions are about the nature of your job. Please read each question and use the following 1-7 scale to answer each question. While the descriptions of the ratings vary slightly, use the below rating guidelines to answer each question:

1 – Very little

4 – Moderately

7 – Very much

1. To what extent does your job require you to work closely with other people (either clients, or people in related jobs in your organization)? (task significance)

   1 – Very little; dealing with other people is not at all necessary in doing the job.

   2

   3

   4 – Moderately; some dealing with others is necessary.

   5

   6

   7 – Very much; dealing with other people is an absolutely essential and crucial

   part of doing the job.

2. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines? (task identity)

   1 – My job is only a tiny part of the overall piece of the work; the results of my

   activities cannot be seen in the final product or service.

   2

   3

   4 – My job is a "chunk" of the overall piece of work; my own contribution can be

   seen in the final outcome.

   5

   6

   7 – My job involves doing the whole piece of work, from start to finish; the

   results of my activities are easily seen in the final product or service.

3. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people? (task significance)

   1 – Not very significant; the outcomes of my work are not likely to have

   important effects on other people.

   2

   3

   4 – Moderately significant.

   5

   6

7 – Highly significant; the outcomes of my work can affect other people in very

important ways.

Part 2 – Assessing Task Significance and Task Identity

Listed below are a number of statements which could be used to describe a job. Please use the following 1-7 scale to indicate whether each statement is an accurate or inaccurate description of your job. A 1 indicates the statement is a very inaccurate description of your job and a 7 indicates the statement is a very accurate description of your job.

1. The job requires a lot of cooperative work with other people. (task significance)

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

2. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end. (task identity, reverse scored)

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

3. The job can be done adequately by a person working alone – without talking or checking in with other people. (task significance, reverse scored)

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

4. This job is one where a lot of other people can be affected by how well the work gets done. (task significance)

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

5. The job provides me the chance to completely finish the pieces of the work I begin. (task identity)

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

6. The job itself is not very significant or important in the broader scheme of things. (task significance, reverse scored)

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

Part 3 – Assessing Meaningfulness of Work

Each of the statements below is something that a person might say about his or her job. Please indicate your own, personal feelings about your job by marking how much you agree with each statement using the following 1-7 scale. A 1 indicates you disagree strongly with the statement and a 7 indicates you agree strongly with the statement.

1. Most of the things I have to do on this job seem useless or trivial. (reverse scored)

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

2. The work I do on this job is very meaningful to me.

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

3. Most people on this job feel that the work is useless or trivial. (reverse scored)

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

4. Most people on this job find the work very meaningful.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Disagree Strongly | Disagree | Disagree Slightly | Neutral | Agree Slightly | Agree | Agree Strongly |

Satisfaction With Life Scale

(Diener et al., 1985)

Below are five statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item. Please be open and honest in your responding.

---

1. In most ways my life is close to my ideal.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

2. The conditions of my life are excellent.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

3. I am satisfied with my life.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

4. So far, I have gotten the important things I want in life.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

5.   If I could live my life over, I would change almost nothing.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

Job Satisfaction

(Diener et al., 1985)

Below are five statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item. Please be open and honest in your responding.

---

1. In most ways my job is close to my ideal.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

2. The conditions of my job are excellent.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

3. I am satisfied with my job.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

4. So far, I have gotten the important things I want from my job.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

5. If I had the opportunity to change my job, I would change almost nothing.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree

Myers-Briggs Personality Assessment

(Witt & Dodge, 2018)

The following questions are about your preferences. Please read each question and choose between the two answers of A) and B) the answer you think fits you the best. If you feel that both answers apply to you, or neither apply to you, just pick the one that is MORE applicable.

While you are free to skip any question you do not wish to answer, you are at the section of the questionnaire where skipping questions may result in not getting your results from the personality assessment at the end of the survey.

Again, these questions are all about your preferences, so there are NO right or wrong answers. Please answer these questions honestly and choose the option that fits you MOST of the time.

1. My friends say that I am…

    A.) Easy to read and get to know   B.) Somewhat private, and difficult to read

2. I value…

    A.) Realism and common sense   B.) Innovation and imagination

3. I enjoy receiving…

    A.) Respect more than appreciation   B.) Appreciation more than respect

4. I am most comfortable when I can be…

    A.) Prepared   B.) Spontaneous

5. When I meet someone new, I usually…

   A.) Do most of the talking   B.) Do most of the listening

6. While knowing that everyone is a unique individual, deep down I feel…

   A.) Like I am basically the same as   B.) Like there is something different
   about me, most people   compared to most people

7. An argument with feeling…

   A.) Has more effect on me than a cold,   B.) Has the same or less effect on me
   than a rational one   cold, rational one

8. I get a lot of satisfaction from…

   A.) Finishing projects   B.) Starting projects

9. People would describe me as…

   A.) Outgoing   B.) Reserved

10. It is better to be…

   A.) Practical   B.) Inventive

11. I have stronger…

   A.) Social skills   B.) Analytical skills

12. I am more of a…

    A.) Planner   B.) Improvisor

13. I think best when I can…

    A.) Bounce my ideas off of someone   B.) Work out my ideas internally before I
        share else   them with others

14. I like to…

    A.) Use and refine existing skills   B.) Pick up new skills – I can get bored
        once a skill   is mastered

15. For me, it is more interesting to know…

    A.) How people feel   B.) How people think

16. At work I would rather…

    A.) Follow a plan   B.) Go with the flow

17. I usually…

    A.) Act first, and think while I am   B.) Think first, before acting
        acting

18. I am drawn to…

    A.) The realistic   B.) The surrealistic

19. It is more important to be…

   A.) Tactful   B.) Truthful

20. I am most comfortable when…

   A.) Things are settled and decided   B.) My options are open

21. Ask me a question, and I will usually…

   A.) Start talking to come up with   B.) Take the time to form an answer in my
       head an answer   before I respond

22. I am usually more absorbed in…

   A.) Things I can see, hear, feel,   B.) My daydreams, thoughts, and imagination
       taste, or touch

23. I tend to value…

   A.) Compassion more than   B.) Competence more than compassion
       competence

24. I am sometimes accused of being too…

   A.) Rigid   B.) Wishy-washy

25. It is more difficult for me to be…

   A.) Quiet   B.) Loud

26. I solve problems by…

   A.) Grounding myself in the   B.) Jumping between different ideas, possibilities,
   and facts until I understand   perspectives
   the problem

27. When interacting with others…

   A.) I am friendly and have   B.) I am usually brief and businesslike
   difficulty remaining
   businesslike

28. I try things…

   A.) That I am reasonably sure   B.) Just to see what will happen
   will work

29. I talk about the things most important to me…

   A.) Whenever the subject comes up   B.) Only with those I trust

30. I think rules and regulations are…

   A.) Necessary   B.) Necessary for other people

31. I make most decisions…

   A.) Guided by my feelings   B.) Based on logic and facts

32. I usually prefer to work…

   A.) At a steady pace   B.) In bursts

33. If I have to spend a lot of time alone, I will feel…

    A.) Bored or depressed   B.) Relaxed and refreshed

34. Regardless of what other people say, deep down I feel that I am…

    A.) Pretty normal   B.) Kind of weird

35. I value…

    A.) Harmony and authenticity   B.) Accuracy and effectiveness

36. I think best when…

    A.) My surroundings are clean   B.) I do not have to follow a procedure
        and uncluttered

37. I prefer to…

    A.) Engage   B.) Observe

38. I am usually more entertained by…

    A.) The reality of what is going   B.) My interpretation of what is going on
        around me on around me

39. I usually obey…

    A.) My hear more than my mind   B.) My mind more than my heart

40. I like…

    A.) To know what I am getting into   B.) Adapting to new situations

41. When I am problem solving, I tend to…

    A.) Think out loud   B.) Close my eyes to shut out distractions

42. A conversation about purely abstract ideas and theories is usually…

    A.) Kind of annoying   B.) Totally energizing

43. I believe feelings are…

    A.) Always valid, whether they   B.) Valid, as long as they make sense
        make sense or not

44. I take pride in being…

    A.) Dependable   B.) Free-spirited

45. If I go to the gym or library…

    A.) I take the opportunity to   B.) I find a place by myself and focus on my
        work interact with people

46. Under most circumstances, I naturally pay more attention to…

    A.) What is happening   B.) What could be happening

47. I trust…

    A.) What my heart tells me   B.) What my head tells me

48. I am naturally more…

    A.) Organized   B.) Disorganized

49. I prefer to discuss things with…

    A.) A group of people   B.) One person at a time

50. When I need to do my best work, the feeling of inspiration is…

    A.) Great, but if I do not feel   B.) Vital, and if I do not feel inspired, it is
        inspired, it does not affect   very difficult for me to produce
        my ability to get things done   something I am happy with
        right

51. I tend to pay more attention to my…

    A.) Emotions   B.) Thoughts

52. I am more…

    A.) Orderly   B.) Random

53. When working, I love to…

    A.) Be in the middle of the action   B.) Close my door and enjoy the quiet

54. Sometimes…

    A.) I pay so much attention to the   B.) I think so much about new possibilities
       facts, either past or present,   that I do not look at how to make them
       that I miss new possibilities   a reality

55. It is worse to be…

    A.) Unsympathetic   B.) Biased

56. In general, I think people would benefit from more…

    A.) Responsibility   B.) Spontaneity

57. Whenever possible…

    A.) I connect with people   B.) I avoid unnecessary interaction

58. In everyday life…

    A.) I often meet people who seem   B.) It is rare to meet someone who really
       seems to be to see things the   on the same "wavelength" as me
       way I do

59. It is more important to be…

    A.) Kind   B.) Fair

60. For appointments, I am usually…

    A.) On time or early   B.) On time or a little late

*To Score:

Use the chart below to tally your A and B answers. Add the total number of A answers in the box at the bottom of each column. Do the same for the B answers you have checked. Each of the 8 boxes in the Totals column should have a number in it.

	A	B		A	B		A	B		A	B
1			2			3			4		
5			6			7			8		
9			10			11			12		
13			14			15			16		
17			18			19			20		
21			22			23			24		
25			26			27			28		
29			30			31			32		
33			34			35			36		
37			38			39			40		
41			42			43			44		
45			46			47			48		
49			50			51			52		
53			54			55			56		
57			58			59			60		
Totals											
	E	**I**		**S**	**N**		**F**	**T**		**J**	**P**

*Note: The instructions for scoring will not appear in the actual survey. I included them here so that the reader could see how the Myers-Briggs is scored and see which questions correspond to which dichotomy.

Positive Affectivity and Negative Affectivity Schedule

(Watson et al., 1988)

The following are words describing feelings and emotions. Please indicate the extent you feel this way in general (you generally feel this way, that is, how you feel on the average).

1. Interested

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

2. Distressed

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

3. Excited

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

4. Upset

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

5. Strong

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

6. Guilty

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

7. Scared

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

8. Hostile

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

9. Enthusiastic

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

10. Proud

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

11. Irritable

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

12. Alert

	1	2	3	4	5
	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

13. Ashamed

	1	2	3	4	5
	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

14. Inspired

	1	2	3	4	5
	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

15. Nervous

	1	2	3	4	5
	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

16. Determined

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

17. Attentive

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

18. Jittery

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

19. Active

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

20. Afraid

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

Scoring:

Positive Affect Score: Add the scores on items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19. Scores can
range from 10 – 50, with higher scores representing higher levels of positive affect.

Negative Affect Score: Add the scores on items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20. Scores can
range from 10 – 50, with lower scores representing lower levels of negative affect.

Mental Health Inventory – 15

(Diaz, 2013; Viet & Ware, 1983)

These questions are about how you feel and how things have been with you during the last 6 months. How much of the time:	1- None of the time 2- A little of the time 3- Some of the time 4- A lot of the time 5- All of the time
…have you been a very nervous person?	MHI001
…have you been anxious or worried?	MHI002
…did you get rattled, upset, or flustered?	MHI003
…have you been moody or brooded about things?	MHI004
…have you been in low or very low spirits?	MHI005
…have you felt downhearted and blue?	MHI006
…have you been in firm control of your behavior, thoughts, emotions, feelings?	MHI007r
…have you felt emotionally stable?	MHI008r
…have you felt like crying?	MHI009
…have you been a happy person?	MHI010r
…have you been happy, satisfied, or pleased with your personal life?	MHI011r
…has your daily life been full of things that were interesting to you?	MHI012r
…have you felt loved and wanted?	MHI013r
…did you feel there were people close to you?	MHI014r
…have you felt lonely?	MHI015

Perceived Stress Scale

(Cohen et al., 1983)

The questions in this scale ask you about your feelings and thoughts during **the last month**. Use the 0-4 scale below to indicate how often you felt or thought a certain way during **the last month**.

Use the below rating guidelines to answer each question:

0 - Never

1 - Almost Never

2 - Sometimes

3 - Fairly Often

4 - Very Often

---

1. In the last month, how often have you been upset because of something that happened unexpectedly?

   o 0 - Never

   o 1 - Almost Never

   o 2 - Sometimes

   o 3 - Fairly Often

   o 4 - Very Often

2. In the last month, how often have you felt that you were unable to control the important things in your life?

   o 0 - Never

   o 1 - Almost Never

   o 2 - Sometimes

   o 3 - Fairly Often

   o 4 - Very Often

3. In the last month, how often have you felt nervous and "stressed"?

       o 0 - Never

       o 1 - Almost Never

       o 2 - Sometimes

       o 3 - Fairly Often

       o 4 - Very Often

4. In the last month, how often have you felt confident about your ability to handle your personal problems? (reverse scored)

       o 0 - Never

       o 1 - Almost Never

       o 2 - Sometimes

       o 3 - Fairly Often

       o 4 - Very Often

5. In the last month, how often have you felt that things were going your way? (reverse scored)

       o 0 - Never

       o 1 - Almost Never

       o 2 - Sometimes

       o 3 - Fairly Often

       o 4 - Very Often

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

       o 0 - Never

       o 1 - Almost Never

       o 2 - Sometimes

o 3 - Fairly Often

o 4 - Very Often

7. In the last month, how often have you been able to control irritations in your life? (reverse scored)

    o 0 - Never

    o 1 - Almost Never

    o 2 - Sometimes

    o 3 - Fairly Often

    o 4 - Very Often

8. In the last month, how often have you felt that you were on top of things? (reverse scored)

    o 0 - Never

    o 1 - Almost Never

    o 2 - Sometimes

    o 3 - Fairly Often

    o 4 - Very Often

9. In the last month, how often have you been angered because of things that were outside of your control?

    o 0 - Never

    o 1 - Almost Never

    o 2 - Sometimes

    o 3 - Fairly Often

    o 4 - Very Often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

> o 0 - Never
>
> o 1 - Almost Never
>
> o 2 - Sometimes
>
> o 3 - Fairly Often
>
> o 4 - Very Often

APPENDIX B

IRB APPROVAL LETTER

September 24, 2019

CSUSB INSTITUTIONAL REVIEW BOARD
Administrative/Exempt Review Determination
Status: Determined Exempt
IRB-FY2019-309

Rebecca Marshall and Ismael Diaz
Department of CSBS - Psychology
California State University, San Bernardino
5500 University Parkway
San Bernardino, California 92407

DearRebecca Marshall Ismael Diaz :

Your application to use human subjects, titled 'The Myers-Briggs Personality System and its Moderating Effects on the Relationship Between Job Characteristics and Job Satisfaction" has been reviewed and approved by the Chair of the Institutional Review Board (IRB) of California State University, San Bernardino has determined that your application meets the requirements for exemption from IRB review Federal requirements under 45 CFR 46. As the researcher under the exempt category you do not have to follow the requirements under 45 CFR 46 which requires annual renewal and documentation of written informed consent which are not required for the exempt category. However, exempt status still requires you to attain consent from participants before conducting your research as needed. Please ensure your CITI Human Subjects Training is kept up-to-date and current throughout the study.

Your IRB proposal (FY2019-309) is approved. You are permitted to collect information from **950** participants for **1 SONA credit** from **SONA/Qualtrics**. This approval is valid from **9/24/2019** to **9/23/2020**.

The CSUSB IRB has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval notice does not replace any departmental or additional approvals which may be required.

Your responsibilities as the researcher/investigator include reporting to the IRB Committee the following three requirements highlighted below. Please note failure of the investigator to notify the IRB of the below requirements may result in disciplinary action.

- Submit a protocol modification (change) form if any changes (no matter how minor) are proposed in your study for review and approval by the IRB before implemented in your study to ensure the risk level to participants has not increased.
- If any unanticipated/adverse events are experienced by subjects during your research, and
- Submit a study closure through the Cayuse IRB submission system when your study has ended.

The protocol modification, adverse/unanticipated event, and closure forms are located in the Cayuse IRB System. If you have any questions regarding the IRB decision, please contact Michael Gillespie, the Research Compliance Officer. Mr. Michael Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at mgillesp@csusb.edu. Please include your application approval identification number (listed at the top) in all correspondence.

If you have any questions regarding the IRB decision, please contact Dr. Jacob Jones, Assistant Professor of Psychology. Dr. Jones can be reached by email at Jacob.Jones@csusb.edu. Please include your application approval identification number (listed at the top) in all correspondence.

Best of luck with your research.

Sincerely,

Donna Garcia

Donna Garcia, Ph.D., IRB Chair
CSUSB Institutional Review Board

DG/MG

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      Leonhard, Hua Ho, Teck, Hoijtink, Herbert, Hruschka, Daniel J., Imai,
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