

The Motivational Effects of Work Characteristics Need-Supply Fit on Active

Employee Behaviors

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Dedications

“Sacrificing your happiness for the happiness of the one you love, is by far, the truest type of love.” – Unknown. Thank you, Katie, Connie, and Cathie.

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Abstract

The Motivational Effects of Work Characteristics Need-Supply Fit on Active Employee Behaviors

Scott B. Dust

Work design theory and research suggests that increasing the supply of work characteristics increases employee motivation. This perspective is limited because it fails to recognize the role of individual preferences for work characteristics. To qualify and expand this *more is better* perspective, I draw upon person-job fit theory to propose an interactionist model, suggesting that the effects of work characteristics on employee motivation is best understood when considering the joint effects of work characteristics supply and employee preferences. I first suggest that task characteristics congruence, knowledge characteristics congruence, and social characteristics congruence are positively related to psychological empowerment and negatively related to psychological strain and that these relationships are stronger at high levels of the work characteristics as opposed to low levels of the work characteristics. Second, I suggest that the relationship between task, knowledge, and social characteristics oversupply is non-linear, whereby psychological empowerment will increase at modest levels of oversupply and will decrease at excessive levels of oversupply, and psychological strain will decrease at modest levels of oversupply and will increase at excessive levels of oversupply. Third, I suggest that task, knowledge, and social characteristics undersupply is negatively related to psychological empowerment and positively related to psychological strain. Fourth, I suggest that task characteristics congruence, oversupply, and undersupply are related to proactive

performance behaviors, knowledge characteristics congruence, oversupply, and undersupply are related to innovative behaviors, and social characteristics congruence, oversupply, and undersupply are related to interpersonal citizenship behaviors, through psychological empowerment. Fifth, I suggest that undersupply of work characteristics is related to a reduction in active employee performance behaviors and an increase in job crafting behavior through manifestations of psychological strain. In total, this dissertation seeks to contribute to work design theory and person-environment fit theory by illustrating that active employee behaviors depend upon the joint effects of individuals and organizations and that work characteristics congruence motivates active employee behaviors.

CHAPTER 1: INTRODUCTION

“People take different roads seeking fulfillment and happiness. Just because they’re not on your road doesn’t mean they’ve gotten lost.”

— Dalai Lama XIV

In the quote above, the Dalai Lama reminds us that the path to fulfillment is personal and the paths chosen are based on personal preferences and needs. Empirical research in organizational behavior and psychology supports this perspective, illustrating that individualized need fulfillment leads to optimal psychological functioning and active orientations towards work (Deci & Ryan, 2000; Ryan & Deci, 2000). That is, while all human beings are thought to seek fulfillment of three underlying psychological needs: autonomy (e.g., self-determined action: Deci, 1975), competence (e.g., optimally challenging work: Skinner, 1975), and relatedness (interconnectedness with others: Baumeister & Leary, 1995), not all individuals need to receive the same amount of each need or seek fulfillment in the same way (Deci & Ryan, 1985; Deci & Ryan, 2000). Interestingly, work design research has not fully investigated the implications of the joint effects of work design and personal needs. Current perspectives in work design suggest that jobs offering more autonomy, challenge, or social interaction, are more motivational than jobs without these characteristics (Humphrey, Nahrgang, & Morgeson, 2007). Yet, research suggests that higher levels of motivation occur when the work characteristics supplied by a job are congruent with an individual’s preferences (Cable & Edwards, 2004).

As an example, University professors with a strong preference for task variety should be more motivated when they have the opportunity to complete an assortment of tasks, such as analyzing data, writing manuscripts, and giving research presentations. Alternatively, professors who prefer a low level of task variety should be more motivated when they have the opportunity to primarily focus on one of these three tasks. In both of these scenarios professors are experiencing a high level of task variety congruence. Alternatively, if professors prefer completing all three tasks but finds themselves spending most of their time analyzing data, they may be demotivated or initiate new projects with opportunities to take on writing and presentation tasks. In this scenario, professors are experiencing low levels of task variety congruence.

I suggest that without considering congruence, current investigations of the motivational effects of work characteristics are incomplete. Thus, the purpose of this dissertation is to illustrate the importance of personal preferences in understanding the motivational effects of work characteristics. More specifically, the purpose is two-fold. First, I examine how person-job congruence of specific work characteristics triggers responses of psychological empowerment or psychological strain. Second, I examine how these mechanisms link varying forms of congruence with active (e.g., self-starting, future oriented) employee behaviors.

I seek to contribute to work characteristics theory (WCT) by illustrating that work characteristics need-supply congruence affects motivational mechanisms and active employee behaviors. I also seek to contribute to person-

job (P-J) fit theory by illustrating that varying forms of work characteristics need-supply congruence differentially affect active employee behaviors. In particular, I investigate three scenarios: when supply is congruent with need; when supply is greater than need (e.g., oversupply); and when supply is less than need (e.g., undersupply). I propose that these varying forms of work characteristics need-supply congruence affect psychological mechanisms of empowerment and strain, which then affects active employee behaviors.

Work Characteristics and Individual Preferences

Work design is concerned with how the structuring of tasks, roles, and responsibilities affect employee attitudes and behaviors (Hackman & Oldham, 1980; Morgeson & Campion, 2003). The first theories in work design were primarily concerned with making workers more efficient by simplifying work (Taylor, 1911). However, efficiency through simplification led to monotony, and employee satisfaction and motivation declined (Grant, Fried, & Juillerat, 2010). This sparked the human relations movement, which sought to enrich work through more growth and participatory opportunities (Hackman & Oldham, 1980).

One of the most influential perspectives on work design within the human relations movement is job characteristics theory (JCT) (Grant et al., 2010; Morgeson & Campion, 2003). According to JCT, jobs can be *enhanced* (e.g., increased task autonomy, task variety, task feedback, etc.) to influence employee motivation (Hackman & Oldham, 1976; 1980). Pinder (1984, p. 11) defines motivation as “a set of energetic forces that originate both within as well as

beyond an individual's being, to initiate work-related behavior, and to determine its form, direction, intensity and duration." Thus, JCT suggests that by altering job characteristics, employees should approach their work differently; the form, direction, intensity, and persistence of their efforts can be harnessed in ways that lead to higher levels of motivated behaviors. In recognition of the growing intellectual complexities of work and the interconnectedness of people, JCT was expanded into WCT and includes knowledge and social characteristics, both of which have the potential to motivate employees (Humphrey et al., 2007; Morgeson & Humphrey, 2006). With respect to knowledge characteristics, facets such as job complexity and specialization are associated with motivation to overcome obstacles (Campion & McClelland, 1993; Campion & Thayer, 1985). Additionally, studies illustrate that social characteristics, such as social support and interdependence with others, are associated with motivation to help other organizational members (Grant & Parker, 2009).

Forty years ago work design researchers suggested that not all employees respond positively to the thrust for more involved and motivated work (Lawler, 1974). Since that time, work design theorists have consistently discussed the importance of understanding how employees are likely to react differently to motivational work design (Champoux, 1980; 1981; 1992; Morgeson & Campion, 2003; Grant et al., 2010; Hackman & Oldham, 1976; Lawler, 1974). This recognition is important because work design plays a central role in organizational structure decisions and strategic human resource management, and understanding individual differences ensures that work design initiatives serve

their intended purpose (Campion, Mumford, Morgeson, & Nahrgang, 2005; Lawler, 1974). Interestingly, a holistic understanding of how differences in individual need preferences affect work design continues to elude work design researchers (Grant et al., 2010).

This lack of understanding may be a result of the approach in which previous work design researchers have studied individual needs and preferences. Work design researchers typically assume that individuals have an overarching characteristic that dictates the extent to which they prefer all of their work characteristics facets to be more motivational. For example, prior studies propose that blue-collar workers, as opposed to white-collar workers, should be more receptive to all forms of motivational work characteristics (Blood & Hulin, 1967; Hulin & Blood, 1968; Katzell, Barrett, & Parker, 1961; Turner & Lawrence, 1965; Whyte, 1955). The rationale is that blue-collar workers should be more appreciative of motivational work characteristics because they are unaccustomed to receiving more autonomous and flexible work design. Similarly, a plethora of studies have tested growth need strength (e.g., the general preference for stimulating and challenging work); expecting individuals with high growth needs to react more strongly to motivational work design (Hackman & Lawler, 1971; Hackman & Oldham, 1976). However, findings are inconclusive, with comprehensive studies showing both confirming (Fried & Ferris, 1987; Loher, Noe, Moeller, & Fitzgerald, 1985) and disconfirming (Tiegs, Tetrick, & Fried, 1992) results. Pinpointing an overarching characteristic may be limited in that individuals may prefer more motivational work characteristics in some work

characteristics facets, and not others, regardless of their background or personal characteristics.

A second issue is that these studies only test the interaction, as opposed to the congruence, of individual and environment. Without explicitly testing the joint effects of individual and environment it is not possible to investigate scenarios in which there is a match between individual and environment. Similarly, it is not possible to investigate scenarios in which there is a mismatch, whereby the individual and organization have opposite levels of needs or supplies (e.g., oversupply or undersupply). Given that one of the overarching goals of work design is to motivate employees, future research is needed to investigate the unique motivating potential of need-supply congruence of work characteristics.

While work design theorists acknowledge that individual need and preference differences exist, the general consensus is that: (a) redesigning work for the average employee is likely the most efficient use of resources; and (b) redesigning work to be more motivational is likely to lead to beneficial, as opposed to detrimental outcomes (Humphrey et al., 2007; Morgeson & Campion, 2003; Morgeson & Humphrey, 2006). Yet, given prior approaches to testing individual differences in work design, these suggestions may be incomplete. Studying the interaction between individual needs and work characteristics supply may not provide an accurate view of the proximity between the two variables (Edwards, Caplan, & Harrison, 1998). Employees may not always respond positively to a high supply of work characteristics (Edwards, 1996). Instead, employees may experience higher levels of motivation when they experience a

match between needs or preferences and work characteristics supplies (Gagne et al., 2005; Ryan & Deci, 2000), regardless of the level (e.g., low, medium, high) of the work characteristics (Edwards & Rothbard, 1999). Thus, following Lewin's (1943) suggestion that behavior is ultimately determined by the interaction of person and environment, work design theory may be expanded by considering the joint effects of the two variables through evaluations of congruence.

Work Characteristics Congruence and Psychological Need Fulfillment

Person-environment (P-E) fit theory suggests that beneficial outcomes result when "person and work environment are well matched" (Kristof-Brown & Guay, 2011, pg. 3). Applying P-E fit theory to work design invokes a specific type of fit called P-J fit, whereby there is compatibility between an individual's personal characteristics and the characteristics of his or her job (Edwards, 1991; Kristof, 1996). This study focuses on a specific type of P-J fit, need-supply (N-S) fit, whereby there is congruence between a person's psychological needs and the resources and rewards supplied within the job (Cable & Edwards, 2004).

Congruence is defined as the degree to which there is a match between person and environment on a commensurate dimension. In this study, the dimension of interest is a type of work characteristics (e.g., task, knowledge, or social). The person variable (P) entails the amount of the work characteristics the employee prefers to receive while working. The employee may prefer to receive anywhere between a low amount to a high amount of the work characteristics. The environment variable (E) entails the amount of the work characteristics being supplied by the employee's job. The job may supply anywhere between a low

amount to a high amount of the work characteristics. Thus, a high degree of congruence entails the level of the employee's preference for work characteristics being similar to the job's supply of the same work characteristics. Conversely, a low degree of congruence entails the level of the employee's preference for work characteristics being dissimilar to the job's supply of the same work characteristics.

The degree of congruence increases as the level of P and E become similar. When the employee prefers a specific amount of work characteristics and the job supply meets this preferred amount (e.g., congruence), the employee has a need that is being fulfilled. Thus, the extent to which needs are fulfilled increases as the job supplies a level of work characteristics that matches the employee's preferences. Congruence can take place at varying levels of work characteristics need and supply. If the employee prefers a high amount of the work characteristics and is supplied a high amount of the work characteristics, the employee's need is fulfilled. Similarly, if the employee prefers a low amount of the work characteristics and is supplied a low amount of the work characteristics, the employee's need is fulfilled. Thus, employees' needs are met when the amount of job supply meets their preferred amount, regardless of the level in which this congruence occurs. However, the level of the characteristics in which congruence occurs may have an impact on employee psychological states and behaviors (Edwards, 1996). Research suggests that congruence at higher levels of work characteristics may have stronger effects than at lower levels of work characteristics (Edwards, 1996; Edwards & Rothbard, 1999).

The degree of congruence decreases as the level of P and E become discrepant. This discrepancy will take one of two different forms: oversupply or undersupply. *Oversupply* occurs when E is greater than P. The amount of the work characteristics preferred by the employee serves as a threshold for need fulfillment. In the case of oversupply, the amount of the work characteristics being supplied by the job not only meets this threshold, but exceeds it. Theoretical perspectives regarding the effects of oversupply are currently contradictory. Research suggests that oversupply of work characteristics should have beneficial effects on employee outcomes because it is viewed as a buffer or reservoir of work characteristics supply that can be applied in the future (Edwards, 1996; Edwards & Rothbard, 1999; Shipp & Jansen, 2011). Alternatively, research also suggests that oversupply of work characteristics should have detrimental effects because employees are pushed beyond their limitations or preferences (Warr, 1990; De Jonge & Schaufeli, 1998). To address this contradiction, I propose that modest levels of oversupply are beneficial and that excessive levels of oversupply are detrimental. The second form of discrepancy, *undersupply*, is when P is greater than E. In this scenario, employees prefer a certain amount of work characteristics to be supplied through their job, however, the amount of the work characteristics being supplied by the job is less than the employees' preferred amount. When experiencing undersupply, the amount of the work characteristics being supplied by the job does not fully satisfy employees' needs.

In summary, congruence entails work characteristics preferences being met by work characteristics supply. This need-supply congruence can take place

anywhere between low and high levels of work characteristics. Low levels of congruence may be a function of oversupply or undersupply. Oversupply means that needs are fulfilled and an excess supply of the work characteristics exists. Undersupply means that needs are unfulfilled because the level of work characteristics supply is below employee preferences. This study will investigate each of these varying forms of congruence in detail.

Work Characteristics and Self-Determination Theory

Self-determination theory (SDT) suggests that there are three innate psychological needs for all human beings: autonomy, competence, and relatedness (Deci & Ryan, 1985; 2000). SDT offers a useful perspective to explain the important role of congruence in work design. The need for autonomy involves the desire for self-determined action (Deci, 1975), the need for competence involves the desire to engage in optimally challenging work (Skinner, 1975), and the need for relatedness involves the desire for interconnectedness with others (Baumeister & Leary, 1995). Individuals have an inherent evolutionary drive to continuously seek fulfillment of their psychological needs (Goldstein, 1939) and SDT research suggests that employees evaluate their work characteristics and make judgments on how well these characteristics fulfill their needs (Baard, Deci, & Ryan, 2004; Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Gagne & Deci, 2005).

Preferences for the three work characteristics are similar in focus to the three psychological needs of SDT. First, preferences for task characteristics entail the extent to which employees prefer decision making and process autonomy,

which is similar to the extent to which they prefer self-determined action. Thus, the supply of task characteristics provides a mechanism to satisfy autonomy needs. Second, preferences for knowledge characteristics entail the extent to which employees prefer challenge and specialization in their job, which is similar to the extent to which they prefer optimally challenging work. Thus, the supply of task knowledge provides a mechanism to satisfy competence needs. Third, preferences for social characteristics entail the extent to which employees prefer co-worker support and interdependence, which is similar to the extent to which they prefer interconnecting and relating with others. Thus, the supply of social characteristics provides a mechanism to satisfy relatedness needs. In total, employees' needs can be satisfied when the supply of work characteristics matches their preferences for work characteristics. Need-supply congruence of work characteristics may be particularly important to work design because employees with fulfilled needs are likely to experience intense engagement and active orientation towards their work (Deci & Ryan, 2000). Thus, in order to investigate the effects of need-supply congruence of work characteristics, I seek to investigate a motivated state characteristic of engagement and active orientations towards work, namely, psychological empowerment.

The Effects of Work Characteristics Congruence

I expect that congruence, oversupply, and undersupply of work characteristics are related to employee manifestations of psychological empowerment, which in turn links these varying forms of work characteristics need-supply congruence to active employee behaviors. Psychological

empowerment is an enhanced form of intrinsic task motivation and a proactive orientation towards work (Spreitzer, 1995; Thomas & Velthouse, 1990).

Employees that manifest feelings of psychological empowerment are likely to exhibit active behaviors, whereby the employee directs attention towards future oriented tasks and is intense and persistent in taking initiatives from idea to implementation (Spreitzer, 1995). Accordingly, I expect that psychological empowerment links work characteristics need-supply congruence to active work behaviors.

A recent focus in work design research is to identify how and why work design is linked to active behaviors. Active behaviors are self-starting, future-oriented employee behaviors that are enacted proactively, as opposed to reactively, to improve organizational functioning (Crant, 2000; Griffin, Neal, & Parker, 2007). In Grant and colleagues' (2010) review of the work design literature, they suggests that globalization, the prevalence of service and knowledge work (Parker, Wall, & Cordery, 2001; Rousseau & Fried, 2001), and technological advances (Sinha & Van De Ven, 2005) have forced employees to be more responsible for being proactive, taking initiative, and being future-oriented, to ensure their organization remains competitive. Work characteristics need-supply congruence may be an especially useful perspective for explaining such active employee behaviors. Work characteristics need-supply congruence may lead to active employee behaviors because when employees receive their preferred amount of work characteristic they should feel fully volitional and engrossed in their work (Greguras & Diefendorf, 2009), enabling a heightened

sensitivity and attentiveness to the current and future needs of their organization (Erdogan & Bauer, 2005; Grant et al., 2010). In this study, I evaluate three active performance-related behaviors: proactive behaviors, innovative behaviors, and interpersonal citizenship behaviors (OCBI). Proactivity involves self-starting, anticipatory, and future-oriented behaviors (Grant & Ashford, 2008; Griffin et al., 2007). Innovativeness involves integrating and implementing ideas into organizational products or processes (Scott & Bruce, 1994). Finally, OCBI entails discretionary, prosocial behaviors towards co-workers (Podsakoff, MacKenzie, Moorman, & Fetter, 1990).

In summary, I expect that congruence, oversupply, and undersupply of work characteristics are associated with active employee behaviors, such as proactivity, innovativeness, and OCBI. According to SDT, active orientations towards work should follow fulfillment of psychological needs (Deci & Ryan, 2000; Ryan & Deci, 2000). Thus, I also expect that psychological empowerment embodies an engaged and active orientation towards work that results from work characteristics need-supply congruence and represents a motivational mechanism linking the varying forms of work characteristics need-supply congruence to the set of active employee behaviors.

To have a more comprehensive understanding of the role of work design on active employee behavior, it is necessary to go beyond studying the motivating potential of congruence and investigate the demotivating potential of incongruence. The SDT literature suggests that unfulfilled psychological needs may cause employees to experience psychological strain (Deci & Ryan, 2000).

Experiencing strain can be distracting and energy consuming, taking away from an employee's ability to devote attention to work tasks that require focus and vigor, such as active-oriented job-related behaviors. In turn, I propose that psychological strain is a linking mechanism between work characteristics undersupply and active employee performance behaviors (e.g., proactivity, innovativeness, and citizenship behaviors). The psychological strain resulting from unmet needs may also trigger a non-performance related, active-oriented behavior called job crafting; self-initiated behaviors that attempt to change the tasks and social structure of the employee's work environment (Wrzesniewski & Dutton, 2001). Theoretical arguments have been made suggesting that P-J incongruence may cause employees to engage in job crafting so that they can change the amount of work characteristics supply to fit their preferences (Tims & Bakker, 2010). This perspective is important to work design theory and P-J fit theory because it highlights that employees themselves, in addition to organizations, are taking responsibility for redesigning work so that their needs are congruent with job supply. To investigate this phenomenon, I propose that psychological strain is a linking mechanism between work characteristics undersupply and job crafting because experiencing strain may trigger employees to make proactive attempts at changing their job environment.

In summary, the overall goal of this dissertation is to empirically test the importance of congruence between employee preferences for work characteristics, and the extent to which the job supplies a matching amount to meet those preferences, in order to more fully understand the motivational effects of work

characteristics. In doing so, my intended contributions are two-fold. First, I seek to extend previous work design theory by illustrating how and why the joint effects of individual needs and work characteristics supplies provides a more comprehensive mechanism for understanding employee motivated behaviors. Second, I seek to contribute to P-E fit theory by illustrating that congruence can trigger motivated behaviors by testing the relationship between varying forms of need-supply congruence and active-oriented employee outcomes through psychological states. To accomplish these objectives I first discuss psychological empowerment and psychological strain as consequences of work characteristics congruence, oversupply, and undersupply. Second, I discuss how psychological empowerment and psychological strain act as linking mechanisms between the varying forms of work characteristics congruence and active employee outcomes.

CHAPTER 2: LITERATURE REVIEW

Investigating the joint effects of individual need for work characteristics and organizational supply of work characteristics offers a novel perspective on work motivation. Work design research suggests that enhancing motivational work characteristics trigger motivational states that then lead to employee outcomes (Hackman & Oldham, 1980). By taking a need-supply congruence perspective this study explicitly recognizes that “motivation is a psychological process resulting from the interaction between the individual and the environment” (Latham & Pinder, 2005, p. 486). Additionally, prior approaches to studying need fulfillment are usually perceptive, whereby the individual reports the extent to which their psychological needs are fulfilled (Greguras & Diefendorff, 2009). The study of congruence is a more revealing approach to studying need fulfillment than purely perceptive interpretations because it captures a quantifiable level of congruence and/or discrepancy between individual and environment (Edwards, Cable, Williamson, Lambert, & Shipp, 2006). Drawing upon SDT (Deci & Ryan, 1985), I propose that congruence, oversupply, and undersupply of work characteristics are related to a series of psychological states and active employee behaviors. To lay the foundation for my hypotheses, this chapter offers a review of work design theory, P-E fit theory, and SDT.

Work Design

Background

Work design has a long history in management research. Over a century ago, work design research was concerned with making workers more efficient

(Taylor, 1911). Over time, work design research evolved to focus on how jobs, tasks, and responsibilities could be structured to enhance employee attitudes and behaviors (Hackman & Oldman, 1976; 1980). Contemporary research goes beyond the focus of job tasks and evaluates the psychological processes underlying how employees experience their overall work experience, particularly, the dynamic and interactive nature of employees with their work (Grant et al., 2010; Oldham & Hackman, 2010; Morgeson & Humphrey, 2008). I begin with a brief summary of theories and perspectives that have laid the foundation for contemporary work design theory and research.

The first formal theory of work design, called scientific management, suggested that through division of labor and specialization of skills, organizations could be more efficient and profitable (Taylor, 1911). The tedium of this approach, however, led to dissatisfied and unmotivated workers (Grant et al., 2010), which spurred the human relations movement where the new goal became understanding how to increase employee well-being, satisfaction, and motivation. For example, Likert (1961; 1967) studied the effects of participative management (e.g., employee involvement in decision making). Similarly, Herzberg (1966) proposed the motivator-hygiene theory, which suggested that certain job opportunities (e.g., development or advancement) would act as motivators and certain elements of the job context (e.g., policy or working conditions) could act as demotivators. While there was limited support for these two separate factors (Locke & Henne, 1986), the suggestion that a variety of job factors could be redesigned informed a new wave of work design research, called job enrichment,

which sought to increase employee intrinsic motivation (Campion & McClelland, 1993).

Turner and Lawrence (1965) began outlining a variety of job attributes that could be redesigned, such as task structure, physicality of the work, interconnectedness with other jobs, social structure, and career progression opportunities. Subsequently, Hackman and Lawler (1971) proposed that the structure of task characteristics affects employee attitudes and behaviors. A series of studies by Hackman and Oldman (1975; 1976; 1980) introduced and refined JCT, illustrating that variety (e.g., multiple tasks), autonomy (e.g., discretion regarding tasks), significance (e.g., important tasks), identity (e.g., how tasks relate to big picture), and feedback (e.g., appropriate task adjustment), were fundamental job characteristics that affected employee attitudes and behaviors such as job satisfaction, organizational commitment, and task performance, through motivational states of experienced meaningfulness, responsibility for outcomes, and knowledge of results. Forty years later, the model is still used in work design research. However, contemporary work design research has begun to focus not only on task characteristics of the job, but also the knowledge, social, and contextual characteristics of work; commonly referred to as WCT (Humphrey et al., 2007; Morgeson & Humphrey, 2006).

There are several additional work design perspectives that highlight the need for a joint effect approach to work design research. First, social information processing (SIP) (Salancik & Pfeffer, 1978) suggests that social cues may inform the need and value preferences of employees. The employee's subjective

interpretation of the objective work redesign will be filtered and constructed through their unique interpretive lens, which is likely informed by previous experiences and social interactions with others. Thus, SIP highlights that employees should have differing levels of needs and preferences for work characteristics given their unique backgrounds and experiences. Second, demand-resource models of work design (Karasek, 1979; Karasek & Theorell, 1990) suggest that various forms of work environment demands may create psychological strain, and these demands can be buffered through work resources (e.g., job control or support from colleagues). The demand-resource model highlights that detrimental states may result from oversupplied work characteristics. By studying work characteristics need-supply incongruence, work design research can more accurately assess the person and environmental circumstances that lead to psychological strain. Third, sociotechnical system theory suggests that employee and/or organizational effectiveness is a result of joint optimization between people and the technical components of their work (Rousseau, 1977). This perspective helps work design researchers recognize that job redesign does not take place in a vacuum; considering the dynamics of an employee embedded within a system enables a contextualized understanding of the work redesign. Thus, sociotechnical systems theory highlights the importance of understanding the joint effects of individual and environment.

In this dissertation I build upon these suggestions—that individuals have different work characteristics preferences, work characteristics can be oversupplied, and that the individual and the environment should be studied

jointly—and study the joint effects of individual need and job supply of work characteristics.

Work Characteristics Theory

In this study I focus on WCT because of its broad inclusion of work characteristics categories (e.g., task, knowledge, and social) and its inclusion of specific, empirically derived facets within each category (e.g., work methods autonomy and decision making autonomy). The categories and facets within each category were developed through a comprehensive construct development study that spanned 540 job applicants in 243 different jobs (Morgeson & Humphrey, 2006). Reliable and valid dimensionality for each facet and category were found and appropriate correlations with theoretically relevant variables were also found (Morgeson & Humphrey, 2006). WCT builds upon Hackman & Oldham's (1976; 1980) JCT, which focuses on five task characteristics: variety, autonomy, significance, identity, and feedback. Variety is the extent to which an employee uses different skills when completing work tasks. Autonomy is the extent to which an employee has discretion while completing work tasks. Significance is the extent to which an employee's tasks affect the lives of others. Identity is the extent to which an employee participates in various tasks throughout the entire lifespan of a product or process. Feedback is the extent to which an employee receives feedback regarding his or her task performance. JCT suggests that these five task characteristics lead to employee outcomes such as job satisfaction, motivation, job performance, and absenteeism, through motivational states of experienced meaningfulness, responsibility, and knowledge of results (Hackman

& Oldham, 1980). In general, meta-analytic results support the position that task characteristics influence employee attitudes and behaviors through motivational mechanisms (Fried & Ferris, 1987; Humphrey et al., 2007).

Building on JCT, WCT offers an expanded perspective of work characteristics categories and more specific work characteristics facets within each category (Humphrey et al., 2007; Morgeson & Humphrey, 2006). WCT proposes four work characteristics categories: task, knowledge, social, and contextual. The task characteristics are concerned with how work is completed. Task characteristics include JCTs facets of variety, significance, identity, and feedback, but also breakdown autonomy into work methods autonomy (e.g., processes or systems), decision making autonomy (e.g., decision making), and work scheduling autonomy (e.g., timing or ordering). The knowledge characteristics consider the kinds of KSAOs necessary to complete work and include facets of job complexity (e.g., challenge), specialization (e.g., specialized knowledge or skill), informational processing (e.g., attending to and processing data), problem solving (e.g., offering unique solutions), and skill variety (e.g., using multiple skills). The social characteristics consider the type or form of interaction with others and include facets of social support (e.g., advice or support), interdependence (e.g., dependence on each other to complete work), interaction outside the office (e.g., external communication), and feedback from others (e.g., performance feedback). Finally, contextual characteristics consider the physiological nature of work and include facets of ergonomics (e.g., posture), physical demands (e.g., sustained physical effort), work conditions (e.g.,

physiological comfort), and equipment use (e.g, technology or physical equipment).

In this study I focus on task, knowledge, and social characteristics, and exclude contextual characteristics. Contextual characteristics take a physiological perspective and are concerned with keeping employees satisfied or effective by meeting minimum physical, visual, or ergonomic needs. In this study I am interested in investigating the effects of psychological need congruence, as opposed to meeting a minimum physiological threshold. Additionally, previous studies have already illustrated that employee outcomes related to contentment, such as job satisfaction, job commitment, or intent to turnover, are related to meeting a minimum threshold of work characteristics supply (Humphrey et al., 2007).

In terms of task characteristics, I focus on two facets: work methods autonomy and decision making autonomy. Work methods autonomy is the extent to which an employee has discretion in deciding the methods in which the work tasks will be completed (Morgeson & Humphrey, 2006; Wall, Jackson, & Mullarkey, 1995). Decision making autonomy is the freedom and independence an employee has when making decisions at work (Morgeson & Humphrey, 2006; Wall et al., 1995). Research suggests that each facet has similar, yet unique effects on employee outcomes (Humphrey et al., 2007; Morgeson & Humphrey, 2006). For example, meta-analytic results suggest that decision making autonomy is more strongly related to job satisfaction than work methods autonomy (Humphrey et al., 2007). Additionally, when work is redesigned, it is possible to

offer additional autonomy regarding how an employee completes work without offering additional decision making discretion, or vice versa (Campion et al., 2005). Given that employees may react slightly differently to each facet, and organizations can redesign one specific facet without changing the others, jointly investigating these facets offers a broader and more inclusive conceptualization of task characteristics.

In terms of knowledge characteristics, I focus on two facets: job complexity and specialization. Job complexity is the extent to which job tasks are difficult and mentally challenging, and requires high-level skills to perform effectively (Edwards, Scully, & Brtek, 2000; Morgeson & Humphrey, 2006). Specialization is the extent to which job tasks require expertise and unique KSAOs to successfully complete work (Campion, 1988; Edwards, Scully, & Brtek, 1999; Morgeson & Humphrey, 2006). I focus on job complexity because the findings regarding its effect on employee motivation is mixed. Research suggests that offering additional challenge through increased job complexity may trigger more engagement and interest (Edwards, Scully, & Brtek, 2000). Alternatively, findings illustrate that an excessive amount of job complexity leads to psychological strain (Xie & Johns, 1995). A potential interpretation of these mixed findings is that there may be a threshold at which supply is greater than individual need.

The second knowledge characteristic, specialization, has been cited as a particularly important work characteristic because of its benefits for both the organization and the employee (Campion et al., 2005). Specialization fosters

organizational efficiency because employees become more skillful in their assigned task, reducing the likelihood for error and the time/effort necessary to complete the task (Campion et al., 2005). Additionally, employees have higher job satisfaction when encouraged to be an expert in a particular work task (Morgeson & Campion, 2002). However, employees may perceive that high levels of specialization equates to minimally impactful work because their contributions are narrow in focus (Abramson, Seligman, & Teasdale, 1978). Thus, there may be a threshold at which supply of specialization becomes detrimental for employee motivation. Studying the joint effects of employee need for specialization and job supply of specialization may help uncover when and why specialization is effective or ineffective. In total, a joint investigation of complexity and specialization targets two influential knowledge characteristics components that have not yet been fully explored.

In terms of social characteristics, I focus on two facets: social support and interdependence. Social support is the extent to which an employee's work offers opportunities to receive advice or assistance from others (Karasek, 1979; Sims, Szilagyi, & Keller, 1976). Interdependence is the extent to which an employee's work is dependent upon the work of others, or the work of others is dependent upon the employee's work (Kiggundu, 1983). Among all the social work characteristics, these two specific facets are concerned with the amount of interaction between co-workers. While research suggests all types of social interaction increases well-being (Cohen & Willis, 1985), the purpose behind the interaction for social support and interdependence is distinctly different. The

purpose of social support is to give and receive advice and support (Karasek, 1979), while the purpose behind interdependence is to create accountability and process integration (Kiggundu, 1983). Research suggests that each facet may have unique effects on employee outcomes (Humphrey et al., 2007; Morgeson & Humphrey, 2006). For example, meta-analytic results suggest that interdependence is more strongly related to job performance than social support, while social support is more strongly related to withdrawal intentions than interdependence (Humphrey et al., 2007). Thus, jointly investigating these two forms of social interaction may offer a broader and more inclusive understanding of the relationship between social work characteristics and employee behavior.

Individual Differences in Work Design

Work characteristics research also indicates that individual differences may affect the relationship between work characteristics and employee outcomes. Differences in socio-cultural backgrounds were thought to alter preferences for motivational work characteristics. For example, sub-group analyses illustrate that the association between motivational work characteristics and employee motivation is stronger for blue-collar workers (as opposed to white-collar workers) (Blood & Hulin, 1967; Hulin & Blood, 1968; Katzell et al., 1961; Turner & Lawrence, 1965; Whyte, 1955), and workers with a strong protestant work ethic (as opposed to a low protestant work ethic) (Stone, 1975; 1976). However, individual characteristics likely vary on a continuum between low and high levels and using the dichotomous categorizations inherent in sub-group analysis can be somewhat misrepresentative (Stone & Hollenbeck, 1984).

Second, research has also pursued individual differences in need preferences, such as the need for achievement (Rentsch & Steel, 1998; Steers, 1975; Steers & Spencer, 1977; Stinson & Johnson, 1977), the need for competence (Rentsch & Steel, 1998), and the need for affiliation (Stinson & Johnson, 1977) as moderators of the work characteristics to employee motivation relationship. Among these studies, findings have been mixed, with some interactions being insignificant, others being significant but illustrating constraining effects (e.g., opposite of hypothesized), and still others showing a significant, enhancing interaction effect (Stone, Mowday, & Porter 1977).

Third, perhaps the most widely studied individual difference variable is growth needs strength; the general preference for stimulating and challenging work (Hackman & Oldham, 1976). Two meta-analyses have illustrated that there is a stronger association between work characteristics and job satisfaction for those high in growth needs strength as opposed to low in growth need strength (Fried & Ferris, 1987; Loher et al., 1985). However, two additional large sample studies (Hackman & Lawler, 1971; Tiegs et al., 1992), found that growth need strength did not reach significance as a moderating variable. Research is needed that goes beyond testing the moderating effect of individual difference variables on the relationships between work characteristics and employee motivation. Variables such as growth need strength, need for achievement, and the like, assume that employees desire growth in all aspects of their work. However, it is possible that employees prefer higher levels of some work characteristics and lower levels of others.

Fourth, a handful of studies confirm a fairly intuitive finding; that mental ability may enhance receptivity to more complex job tasks (Campion, 1989; Fried & Ferris, 1987; Schneider, Reichers, & Mitchell, 1982). Higher levels of cognitive ability may influence the relationship between knowledge characteristics and employee outcomes, however, the supply of work characteristics, such as friendly advice and support (e.g., social characteristics) are less likely to be enhanced or constrained by intellect (Morgeson & Humphrey, 2006). In summary, several studies have examined the role of individual differences in work design, however findings are mixed. I now discuss why former approaches were limited and then discuss an option to address these limitations.

The former studies have examined individual characteristics, such as growth need strength or need for achievement, as moderators of the work characteristics to employee outcome relationship. This approach is limited in that it fails to recognize employee fit or congruence with the work characteristics supplied by the job. As stated by Edwards and colleagues (1998), “the interaction between person and environment variables does not reflect their proximity to one another” (p. 41), indicating that analyzing the level of environmental variables in conjunction with the level of person variables (e.g., joint effects) is conceptually distinct from analyzing two-way interactions. The study of congruence overcomes this limitation by testing the joint effects of individual characteristics and environmental characteristics, illustrating how these two variables together affect a third variable.

In summary, current work design research fails to investigate the match between person and work characteristics. To fully understand the relationship between individual differences and work characteristics, an evaluation of their joint effects is needed. If congruence has beneficial effects, organizations may be able to more efficiently leverage, develop, and retain human capital through both work design and selection and placement efforts. Thus, taking a P-J congruence approach to WCT provides a more comprehensive way to understand the joint effects of individual needs and characteristics supplied by job roles than merely examining interactive effects.

Person-Environment Fit

Definitions and Types

P-E fit refers to “the compatibility that occurs when person and work environment are well matched” (Kristof-Brown & Guay, 2011, p. 3). P-E fit theory follows Lewin’s (1943) notion that behavior is a function of personal characteristics and environmental characteristics [$B = f(P, E)$] (Lewin, 1943). The P-E fit concept was first utilized in the theory of work adjustment, which explains how employees and organizations interact and meet each other’s requirements in order to maintain effectiveness (Dawis & Lofquist, 1984). P-E fit theory is also central to attraction-selection-attrition (ASA) theory, which suggests that person-environment similarity may explain why people are attracted to and continue working for organizations, which eventuates in organizational homogeneity (Schneider, 1987). Application of P-E fit theory has since been applied to a wide variety of person-environment interactions, such as employee

and organizational characteristics (e.g., values, personality, etc.) (Cable & Judge, 1996; O'Reilly, Chatman, & Caldwell, 1991), employee abilities and organizational demands (Caldwell & O'Reilly, 1990), and employee needs and organizational rewards (Dawis, 1992).

There are two primary forms of P-E fit: supplementary and complementary. Supplementary fit refers to compatibility that occurs when a person has similar characteristics to the environment. Complementary fit refers to compatibility that occurs when a person's KSAOs fill a need within the environment or a person's needs are fulfilled by the characteristics of the environment. Thus, the strengths of the person complement the weaknesses of the environment, or vice versa (Muchinsky & Monahan, 1987).

Employees may fit with varying aspects of their environment, including the organization (P-O), vocation (P-V), job (P-J), supervisor (P-S), or work group (P-G). For example, research has taken a supplementary perspective of P-O, P-V, P-S, and P-G fit, evaluating the potential benefits from similar personality types or values between employees and their organization (O'Reilly et al., 1991), vocation (Holland, 1997), supervisor (Van Vianen, Shen, & Chuang, 2011; Zhang, Wang, & Shi, 2012), or work team (Kristof-Brown & Stevens, 2001). Research typically takes a complementary perspective of P-J fit, evaluating the potential benefits to the person and/or the organization when the person offers complementary abilities and skills to the job (Cable & DeRue, 2002). In this study, I focus on a complementary perspective of P-J fit (e.g. need-supply fit)

whereby the characteristics of the job complement the preferences of the employee. I further elaborate on this approach in a later section.

Measurement

Another important distinction in P-E fit research is between objective and perceived forms of fit. Objective fit involves collecting separate information from the person and the environment and then evaluating fit between them (Cable & Parsons, 2001). Perceived fit involves the person providing fit information for both the person and the environment and then evaluating fit (Kristof, 1996). Research in perceived fit has taken three measurement approaches: molar, molecular, and atomistic (Edwards et al., 2006). With a molar approach, individuals are asked to rate the extent to which they believe there is a fit. With a molecular approach, individuals are asked to rate their level of fit on a continuum with fit and misfit as anchors. With an atomistic approach, individuals are asked to rate a fit dimension for themselves and then separately rate the same fit dimension for the environment.

In this study I take an atomistic approach, because it allows for a nuanced evaluation of congruence between person and environment, whereby the researcher can evaluate the level of the person variable in relation to the level of the environment variable (Cable & Edwards, 2004; Edwards & Cable, 2009). Two approaches have been used to evaluate the joint effects of person and environment, whereby outcomes are evaluated at varying combinations of person-environment congruence. Initially, studies used Euclidian distance scores, evaluating the absolute differences in preferences versus organizational supplies

(O'Reilly et al., 1991). However, difference scores compound the effects of each variable and do not differentiate between the levels (e.g., low, medium, high) in which congruence or incongruence are met (Edwards & Van Harrison, 1993). Today, researchers commonly employ polynomial regression to evaluate three-dimensional relationships of person and environment on a third variable (Edwards & Parry, 1993). The polynomial regression approach enables an evaluation of an outcome variable at varying levels of congruence and incongruence among the main predictor variables of interest.

Person-Job Fit

P-J fit entails the compatibility between the characteristics of the person and the characteristics of their job (Edwards, 1991; Kristof, 1996). There are two types of P-J fit: demands-ability (D-A) fit and need-supply (N-S) fit (Edwards, 1991). D-A fit entails a match between the demands of a job and the KSAOs of the person (French, Caplan, & Van Harrison, 1982; Kristof, 1996). For example, D-A fit may be used by hiring managers in an attempt to gauge a salesperson's ability to satisfy the communicative and social demands of a job opening. N-S fit entails a match between the needs of employees and the resources and rewards supplied within their job. The needs of the employee may be in the form of psychological needs, desires, or preferences, and the supplies of the environment may include a variety of job factors, such as compensation, security, challenge, relationships, or flexibility, to name a few (Cable & Edwards, 2004). Meta-analytic evidence suggests that need-supply congruence is strongly associated with increased job satisfaction and organizational commitment and decreased

intentions to quit (Kristof-Brown, Zimmerman, & Johnson, 2005). Locke (1976) suggests that an employee's degree of job satisfaction is related to the extent to which a job fulfills the needs of the employee. Similarly, Dawis and Lofquist's (1984) theory of work adjustment suggests that job satisfaction is a result of the subjective evaluation of the job meeting an employee's preferences. Additionally, theories of well-being have applied the N-S fit perspective, suggesting that an employee's cognitive appraisal of the fit between environmental characteristics and personal characteristics determines well-being and/or lack of stress (Caplan, 1983; French et al., 1982; Harrison, 1978).

This study takes a N-S fit approach, using work characteristics as the dimension of interest for both the need and supply. I suggest that preferences for the three work characteristics: task, knowledge, and social (Morgeson & Humphrey, 2006) align with the three innate psychological needs: autonomy, competence, and relatedness (Ryan & Deci, 2000), respectfully. In terms of work supplies, this study is not concerned with secondary work characteristics such as pay, promotion, or prestige, but with the primary work characteristics—task, knowledge, and social— which are omnipresent in all jobs (Morgeson & Humphrey, 2006).

Needs Theories

In order to make connections regarding the effects of needs-supply congruence within work design, it is important to explain the background of needs. Needs are defined as:

“a construct (a convenient fiction or hypothetical concept) that stands for a force (the physico-chemical nature of which is unknown) in the brain region, a force that organizes perception, appreciation, intellection, conation and action in such a way as to transform in a certain direction an existing, unsatisfying situation”
(Murray, 1938, pp. 123-124).

The first need fulfillment studies were physiological in nature (e.g., food and water: Hull, 1943), but this perspective did not explain behaviors outside of essential needs such as curious exploration and play. This led to studies attempting to understand how psychological needs initiate action and included broad concepts such as motives, goals, and desires (Murray, 1938). Maslow's (1943) need hierarchy became one popular perspective, which suggests that more basic needs must be fulfilled before higher-order needs (e.g., from basic to higher-order: physiological, safety, social, esteem, and self-actualization). Alderfer (1969) used condensed categories, such as existence, relatedness, and growth to offer explanations for satisfaction or frustration of needs. Eventually, in an attempt to explain why employees flourished and/or were more effective, needs theories were incorporated into management research (Argyris, 1957; Herzberg, Mausner, & Snyderman, 1959; McGregor, 1960). Today, perhaps the most prominent and empirically supported perspective of need fulfillment in organizational settings is SDT. I now elaborate on SDT and explain its role in my proposed model.

Self-Determination Theory

SDT proposes that three needs: autonomy, competence, and relatedness, are “innate psychological nutrients that are essential for ongoing psychological growth, integrity, and well-being” (Deci & Ryan, 2000, p. 229). The need for autonomy involves feelings of choice and self-determined actions (Deci, 1975), the need for competence involves engaging and succeeding in optimally challenging tasks (Skinner, 1975), and the need for relatedness involves feelings of interconnectedness and reliance on others (Baumeister & Leary, 1995). SDT also proposes that humans are “active, growth-oriented organisms who are naturally inclined toward integration of their psychic elements into a unified sense of self and integration of themselves into larger social structures” (Deci and Ryan, 2000, p. 229). Thus, SDT is a motivational theory that suggests humans strive to attain and maintain the fulfillment of these psychological needs through their environments (Deci & Ryan, 1985). Need fulfillment leads to optimal functioning, well-being, and intrinsic motivation (Deci & Ryan, 1985; 2000), while unfulfilled needs lead to feelings of frustration and strain that may lead to self-protective behavior or attempts to make environmental changes that enable need fulfillment (Ryan, Deci, & Grolnick, 1995; White, 1963).

The need for autonomy involves the need to feel as if actions are self-determined (Deci, 1975) and involves the desire to participate in activities that serve inner interests (Deci & Ryan, 2000; Ryan & Deci, 2000). Employees are likely to react favorably when they prefer a certain level of decision making autonomy and then receive this level of discretion through the characteristics of

their job because their autonomy needs have been optimally fulfilled. The need for competence involves the need to feel as if activities pursued are novel and optimally challenging (Harter, 2009). Pursuing novel events satisfies an innate need to grow and develop in order to survive and thrive within our environments (White, 1963). Participating in optimally challenging activities entails pursuit of activities that are challenging, but not impossible, ensuring growth without unnecessary risk of failure (White, 1963). Employees are likely to react favorably when they prefer a certain level of challenge or specialization in their work and then receive a matching amount because their needs for competence have been satisfied. The need for relatedness involves the need to experience interaction with others which involves opportunities to feel cared for by others (Patrick, Knee, Canevello, & Lonsbary, 2007) and feel as if one belongs (Baumeister & Leary, 1995). Employees are likely to react favorably when they prefer and receive their ideal level of social support and interdependence because their relatedness needs have been satisfied.

Psychological States Resulting from Congruence

I expect that varying forms of work characteristics need-supply congruence are related to psychological empowerment; a psychological state that embodies the engaged and active orientations that result from operating in one's preferred work environment. Empowerment was first conceived from a psychological perspective by Conger and Kanungo (1988), who integrated effort-performance expectancy theories to explain how individuals could exhibit more initiative due to increased self-efficacy. Thomas and Velthouse (1990) built upon

this framework and created a theoretical model that defined psychological empowerment as a type of intrinsic motivation surfacing through four cognitions: meaning, choice, competence and impact. Using this conceptualization, Spreitzer (1996) developed a multi-dimensional measure of psychological empowerment and defined the construct as intrinsic task motivation manifesting in four cognitions: meaning, competence, self-determination, and impact (Spreitzer, 1995). Meaning refers to the alignment between the demands of one's work role and one's own beliefs, values, and standards (Hackman & Oldham, 1980). Self-determination is one's sense of choice concerning the initiation or regulation of one's actions (Deci et al., 1989). It reflects a sense of autonomy over the initiation and continuance of work behaviors. Competence refers to one's self-efficacy specific to one's work, and the belief in one's capability to perform work activities with skill (Bandura, 1989; Lawler, 1973). Finally, impact is one's belief that one can influence strategic, administrative, or operational activities and outcomes at work (Abramson et al., 1978). Together these four cognitions form a gestalt and latent construct of psychological empowerment (Spreitzer, 1995; Seibert, Wang, & Courtright, 2011).

Self-determination theory suggests that human beings are "active, growth-oriented organisms" who seek a "unified sense of self and integration of themselves into larger social structures" (Deci & Ryan, 2000, p. 229). When individuals experience unfulfilled psychological needs their unified sense of self is threatened because their need preferences are not fulfilled. Not receiving enough of a preferred characteristic or receiving too much of a characteristic can

be considered a *stressor*, which is when individuals feel they do not have the capacity to successfully handle the burdens of their situation (Lazarus, 1991). Research suggests that stressors lead to psychological strain (Lazarus, 1991; Lazarus & Folkman, 1984), whereby the individual has feelings of anxiety, stress, exhaustion, or somatic symptoms (French et al., 1982). In total, psychological empowerment and psychological strain may act as linking mechanisms between varying forms of work characteristics congruence and active employee behaviors. I now discuss how these varying forms of work characteristics need-supply congruence are related to active job-related behaviors through these psychological mechanisms.

Congruence and Active Employee Outcomes

Task characteristics, such as work methods autonomy and decision making autonomy, are particularly concerned with the amount of discretion and latitude available in an employee's work (Morgeson & Humphrey, 2007). Being able to self-determine how work is conducted should be associated with the extent to which employees engage in self-initiated or proactive behaviors. Proactivity entails engaging in future oriented behaviors, showing initiative, generating ideas for organizational improvements, and finding better ways of completing work (Crant, 2000; Griffin et al., 2007). Prior research suggests that when jobs are structured in ways that allow for more control and freedom, employees are more likely to feel capable of taking on broader job roles, which then leads to more proactive behaviors (Parker, 2000). Yet to be investigated, however, is how individual preferences for control and freedom interact with these work

characteristics to affect proactive behaviors. I suggest that if employees receive their preferred amount of discretion and latitude they will be more likely to engage in work initiatives that go beyond structured and pre-determined work tasks because they have more options and less constraints for self-initiated behaviors. In turn, I investigate the mechanisms through which congruence, oversupply, and undersupply of task characteristics are associated with proactive performance behaviors.

Knowledge characteristics, such as job complexity and specialization, involve the extent to which work requires depth of knowledge and a pursuit of intellectual challenge (Morgeson & Humphrey, 2007). If employees receive their preferred amount of challenge or expertise they may attempt to apply their unique knowledge through creative outlets, such as participating in innovative behaviors. Individual innovation is a process, starting with problem recognition, then generation of creative ideas for overcoming or circumventing the problem, followed by building momentum towards implementing solutions through consensus building and developing a model for implementation (Kanter, 1988). For the purposes of this study, I focus on specific innovative behaviors that can take place throughout the innovative process, including generating creative ideas to improve the effectiveness or performance of the organization and the implementation of these ideas through actionable initiatives (Scott & Bruce, 1994). Prior research suggests that the people, policies, and norms within an organization can create a climate for innovation, which is associated with idea generation and initiating change (Amabile & Gryskiewicz, 1989; Oldham &

Cummings, 1996; Scott & Bruce, 1994). To date, no research has investigated how these organizational factors match the preferences of individuals to affect innovative behaviors. In turn, I investigate the mechanisms through which congruence, oversupply, and undersupply of knowledge characteristics are associated with innovative behaviors.

Social characteristics, such as social support and interdependence, entail the social interactions and relationships among co-workers (Morgeson & Humphrey, 2007). If employees receive their preferred amount of social support from co-workers, or preferred amount of interdependence among co-workers, they are likely to view these interrelations favorably and reciprocate with a positive orientation towards these co-workers (Blau, 1964). This positive orientation towards co-workers may be in the form of citizenship behaviors, which include actions that are “discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate, promotes the efficient and effective functioning of the organization” (Organ, 1988, p. 4). Citizenship behaviors may be targeted toward the organization (OCBO) or co-workers (OCBI) (Lee & Allen, 2002; Williams & Anderson, 1991). Behaviors associated with OCBO include representing and protecting the organization’s interests, while behaviors associated with OCBI include showing a genuine concern for co-workers by engaging in supportive and helpful activities directed towards those co-workers (Lee & Allen, 2002; Williams & Anderson, 1991). Prior research suggests that organizational characteristics such as increased flexibility and decreased formality (Podsakoff, MacKenzie, Paine, & Bachrach, 2000) and job

characteristics such as increased autonomy and task significance (Piccolo, Greenbaum, Hartog, & Folger, 2010), is generally associated with OCBs. To date, however, no research has investigated the joint effects of individual preferences and job supply of work characteristics on OCBs. I suggest that because social support and interdependence involve interrelations among co-workers, social characteristics are likely associated with OCBI, as opposed to OCBO. In turn, I investigate the mechanisms through which congruence, oversupply, and undersupply of social characteristics are associated with OCBI.

Psychological empowerment may help explain why work characteristics congruence, oversupply and undersupply eventuate in active employee outcomes. Psychological empowerment theory suggests that employees are likely to participate in active employee behaviors because they feel self-deterministic in their work choices and competent in their capabilities, and they view their work as meaningful and impactful on the organization (Spreitzer, 1995). As such, psychologically empowered employees should engage in the same active behaviors (e.g., proactivity, innovation, and OCBI), because they are intrinsically motivated to go above and beyond the customary task performance behaviors.

Employees experiencing an unpleasant reaction to a stressor (e.g., psychological strain) may cause them to attempt to minimize the negative emotional impact of the stressor by behaving in ways that distance themselves from the situation causing the stressor (Folkman, Lazarus, Gruen, & DeLongis, 1986; Lazarus & Folkman, 1984). Employees may attempt to minimize the negative reaction (e.g., psychological strain) from their unfulfilling work by

meeting only the minimum requirements of their job and refraining from any extra effort or self-initiated tasks. Thus, by participating less in active employee behaviors, such as proactivity, innovation, and OCBI, employees are coping with unfulfilled needs because they are reducing their engagement with work tasks that cause psychological strain.

Alternatively, employees may seek ways to proactively change the supply of work characteristics in order to obtain their preferred amount of the work characteristics. Tims and Bakker (2010) suggested that P-J misfit is likely to lead to a specific kind of job change behavior; job crafting. Job crafting is defined as “self-initiated change behaviors that employees engage in with the aim to align their jobs with their own preferences, motives, and passions” (Tims, Bakker, & Derks, 2012, p. 173). Job crafting represents a behavior that is proactive and productive (Grant & Ashford, 2008) and is likely triggered by a desire for need fulfillment, finding meaning in work, and identifying with work (Wrzesniewski & Dutton, 2001).

Job crafting theory suggests that the motivation to job craft is based on an innate desire to fulfill three psychological needs: control over work, maintenance of a positive self-image, and interconnectedness with others (Wrzesniewski & Dutton, 2001). Job crafting theory closely resembles self-determination theory. Employees job craft their task characteristics by altering the control over their work in order to satisfy their need for autonomy (Leana, Appelbaum, & Shevchuk, 2009). Similarly, crafting knowledge characteristics may facilitate a positive self-image and satisfy needs for competence (Berg, Wrzesniewski, &

Dutton, 2010; Lyons, 2008). Finally, job crafting social characteristics by managing the amount and form of interconnectedness with others may satisfy needs for relatedness (Berg et al., 2010). In total, job crafting theory suggests that when undersupply of work characteristics is present, employees seek to proactively alter the characteristics of their work in order to fulfill their needs.

I suggest that psychological strain is a precursor to job crafting and a linking mechanism between undersupply and job crafting. When employees experience strain from unfulfilled psychological needs, they are likely to participate in job change behaviors so that they can resolve the source of the strain. Thus, psychological strain serves as the catalyst between experiencing undersupply of work characteristics and proactive, job change behaviors.

In summary, I suggest that the impact of work design on motivation is incomplete. Research considering the motivating effects of work characteristics should consider the joint effects of individual preferences and job supply of work characteristics. Studying the joint effects may offer additional insight regarding why employees engage in motivated behaviors, beyond what supply-only work characteristics studies can explain. Additionally, work design research is just beginning to explore more proactive forms of employee performance (Grant et al., 2010). SDT suggests that fully volitional and active-oriented behaviors are likely to result when employees' needs are psychological fulfilled (Deci & Ryan, 2000; Ryan & Deci, 2000). Thus, studying the relationship between work characteristics congruence — a reflection of psychological need fulfillment — may help explain why employees engage in active behaviors. Additionally, prior P-E fit research

suggests that the relationship between fit and motivation and/or motivated behaviors, is relatively weak (Kristof-Brown et al., 2005). However, no studies to date have directly tested a variety of work characteristics as job supplies that may fulfill the psychological needs of employees. Thus, studying P-J, N-S fit of work characteristics offers a novel perspective on why fit leads to motivational states and active employee outcomes.

CHAPTER 3: HYPOTHESIS DEVELOPMENT

Joint Effects of Work Characteristics Need-Supply Congruence

This dissertation offers a more comprehensive approach for investigating the motivational effects of work characteristics by evaluating the joint effects of job supplied work characteristics and individual needs for work characteristics. With respect to employee motivation, I propose that it will be more informative to test the degree to which a job offers increasing levels of work characteristics in coordination with the degree to which the individual prefers the work characteristics. Thus, the goal of this chapter is to explain why varying forms of congruence eventuates in active employee behaviors through psychological mechanisms.

The study of congruence may offer an explanation for why employees are motivated even though they are supplied with a low amount of motivational work characteristics (Hackman & Oldham, 1980). If employees prefer a low amount of work characteristics, receiving a low supply of the work characteristics may lead to beneficial employee outcomes because their need is being fulfilled. Second, the study of congruence may offer an explanation for why employees are not motivated even though they are supplied with a high amount of motivational work characteristics. If employees prefer a low amount of work characteristics, receiving a high supply of the work characteristics may lead to detrimental employee outcomes because their preferences are not being met (Edwards, 1996). The study of congruence may be important for work design because it represents the fulfillment of psychological needs; a phenomenon that triggers psychological

states that can be used to explain why work design leads to proactive behaviors, innovative behaviors, and OCBI. Conversely, studying congruence may be important for work design because it may trigger psychological stressors that adversely affect active employee behaviors or result in active job change behaviors. Thus, studying the joint effects of employees and jobs may inform work design theory by highlighting psychological mechanisms that lead to employee outcomes. Additionally, prior research in work design has primarily focused on task proficiency behaviors and job attitudes as outcomes of work characteristics supply (Humphrey et al., 2007). Studying work design from a congruence perspective facilitates the study of motivational factors and how these mechanisms eventuate in active employee behaviors.

Again, the goal of this chapter is to explain why varying forms of work characteristics need-supply congruence leads to active job-related behaviors through psychological mechanisms. To do so, I address three work characteristics categories: task characteristics (e.g., work methods autonomy and decision making autonomy), knowledge characteristics (e.g., job complexity and specialization), and social characteristics (e.g., social support and interdependence). First, I explain how and why work characteristics congruence, oversupply, and undersupply of work characteristics affect psychological empowerment. Second, I explain how and why congruence, oversupply, and undersupply of work characteristics affect psychological strain. Third, I explain how and why congruence, oversupply, and undersupply of work characteristics influence active employee performance behaviors through psychological

empowerment. Fourth, I explain how and why work characteristics undersupply influences active employee performance behaviors and active job change behaviors through psychological strain. See Figure 1 for an illustrative framework of the proposed relationships between work characteristics congruence, psychological mechanisms, and active job-related behaviors.

Task Characteristics

The task characteristics of a job entail how the work itself is accomplished. Two important task characteristics facets include work methods autonomy and decision making autonomy (Morgeson & Humphrey, 2006). Work methods autonomy is the extent to which an employee has discretion in deciding the methods by which the work tasks are completed (Morgeson & Humphrey, 2006; Wall et al., 1995). Decision making autonomy is the freedom and independence an employee has when making decisions at work (Morgeson & Humphrey, 2006; Wall et al., 1995). An employee's preference for receiving these task characteristics of work methods autonomy and decision making autonomy can be compared to the amount the employee receives from their job through the concept of congruence.

Task Characteristics Congruence

Task characteristics congruence occurs when an employee's job supplies his or her preferred amount of autonomy in making work task decisions and work method decisions. Prior research suggests that job and organizational characteristics that induce feelings of autonomy, such as flat organizational structures, high-involvement systems, and participative decision making, are

strongly associated with manifestations of empowerment (Lawler, 1992; Seibert et al., 2011; Spreitzer, 2008). However, feelings of empowerment should result from an optimal match between the employee's preference and job supply of autonomy, as opposed to simply receiving a high amount of autonomy.

One important element of psychological empowerment, self-determination, considers the extent to which individuals feel that they have crafted an environment that meets their intrinsic preferences (Ryan & Connell, 1989). Indeed, more discretion may enable them to have more opportunities to create this self-determined environment. However, manifestations of self-determination are less concerned with the amount of discretion received and more concerned with the extent to which employees receive the amount of autonomy they have self-determined as most fulfilling, which may fluctuate between low and high amounts (Deci & Ryan, 2000).

When employees have their preferred level of autonomy, they should feel comfortable with the latitude they have been given in making decisions. Instead of feeling constrained by a lack of autonomy or overwhelmed by too much autonomy, employees should feel an optimal balance between the two that allows them to feel competent in their work (Lynch, Plant, & Ryan, 2005). Additionally, employees who have their preferred level of autonomy are likely to feel that they will be successful in making an organizational impact because they have the optimal amount of decision making capacity that allows them to make a difference, yet not feel incapable and confused due to lack of direction. In

summary, employees are likely to form a sense of psychological empowerment when receiving their preferred amount of autonomy.

Need fulfillment at high levels of task characteristics, however, may be different than need fulfillment at low levels of task characteristics. Employees who prefer and receive high levels of task characteristics may have a heightened sense of accomplishment because high autonomous needs indicate ambitious aspirations (Edwards & Rothbard, 1999). Additionally, employees who prefer high levels of autonomy prefer to play a significant role in influencing organizational outcomes (Hackman & Oldham, 1980), and when the organization supplies these opportunities to significantly impact organizational outcomes, employees will feel as if their work is essential to organizational success (Hackman & Oldham, 1976). Thus, the relationship between congruence and psychological empowerment should be stronger when employees prefer and obtain a high amount of task characteristics as opposed to when employees prefer and obtain a low amount.

Hypothesis 1a: Task characteristics congruence is positively related to psychological empowerment and the effects are stronger at high as opposed to low levels of the work characteristics.

When the job supply of task characteristics is more than the employee's preferred amount, this represents an oversupply of work characteristics. In this situation, employees receive more than enough task characteristics to meet their autonomous needs. Employees likely take comfort in knowing they have a modest level of additional discretion because the additional control may be needed

sometime in the future (Folkman, 1984; Shipp & Jenson, 2011). Thus, the excess discretion acts as a buffer in case future organizational mandates reduce the amount of supplied autonomy. Alternatively, however, the effects of oversupply may eventually become detrimental when the discrepancy is substantial (Edwards & Rothbard, 1999). If employees receive an excessive amount of autonomy that is far beyond their needs, this may equate to inadequate guidance (Bonaccio & Dalal, 2006) and limited feedback on the accuracy of their decisions (Dalal & Bonaccio, 2010), making it difficult to know if their judgments meet the expectations of others (Ashford & Cummings, 1983). I therefore propose the following:

Hypothesis 1b: Oversupply of task characteristics will have an inverted U-shaped relationship with psychological empowerment such that psychological empowerment will be highest at moderate levels of oversupply.

Receiving less task characteristics supply than preferred is likely to have a detrimental effect on employee motivation. Employees who are not given their preferred level of discretion are unable to complete work in a way that they self-determine as appropriate or fulfilling (Deci et al., 2001). Additionally, feelings of competence may decline if employees believe they are capable of making their own decisions, yet they are not given opportunities to carry out these decisions (Deci et al., 2001). Finally, employees should have reduced feelings of impactfulness because while they strive to be involved in the strategic direction of the organization, they are not given opportunities to do so (Liao, Toya, Lepak, &

Hong, 2009). Thus, task characteristics undersupply is likely to lead to reduced manifestations of psychological empowerment.

The extent to which task characteristics supply is less than need is likely to affect employee motivation. If employees are receiving much less discretion than what they prefer they may assume that it is unlikely that the organization's approach to managing human capital could ever be successfully changed to include high-involvement, autonomous work design (Wanous, Reichers, & Austin, 2000). This extreme discrepancy may lead employees to completely disengage from finding meaning and purpose in their work because they perceive that overcoming the discrepancy is insurmountable. On the other hand, employees may view slight adjustments to decision making control as feasible. Thus, if the supply of task characteristics is slightly below need, employees may perceive that there is a reasonable chance that they will eventually reach need fulfillment and continue to seek out opportunities to participate in self-determined and meaningful work. In summary, in regards to undersupply, as the discrepancy between need and supply increases, employees will have a stronger decrease in psychological empowerment.

Hypothesis 1c: Undersupply of task characteristics is negatively related to psychological empowerment and the effects are stronger when the discrepancy increases.

If employees are not receiving their preferred level of task characteristics then they will feel as if their autonomous needs are not being fulfilled (Deci & Ryan, 1985). These employees do not have the control they need to feel secure as

they operate within their work environment. Experiencing this lack of control and security represents a stressor, whereby the individual does not have enough resources to handle the demands of their environment (Lazarus & Folkman, 1987). Thus, receiving less task characteristics than preferred is a stressor, which initiates forms of psychological stress in employees, such as reduced well-being (Baard et al., 2004; Diener, 1984; Ilardi et al., 1993) and psychological health (Deci et al., 2001; Kasser & Ryan, 1999).

Employees who prefer high levels of task characteristics have a strong desire for autonomous control. Employees' receiving this high amount of autonomy have fulfilled needs, but they are also equipped with more resources for dealing with stress because they are supplied with a substantial amount of discretion in how to approach their work (Karasek, 1979). Receiving this high level of discretion offers opportunities to reduce stressful work stimuli because they have the discretion to make changes as needed (Jackson & Schuler, 1985). Alternatively, employees who prefer low levels of autonomy have a more modest need for autonomous control. Receiving this low amount of autonomy means their needs are fulfilled, but they are not receiving a substantial amount of discretion in their work. These individuals may be constrained in their ability to deflect stress-related stimuli because they do not have the discretion to do so (Spector, 1986). Thus, individuals receiving their preferred high amount of autonomy should have lower amounts of strain than those receiving their preferred low amount of autonomy.

Hypothesis 2a: Task characteristics congruence is negatively related to psychological strain and the effects are stronger at high as opposed to low levels of the work characteristics.

When the job supply of task characteristics is more than the employee's preferred amount, this represents oversupply of work characteristics. In this situation, employees receive an amount of work method and decision making autonomy that goes beyond their autonomous needs. A modest level of task characteristics oversupply is likely to be considered a resource that may be useful in the future (Edwards & Rothbard, 1999; Shipp & Jenson, 2011). Employees are likely to experience little psychological strain from the modest level of excess supply because they have a buffer of additional control that may be useful in overcoming future events (Elsass & Veiga, 1997; Folkman, 1984). Alternatively, however, the effects of task characteristics oversupply may eventually become detrimental when the discrepancy is substantial (Edwards & Rothbard, 1999). If employees receive an excessive amount of autonomy that is far beyond their needs they will be uncomfortable with the discretion that accompanies the excessive task characteristics (Ashford & Cummings, 1983). Excessive oversupply then becomes a psychological burden because the employee is fraught with anxiety about the excessive level of responsibility (De Jonge & Schaufeli, 1998; Martin & Wall, 1989). I therefore propose the following:

Hypothesis 2b: Oversupply of task characteristics will have a U-shaped relationship with psychological strain such that psychological strain will be lowest at moderate levels of oversupply.

Employees experiencing undersupply, whereby they receive less task characteristics than what they prefer, will become discouraged because they are unable to complete work in ways that they feel is effective or suitable to their skill-set (Spector, 1986). Additionally, employees will become frustrated because their job does not allow them to fully exhibit their knowledge or talents. In support, employees who perceive that their needs for autonomy are unfulfilled experience higher levels of anxiety and depression (Baard et al., 2004) and overall mental health (Ilardi et al., 1993). Additionally, as the discrepancy between need and supply becomes more discrepant, the employee has a larger need-supply gap to overcome. The larger this discrepancy the more likely the employees will feel psychologically strained because they perceive that the discrepancy will be insurmountable or extremely challenging to overcome (French et al., 1982). Thus, as supplies fall further below the amount of needs, the employee's level of psychological strain will increase.

Hypothesis 2c: Undersupply of task characteristics is positively related to psychological strain and the effects are stronger when the discrepancy increases.

Knowledge Characteristics

The knowledge characteristics of a job entail the KSAOs that a job demands from the incumbent. I focus on two knowledge characteristics facets in the current study: job complexity and specialization. Job complexity is the extent to which job tasks are difficult and mentally challenging (Edwards et al., 2000; Morgeson & Humphrey, 2006). Specialization is the extent to which job tasks

require unique KSAOs to successfully complete work (Campion, 1988; Edwards et al., 1999; Morgeson & Humphrey, 2006). An employee's preference for receiving these knowledge characteristics facets of job complexity and specialization can be compared to the amount the employee receives from their job through the concept of congruence.

Knowledge Characteristics Congruence

Knowledge characteristics congruence means that employees prefer a specific amount of challenge or specialization in their work tasks and they are receiving a matching amount given the task requirements of the job. Receiving a commensurate supply of job complexity or specialization should lead to manifestations of competence because employees feel capable of satisfying the job's obligatory level of specialized knowledge and expertise (Gist, 1987). Additionally, the amount of job complexity and specialization is likely to be an important element of an employee's work identity (Ashforth & Mael, 1989). When the job matches this preference for knowledge characteristics it supports the employees' ability to exhibit their identity. Thus, experiencing congruence may cause employees to feel as if their work is intrinsically fulfilling and personally meaningful because they strongly identify with the work being conducted (Hackman & Oldham, 1976). Similarly, employees who are supplied opportunities to apply their preferred level of expertise are likely to perceive that their work is appreciated by the organization and considered essential for the overall functioning of the organization, leading to manifestations of impactfulness (Spreitzer, 1996).

Employees attaining supplies that fulfill high preferences for knowledge characteristics may yield a sense of accomplishment because a high need for competence represents strivings for increased challenge (Edwards & Rothbard, 1999). Receiving fulfillment of these high aspirations is likely to yield a stronger effect on psychological empowerment than at lower levels of knowledge characteristics because employees may feel more involved in the intricacies of the organizational process (Lawler, 1973). Individuals who want and receive opportunities for challenging work should feel as if they are contributing to organizational initiatives at a higher level of impactfulness and meaningfulness than those receiving modest levels of complexity and specialization (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005). I therefore propose the following:

Hypothesis 3a: Knowledge characteristics congruence is positively related to psychological empowerment and the effects are stronger at high as opposed to low levels of the work characteristics.

An employee's reaction to receiving an oversupply of knowledge characteristics is likely to depend upon the amount of the discrepancy. Employees receiving a modest amount of knowledge characteristics oversupply may feel psychologically empowered because it signals that challenging opportunities will be available in the future. Thus, modest levels of oversupply may be perceived by employees as a buffer because they know they will have future opportunities to engage in tasks that they find meaningful or where they feel they could have a significant organizational impact (Tansky & Cohen, 2001). Alternatively, the effects of knowledge characteristics oversupply can be detrimental when the

discrepancy is substantial (Edwards & Rothbard, 1999). Employees receiving excessive oversupply have jobs that encourage participation in overly challenging tasks or tasks that go beyond the employees' level of expertise, reducing their feelings of competence (Karasek, 1979; Warr, 1990). Additionally, excessive oversupply may detract from feelings of self-determination because employees may feel obligated to adapt and pursue more challenging or specialized tasks (Bandura, 1991). Similarly, excessive supply may detract from feelings of impactfulness because employees feel more comfortable contributing to organizational initiatives through less complex and specialized work, yet the organization signals their preference for work at much higher levels. I therefore propose the following:

Hypothesis 3b: Oversupply of knowledge characteristics will have an inverted U-shaped relationship with psychological empowerment such that psychological empowerment will be highest at moderate levels of oversupply.

Research suggests that individuals manifest needs for competence, whereby they are learning, growing, and developing through their exploratory behaviors within their environment (Ryan & Deci, 2000). At the same time, the need for competence entails a desire for mastery and the need to feel capable of success (Harter, 2009). Thus, when employees receive less than their preferred amount of job complexity and specialization they will feel as if they have little self-determined control over their growth (Kelloway & Barling, 1991). Additionally, employees who are unable to exhibit the full extent of their

expertise may feel as though their efforts are less impactful and that their work contributions offer less intrinsic meaning (Edwards & Cooper, 1990).

The amount of discrepancy between an employee's need and the job supply of knowledge characteristics represents different degrees of unfulfilled needs. If employees are receiving much less job complexity or specialization than they prefer, they may assume that it is unlikely for their job to make a drastic change and eventually meet their preferences (Rousseau, 1989). For example, if employees' jobs are designed so that they are responsible for covering a wide variety of tasks, they may perceive that few opportunities will ever exist to work on intricate and narrowly defined job tasks. On the other hand, if there is a small and manageable difference between the amount of need and the amount of supply, employees may believe it is possible to find occasional opportunities for engaging in more complicated initiatives that are related to their core work tasks (Berg et al., 2010), enabling them to get closer to their preferred amount of competence needs. Thus, as the discrepancy between need and supply increases, employees will have a stronger decrease in psychological empowerment.

Hypothesis 3c: Undersupply of knowledge characteristics is negatively related to psychological empowerment and the effects are stronger when the discrepancy increases.

Individuals have an innate need to learn and grown intellectually (Deci & Ryan, 1985). Thus, individuals seek tasks that are challenging, yet attainable, in which they can work towards mastering the task and eventually feel more capable of self-sustainment within their environment (White, 1959). Pursuing these needs

for competence enables employees to feel more comfortable and less anxious about their ability to successfully overcome future obstacles (Deci & Ryan, 2000). At work, employees will strive to master their work environment by engaging in manageable, complex, and specialized tasks in order to further their sense of self-sustainment (Gagne & Deci, 2005). Thus, as employees receive their preferred level of job complexity and specialization, they should have reduced feelings of psychological strain because they are satisfying their needs for competence through learning and growth opportunities.

Employees who prefer high levels of complexity and specialization desire more challenging and detailed work (Morgeson & Humphrey, 2006). Employees receiving this high amount of knowledge characteristics not only have fulfilled needs; they have higher levels of self-esteem because they are successfully engaging in challenging work (Pierce & Gardner, 2004). This sense of confidence is instrumental in helping employees overcome future organizational stressors (Deci et al., 2001). Alternatively, employees preferring and receiving lower levels of knowledge characteristics may be fulfilled, and thus have reduced psychological strain, but they are not embracing opportunities for feelings of self-sustainment, which may give them increased confidence while dealing with future challenging work situations.

Hypothesis 4a: Knowledge characteristics congruence is negatively related to psychological strain and the effects are stronger at high as opposed to low levels of the work characteristics.

An employee's reaction to receiving an oversupply of knowledge characteristics will likely depend upon the amount of the discrepancy. Modest levels of task characteristics oversupply may be a psychological buffer, whereby employees know they will have future opportunities to engage in tasks that enable them to grow and develop so that they can remain as productive and attractive employees (Maurer, Pierce, & Shore, 2002). Thus, employees receiving a modest amount of oversupply may feel less psychological strain because it gives them an additional sense of security that they will continue to receive opportunities for fulfilling competence needs in the future. Alternatively, the effects of oversupply can be detrimental when the discrepancy is substantial (Edwards & Rothbard, 1999). Employees' preferred level of knowledge characteristics signifies the amount of complexity or specialization that they feel is ideal for their skill level, goals, and well-being. Receiving a supply of knowledge characteristics that goes far beyond this preferred level could make employees uncomfortable because they perceive that the job requires them to pursue complex tasks that go beyond their level of skill or pursue specialized tasks that go beyond their expertise (Karasek, 1979, Schaubroeck & Ganster, 1995; Xie & Johns, 1995).

Hypothesis 4b: Oversupply of knowledge characteristics will have a U-shaped relationship with psychological strain such that psychological strain will be lowest at moderate levels of oversupply.

Employees who are not receiving their preferred amount of job complexity or specialization may feel as if they are not offered enough opportunities to challenge themselves. These employees are likely to feel psychologically

frustrated because their desire for growth is not being fulfilled (Baard et al., 2004; Ilardi et al., 1993). In support, research illustrates that when employees perceive that their work tasks are not meeting preferences for development and mastery, they are more likely to report lower levels of well-being and satisfaction (Baard et al., 2004; Ilardi et al., 1993). Additionally, as the difference between need and supply becomes more discrepant, the employee has a larger need-supply gap to overcome. While incremental changes to the amount of complexity or specialization might be possible, changing employees' jobs from high-level generalists to narrowly focused specialists is a major change to an organization's human resource strategy. Thus, the larger this need-supply discrepancy, the more likely employees are psychologically strained because they believe it will be difficult for their job to change drastically enough to reach their high preference for knowledge characteristics (Rousseau, 1989).

Hypothesis 4c: Undersupply of knowledge characteristics is positively related to psychological strain and the effects are stronger when the discrepancy increases.

Social Characteristics

The social characteristics of a job entail the amount and form of interaction with other employees while conducting work. I focus on two social characteristics: social support and interdependence. Social support is the extent to which an employee's work offers opportunities to receive advice or assistance from others (Karasek, 1979; Sims et al., 1976). Interdependence is the extent to which an employee's work is dependent upon the work of others, or the work of

others is dependent upon the employee's work (Kiggundu, 1983). An employee's preference for receiving these social characteristics of social support and interdependence can be compared to the amount the employee receives from their job through the concept of congruence.

Social Characteristics Congruence

Social characteristics congruence means that the employee prefers a specific amount of social support and interdependence with co-workers and the job is supplying a commensurate amount given the requirements or structure of the job. When employees prefer social characteristics at work and they receive these relatedness opportunities, they perceive their work as having intrinsic meaning because they are engaging in rewarding social exchanges with colleagues that they trust and respect (Blau, 1964). Similarly, when employees recognize that their work is interconnected with the well-being or success of others, they feel as if producing a high-quality work product is necessary because they do not want to disappoint others (Spreitzer, 1996; Spreitzer et al., 2005). Alternatively, if employees prefer less interdependent work and they are supplied with a commensurate amount, they fulfill their preference for being self-sustaining and self-competent because their work output is solely dependent upon their individual production (Ryan & Deci, 2000). These employees also fulfill their preference for self-determined action because they are personally responsible for their work and do not need to accomplish work through interacting with others (Gagne & Deci, 2005). In summary, when employees perceive that

their job requires a specific amount of social characteristics that coincides with their preferred amount, they are likely to feel psychologically empowered.

Research suggests that people find their lives to be more meaningful and purposeful the more their lives are interconnected with others (Baumeister & Leary, 1995). Thus, preference for and attainment of high levels of social characteristics may lead to higher levels of meaningfulness because social support and interdependence offer additional opportunities for significant interaction with others. Additionally, employees who prefer and receive high levels of interdependence aspire to play a role within a collective group. Thus, employees' feelings of impactfulness are likely to be higher when completing highly interdependent work, because their influence on organizational outcomes is more powerful through the complementary effects of working as a unit (Van Der Vegt, Emans, & Van De Vliert, 2000). Thus, the relationship between congruence and psychological empowerment should be stronger when employees prefer and receive a high amount of social characteristics as opposed to when employees prefer and receive a low amount.

Hypothesis 5a: Social characteristics congruence is positively related to psychological empowerment and the effects are stronger at high as opposed to low levels of the work characteristics.

An employee's reaction to receiving an oversupply of social characteristics is likely to depend upon the amount of the discrepancy. Modest levels of social support oversupply signifies an excess supply of advice and support, which represents a readily available reservoir of coping resources

(Kessler, Price, & Wortman, 1985) that can be used when needed to bolster the employee's sense of confidence and efficacy (De Rijk et al., 1998). Similarly, modest levels of interdependence oversupply ensures that employees have a reservoir of personal connections that may eventually assist them in contributing to organizational initiatives in ways that they feel are interesting or fulfilling. For example, being supplied with additional opportunities to build connectedness ties ensures employees have avenues available for successfully completing work, thus elevating their manifestations of competence (Burt, 2000). Similarly, modest excess supply of interdependence increases opportunities for bridging connections with others, which may assist employees in discovering organizational initiatives where they find meaning or they feel capable of making a significant impact (Coleman, 1988). Alternatively, the effects of oversupply can be detrimental when the discrepancy is substantial (Edwards & Rothbard, 1999). If colleagues rely upon an employee's work it may lead to reduced self-determination because the employee must stay interconnected and dependent upon the understanding of others (Wong & Campion, 1991). Similarly, if employees are forced to be overly reliant on the work of others it may affect their sense of competence in being able to successfully complete work on their own (Mainiero, 1986). In turn, I propose the following:

Hypothesis 5b: Oversupply of social characteristics will have an inverted U-shaped relationship with psychological empowerment such that psychological empowerment will be highest at moderate levels of oversupply.

Research suggests that individuals manifest needs for relatedness, such that they seek opportunities for collective participation and the comfort and guidance of others within these collectives (Ryan & Deci, 2000). When employees receive less social support than preferred they may be less likely to feel competent in their work because they do not receive the encouragement and guidance that they need (Viswesvaran, Sanchez, & Fisher, 1999). Additionally, when employees receive less than their preferred amount of interdependence they may feel less impactful because they are not participating in accomplishing goals with a collective group, and may feel that their work is less meaningful because they are not seeing how their work product benefits other organizational members (Ashforth & Mael, 1989).

Additionally, the larger the discrepancy between employee need and job supply of social characteristics the greater the amount of unfulfilled needs. If the organization is designed so that all work is done independently the employee may perceive that there may never be opportunities to overcome challenge through the complementary skills of colleagues. Additionally, employees may feel that they have little social support or guidance. Alternatively, if employees are given occasional opportunities to work interdependently and interact socially through collaborative work assignments, then employees may perceive that increasing or decreasing the amount and intensity of the interaction with others as a reasonable possibility. Thus, as the discrepancy between need and supply increases, employees will have a stronger decrease in psychological empowerment.

Hypothesis 5c: Undersupply of social characteristics is negatively related to psychological empowerment and the effects are stronger when the discrepancy increases.

Research suggests that employees experience higher levels of well-being when they are able to interact with co-workers in ways they find comforting and helpful (Sheldon, Ryan & Reis, 1996). Social interaction facilitates coping whereby individuals have the opportunity to feel comforted and emotionally supported (Kessler et al., 1985). Thus, if employees are receiving their preferred levels of social support, then they are likely receiving their preferred amount of advice, guidance, and coping resources (Folkman & Moskowitz, 2000). Additionally, when employees receive their preferred level of interdependence with colleagues, they have heightened well-being because they are receiving an adequate collection of ideas and advice for dealing with work challenges (Bradburn, 1969).

Employees who prefer and receive high levels of social characteristics have resources and social connections available to them that can be used in the future (Burt, 2000). Alternatively, while preferring and receiving a low level of social characteristics is fulfilling, this may lead to fewer available social connections for coping with challenges through support or overcoming challenges through working with others. Thus, preferring and receiving a high level of social characteristics is likely to have a stronger relationship with reduced strain than at low levels of social characteristics.

Hypothesis 6a: Social characteristics congruence is negatively related to psychological strain and the effects are stronger at high as opposed to low levels of the work characteristics.

An employee's reaction to receiving an oversupply of social characteristics is likely to depend upon the amount of the discrepancy. Employees receiving a modest amount of social characteristics oversupply may have less psychological strain because it gives them a reservoir of resources that can be applied in the future. For example, modest levels of social support oversupply ensure employees have ample amounts of guidance and support for coping with issues or obstacles that may occur in the future (Kessler et al., 1985).

Additionally, modest excess supply of interdependence ensures that employees have a variety of social connections that could eventually assist in overcoming obstacles collectively. For example, this excess supply of social connections could lead to obtaining complementary expertise or the ability to support each other through negotiating work role responsibilities. Alternatively, the effects of oversupply can be detrimental when the discrepancy is substantial (Edwards & Rothbard, 1999). Employees that are continually approached by colleagues with advice and ideas may become psychologically frustrated because they are not comfortable with the amount of interpersonal interaction (De Jonge & Schaufeli, 1998). Additionally, employees that are continually supplied with excessive levels of interdependent work may feel forced to rely upon the work of others. This may cause employees to feel psychologically strained because the unpredictable behavior of others makes it difficult to control their work environment

(Schaubroeck & Ganster, 1993). Excessive interdependence also entails others being reliant upon the work product of a focal employee. This unwanted responsibility and accountability towards others may cause employees to feel strained (Martin & Wall, 1989). I therefore propose the following:

Hypothesis 6b: Oversupply of social characteristics will have a U-shaped relationship with psychological strain such that psychological strain will be lowest at moderate levels of oversupply.

Receiving less social support than preferred is likely to be perceived as a stressor because employees feel as if they are not receiving enough guidance or coping resources to deal with daily stressors (Lazarus & Folkman, 1984). The social support of other organizational members should assist in dealing with interpersonal conflicts or overcoming short-term work obstacles (Kessler et al., 1985). Thus, undersupply of social support will lead to unresolved stressors, which coincide with manifestations of psychological strain. Additionally, if employees prefer to be engaged in interdependent work deliverables, yet are not offered these opportunities, they feel unconnected and uninformed of the organization initiatives (Wong & Campion, 1991). In support, studies show that individuals who perceive that their needs for relatedness are unfulfilled are more likely to exhibit psychological strain (Baard et al., 2004; Ilardi et al., 1993).

Additionally, the greater the discrepancy between need and supply of social characteristics, the more likely it is that employees will react negatively to the discrepancy. Employees who need a high level of guidance, coping, and support, yet receive very little, are likely to falter and have difficulty overcoming

obstacles (Kessler et al., 1985). Additionally, a larger discrepancy between needs and supplies signifies a major difference in the organization's design in regards to designing work groups and offering opportunities for formal and informal interaction. Thus, employees may perceive that it is unlikely that the job will ever be altered to mirror the amount they feel is adequate, furthering manifestations of psychological strain (Rousseau, 1989). In turn, I propose the following:

Hypothesis 6c: Undersupply of social characteristics is positively related to psychological strain and the effects are stronger when the discrepancy increases.

Work Characteristics Congruence to Active Outcomes

Thus far, I have discussed how congruence, oversupply, or undersupply of specific work characteristics initiates a psychological reaction of empowerment or strain. These states are also likely to act as motivational linking mechanisms between the joint effects of individual need and job supply of work characteristics and a variety of active employee behaviors (Kristoff-Brown & Guay, 2011).

First, I expect that the congruence, oversupply, and undersupply of task characteristics are positively related to proactive behaviors through the motivational state of psychological empowerment. Task characteristics entail the amount of discretion and latitude available in an employee's work (Wall et al., 1995). If employees receive their preferred amount of discretion and latitude they will be more likely to engage in work initiatives that go beyond structured and pre-determined work tasks, such as self-starting, future oriented, proactive behaviors. In turn, I investigate the mechanisms through which the varying forms

of task characteristics congruence are associated with proactive performance behaviors.

Second, I expect that congruence, oversupply, and undersupply of knowledge characteristics are related to innovative behaviors through psychological empowerment. Knowledge characteristics entail the extent to which work requires depth of knowledge and a pursuit of intellectual challenge (Campion, 1988; Edwards et al., 2000). If employees receive their preferred amount of challenge or expertise they will participate in work behaviors that enable them to apply their intricate understanding of the work through innovative behaviors, such as the generation and implementation of creative ideas (Scott & Bruce, 1994). In turn, I investigate the mechanisms through which the varying forms of knowledge characteristics congruence are associated with innovative behaviors.

Third, I expect that congruence, oversupply, and undersupply of social characteristics are related to OCBI through the motivational states of psychological empowerment. Social characteristics entail the social interactions and relationships among co-workers (Karasek, 1979; Kiggundu, 1983). If employees receive their preferred amount of social support from co-workers, or preferred amount of interdependence among co-workers, they are likely to favorably reciprocate with OCBI, such as showing a genuine concern for co-workers by engaging in supportive and helpful activities directed towards those co-workers (Lee & Allen, 2002; Williams & Anderson, 1991). In turn, I

investigate the mechanisms through which varying forms of social characteristics congruence are associated with OCBI.

Experiencing psychological strain is likely to drain the necessary psychological resources (Lazarus, 1991) for participation in active employee performance behaviors, such as proactive behaviors, innovative behaviors, and OCBI. Thus, psychological strain is likely a linking mechanism between undersupply of task characteristics and proactivity, undersupply of knowledge characteristics and innovativeness, and undersupply of social characteristics and OCBI. Additionally, experiencing psychological strain may also relate to job crafting behaviors. Experiencing strain may act as a behavioral trigger, whereby the employee attempts to alter their work environment through job crafting in order to abate the source of their stressor. Thus, psychological strain is likely a linking mechanism between undersupply of work characteristics and job crafting behaviors. In the following sections I offer more detailed arguments for the mediating role of psychological states between the varying forms of work characteristics congruence and active employee outcomes.

Task Characteristics Congruence and the Mediating Role of Psychological Empowerment

Prior empirical research supports psychological empowerment theory (Spreitzer, 1995; Spreitzer, 2008; Thomas & Velthouse, 1990), which suggests that there is a positive relationship between employee psychological empowerment and job-related performance outcomes (Seibert et al., 2011). When employees experience psychological empowerment they feel intrinsically

motivated and have an active orientation towards work, which facilitates proactive job-related performance behaviors (Spreitzer, 1995; Thomas & Velthouse, 1990).

First, empowered employees value being in control and taking charge, and therefore view being proactive as a vital contribution to facilitating proper organizational functioning (Morrison & Phelps, 1999). Second, empowered employees view their work as important and meaningful, and therefore feel responsible for organizational outcomes (Hackman & Oldham, 1980). This sense of responsibility compels employees to participate in self-starting, future-oriented activities that support the future sustainability of the organization (Spreitzer et al., 2005). Third, empowered employees feel as if their work plays a vital role in organizational outcomes, and therefore feel invested in the success of the organization (Spreitzer, 1995). Fourth, empowered employees are confident that they will be successful and believe that they will overcome obstacles that arise when dealing with new initiatives (Frese & Fay, 2001; Parker, 2000). In total, psychological empowerment will be associated with being more proactive (Spreitzer, 2008) because employees feel more capable, confident, and interested in initiating more effective ways for completing work.

As I argued above, task characteristics congruence is related to psychological empowerment because employees feel more confident and/or experience or perceive more meaning in their work. Employees experiencing task characteristics congruence are also more likely to participate in proactive behaviors, through their heightened levels of psychological empowerment.

Employees experiencing task characteristics congruence find ways to improve the way their job is conducted, given that they strongly believe that their improvement initiatives are useful to the organization. Additionally, employees experiencing task characteristics congruence will proactively seek solutions to difficult job-related problems because they are more confident in their abilities. In summary, psychological empowerment links task characteristics congruence to proactivity because it alters the employees' cognitive orientation towards recognizing the importance and fulfillment from being involved and active, which cause an increase in proactive behaviors. In turn, I propose the following:

Hypothesis 7a: Task characteristics congruence is positively related to proactivity through psychological empowerment, and the effects are stronger at high as opposed to low levels of the work characteristics.

As I argued above, modest levels of task characteristics oversupply leads to heightened levels of psychological empowerment, while excessive levels of task characteristics oversupply reduces levels of psychological empowerment. Task characteristics oversupply is likely to have the same pattern of relationship with proactive behaviors, through their manifestations of psychological empowerment. Employees experiencing modest levels of task characteristics oversupply likely participate in proactive problem-solving, given their heightened sense of confidence in their abilities from the additional sense of control and security. Employees experiencing excessive levels of task characteristics oversupply are less likely to participate in altering the nature of the job tasks

because they are unsure of the appropriate actions given the lack of guidance from excessive autonomy. In turn, I propose the following:

Hypothesis 7b: Oversupply of task characteristics will have an inverted U-shaped relationship with proactivity through psychological empowerment such that proactivity will be highest at moderate levels of oversupply.

As I argued above, an undersupply of task characteristics reduces psychological empowerment because employees are less able to self-determine their work tasks or pursue initiatives they find meaningful and impactful. Employees experiencing task characteristics undersupply are also less likely to participate in proactive behaviors, through their reduced levels of psychological empowerment. Employees experiencing task characteristics undersupply will be less likely to improve the nature of their work tasks given that they have reduced feelings of confidence in their abilities and reduced perceptions that they can make a significant impact on their organization. In summary, psychological empowerment links task characteristics undersupply to proactivity because it alters the employees' perceptions of whether they are capable of making productive change. In turn, I propose the following:

Hypothesis 7c: Undersupply of tasks characteristics is negatively related to proactivity, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological empowerment.

Task Characteristics Congruence and the Mediating Role of Psychological Strain

Prior research suggests that employees are less motivated to participate in organizational initiatives when experiencing psychological strain from role stressors (e.g., overload and conflict) (Bowling & Eschleman, 2010; Chen & Spector, 1992) and interpersonal stressors (Bowling & Beehr, 2006; Bowling & Eschleman, 2010; Penney & Spector, 2005). This reduction in participating in proactive, job-related initiatives is due to the fact that experiencing psychological strain through anxiety or somatic symptoms drains employee energy (Lazarus, 1991). Instead of participating in productive, future-oriented thoughts, the individual is overwhelmed with thought processes directed towards dealing with the strain.

As I argued above, undersupplied task characteristics leads to heightened levels of psychological strain because employees are unsure of organizational expectations or are unable to exhibit preferred work practices. Employees experiencing task characteristics undersupply are also less likely to participate in proactive behaviors, given their heightened sense of psychological strain. Employees experiencing task characteristics undersupply will generate fewer ideas for how to improve their work tasks, given that they are consumed by anxiety or concern from receiving more autonomy than preferred. Additionally, employees experiencing task characteristics undersupply will have difficulty focusing their attention on improvement initiatives because they are distracted by the frustrations resulting from too little discretion. In summary, psychological

strain links task characteristics undersupply to proactivity because it reduces the likelihood that cognitive resources can be applied to proactive behaviors. In turn, I propose the following:

Hypothesis 8a: Undersupply of task characteristics is negatively related to proactivity, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological strain.

Employees experiencing unfulfilled autonomous needs may attempt to proactively change the supply of autonomy within their job so that their needs are fulfilled (Leana, Appelbaum, & Shevchuk, 2009; Wrzesniewski & Dutton, 2001). For example, if employees desire more decision making discretion than what they currently have, they may seek out this additional autonomy by talking with their supervisor and requesting it directly, or talking with coworkers and convincing them that they deserve more decision making control over a specific area (Tims & Bakker, 2010; Tims et al., 2012). These types of job crafting behaviors are likely to follow task characteristics undersupply because unfulfilled autonomous needs initiate feelings of psychological strain (Ryan & Deci, 2000). The experience of psychological strain is uncomfortable and is likely to prompt some form of behavioral reaction in order to cope with this distressing psychological state (Lazarus & Folkman, 1984). One potential reaction is to attempt to reduce the amount of strain by making changes to the source of the strain. In the case of undersupply of task characteristics, employees are likely to engage in job crafting behaviors in order to alter the amount of autonomy and discretion being supplied. Thus, as previously discussed, task characteristics undersupply leads to

psychological strain, which then triggers the employee to engage in job crafting because they want to reduce feelings of strain that are being caused by the unfulfilled need.

Hypothesis 8b: Undersupply of task characteristics is positively related to job crafting, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological strain.

Knowledge Characteristics Congruence and the Mediating Role of Psychological Empowerment

Employees who are psychologically empowered should engage in innovative behaviors because they have an active orientation towards initiating change (Conger & Kanungo, 1988; Spreitzer, 1995; Thomas & Velthouse, 1990). Empowered employees are also thought to be more innovative because they feel less constrained by their environment, confident in their abilities, and feel as if their ideas and initiatives will have an impact on the organization (Spreitzer, 1995). Empowered employees have a powerful sense of ownership and intrinsic interest in their work tasks and are therefore likely to champion the implementation of useful and creative ideas into organizational processes. Additionally, empowered employees have a heightened sense of confidence in their ability to succeed while engaging in challenging initiatives and therefore believe in their ability to successfully implement innovative organizational initiatives (Amabile, 1998). Meta-analytic results support the proposed relationship between psychological empowerment and innovative behavior (Seibert et al., 2011).

As I argued above, heightened levels of psychological empowerment result when job supply of knowledge characteristics matches employee preferences for these knowledge characteristics. Employees experiencing congruence are also more likely to participate in innovative behaviors through their heightened levels of psychological empowerment. Employees experiencing knowledge characteristics congruence engage in idea generation and implementation, given that they feel self-efficacious in their ability to create positive organizational change (Spreitzer, 1995). Additionally, employees experiencing congruence are motivated to persist through the challenges of innovation implementation because they believe that their work is beneficial to the organization and society at large (Spreitzer et al., 2005). In summary, psychological empowerment links knowledge characteristics congruence to innovativeness because it alters the employees' cognitive orientation towards recognizing the importance of innovation as well as their belief in their ability to successfully implement change. In turn, I propose the following:

Hypothesis 9a: Knowledge characteristics congruence is positively related to innovativeness through psychological empowerment, and the effects are stronger at high as opposed to low levels of the work characteristics.

As I argued above, modest levels of knowledge characteristics oversupply leads to heightened levels of psychological empowerment, while excessive levels of knowledge characteristics oversupply reduces levels of psychological empowerment. Knowledge characteristics oversupply is likely to have the same pattern of relationships with innovative behaviors, through their manifestations of

psychological empowerment. Employees experiencing modest levels of knowledge characteristics oversupply likely participate in idea generation and implementation, given their heightened sense of empowerment from the additional buffer of opportunities for growth and development. Alternatively, employees experiencing excessive levels of complexity or specialization likely participate in fewer innovative behaviors. Employees experiencing excessive levels of challenge likely feel less competent in their work because they perceive that the excessive level of knowledge characteristics entails work tasks that are too advanced or too complicated for their abilities, which then reduces the likelihood that they would make any creative or innovative intellectual contributions. In turn, I propose the following:

Hypothesis 9b: Oversupply of knowledge characteristics will have an inverted U-shaped relationship with innovativeness through psychological empowerment such that innovativeness will be highest at moderate levels of oversupply.

As I argued above, an undersupply of knowledge characteristics reduces psychological empowerment because employees' needs for growth are unfulfilled and they have fewer opportunities to exhibit their skills and expertise. Employees experiencing knowledge characteristics undersupply are also less likely to participate in innovative behaviors through their reduced levels of psychological empowerment. Employees experiencing knowledge characteristics undersupply will be less likely to champion innovative initiatives given that they feel like their attempts at impacting the organization are unneeded or will go unnoticed. In

summary, psychological empowerment links knowledge characteristics undersupply to innovativeness because it alters the employees' perceptions on how important their ideas and efforts are in making a contribution to the organization which causes a decrease in innovative behaviors. In turn, I propose the following:

Hypothesis 9c: Undersupply of knowledge characteristics is negatively related to innovativeness, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological empowerment.

Knowledge Characteristics Congruence and the Mediating Role of Psychological Strain

Employees experiencing psychological strain may be less likely to generate novel ideas because they are overwhelmed with the distraction of anxiety, nervousness, or unease (Talbot, Cooper, Barrow, 2006). Additionally, psychological strain will be a drain on psychological resources, which may impede the ability to engage in the time and energy consuming implementation of new and innovative ideas (Lazarus, 1991). Thus, employees are less likely to participate in innovative behaviors when experiencing psychological strain.

As I argued above, knowledge characteristics undersupply leads to heightened levels of psychological strain because employees are overwhelmed by work that is overly challenging or frustrated by work that is not challenging enough. Employees experiencing knowledge characteristics undersupply are also less likely to participate in innovative behaviors, given their heightened levels of

psychological strain. Employees experiencing knowledge characteristics undersupply are less likely to generate creative ideas, given that they are consumed frustrations from receiving too little job challenge. Additionally, employees experiencing knowledge characteristics undersupply will be less likely to focus attention on implementing innovative initiatives because their energy is depleted due to the strain of unfulfilled competence needs. In summary, psychological strain links knowledge characteristics undersupply to a reduction in innovative behaviors because it reduces the likelihood that cognitive resources are available for innovative behaviors. In turn, I propose the following:

Hypothesis 10a: Undersupply of knowledge characteristics is negatively related to innovativeness, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological strain.

Employees experiencing unfulfilled competence needs may attempt to proactively change the supply of complexity or specialization within their job so that their needs are fulfilled (Berg et al., 2010; Lyons, 2008; Wrzesniewski & Dutton, 2001). For example, if employees desire more complexity or specialization than what they currently receive, they may attempt to engage in these opportunities by going outside of their typical work domain or become more intricately involved in different work processes in order to engage in work that fulfills these needs for competence (Tims & Bakker, 2010; Tims et al., 2012). These types of job crafting behaviors are likely to follow knowledge characteristics undersupply because unfulfilled competence needs initiate feelings of psychological strain (Deci & Ryan, 2000). Thus, as previously discussed,

knowledge characteristics undersupply leads to psychological strain, which then triggers the employee to engage in job crafting because they want to reduce feelings of strain caused by the unfulfilled need.

Hypothesis 10b: Undersupply of knowledge characteristics is positively related to job crafting, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological strain.

Social Characteristics Congruence and the Mediating Role of Psychological Empowerment

Empowered employees will assist others because they feel that their knowledge and skills make them an important and influential participant within the interconnected organizational system (Alge, Ballinger, Tangirala, & Oakley, 2006; Choi, 2007; Spreitzer, 1995). Thus, empowered employees believe their skills and abilities are useful and feel compelled to develop and assist others. Meta-analytic results support the proposed relationship between psychological empowerment and citizenship behaviors (Seibert et al., 2011).

As argued above, heightened levels of psychological empowerment result when job supply of social characteristics match employee preference levels for social characteristics. Employees experiencing social characteristics congruence are also more likely to participate in OCBIs, through their heightened levels of psychological empowerment. Employees experiencing social characteristics congruence are kind and altruistic toward colleagues because they believe it to be their responsibility to participate in behaviors that foster unit cohesion (Kidwell, Mossholder, & Bennett, 1997). Additionally, employees experiencing congruence

are helpful towards others because they feel that the unit will benefit if other members receive their insight and assistance in areas where they are competent or have control (Gist & Mitchell, 1992). In summary, psychological empowerment links social characteristics congruence to innovativeness because it alters the way employees view their role as organizational citizens. In turn, I propose the following:

Hypothesis 11a: Social characteristics congruence is positively related to OCBI through psychological empowerment, and the effects are stronger at high as opposed to low levels of the work characteristics.

As I argued above, modest levels of social characteristics oversupply leads to heightened levels of psychological empowerment, while excessive levels of social characteristics oversupply reduces levels of psychological empowerment. Social characteristics oversupply is likely to have the same pattern of relationships with OCBI, through employee manifestations of psychological empowerment. Employees experiencing modest levels of social characteristics oversupply are more likely to offer assistance to colleagues, given their heightened sense of empowerment from the reservoir of support and guidance available to them. Alternatively, employees experiencing excessive levels of support and interdependence likely participate in fewer OCBI. Employees receiving excessive levels of social characteristics are likely experiencing unwanted level of interconnectedness, accountability, and responsibility, leading to reduced manifestations of self-determined and personally meaningful work. Thus, excessive oversupply causes employees to counteract these unwanted

experiences of social interaction by refusing to participate in discretionary social-oriented activities, such as OCBI, because of their reduced levels of psychological empowerment. In turn, I propose the following:

Hypothesis 11b: Oversupply of social characteristics will have an inverted U-shaped relationship with OCBI through psychological empowerment such that OCBI will be highest at moderate levels of oversupply.

As I argued above, an undersupply of social characteristics reduces psychological empowerment because employees' needs for relatedness are unfulfilled. Employees experiencing social characteristics undersupply are also less likely to participate in OCBI through their reduced levels of psychological empowerment. Employees experiencing social characteristics undersupply will be less likely to assist colleagues with their work because they do not feel as if their assistance will be useful to their colleagues. In summary, psychological empowerment links social characteristics undersupply to OCBI because it alters the employees' perceptions on the usefulness of their discretionary helping behaviors, which causes a decrease in OCBI. In turn, I propose the following:

Hypothesis 11c: Undersupply of social characteristics is negatively related to OCBI, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological empowerment.

Social Characteristics Congruence and the Mediating Role of Psychological Strain

An increase in psychological strain causes employees to focus on their own well-being, as opposed to attempting to assist others in obtaining success

(Cropanzano, Rupp, & Byrne, 2003). Given that psychological strain drains motivation and energy (Lee & Ashforth, 1996), it deflates an employee's interest in expending effort helping others. Thus, psychological strain causes employees to lessen their engagement in prosocial, discretionary behaviors.

As I argued above, undersupply of social characteristics leads to heightened levels of psychological strain because employees do not have enough social interaction to feel like part of a collective unit or because they do not have enough support to overcome obstacles. Employees experiencing social characteristics undersupply are also less likely to participate in OCBI, given their heightened levels of psychological strain. Employees experiencing an undersupply of interdependence and support may see little reason to reciprocate with citizenship behaviors (Blau, 1964). Additionally, employees experiencing social characteristics undersupply are less likely to help others, given that they are consumed by anxiety from receiving less social interaction than preferred. In summary, psychological strain links social characteristics undersupply to a reduction in OCBI because it reduces the likelihood that cognitive resources are available for helping others. In turn, I propose the following:

Hypothesis 12a: Undersupply of social characteristics is negatively related to OCBI, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological strain.

Employees experiencing unfulfilled relatedness needs may attempt to proactively change the supply of social support or interdependence within their job so that their needs are fulfilled (Berg et al., 2010; Wrzesniewski & Dutton,

2001). For example, if employees seek additional social support or interdependence, they may attempt to increase their interaction with others by seeking out informal avenues for social interaction or by volunteering for cross-departmental initiatives (Tims & Bakker, 2010; Tims et al., 2012). These types of job crafting behaviors are likely to follow social characteristics undersupply because unfulfilled relatedness needs initiate feelings of psychological strain (Deci & Ryan, 2000). Thus, as previously discussed, social characteristics undersupply leads to psychological strain, which then triggers employees to engage in job crafting because they want to reduce feelings of strain caused by the unfulfilled need.

Hypothesis 12b: Undersupply of social characteristics is positively related to job crafting, the effects are stronger when the discrepancy increases, and the relationship is mediated by psychological strain.

CHAPTER 4: METHODS

Power Analysis

I conducted an a priori power analysis and determined that I needed 261 dyads to have enough statistical power to appropriately test the study hypotheses. 261 dyads is sufficient for satisfying probably levels of .05 while accounting for five predictor variables (P, E, P², PE, and E²) and assuming an effective size of .05 (Cohen, 1988). Previous studies that evaluate congruence/incongruence through polynomial regression typically have low to moderate effect sizes (Edwards & Cable, 2009; Zhang et al., 2012). Thus, an effect size of .05 appears to be a conservative target for minimizing type two error.

Sample

Data was collected using a sample of working adults, using Amazon.com's Mechanical Turk service. Mechanical Turk is an online marketplace where workers have the opportunity to complete HITs (e.g., Human Intelligence Tasks) offered by requestors in exchange for payment. A total of 895 HITs were posted and accepted on Mechanical Turk. Out of those 895 accepted HITs, 891 finished the employee survey and 639 (72%) of the surveys remained after removing 252 surveys that did not meet quality control thresholds. The quality control metrics are explained in detail in a later section. In brief, surveys were dropped if respondents (a) repeatedly used one response for multiple survey items, (b) did not spend an adequate amount of time completing the survey, or (c) did not correctly answer questions that signaled whether or not they were paying attention to each survey item. 366 completed supervisor surveys were received.

After removing 95 surveys that did not meet quality control thresholds, 271 (74%) usable supervisor surveys remained. Two supervisor surveys were not traceable back to an employee survey. As well, eight supervisor surveys did not meet quality control thresholds for dyadic data; either the IP address for the employee and supervisor was the same or the start time of the supervisor survey was too close to the finish time of the employee survey. In turn, the final sample consisted of 261 (29%) employee-supervisor matched pairs. When comparing all the accepted employee surveys ($N = 639$), non-response bias analyses illustrated that employees who had matched supervisor surveys ($N = 261$) had higher scores than employees that did not have matched supervisor surveys ($N = 378$) for education ($M = 3.86$ vs. $M = 3.70$, $t = 1.98$), social characteristic need ($M = 5.16$ vs. $M = 4.90$, $t = 3.18$), knowledge characteristic supply ($M = 5.39$ vs. $M = 5.22$, $t = 2.18$), social characteristic supply ($M = 5.24$ vs. $M = 5.02$, $t = 2.61$), and psychological empowerment ($M = 5.66$ vs. $M = 5.53$, $t = 2.03$). The results of this analysis indicate that responders, as opposed to non-responders, may be more comfortable approaching supervisors because they are confident in their skills, feel empowered to engage others, or enjoy engaging others. Thus, the results may have a restricted range which may attenuate effect sizes.

Employee participants were predominantly male (62%) with a mean age of 28.7 years, an average of 4.1 years of experience with their employing organization, and an average of 3.4 years of experience working for their supervisor. Supervisors were also predominantly male (68%) with a mean age of 33 years and a mean of 6.3 years of experience with their employing organization.

This was an international sample; with employee participants representing a variety of ethnicities, including Asian (76%), Caucasian (10%), Hispanic/Latino (2%), African-American, (2%), and other (10%). Supervisor participants represented a similar ethnic breakdown, including Asian (75%), Caucasian (10%), Hispanic/Latino (1%), African-American, (1%), and other (13%). Almost half of the employee participants had a four-year degree (48%), and many had a graduate degree (22%), while most of the supervisor participants also had a four-year degree (43%), and a slightly higher amount had a graduate degree (37%).

Procedure

This study was conducted using multi-source survey research methods. Mechanical Turk is available internationally and the majority of the members are located in the United States, India, and China. Registered Mechanical Turk members search for HIT opportunities based upon three factors: eligibility requirements, payment amount, and the type of task. If the Mechanical Turk member meets the eligibility requirements and they are interested in being compensated the listed amount for completing the listed task, then they can voluntarily accept the HIT opportunity.

For Mechanical Turk members to be eligible to participate in this study they had to satisfy the following requirements: (a) they had to have worked 20 or more hours per week within the last six months, (b) they had to have a supervisor or manager that they reported to when they worked 20 or more hours per week within the last six months, and (c) they had to be willing to send a survey opportunity to their supervisor. Note that there was no geographic employment

restriction and this data is therefore an international sample. With respect to payment, the HIT opportunity stated that (a) the individual will receive \$0.50 for completing a 15 minute survey about their work experience, and (b) the individual will receive an additional \$0.50 bonus after their current supervisor has completed a different seven minute survey about their work experience. Further, the HIT opportunity listed the following task type explanation: “This is an organizational behavior study. In this study, we are interested in your preferences regarding job characteristics, as well as the actual characteristics of your current job.” If after reviewing the eligibility requirements, payment amount, and task type, the individual was interested in completing the HIT, the member clicked the “Accept HIT” button and then received instructions on how to begin taking the survey.

The HIT instructed the participant to complete the following four steps. Step one instructed the participant to click a provided link or copy and paste the link into a new browser window. This linked contained the employee survey, which was hosted on surveymonkey.com. Step two instructed the participant to complete the survey. Step three instructed the participant on how to submit a completion code that would be used to facilitate survey compensation. The instructions were stated as follows:

“At the end of this survey, you will be given instructions for entering a completion code. To receive credit for this HIT, you will need to enter this completion code in both the survey and in the text box below. In order to receive payment, you must (a)

accurately complete all questions (methods are in place to detect random answering) and (b) submit the completion code.”

Step four instructed the participant on how to properly invite their supervisor to complete the supervisor version of the survey. The instructions were stated as follows:

“Please insert your completion code from Step 3 above into the bracketed box in the message below. In order to receive the bonus, (a) the supervisor survey must be completed by your supervisor (IP addresses and time of submissions will be analyzed), (b) the supervisor must accurately complete all questions (methods are in place to detect random answering), (c) the supervisor must submit the correct completion code, and (d) the supervisor survey must be completed within 14 days of the employee survey.”

Additionally, step four instructed the participant to provide to their supervisor the following text:

“Dear Supervisor, Thank you for agreeing to participate in this survey. Please click the provided link below for the survey, or copy and paste the link into a new browser window. This survey should take you about 7 minutes:

<https://www.surveymonkey.com/s/jcsupervisorsurvey>. At the end of the survey, you will be given instructions for entering a completion code. Please enter the following completion code: [INSERT YOUR COMPLETION CODE FROM STEP 3 ABOVE]. It is very

important that you enter this completion code. Also, please accurately and honestly answer each of the survey questions. Your responses are completely confidential and anonymous. Only the researcher will see your responses and there is no way to track your responses back to you individually. Thank you for participating!”

For this study, surveys were hosted on surveymonkey.com and employee participants were able to complete the survey at a time and location of their choice. When employee participants completed the survey, a final page appeared and it asked them to enter a completion code. The completion code instructions asked employee participants to use their Mechanical Turk worker identification number as their completion code. This is a unique, 13- or 14-digit, alpha-numeric identification number. Mechanical Turk automatically generates this identification number when the user registers for Mechanic Turk. No two respondents have the same identification number. Upon completion of the survey the employee participants were asked to return to the Mechanical Turk website and enter their completion code into a text box within Mechanical Turk. When the employee participant entered their completion code into Mechanical Turk, I received an electronic prompt stating that a survey had been completed. Once per day I reviewed the submitted surveys and confirmed whether the survey had been completed correctly.

The HIT instructions highlighted that I had the option to reject surveys that were not completed accurately and in entirety. When a survey had been

rejected, the employee participant had the option to anonymously email me to request additional information on the survey rejection. This anonymous email is through Mechanical Turk's non-identifying email communication system. When I rejected a survey, and was subsequently contacted by an employee participant, I requested that the survey be finished or redone in order to receive payment. In this study, three participants were invited to redo a survey but they did not accept the invitation to complete a new survey. After confirming that a survey was completed correctly, I clicked the confirmation of completion button in order to release the \$0.50 payment to the survey participant. Mechanical Turk acts as the broker of payments; the requester and worker never have access to each other's financial information.

Employee participants were also instructed to send an email request to their supervisor asking them to complete a survey at a time and location of their choice. This email included two items: a link to a separate survey, also hosted on [surveymonkey.com](https://www.surveymonkey.com), and the employee's completion code. When the supervisor completed the survey, a final page appeared and it asked the supervisor to enter the completion code. I checked for completed supervisor surveys on a daily basis from the day the survey started until the day the survey ended. When a supervisor survey had been completed I used the same metrics as I did for the employee survey to confirm that the survey had been completed accurately and in entirety. If the supervisor survey had been completed correctly, I then looked up the entered completion code, which corresponded to the employee participant's

Mechanical Turk identification number, and submitted a \$0.50 bonus payment to the appropriate employee survey participant.

The employee survey asked the employee participant to respond to a variety of demographic questions, including gender, ethnicity, age, education, on-the-job training, off-the-job training, and tenure with their organization. Also, the survey included the work characteristics and psychological state measures, including task characteristics need, knowledge characteristics need, social characteristics need, task characteristics supply, knowledge characteristics supply, social characteristics supply, psychological empowerment, and psychological strain. The supervisor survey asked the supervisor to respond to a variety of demographic questions, including gender, ethnicity, age, education, and tenure managing the employee who invited them to participate in the survey. Also, the survey included a variety of employee behavior measures. The supervisor was instructed to rate the behaviors of the employee who invited them to complete the survey. The employee behaviors measures included proactivity, innovativeness, OCBI, and job crafting.

To ensure accurate responses and minimize socially desirable responding, I inserted clear statements that reminded participants that their responses were anonymous and confidential. Statements were made in Mechanical Turk, during the introduction of the survey, and at two additional points throughout the survey. By making these statements, participants should have had reduced evaluation apprehension and were thus less likely to acquiesce to the expectations of researchers or offer socially desirable responses (Podsakoff, MacKenzie, Lee, &

Podsakoff, 2003). Additionally, in order to minimize common-method bias (CMB) I created a temporal separation between similar measures so that participants did not engage in retrieval bias due to saliency of responses within their short-term memory (Podsakoff et al., 2003). Employee ratings of work characteristics preferences could have been perceived as similar to work characteristics supply given that they are based upon the same work characteristics description. As well, psychological empowerment and psychological strain are both cognitive, psychological states that could have been perceived as similar, inversely related concepts. Additionally, supervisors could have psychologically grouped the employee behaviors together given that they are all active-oriented behaviors. To prevent these biases, I included dummy measures that were unrelated to the study between ratings of (a) need and supply of a commensurate work characteristic, (b) psychological empowerment and psychological strain, and (c) each of the four active employee behaviors. Additionally, only two measures were listed on one page of the surveymonkey.com survey and the participant had to submit the page before progressing to the next page. For example, work characteristics needs were never on the same page as work characteristics supplies and psychological empowerment was never on the same page as psychological strain.

I conducted a variety of data cleaning procedures to ensure employee and supervisor responses were accurate. First, I inserted three quality control questions throughout the employee and supervisor surveys to ensure that participants were paying careful attention to each item. The three quality control

questions were embedded within the survey measures, and appeared in the same format as survey items. The first quality control question was embedded approximately one-quarter of the way through the survey, the second question was embedded at the half-way point, and the third question was embedded three-quarters of the way through the survey. Spreading out the quality control questions throughout the survey ensured that the employee was maintaining their attention throughout the entire duration of the survey. Both the employee and supervisor surveys included the following three questions: (1) *Please select “a moderate amount” in order to indicate that you are carefully completing each question,* (2) *Please select “a very high amount” in order to indicate that you are carefully completing each question,* and (3) *In order to indicate that you are paying close attention to each item, please select “rarely”.* The respondent had to select the correct answer to all three of the quality control questions in order for their data to be included in the sample.

Second, I evaluated the amount of time the participants spent completing the survey. SurveyMonkey.com collects the start time and end time of each survey. I first calculated the amount of time each employee and supervisor spent completing their surveys by subtracting the end time from the start time. I then created an average employee survey completion time and an average supervisor completion time by taking the mean of each employee survey and the mean of each supervisor survey, respectively. The survey was dropped if they completed the survey in 50% or less time than the average.

Third, for each completed survey I evaluated long-string index responses, which is when multiple, subsequent items have the same rating (Johnson, 2005). For example, if a participant selects “7” for all items within a seven-point measure, for multiple measures in a row, this represents long-string index responses, which likely signals a pattern of random responding. Surveys that had three consecutive measures rated with the same rating for all items were dropped.

A total of 252 employee surveys were marked for deletion after conducting the three procedures. 23 of these surveys were deleted solely because they failed to successfully complete the quality control questions. 224 of these employee surveys were marked for deletion due to both the quality control questions and the time stamp procedure. Five of these employee surveys were marked for deletion due to the quality control questions, time stamp procedure, and the long-string index procedure. A total of 95 supervisor surveys were marked for deletion after conducting the three procedures. Seven of these surveys were deleted solely because they failed to successfully complete the quality control questions. 88 of these supervisor surveys were marked for deletion due to both the quality control questions and the time stamp procedure. None of the supervisor surveys were marked for deleted due to the long-string index procedure.

I also conducted a variety of data cleaning tasks to ensure that a different person completed the employee and supervisor surveys. First, I verified that IP addresses were different for each survey within the employee-supervisor dyad. I dropped eight dyads because the corresponding employee and supervisor surveys

had the same IP address. In addition, I conducted a time lag analysis by analyzing the time stamps collected within *survyemonkey.com*. Five dyads were marked for deletion because the end time of the employee participant survey had been completed within 30 minutes of the start time of the corresponding supervisor participant survey. All five of these dyads had also been marked for deletion from the IP address procedure. A number of researchers have employed similar data-cleaning approaches when collecting dyadic data (e.g., Grant & Mayer, 2009; Greenbaum, Mawritz, & Eissa, 2012; Moore, Detert, Treviño, Baker, & Mayer, 2012; Morgeson & Humphrey, 2006).

Measures

Task Characteristics Need

To assess employee task characteristics need, I used the 3-item work process autonomy dimension and the 3-item decision making autonomy dimension within the work design questionnaire (WDQ; Morgeson & Humphrey, 2006). Sample items include: “Making decisions about what methods I use to complete my work” and “Having significant autonomy in making decisions”. Employees rated each of these six items by answering the question, “How much is the right amount for you?” on a 7-point scale ranging from 1 (*none*) to 7 (*a very great amount*). This question stem has been used in previous P-J, N-S fit research for evaluating psychological needs (Edwards & Cable, 2009). An acceptable internal consistency reliability was found ($\alpha = .88$).

Knowledge Characteristics Need

To assess employee knowledge characteristics need, I used the 3-item job complexity dimension and the 3-item specialization dimension within the WDQ (Morgeson & Humphrey, 2006). Sample items include: “Doing complicated tasks” and “Using specialized knowledge and skills”. Similar to task characteristics need, employees rated each of these six items using the psychological need question stem (Edwards & Cable, 2009), “How much is the right amount for you?” on a 7-point scale ranging from 1 (*none*) to 7 (*a very great amount*). An acceptable internal consistency reliability was found ($\alpha = .83$).

Social Characteristics Need

To assess employee social characteristics need, I used the 3-item social support dimension and the 3-item interdependence dimension within WDQ (Morgeson & Humphrey, 2006). Sample items include: “Working with friendly and supportive people” and “Having other workers depend on my work”. Employees again rated each of these six items using the psychological need question stem (Edwards & Cable, 2009), “How much is the right amount for you?” on a 7-point scale ranging from 1 (*none*) to 7 (*a very great amount*). An acceptable internal consistency reliability was found ($\alpha = .80$).

Task Characteristics Supply

To assess employee task characteristics supply, I used the same six items within the task characteristics need measure, however, employees rated each of these six items by answering the question, “How much is present in your work?” on a 7-point scale ranging from 1 (*none*) to 7 (*a very great amount*). This question stem has been used in previous P-J, N-S fit research for evaluating job supply

(Edwards & Cable, 2009). An acceptable internal consistency reliability was found ($\alpha = .88$).

Knowledge Characteristics Supply

To assess employee knowledge characteristics supply, I used the same six items within the knowledge characteristics need measure, however, employees rated each of these six items by using the job supply question stem (Edwards & Cable, 2009), “How much is present in your work?” on a 7-point scale ranging from 1 (*none*) to 7 (*a very great amount*). An acceptable internal consistency reliability was found ($\alpha = .86$).

Social Characteristics Supply

To assess employee social characteristics supply, I used the same six items within the social characteristics need measure, however, employees rated each of these six items by using the job supply question stem (Edwards & Cable, 2009), “How much is present in your work?” on a 7-point scale ranging from 1 (*none*) to 7 (*a very great amount*). An acceptable internal consistency reliability was found ($\alpha = .84$).

Psychological Empowerment

Employees indicated their level of psychological empowerment by completing Spreitzer’s (1995) 12-item measure on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A sample item includes: “The work I do is very important to me.” An acceptable internal consistency reliability was found ($\alpha = .91$).

Psychological strain

Employees indicated their level of psychological strain by completing Caplan, Cobb, French, Harrison, & Pinneau's (1980) 16-item measure. Employees were given a list of 16 phrases and asked to rate the extent to which they felt this way during the last month using a 7-point scale again ranging from 1 (*never*) to 7 (*often*). Sample items include: "You had a loss of appetite" and "You felt irritated or annoyed." An acceptable internal consistency reliability was found ($\alpha = .96$).

Proactivity

Supervisors rated employee proactivity using Griffin et al.'s (2007) 3-item measure. A sample item is: "Initiates better ways of doing his/her core tasks." Supervisors completed the proactivity measure using a seven-point response scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An acceptable internal consistency reliability was found ($\alpha = .82$).

Innovativeness

Supervisors rated employee innovativeness using Scott and Bruce's (1994) 6-item measure. A sample item is: "Promotes and champions ideas to others." Supervisors completed the innovativeness measure using a seven-point response scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An acceptable internal consistency reliability was found ($\alpha = .89$).

Interpersonal-Focused Citizenship Behavior

Supervisors rated employee interpersonal-focused citizenship behavior using Lee and Allen's (2002) 8-item measure. A sample item is: "Assists others

with their duties.” Supervisors completed the OCBI measure using a seven-point response scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An acceptable internal consistency reliability was found ($\alpha = .86$).

Job Crafting

Supervisors rated employee job crafting ($\alpha = .91$) using Tims et al.’s (2012) 13-item measure. A sample item is: “Tried to learn new things at work.” Supervisors completed the job crafting measure using a seven-point response scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An acceptable internal consistency reliability was found ($\alpha = .91$).

Controls

First, I controlled for employee age and the number of years the employee had worked for their current employer. Older and more experienced employees may be more comfortable with their job and/or work environment than younger and less experienced employees, which may increase participation in active job-related behaviors (Avolio, Waldman, & McDaniel, 1990). Second, I controlled for the number of years the employee had worked with their current supervisor. Employees who have worked longer with their current supervisor may be given higher performance ratings because they have a more trusting or higher quality relationship (Wat & Shaffer, 2005). Third, I controlled for employee job level. Research suggests that employees with higher-level positions within organizational hierarchies may have more discretion and therefore more opportunities to participate in active behaviors (Berg et al., 2010). To control for job level, I used the job zone categorizations recommended by the Occupational

Information Network (O*Net). The O*Net's job zone categorizations use a combination of education, training, and experience. Employees were asked to rate their education level, training (e.g., amount of on-the-job training to learn their position), and experience (e.g., amount of overall experience necessary to earn their position) on five point scales. These three scales were averaged to create an overall job level control.

Analytical Approach

Methodology for Testing Relationships between Congruence and Psychological States

To test Hypotheses 1 - 6 which suggest that congruence is related to psychological empowerment and psychological strain, I used polynomial regression and response surface modeling (Edwards, 1994; Edwards & Parry, 1993). Polynomial regression enabled a test of the joint effects of two variables in relation to a third variable. The results of the polynomial regression analysis were graphed in three-dimensional space using surface plot analysis which allowed for a nuanced view of the effects of varying combinations of work characteristics need and supplies on the third variable (see Edwards, 1994; Kristof-Brown & Guay, 2011; Shanock, Baran, Gentry, Pattison & Heggstad, 2010).

To conduct the polynomial regression analyses I employed the following steps. First, I scale centered the individual preference or need for the work characteristics (P) and the perceived supply of the work characteristics (E). Second, I used these centered scores to calculate a squared term for P (P^2), a squared term for E (E^2), and an interaction term for P and E (PE). Third, I

conducted a hierarchical regression with controls in step one, and the following variables in step two: (1) individual need main effects (P), (2) job supply main effects (E), (3) individual need squared term (P^2), (4) individual need x job supply interaction term (PE), and (5) job supply squared term (E^2). Edwards (2002) argues that it is unlikely that the joint effect of P and E will follow a normal distribution because it includes squared terms and product terms. Thus, the most appropriate way to analyze the joint effects is to apply bootstrapping, a nonparametric approach which does not impose assumptions regarding the shape of the distribution (Efron & Tibshirani, 1993). The bootstrap was applied to the polynomial regression equation (see equation 1 below) to obtain a large number of bootstrap estimates of the coefficients within the equation. I used 10,000 bootstrap estimates (with replacement) and the distributions of these coefficients were examined using a 95% bias-corrected confidence interval.

$$(1) Z = b_0 + b_1P + b_2E + b_3P^2 + b_4PE + b_5E^2 + e$$

The bootstrapped coefficients were then used to conduct surface plot analyses, whereby the joint effects of the two independent variables on a third variable were plotted in three-dimensional space (Edwards, 1994; Shanock et al., 2010). See Figure 2 for an illustrative surface plot. The zone of congruence is the area under investigation for hypotheses related to psychological need fulfillment (H1a, H2a, H3a, H4a, H5a, and H6a), the zone of oversupply is the area under investigation for hypotheses related to the oversupply of work characteristics (H1b, H2b, H3b, H4b, H5b, and H6b), and the zone of undersupply is the area under investigation for hypotheses related to the undersupply of work

characteristics (H1c, H2c, H3c, H4c, H5c, and H6c). Additionally, this response surface methodology enabled an evaluation of the slope and curvature along the line of congruence ($P = E$) and the line of incongruence ($P = -E$) (Edwards & Parry, 1993).

The slope ¹($a_1 = \beta_{w1} + \beta_{w2}$) and curvature ($a_2 = \beta_{w3} + \beta_{w4} + \beta_{w5}$) along the line of congruence illustrate the manner in which the agreement between need (P) and supply (E) relate to the dependent variable. Specifically, a_1 indicates the direction of the relationship between agreement between need (P) and supply (E) and the dependent variable. A positive a_1 indicates that the dependent variable increases when moving from agreement at low levels of need (P) and supply (E) to agreement at high levels of need (P) and supply (E). Graphically, a positive a_1 illustrates that the dependent variable is higher at the back corner of the surface plot than at the near corner of the surface plot. Alternatively, a negative a_1 indicates that the dependent variable decreases when moving from agreement at low levels of need (P) and supply (E) to agreement at high levels of need (P) and supply (E). Graphically, a negative a_1 illustrates that the dependent variable is lower at the back corner of the surface plot than at the near corner of the surface plot.

The curvature along the line of congruence (a_2) indicates whether the similarity between need (P) and supply (E) relates to the dependent variable in a linear or non-linear manner. If a_2 is not significant then the relationship between

¹ β_{w1} , β_{w2} , β_{w3} , β_{w4} , and β_{w5} represent unstandardized regression coefficients for P, E, P^2 , PE, and E^2 , respectively.

agreement between need (P) and supply (E) and the dependent variable is linear.

If a_2 is positive then there is an inverted U-shaped relationship between the similarity between need (P) and supply (E) and the dependent variable.

Graphically, a positive a_2 illustrates that when moving from the back corner of the surface plot towards the near corner of the surface plot, the dependent variable will increase until it reaches a plateau, and then begin to decrease. Alternatively, if a_2 is negative then there is a U-shaped relationship between the similarity between need (P) and supply (E) and the dependent variable. Graphically, a negative a_2 illustrates that when moving from the back corner of the surface plot towards the near corner of the surface plot, the dependent variable will decrease until it reaches a bottom-point, and then begin to increase.

The slope ($a_3 = \beta_{w1} - \beta_{w2}$) and curvature ($a_4 = \beta_{w3} - \beta_{w4} + \beta_{w5}$) along the line of incongruence illustrate the manner in which the discrepancy between need (P) and supply (E) relate to the dependent variable. Specifically, a_4 indicates whether the dependent variable increases or decreases as need (P) and supply (E) become more discrepant. If a_4 is positive the dependent variable will decrease when need (P) exceeds supply (E) and when supply (E) exceeds need (P).

Graphically, a positive a_4 illustrates that when moving from the left corner of the surface plot towards the right corner of the surface plot, there is an inverted-U shaped relationship, whereby the dependent variable will increase until it reaches a plateau, and then begin to decrease. Alternatively, if a_4 is negative the dependent variable will increase when need (P) exceeds supply (E) and when supply (E) exceeds need (P). Graphically, a negative a_4 illustrates that when

moving from the left corner of the surface plot towards the right corner of the surface plot, there is a U-shaped relationship, whereby the dependent variable will decrease until it reaches a bottom-point, and then begin to increase.

The line of incongruence entails two forms of discrepancy; when need (P) exceeds supply (E) and when supply (E) exceeds need (P). The slope along the line of incongruence (a_3) indicates whether the relationship between the discrepancy between need (P) and supply (E) and the dependent variable is more effected by situations where need (P) exceeds supply (E) or when supply (E) exceeds need (P). If a_3 is positive, the dependent variable will be higher when need (P) exceeds supply (E) and lower when supply (E) exceeds need (P). Graphically, a positive a_3 illustrates that the dependent variable is higher in the right corner of the surface plot than in the left corner of the surface plot. If a_3 is negative, the dependent variable will be lower when need (P) exceeds supply (E) and higher when supply (E) exceeds need (P). Graphically, a negative a_3 illustrates that the dependent variable is higher in the left corner of the surface plot than in the right corner of the surface plot.

In order to evaluate the relationship between work characteristics congruence and psychological states of empowerment and strain, polynomial regression results as well as the slopes and curvatures along the line of congruence and incongruence are reported. Table 3 reports findings for the effects of task characteristics congruence, Table 4 reports findings for knowledge characteristics congruence, and Table 5 reports findings for social characteristics congruence. In each table, the effect of work characteristics need (P), work

characteristics supply (E), the squared term of work characteristics need (P^2), the interaction between work characteristics need and supply (PE), and the squared term for work characteristics supply (E^2) on empowerment and strain are reported. As well, the slopes and curvatures along the line of congruence and incongruence, including a_1 , a_2 , a_3 , and a_4 , are reported for the relationships between each work characteristics and psychological state. Finally, the surface plots for each of these relationships are illustrated in Figures 3 – 8.

Hypotheses 1a, 3a, and 5a suggest that psychological need fulfillment is positively related to psychological empowerment and that the effects will be stronger at higher levels of work characteristics than at lower levels of work characteristics. These hypotheses suggest that psychological empowerment will increase as need (P) and supply (E) become more similar. In terms of the surface plot, there should be a downward sloping ridge along the line of congruence, which suggests that empowerment increase when moving away from the zone of undersupply and oversupply and towards the zone of congruence. Moderate oversupply, however, is one scenario in which need (P) and supply (E) are becoming more discrepant, yet psychological empowerment is predicted to increase. The combined effect of movement away from undersupply towards congruence and movement away from excessive oversupply towards congruence is likely to override the opposing effects of moderate oversupply. In order for these hypotheses to be supported, the curvature along the line of incongruence (a_4) should be negative and the three quadratic terms of the polynomial regression equation should be jointly significant (Edwards & Parry, 1993). Negative

curvature indicates that empowerment decreases when need (P) exceeds supply (E) and when supply (E) exceeds need (P). Inversely stated, negative curvature indicates that empowerment increases as need (P) and supply (E) become similar. Thus, negative curvature signifies a positive relationship between psychological need fulfillment and psychological empowerment. This relationship is further supported when the three quadratic terms, β_{w3} , β_{w4} , and β_{w5} , are jointly significant. These three terms are included in the a_4 formula ($a_4 = \beta_{w3} - \beta_{w4} + \beta_{w5}$). Thus, finding joint significance offers additional supporting evidence that the a_4 test is appropriate for determining a significant relationship between psychological need fulfillment and psychological empowerment.

These hypotheses also suggested that the positive relationship between psychological need fulfillment and psychological empowerment will be stronger at higher levels of work characteristics than at lower levels of work characteristics. For these hypotheses to be supported there should be a positive slope along the line of congruence ($a_1 = \beta_{w1} + \beta_{w2}$). A positive a_1 suggests that psychological empowerment will be higher when psychological need fulfillment takes place at high levels of the work characteristics than at low levels of the work characteristics. In terms of the surface plot, the dependent variable should be higher at the back corner of the surface plot (high need; high supply) than at the near corner of the surface plot (low need; low supply). Additionally, in order for the hypotheses to be supported, the curvature along the line of congruence ($a_2 = \beta_{w3} + \beta_{w4} + \beta_{w5}$) should not be significant. This indicates that the line of congruence is linear as opposed to non-linear (e.g., U-shaped or inverted U-

shared). Finding significant curvature would suggest that psychological need fulfillment at higher levels of work characteristics does not always relate to higher levels of psychological empowerment.

Hypotheses 1b, 3b, and 5b suggest that psychological empowerment increases when supply (E) exceeds need (P) by a modest amount and that psychological empowerment decreases when supply (E) exceeds need (P) by an excessive amount. These hypotheses consider the nature of the joint effects within the zone of oversupply. To test these hypotheses, the significance and direction of curvature along the line of incongruence ($a_4 = \beta_{w3} - \beta_{w4} + \beta_{w5}$), the inflection point in which curvilinearity begins (e.g., slope is zero), and the slope along the line of incongruence ($a_3 = \beta_{w1} - \beta_{w2}$) should be evaluated to determine if the hypotheses are supported.

If the curvature is negative, this signals that psychological empowerment decreases as work characteristics supply exceeds work characteristics needs. The surface plot should then be analyzed to evaluate the inflection point for where curvilinearity occurs. If the point along the line of incongruence where curvilinearity begins occurs at high levels of work characteristics supply, this signals that modest levels of oversupply increase psychological empowerment and excessive levels of oversupply decrease psychological empowerment. In terms of the surface plot, psychological empowerment increases when moving from the midpoint of the X-Y axes towards the left corner of the surface plot, but begins to decrease at the far left corner of the surface plot (low need; high supply). In this scenario the hypotheses are fully supported. Alternatively, if the point along the

line of incongruence where curvilinearity occurs is near the mid-point of the X-Y access, this signals that all levels of oversupply, both modest and excessive, are related to a decrease in psychological empowerment. In terms of the surface plot, psychological empowerment decreases when moving from the mid-point of the X-Y axes towards the left corner of the surface plot (low need; high supply). In this scenario the hypotheses are rejected.

If the curvature is positive, this signals that psychological empowerment increases as work characteristics supply (E) exceeds work characteristics need (P). In terms of the surface plot, psychological empowerment increases when moving from the mid-point of the X-Y axes towards the left corner of the surface plot (low need; high supply). In this scenario, the hypotheses are rejected.

Although oversupply is related to an increase in psychological empowerment, excessive levels of oversupply are not related to a decrease in psychological empowerment.

If the curvature is not significant, this signals that the line of incongruence is linear. If the line of incongruence is linear and there is a negative slope along the line of incongruence ($a_3 = \beta w_1 - \beta w_2$), then psychological empowerment increases when moving from the right corner of the surface plot (high P; low E) towards the left corner of the surface plot (low P; high E). In this scenario, the hypotheses are rejected. Although oversupply is related to an increase in psychological empowerment, excessive levels of oversupply are not related to a decrease in psychological empowerment.

Hypotheses 1c, 3c, and 5c suggest that psychological empowerment decreases when the level of supply (E) falls below the level of need (P) and that these effects will be greater as the discrepancy between supply (E) and need (P) increases. These hypotheses consider the nature of the joint effects within the zone of undersupply. To test these hypotheses, the significance and direction of curvature along the line of incongruence ($a_4 = \beta w_3 - \beta w_4 + \beta w_5$), the inflection point in which curvilinearity begins, and the slope along the line of incongruence ($a_3 = \beta w_1 - \beta w_2$) should be evaluated to determine if the hypotheses are supported.

If the curvature along the line of incongruence is negative, this signals that psychological empowerment decreases as work characteristics supply (E) falls short of work characteristics need (P). In terms of the surface plot, psychological empowerment decreases when moving from the mid-point of the X-Y axes towards the right corner of the surface plot (high need; low supply). As well, the significant curvature signals that as supply (E) and need (P) become more discrepant, psychological empowerment will have a more dramatic decrease. In terms of the surface plot, discrepancy close to the mid-point of the X-Y axes will illustrate a gradual decrease in psychological empowerment while discrepancy towards the right corner of the surface plot (high need; low supply) will illustrate a more dramatic decrease. In this scenario the hypotheses are supported.

If a_4 is not significant, suggesting that the line of incongruence is linear, and there is a negative slope along the line of incongruence (a_3), this offers partial support for the hypothesis. This suggests that undersupply is related to a decrease

in psychological empowerment but that the level of discrepancy does not necessarily affect the level of empowerment. In terms of the surface plot, psychological empowerment decreases when moving from the left corner of the surface plot (low need; high supply) towards the right corner of the surface plot (high need; low supply). Additionally, the surface plot will illustrate that the amount of decrease in psychological empowerment will be the same regardless of whether discrepancy takes place close to the mid-point of the X-Y axes or towards the right corner of the surface plot (high need; low supply).

If the curvature is positive, this signals that psychological empowerment increases as work characteristics supply (E) falls short of work characteristics need (P). In terms of the surface plot, psychological empowerment increases when moving from the mid-point of the X-Y axes towards the right corner of the surface plot (high need; low supply). In this scenario the hypotheses are rejected.

Hypotheses 2a, 4a, and 6a suggest that psychological need fulfillment is negatively related to psychological strain and that the effects will be stronger at higher levels of work characteristics than at lower levels of work characteristics. These hypotheses suggest that psychological strain will decrease as need (P) and supply (E) become more similar. In terms of the surface plot, there should be an upward sloping ridge along the line of congruence, which suggests that strain decreases when moving away from the zone of undersupply and oversupply and towards the zone of congruence. Moderate oversupply, however, is one scenario in which need (P) and supply (E) are becoming more discrepant, yet psychological strain is predicted to decrease. For these hypotheses to be

supported, the curvature along the line of incongruence (a_4) should be positive and the three quadratic terms of the polynomial regression equation should be jointly significant (Edwards & Parry, 1993). Positive curvature indicates that strain decreases as need (P) and supply (E) become similar. Thus, positive curvature signifies a negative relationship between psychological need fulfillment and psychological strain. This relationship is further supported when the three quadratic terms, β_3 , β_4 , and β_5 , are jointly significant. These three terms are included in the a_4 formula ($a_4 = \beta_3 - \beta_4 + \beta_5$). Thus, finding joint significance offers additional supporting evidence that the a_4 test is appropriate for determining a significant relationship between psychological need fulfillment and psychological strain.

Next, I move from an evaluation of the effects of psychological need fulfillment versus a lack of psychological need fulfillment, towards an evaluation of psychological need fulfillment at varying levels of work characteristics. The hypotheses suggest that the negative relationship between psychological need fulfillment and psychological strain will be stronger at higher levels of work characteristics than at lower levels of work characteristics. In order for these hypotheses to be supported there should be a negative slope along the line of congruence ($a_1 = \beta_1 + \beta_2$). A negative a_1 suggests that psychological strain will be lower when psychological need fulfillment takes place at high levels of the work characteristics than at low levels of the work characteristics. In terms of the surface plot, the dependent variable should be lower at the back corner of the surface plot (high need; high supply) than at the near corner of the surface plot

(low need; low supply). Additionally, in order for the hypotheses to be supported, the curvature along the line of congruence ($a_2 = \beta_{w3} + \beta_{w4} + \beta_{w5}$) should not be significant. This indicates that the line of congruence is linear as opposed to non-linear (e.g., U-shaped or inverted U-shaped). Finding significant curvature would suggest that psychological need fulfillment at higher levels of work characteristics does not always relate to higher levels of psychological strain.

Hypotheses 2b, 4b, and 6b suggest that psychological strain decreases when supply (E) exceeds need (P) by a modest amount and that psychological strain increases when supply (E) exceeds need (P) by an excessive amount. These hypotheses consider the nature of the joint effects within the zone of oversupply. To test these hypotheses, the significance and direction of curvature along the line of incongruence ($a_4 = \beta_{w3} - \beta_{w4} + \beta_{w5}$), the inflection point in which curvilinearity begins, the slope along the line of incongruence ($a_3 = \beta_{w1} - \beta_{w2}$) should be evaluated to determine if the hypotheses are supported.

If the curvature is positive, this signals that psychological strain increases as work characteristics supply (E) exceeds work characteristics need (P). If the point along the line incongruence where curvilinearity begins occurs at high levels of work characteristics supply, this signals that modest levels of oversupply decrease psychological strain and excessive levels of oversupply increase psychological strain. In terms of the surface plot, psychological strain decreases when moving from the mid-point of the X-Y axes towards the left corner of the surface plot, but begins to increase at the far left corner of the surface plot (low need; high supply). In this scenario the hypotheses are fully supported.

Alternatively, if the point along the line of incongruence where curvilinearity occurs is near the mid-point of the X-Y axis, this signals that all levels of oversupply, both modest and excessive, are related to an increase in psychological strain. In this scenario the hypotheses are rejected.

If the curvature is negative, this signals that psychological strain decreases as work characteristics supply (E) exceeds work characteristics need (P). In terms of the surface plot, psychological strain decreases when moving from the mid-point of the X-Y axes towards the left corner of the surface plot (low need; high supply). In this scenario, the hypotheses are rejected. Although oversupply is related to a decrease in psychological strain, excessive levels of oversupply are not related to an increase in psychological strain.

If the curvature is not significant, this signals that the line of incongruence is linear. If the line of incongruence is linear and there is a positive slope along the line of incongruence ($a_3 = \beta w_1 - \beta w_2$), then psychological strain decreases when moving from the right corner of the surface plot (high P; low E) towards the left corner of the surface plot (low P; high E). In this scenario, the hypotheses are rejected. Although oversupply is related to a decrease in psychological strain, excessive levels of oversupply are not related to an increase in psychological strain.

Hypotheses 2c, 4c, and 6c suggest that psychological strain increases when the level of supply (E) falls below the level of need (P) and that these effects will be greater as the discrepancy between supply (E) and need (P) increases. To test these hypotheses, the significance and direction of curvature

along the line of incongruence ($a_4 = \beta w_3 - \beta w_4 + \beta w_5$), the inflection point in which curvilinearity begins, and in some cases, the slope along the line of incongruence ($a_3 = \beta w_1 - \beta w_2$) should be evaluated to determine if the hypotheses are supported.

If the curvature along the line of incongruence is positive, this signals that psychological strain increases as work characteristics supply (E) falls short of work characteristics need (P). In terms of the surface plot, psychological strain increases when moving from the mid-point of the X-Y axes towards the right corner of the surface plot (high need; low supply). As well, the significant curvature signals that as supply (E) and need (P) become more discrepant, psychological strain will have a more dramatic increase. In terms of the surface plot, discrepancy close to the mid-point of the X-Y axes will illustrate a gradual increase in psychological strain while discrepancy towards the right corner of the surface plot (high need; low supply) will illustrate a more dramatic increase. In this scenario the hypotheses are supported.

If a_4 is not significant, suggesting that the line of incongruence is linear, and there is positive slope along the line of incongruence (a_3), this offers partial support for the hypothesis. This suggests that undersupply is related to an increase in psychological strain but that the level of discrepancy does not necessarily affect the level of strain. In terms of the surface plot, psychological strain decreases when moving from left corner of the surface plot (low need; high supply) towards the right corner of the surface plot (high need; low supply), and the amount of increase in psychological strain will be the same regardless of whether

discrepancy takes place close to the mid-point of the X-Y axes or towards the right corner of the surface plot (high need; low supply).

If the curvature is negative, this signals that psychological strain decreases as work characteristics supply (E) falls short of work characteristics need (P). In terms of the surface plot, psychological strain decreases when moving from the mid-point of the X-Y axes towards the right corner (high need; low supply). In this scenario the hypotheses are rejected.

Methodology for Testing Indirect Effects of Congruence

Hypotheses 7-12 suggest that varying forms of congruence will affect active work behaviors through psychological empowerment or psychological strain. I will use mediated polynomial regression analysis to test these hypotheses.

The first step in testing for an indirect effect is to analyze the relationship between congruence and the mediating variable. The tests outlined in Hypotheses 1 - 6 above describe the necessary findings for satisfying the first step in the indirect effect analysis.

Second, there must be a significant relationship between the mediator variable and the outcome variable after controlling for the five polynomial terms and control variables. The relationships between psychological empowerment and proactivity, innovativeness, and OCBI should be positive. The relationships between psychological strain and proactivity, innovativeness, and OCBI should be negative and the relationship between psychological strain and job crafting should be positive. Tables 6 - 9 report the regression results of the direct relationship between psychological empowerment and psychological strain and

the active employee behaviors after accounting for the appropriate polynomial terms and controls.

Third, the equations and steps outlined below will be used for evaluating the indirect effects (Edwards, 2013). Equation two regresses the mediator (M) on the five quadratic terms (P, E, P², PE, and E²). Equation three regresses the dependent variable (Z) on the five quadratic terms and the mediator. Substituting equation two into equation three produces equation four. Equation four represents the direct effect of congruence on the dependent variable as well as indirectly through the mediator.

$$(2) M = a_0 + a_1P + a_2E + a_3P^2 + a_4PE + a_5E^2 + e_M$$

$$(3) Z = b_0 + b_1M + b_2P + b_3E + b_4P^2 + b_5PE + b_6E^2 + e$$

$$(4) Z = (b_0 + a_0b_1) + (b_2 + a_1b_1)P + (b_3 + a_2b_1)E + (b_4 + a_3b_1)P^2 + (b_5 + a_4b_1)PE + (b_6 + a_5b_1)E^2 + (e_Z + b_1e_M)$$

To evaluate the line of congruence, I set $P = E$, which creates equation five below. This equation can be used to evaluate the slope of the direct effect ($a1 = b_2 + b_3$) and the curvature of the direct effect ($a2 = b_4 + b_5 + b_6$) as well as the slope of the indirect effect ($a1 = a_1b_1 + a_2b_1$) and the curvature of the indirect effect ($a2 = a_3b_1 + a_4b_1 + a_5b_1$) along the line of congruence.

$$(5) Z = (b_0 + a_0b_1) + [(b_2 + b_3) + (a_1b_1 + a_2b_1)]P + [(b_4 + b_5 + b_6) + (a_3b_1 + a_4b_1 + a_5b_1)]P^2 + (e_Z + b_1e_M)$$

To evaluate the line of incongruence, I set $P = -E$, which creates equation six below. This equation can be used to evaluate the slope of the direct effect ($a3 = b_2 - b_3$) and the curvature of the direct effect ($a4 = b_4 - b_5 + b_6$) as well as the

slope of the indirect effect ($a_3 = a_1b_1 - a_2b_1$) and the curvature of the indirect effect ($a_3b_1 - a_4b_1 + a_5b_1$) along the line of incongruence.

$$(6) Z = (b_0 + a_0b_1) + [(b_2 - b_3) + (a_1b_1 - a_2b_1)]P + [(b_4 - b_5 + b_6) + (a_3b_1 - a_4b_1 + a_5b_1)]P^2 + (e_Z + b_1e_M)$$

The indirect effect hypotheses are analyzed in a similar manner as outlined above for Hypotheses 1 - 6. First, the indirect effects of psychological fulfillment on active employee performance outcomes through psychological empowerment will follow the same tests as those used for the relationship between work characteristics psychological fulfillment and psychological empowerment. Thus, the slopes and curvatures of Hypotheses 7a, 9a, and 11a follow the same tests as Hypotheses 1a, 3a, and 5a. Second, the indirect effects of work characteristics oversupply on active employee performance outcomes through psychological empowerment will follow the same tests as those used for the relationship between work characteristics oversupply and psychological empowerment. Thus, the slopes and curvatures of Hypotheses 7b, 9b, and 11b follow the same tests as Hypotheses 1b, 3b, and 5b. Third, the indirect effects of work characteristics undersupply on active employee performance outcomes through psychological empowerment will follow the same tests as those used for the relationship between work characteristics undersupply and psychological empowerment. Thus, the slopes and curvatures of Hypotheses 7c, 9c, and 11c follow the same tests as Hypotheses 1c, 3c, and 5c. Fourth, the indirect effects of work characteristics undersupply on active employee performance outcomes through psychological strain will follow the same tests as those used for the relationship

between work characteristics undersupply and psychological strain. Thus, the slopes and curvatures of Hypotheses 8a, 10a, and 12a follow the same tests as Hypotheses 2c, 4c, and 6c. Fifth, the indirect effects of work characteristics undersupply on job crafting through psychological strain will follow the same tests as those used for the relationship between work characteristics undersupply on psychological strain. Thus, the slopes and curvatures of Hypotheses 8b, 10b, and 12b follow the same tests as Hypotheses 2c, 4c, and 6c. Tables 3 - 5 report the polynomial regression results as well as the slope and curvature along the line of congruence and incongruence for the relationship between task, knowledge, and social characteristics congruence and psychological empowerment and psychological strain. Table 11 - 12 report the polynomial regression results as well as the slope and curvature along the line of congruence and incongruence for the indirect relationship between work characteristics and active employee behaviors through psychological states. The surface plots for the indirect effects are illustrated in Figures 9 and 10.

CH. 5: RESULTS

Descriptive Statistics and Correlations

Table 1 displays the means, standard deviations, internal consistency reliabilities, and zero-order correlations among the study variables. Each of the control variables had statistically significant correlations with one or more of study variables. First, employee age was significantly correlated with job crafting ($r = -.13, p \leq .05$). Second, the number of years the focal employee had worked for their current employer was significantly correlated with perceptions of task characteristics supply ($r = .13, p \leq .01$). Third, the number of years the focal employee had worked for their current supervisor was significantly correlated with perceptions of task characteristics need ($r = .14, p \leq .05$), knowledge characteristics need ($r = .13, p \leq .05$), perceptions of task characteristics supply, ($r = .14, p \leq .05$), and psychological empowerment ($r = .14, p \leq .05$). Fourth, job level was significantly correlated with perceptions of knowledge characteristics supply ($r = .15, p \leq .05$).

Measure Analysis

Each of the work characteristics categories — task, knowledge, and social — included two facets. I proposed that the work characteristics should be studied at the category level as opposed to the facet level, given that research suggests that the facets will have similar influences on employee motivation and behaviors (Morgeson & Humphrey, 2006). In order to justify the usage of category-level work characteristics, I first compared the internal consistency reliabilities for the category-level work characteristics need and supply (e.g., task,

knowledge, and social) versus facet-level work characteristics need and supply (e.g., work process autonomy, decision making autonomy, job complexity, specialization, social support, and interdependence). If the category-level measures have higher levels of internal consistency reliability than the facet-level measures this would suggest that there is a higher level of internal consistency grouping items within the category level.

Regarding task-related needs, the internal consistency reliability for the task characteristics category ($\alpha = .88$) was higher than the internal consistency reliability for the work process autonomy facet ($\alpha = .82$) and the decision making autonomy facet ($\alpha = .80$). Regarding knowledge-related needs, the internal consistency reliability for the knowledge characteristics category ($\alpha = .83$) was higher than the internal consistency reliability for the job complexity facet ($\alpha = .78$) but lower than the specialization facet ($\alpha = .85$). Regarding social-related needs, the internal consistency reliability for the social characteristics category ($\alpha = .80$) was lower than the internal consistency reliability for the social support facet ($\alpha = .84$) but higher than the interdependence facet ($\alpha = .71$). Regarding task-related supplies, the internal consistency reliability for the task characteristics category ($\alpha = .88$) was higher than the internal consistency reliability for the work process autonomy facet ($\alpha = .82$) and the decision making autonomy facet ($\alpha = .79$). Regarding knowledge-related supplies, the internal consistency reliability for the knowledge characteristics category ($\alpha = .86$) was higher than the internal consistency reliability for the job complexity facet ($\alpha = .77$) and the specialization facet ($\alpha = .85$). Regarding the social-related supplies, the internal consistency

reliability for the social characteristics category ($\alpha = .84$) was lower than the internal consistency reliability for the social support facet ($\alpha = .85$) but higher than interdependence facet ($\alpha = .79$). In 9 out of twelve cases the category-level construct had higher internal consistency reliability than the facet-level constructs. This analysis provides initial evidence to support use of category-level scales as opposed to facet-level scales.

Confirmatory Factor Analysis

I conducted confirmatory factor analyses to test the factor structure of the main study variables (Jöreskog, 1969). As reported in Table 2, I compared chi-square, comparative fit index (CFI), and root mean square error of approximation (RMSEA) of various models. For CFI, values above .95 indicate excellent fit and values between .90 and .95 indicate good fit (Hu & Bentler, 1999). For RMSEA, values below .05 indicate excellent fit and values between .05 and .08 indicate good fit. The hypothesized 12-factor model including task characteristics need, task characteristics supply, knowledge characteristics need, knowledge characteristics supply, social characteristics need, social characteristics supply, psychological empowerment, psychological strain, proactive behaviors, innovative behaviors, OCBI, and job crafting, fit the data adequately ($\chi^2 (339) = 881.80, p \leq .01, RMSEA = .08, CFI = .91$), and better than an 18-factor model, separating each work characteristics dimension into two latent constructs (e.g., work methods autonomy, decision making autonomy, complexity, specialization, social support, and interdependence) ($\chi^2 (1224) = 2512.68, p \leq .01, RMSEA = .06, CFI = .87, \Delta\chi^2 (885) = 1630.88, p \leq .01$). I also compared the hypothesized

12-factor model to a nine-factor model combining the needs and supplies of the three characteristics ($\chi^2 (369) = 967.38, p \leq .01, RMSEA = .08, CFI = .89, \Delta\chi^2 (30) = 85.58, p \leq .01$), a ten-factor model combining proactivity, innovativeness, and OCBI ($\chi^2 (360) = 990.32, p \leq .01, RMSEA = .08, CFI = .89, \Delta\chi^2 (21) = 108.52, p \leq .01$), a nine-factor model combining proactivity, innovativeness, OCBI, and job crafting ($\chi^2 (369) = 1096.03, p \leq .01, RMSEA = .09, CFI = .87, \Delta\chi^2 (30) = 214.23, p \leq .01$), a two factor model combining all employee-rated items into one dimension and supervisor-rated items into a second dimension ($\chi^2 (404) = 2257.49, p \leq .01, RMSEA = .13, CFI = .68, \Delta\chi^2 (65) = 1375.69, p \leq .01$), and a one-factor model ($\chi^2 (405) = 2652.68, p \leq .01, RMSEA = .15, CFI = .61, \Delta\chi^2 (66) = 1770.88, p \leq .01$). In summary, results provide support for the hypothesized 12-factor model.

To further test the reliability and validity of the study measures, I calculated the average variance extracted (AVE) for each latent construct following procedures set forth by Fornell and Larcker (1981). Evaluating the AVE ensures that an adequate portion of variance is explained by the latent construct as opposed to measurement error. AVE values above .50 indicate that the explained variance exceeds variance due to measurement error (Fornell & Larcker, 1981). The AVE values can also be used to evaluate discriminant validity among the study variables (Gefen & Straub, 2005). Sufficient discriminant validity is said to exist if the square root of the AVE of each construct exceeds the zero-order correlations between the latent constructs (Gefen & Straub, 2005). As illustrated in Table 1, the AVE for each construct was greater

than .50 and the square root of the AVE values exceeded the zero-order correlations among constructs offering evidence of discriminant validity.

Tests of Relationships between Congruence and Psychological States

Hypothesis 1a proposed that task characteristics congruence is positively related to psychological empowerment and that fulfilled needs at higher levels of task characteristics have a greater effect on psychological empowerment than at lower levels of task characteristics. The line of congruence was upward sloping ($a1 = .72, p \leq .01$) and curvilinear ($a2 = .20, p \leq .01$). Additionally, the three quadratic terms of the polynomial regression equation were jointly significant ($F = 2.04, p \leq .05$), but the curvature along the line of incongruence was not significant ($a4 = .15, ns$). When evaluating the line of congruence, the surface plot (see Figure 3) illustrated that psychological empowerment is higher at the back corner of the surface plot (high need; high supply) and gradually decreased when moving towards the near corner of the surface plot (low need; low supply), and eventually had a slight increase when reaching the near corner of the surface plot. However, when moving away from the zone of congruence towards the zone of undersupply and oversupply, psychological empowerment increased as opposed to decreased. This suggests that similarity between need (P) and supply (E) is not related to an increase in psychological empowerment. Thus, this hypothesis is not supported.

Hypothesis 1b proposed that modest oversupply of task characteristics is positively related to psychological empowerment, while excessive oversupply is negatively related to psychological empowerment. Hypothesis 1c proposed that

undersupply of task characteristics is negatively related to psychological empowerment and that the effects are greater as the discrepancy increases. The slope ($a_3 = -.08$, *ns*) and curvature ($a_4 = .15$, *ns*) along the line of incongruence were not significant. The plot illustrated (see Figure 3) that psychological empowerment increased as supply increased and as need increased. Additionally, psychological empowerment was slightly higher at high levels of supply than at high levels of need. Therefore, H1b and H1c are not supported.

Hypothesis 2a proposed that task characteristics congruence is negatively related to psychological strain and that fulfilled needs at higher levels of task characteristics have a greater effect on psychological strain than at lower levels of task characteristics. The line of congruence was upward sloping ($a_1 = -.41$, $p \leq .01$) and curvilinear ($a_2 = -.19$, $p \leq .05$). Additionally, the three quadratic terms of the polynomial regression equation were not jointly significant ($F = 1.62$, *ns*) and the curvature along the line of incongruence was not significant ($a_4 = .27$, *ns*). When evaluating the line of congruence, the surface plot (see Figure 4) illustrated that psychological strain is lower at the back corner of the surface plot (high need; high supply) and gradually increased when moving towards the near corner of the surface plot (low need; low supply), and eventually had a slight decrease when reaching the near corner of the surface plot. However, when moving away from the zone of congruence and towards the zone of undersupply and oversupply, psychological strain decreased as opposed to increased. This suggests that similarity between need (P) and supply (E) is not related to a decrease in psychological strain. Thus, this hypothesis is not supported.

Hypothesis 2b proposed that modest oversupply of task characteristics is negatively related to psychological strain, while excessive oversupply is positively related to psychological strain. Hypothesis 2c proposed that undersupply of task characteristics is positively related to psychological strain and that the effects are greater as the discrepancy increases. The plot illustrated (see Figure 4) that psychological strain increased when moving away from the zone of congruence towards the zone of oversupply and undersupply. However, the slope ($a_3 = .12, ns$) and curvature ($a_4 = .27, ns$) along the line of incongruence were not significant. Therefore, H2b and H2c are not supported.

Hypothesis 3a proposed that congruence of knowledge characteristics is positively related to psychological empowerment and that fulfilled needs at higher levels of knowledge characteristics have a greater effect on psychological empowerment than at lower levels of knowledge characteristics. The line of congruence was upward sloping ($a_1 = .61, p \leq .01$) and curvilinear ($a_2 = .14, p \leq .01$). Additionally, the three quadratic terms of the polynomial regression equation were jointly significant ($F = 2.04, p \leq .05$) and the curvature along the line of incongruence was not significant ($a_4 = .02, ns$). When evaluating the line of congruence, the surface plot (see Figure 5) illustrated that psychological empowerment is higher at the back corner of the surface plot (high need; high supply) and gradually decreased when moving towards the near corner of the surface plot (low need; low supply), and eventually had a slight increase when reaching the near corner of the surface plot. However, when moving away from the zone of congruence and towards the zone of oversupply and undersupply,

psychological empowerment stayed stable. Overall, these findings suggest that similarity between need (P) and supply (E) is not related to an increase in psychological empowerment. Thus, this hypothesis is not supported.

Hypothesis 3b proposed that modest oversupply of knowledge characteristics is positively related to psychological empowerment, while excessive oversupply is negatively related to psychological empowerment. Hypothesis 3c proposed that undersupply of knowledge characteristics is negatively related to psychological empowerment and that the effects are greater as the discrepancy increases. The slope ($a_3 = -.15, ns$) and curvature ($a_4 = .02, ns$) along the line of incongruence was not significant. As illustrated in the surface plot (see Figure 5), psychological empowerment was unaffected when knowledge characteristics were oversupplied and undersupplied. Therefore, H3b and H3c are not supported.

Hypothesis 4a proposed that knowledge characteristics congruence is negatively related to psychological strain and that fulfilled needs at higher levels of knowledge characteristics have a greater effect on psychological strain than at lower levels of knowledge characteristics. The line of congruence was downward sloping ($a_1 = -.35, p \leq .01$) and curvilinear ($a_2 = -.24, p \leq .05$). Additionally, the three quadratic terms of the polynomial regression equation were not jointly significant ($F = 1.19, ns$) and the curvature along the line of incongruence was not significant ($a_4 = -.07, ns$). When evaluating the line of congruence, the surface plot (see Figure 6) illustrated that psychological strain is lower at the back corner of the surface plot (high need; high supply) and gradually increased when moving

towards the near corner of the surface plot (low need; low supply), and eventually had a slight decrease when reaching the near corner of the surface plot. The surface plots also illustrated that when moving away from the zone of congruence towards the zone of oversupply, strain slightly increased, and when moving towards the zone of undersupply, strain significantly increased. In total, given the lack of significant curvature along the line of congruence, there is not enough support to suggest that similarity between need (P) and supply (E) is related to a decrease in psychological strain. Thus, this hypothesis is not supported.

Hypothesis 4b proposed that modest oversupply of knowledge characteristics is negatively related to psychological strain, while excessive oversupply is positively related to psychological strain. Hypothesis 4c proposed that undersupply of knowledge characteristics is positively related to psychological strain and that the effects are greater as the discrepancy increases. The curvature along the line of incongruence was not significant ($a_4 = -.07, ns$), but when the significance test is extended to $p \leq .10$, the slope along the line of incongruence was positively sloping ($a_3 = .53, p \leq .10$). This positive slope can be seen in the surface plot (see Figure 6), which illustrated that psychological strain decreased when moving from the right corner of the surface plot (high need; low supply) towards the left corner of the surface plot (low need; high supply). These findings indicate that modest oversupply was related to decreasing levels of psychological strain but excessive oversupply was not related to increased strain. Therefore, this H4b is not supported. Additionally these findings indicate that psychological strain increased as knowledge characteristics supply falls short of

task characteristics need. However, given the lack of curvature, greater discrepancy between need and supply was not related to greater levels of strain. Thus, H4c is partially supported.

Hypothesis 5a proposed that social characteristics congruence is positively related to psychological empowerment and that fulfilled needs at higher levels of social characteristics have a greater effect on psychological empowerment than at lower levels of social characteristics. The line of congruence was upward sloping ($a1 = .52, p \leq .01$) and curvilinear ($a2 = .15, p \leq .05$). Additionally, the three quadratic terms of the polynomial regression equation were not jointly significant ($F = 1.59, ns$), but when the significance test is extended to $p \leq .10$, the curvature along the line of incongruence was significant ($a4 = .36, p \leq .10$). When evaluating the line of congruence, the surface plot (see Figure 7) illustrated that psychological empowerment is higher at the back corner of the surface plot (high need; high supply) and gradually decreased when moving towards the near corner of the surface plot (low need; low supply), and eventually had a slight increase when reaching the near corner of the surface plot. Additionally, when moving away from the zone of congruence and towards the zone of oversupply and undersupply, psychological empowerment increased as opposed to decreased. In total, these findings suggest that similarity between need (P) and supply (E) is not related to an increase in psychological empowerment. Thus, H5a is not supported.

Hypothesis 5b proposed that modest oversupply of social characteristics is positively related to psychological empowerment, while excessive oversupply is negatively related to psychological empowerment. Hypothesis 5c proposed that

undersupply of social characteristics is negatively related to psychological empowerment and that the effects are greater as the discrepancy increases. When the significance test is extended to a $p \leq .10$ threshold, the curvature along the line of incongruence was significant and positive ($a_4 = .36, p \leq .10$). Additionally, the slope along the line of incongruence was significant and negatively sloping ($a_3 = -.37, p \leq .01$). Evaluation of the surface plot (see Figure 7) illustrated that psychological empowerment increases when moving from the mid-point of the X-Y axes towards the left corner of the surface plot (low P; high E) and when moving from the mid-point of the X-Y axes towards the right corner of the surface plot (high need; low supply). These findings suggest that oversupply was related to increasing levels of psychological empowerment, but excessive supply was not related to decreasing levels of psychological empowerment. Thus, H5b is not supported. These findings also suggest that psychological empowerment increased as opposed to decreased as social characteristics supply fell short of social characteristics need. Thus, H5c is not supported.

Hypothesis 6a proposed that social characteristics congruence is negatively related to psychological strain and that fulfilled needs at higher levels of social characteristics have a greater effect on psychological strain than at lower levels of social characteristics. The slope along the line of congruence was not significant ($a_1 = -.04, ns$) but it was curvilinear ($a_2 = -.18, p \leq .01$). Additionally, when the significance test is extended to $p \leq .10$, the three quadratic terms of the polynomial regression equation were jointly significant ($F = 1.94, p \leq .10$) but the curvature along the line of incongruence was not significant ($a_4 = .12, ns$). As

illustrated in the surface plot (see Figure 8), when moving from the back corner (high need; high supply) towards the near corner (low need; low supply) of the plot, psychological strain started off low, and then gradually increased until it plateaued at the mid-point (moderate need; moderate supply), and then gradually decreased back to a low point at the near corner. The surface plots also illustrated that when moving away from the zone of congruence towards the zone of oversupply, strain was stable, and when moving towards the zone of undersupply, strain significantly increased. In total, given the lack of significant curvature along the line of congruence, there is not enough support to suggest that similarity between need (P) and supply (E) is related to a decrease in psychological strain. Thus, H6a is not supported.

Hypothesis 6b proposed that modest oversupply of social characteristics is negatively related to psychological strain, while excessive oversupply is positively related to psychological strain. Hypothesis 6c proposed that undersupply of social characteristics is positively related to psychological strain and that the effects are greater as the discrepancy increases. Curvature along the line of incongruence was not significant ($a_4 = .12, ns$), but when the significance test is extended to $p \leq .10$, the slope was significant and positive ($a_3 = .50, p \leq .10$). This positive slope can be seen in the surface plot (see Figure 8), which illustrated that psychological strain decreased when moving from the right corner of the surface plot (high need; low supply) towards the left corner of the surface plot (low need; high supply). Additionally, further evaluation of the surface plot suggests that the positive slope along the line of incongruence is less prominent

when moving from the mid-point of the X-Y axes towards the left corner of the surface plot (low need; high supply) than when moving from the mid-point of the X-Y axes towards the right corner of the surface plot (high need; low supply). These findings suggest that psychological strain is unaffected by oversupply. Thus, H6b is not supported. These findings do suggest that psychological strain increased as social characteristics supply fell short of social characteristics need. However, given the lack of curvature, greater discrepancy between need and supply was not related to greater levels of strain. Thus, H6c is partially supported.

In summary, congruence of task, knowledge, and social characteristics were not significantly related to psychological empowerment or psychological strain. Additionally, oversupply and undersupply of task, knowledge, and social characteristics were not significantly related to psychological empowerment. Finally, undersupply of knowledge and social characteristics were positively related to psychological strain, but undersupply of task characteristics were not significantly related to strain.

Test of Indirect Effects of Congruence

Three steps are undertaken in order to test the indirect effects of work characteristics need-supply congruence. The first step is testing the relationship between work characteristics congruence and the mediating variables of psychological empowerment and psychological strain, which was conducted in Hypothesis 1 - 6. The second step is testing the relationship between the mediating variables and the dependent variables. After accounting for controls and the five polynomial terms, there was a significant positive relationship

between psychological empowerment and proactivity ($b = .46, p \leq .01$), innovativeness ($b = .46, p \leq .01$), and OCBI ($b = .44, p \leq .01$). Additionally, after accounting for controls and the five polynomial terms, there was a significant negative relationship between psychological strain and proactivity ($b = -.07, p \leq .05$), innovativeness ($b = -.10, p \leq .01$), and OCBI ($b = -.14, p \leq .01$). Finally, after accounting for controls and the five task-focused polynomial terms, there was a significant positive relationship between psychological strain and job crafting ($b = -.07, p \leq .05$). Alternatively, after accounting for the controls the five knowledge-focused polynomial terms, the relationship between psychological strain and job crafting ($b = .04, ns$) was not significant and after accounting for the controls and the five social-focused polynomial terms, the relationship between psychological strain and job crafting ($b = .00, ns$) was not significant. These results are summarized in Tables 7 – 9.

The majority of Hypotheses 1 - 6 were not supported. First, psychological need fulfillment of task, knowledge, and social characteristics were not significantly related to psychological empowerment or psychological strain. Therefore, the following indirect effects are not supported: task characteristics congruence and proactivity through psychological empowerment (H7a) and psychological strain (H8a); knowledge characteristics congruence and innovativeness through psychological empowerment (H9a) and psychological strain (H10a); and social characteristics congruence and OCBI through psychological empowerment (H11a) and psychological strain (H12a). Second, oversupply and undersupply of task, knowledge, and social characteristics were

not significantly related to psychological empowerment. Therefore, the following indirect effects are not supported: oversupply (H7b) and undersupply (H7c) of task characteristics and proactivity through psychological empowerment; oversupply (H9b) and undersupply (H9c) of knowledge characteristics and innovativeness through psychological empowerment; and oversupply (H11b) and undersupply (H11c) of social characteristics and OCBI through psychological empowerment. Third, undersupply of task characteristics was not significantly related to strain. Therefore, the following indirect effects are not supported: undersupply of task characteristics and proactivity (H8a) and job crafting (H8b) through psychological strain.

The two relationships that were supported include the relationship between undersupply of knowledge characteristics and strain, and undersupply of social characteristics and strain. Therefore, it is appropriate to test the second step of the following indirect effects: undersupply of knowledge characteristics and innovativeness (H10a) and job crafting (H10b) through strain and undersupply of social characteristics and OCBI (H12a) and job crafting (H12b) through strain. With respect to undersupply of knowledge characteristics, findings illustrated that after accounting for controls and the five knowledge-focused polynomial terms, there was a significant negative relationship between psychological strain and innovativeness ($b = -.10, p \leq .01$) but there was not a significant relationship between psychological strain and job crafting ($b = .04, ns$). With respect to undersupply of social characteristics, findings illustrated that after accounting for controls and the five social-focused polynomial terms, there was a significant

negative relationship between psychological strain and OCBI ($b = -.14, p \leq .01$) but there was not a significant relationship between psychological strain and job crafting ($b = .00, ns$).

The non-significant relationship between strain and job crafting suggests that the indirect effects of undersupplied knowledge characteristics (H10b) and social characteristics (H12b) on job crafting through psychological strain are not supported. However, the significant relationship between strain and innovativeness and OCBI suggests it is appropriate to continue to the third step of the indirect effect analysis for the relationship between undersupplied knowledge characteristics and innovativeness through strain and between undersupplied social characteristics and OCBI through strain. The polynomial regressions for these indirect effects are reported in Tables 11 and 12.

H10a proposed that undersupply of knowledge characteristics is negatively related to innovativeness through psychological strain and that the effects are greater as the discrepancy increases. When the significance test is extended to $p \leq .10$, the slope ($a_3 = .31, p \leq .10$) and curvature ($a_4 = .68, p \leq .10$) along the line of incongruence was significant and positive. However, as indicated in the surface plot (see Figure 9), innovativeness increased as opposed to decreased when moving from the mid-point of the X-Y axes towards the right corner of the surface plot (high P; low E). Thus, H10a is not supported.

H12a proposed that undersupply of social characteristics is negatively related to OCBI through strain and that the effects are greater as the discrepancy increases. The slope along the line of incongruence was significant and negative

($a_3 = -.31, p \leq .05$) and the curvature was significant and positive ($a_4 = .38, p \leq .05$). The surface plot illustrated (see Figure 10) that OCBI increased when moving from the mid-point of the X-Y axes towards the right corner (high P; low E), which is in the opposite direction of the proposed. Thus, H12a is not supported.

In summary, the findings suggest that work characteristics need-supply congruence is not related to active employee behaviors through psychological empowerment or psychological strain. Although these psychological mechanisms may not be linking mechanisms between work characteristics need-supply congruence and active employee behaviors, it is important to investigate whether there is a direct relationship between work characteristics need-supply congruence and active employee behaviors. If so, this would indicate that the joint effects of work characteristics need and supply are directly related to active behaviors. In this case, perhaps congruence, oversupply, or undersupply capture the psychological processes linking work characteristics to behavior or, alternatively, other psychological mechanisms not addressed in this study are involved. Thus, I conducted supplemental analyses to investigate the direct effect of task characteristics congruence on proactivity and job crafting; knowledge characteristic congruence on innovativeness and job crafting; and social characteristic congruence on OCBI and job crafting. For each of the work characteristics, I predicted that (a) congruence would be positively related to the active performance outcomes, and that the effects would be stronger at higher levels of work characteristics, (b) modest oversupply would be positively related

to the active performance outcomes, and excessive levels would be negatively related to active performance outcomes, and (c) undersupply would be negatively related to active performance outcomes. The polynomial regression results for these relationships are reported in Tables 3 – 5. Also, for each work characteristic, I predicted that undersupply would be positively related to job crafting. The polynomial regression results for these relationships are reported in Tables 10 – 12.

Supplemental Analysis

First, I investigated the effect of congruence, oversupply, and undersupply of task characteristics on proactivity. The slope ($a_1 = .69, p \leq .01$) and curvature ($a_2 = .16, p \leq .05$) along the line of congruence were positive and significant. The slope ($a_3 = .21, ns$) and curvature ($a_4 = .41, ns$) along the line of incongruence were not significant. Finally, the three quadratic terms of the polynomial regression equation were jointly significant ($F = 1.94, p \leq .05$). The significant slope and curvature along the line of congruence suggests that proactivity increases when congruence occurs at higher levels of task characteristics, but that it slightly decreases at the lowest level. However, the lack of curvature along the line of incongruence suggests that task characteristics congruence is not related to an increase in proactivity. Additionally, given that both the slope and curvature along the line of incongruence were not significant, neither oversupply nor undersupply is related to proactivity, which is as illustrated in the surface plot (see Figure 11).

Second, I investigated the effect of congruence, oversupply, and undersupply of knowledge characteristics on innovativeness. The slope along the line of congruence was positive and significant ($a_1 = .60, p \leq .01$) and the curvature ($a_2 = .06, ns$) was not significant. The slope ($a_3 = .13, ns$) and curvature ($a_4 = .05, ns$) along the line of incongruence were not significant. Finally, the three quadratic terms of the polynomial regression equation were not jointly significant ($F = 1.59, ns$). The significant slope and non-significant curvature along the line of congruence suggests that innovativeness increases when congruence occurs at higher levels of knowledge characteristics. However, the lack of curvature along the line of incongruence suggests that knowledge characteristics congruence is not related to innovativeness. Additionally, given that both the slope and curvature along the line of incongruence were not significant, neither oversupply nor undersupply is related to innovativeness. The surface plot illustrated (see Figure 12) that innovativeness was unaffected by oversupply and that innovativeness was highest when supply and/or need was high. In total, knowledge characteristics congruence is not related to innovativeness.

Third, I investigated the effect of congruence, oversupply, and undersupply of social characteristics on OCBI. The slope ($a_1 = .45, p \leq .01$) and curvature ($a_2 = .16, p \leq .01$) along the line of incongruence were positive and significant. Additionally, the slope ($a_3 = -.38, p \leq .01$) and curvature ($a_4 = .37, p \leq .10$) along the line of incongruence were significant. Finally, the three quadratic terms of the polynomial regression equation were jointly significant ($F = 1.96, p \leq$

.10). The significant slope and curvature along the line of congruence suggests that OCBI increases when congruence occurs at higher levels of social characteristics, but that it slightly decreases at the lowest level. The significant, negative curvature along the line of incongruence suggests that social characteristics congruence is negatively related to OCBI, which is opposite of what was expected. This suggests that the relationship between congruence and OCBI was not supported. Additionally, I expected that modest oversupply was related to an increase in OCBI while an excessive amount of oversupply was related to a decrease in OCBI. This prediction was not supported, given that negative curvature suggests that modest, as well as excessive oversupply was related to an increase in OCBI. Finally, I expected that undersupply is negatively related to OCBI. Again, opposite of expected, OCBI increased as opposed to decreased when social characteristics were undersupplied. The surface plot illustrated (see Figure 13) that OCBI increased when moving away from the zone of congruence and towards the zone of oversupply and undersupply.

Fourth, I investigated the effect of task characteristics undersupply on job crafting. The curvature along the line of incongruence was significant ($a_4 = .74, p \leq .01$) while the slope along the line of incongruence was not significant ($a_3 = .08, ns$). The surface plot (see Figure 14) illustrated that as the discrepancy increased, so did job crafting. Job crafting increased when moving from the midpoint of the X-Y axes towards the right corner of the surface plot (high need; low supply). As well, the amount of job crafting increased as the discrepancy became more pronounced. As illustrated in the surface plot, discrepancy close to the mid-

point of the X-Y axes related to a gradual increase in job crafting while discrepancy towards the right corner of the surface plot (high need; low supply) related to a more dramatic increase. This suggests that undersupply of task characteristics is related to an increase in job crafting and that effects are greater as the discrepancy increases.

Fifth, I investigated the effect of knowledge characteristics undersupply on job crafting. The slope ($a_3 = .20, ns$) and curvature ($a_4 = .05, ns$) along the line of incongruence were not significant. The surface plot illustrated (see Figure 15) that as the discrepancy increased, so did job crafting, however, statistical significance was not met to support this prediction.

Sixth, I investigated the effect of social characteristics undersupply on job crafting. The slope ($a_3 = -.12, ns$) and curvature ($a_4 = .25, ns$) along the line of incongruence were not significant. The surface plot illustrated (see Figure 16) that as the discrepancy increased, so did job crafting. Again, however, the findings did not meet appropriate statistical thresholds in order to support the directionality of the surface plot.

CH. 6: DISCUSSION

This study sought to contribute to WCT by examining how the joint effects of work characteristics needs and work characteristics supplies provide a nuanced understanding of the linkages between work characteristics, employee motivation, and proactive work behaviors. Additionally, this study sought to contribute to P-E fit theory by examining the effects of work characteristic congruence, oversupply, and undersupply on active employee outcomes. In the following sections, I offer a summary of findings and explanations for how each set of findings contribute to WCT and P-E fit theory.

Summary of Findings

First, the overall pattern along the line of congruence suggests that when people experience high need for work characteristics and high supply of work characteristics they have less strain, more motivation, and engage in more active employee behaviors. In general, empowerment was higher and strain was lower when need-supply congruence occurred at high levels of task, knowledge, and social characteristics as opposed to low levels. Similarly, active employee outcomes of proactivity, innovativeness, and OCBI were higher when need-supply congruence occurred at high levels of task, knowledge, and social characteristics, respectively, as opposed to low levels. These findings illustrate the importance of the joint effects of work characteristics need and supply. When high supply of work characteristics is met with high preferences levels of work characteristics, employees are more likely to engage in motivated and active-oriented behaviors.

Second, the results suggest that motivation and active-oriented behaviors tend to increase as the level of work characteristics supply increases. In particular, for task and social characteristics, all levels of oversupply, including modest and excessive, were related to an increase in psychological empowerment. Additionally, task characteristics oversupply was related to proactivity and social characteristics oversupply was related to OCBI. This suggests that instead of there being a “tipping point” in which excessive oversupply becomes detrimental, oversupply is beneficial as opposed to detrimental. In total, these findings suggest that organizations may benefit from increasing employee discretion as well as the amount of opportunities for working alongside multiple colleagues.

Third, undersupply of work characteristics is related to detrimental psychological states as well as active oriented behaviors. Employees had higher levels of psychological strain when experiencing undersupply of knowledge characteristics and social characteristics. Additionally, employees engaged in job crafting behaviors when experiencing undersupply of task characteristics and OCBI when experiencing undersupply of social characteristics. Job crafting, however, was not related to undersupply of knowledge or social characteristics undersupply and active performance behaviors were not related to task or knowledge characteristics undersupply. These findings suggest that undersupply of certain work characteristics may trigger detrimental psychological reactions and/or self-initiated, discretionary behaviors aimed at changing their work environment.

Theoretical Implications

Work Design Theory

Work design theory typically suggests that individuals high in growth needs strength will be more receptive to enhanced work characteristics (Hackman & Oldham, 1980); however, the findings have primarily been mixed (Fried & Ferris, 1987; Hackman & Lawler, 1971; Loher et al., 1985; Tiegs et al., 1992). By studying the joint effects of need and supply, this study offers a more precise evaluation of how the two variables influence motivation and well-being. The findings generally suggest that strain is lowest and empowerment and active-employee performance are highest when high levels of work characteristics need are matched with high levels of work characteristics supply. Thus, while former studies did not have consistent results when studying the interaction of need and supply, this study illustrates that the enhancement effect is most likely to occur when high supply is matched with high need.

N-S fit research also suggests that employees with higher levels of needs have higher aspirations, and when these higher aspirations are fulfilled, employees should have higher levels of satisfaction and well-being (Edwards & Rothbard, 1999). This study offers an evaluation of work design that goes beyond studying the effect of congruence on employee attitudes. The findings of this study suggest that experiencing need-supply congruence at high levels of work characteristics has the ability to influence active-oriented performance behaviors such as proactivity, innovativeness, and OCBI. Thus, these findings contribute to work design theory by illustrating that it is possible to initiate behaviors that are

highly valued in the twenty-first century work environment (Grant et al., 2010), by considering the compatibility of individual needs and job characteristics supply.

Person-Job Fit Theory

P-E fit theory offers two competing perspectives on the effects of oversupplied work characteristics. While oversupply may be beneficial because it acts as a buffer for future needs (Edwards, 1996; Edwards & Rothbard, 1999; Shipp & Jansen, 2011) it could also be detrimental because it is over-stimulating and goes beyond the comfortable thresholds of employees (Warr, 1990; De Jonge & Schaufeli, 1998). To reconcile these perspectives, I suggested that modest oversupply would be beneficial (e.g., increased empowerment or decreased strain) and that excessive oversupply would be detrimental (e.g., decreased empowerment or increased strain). The findings of this study illustrate that concerns related to excessive oversupply may be unwarranted. No cases were found where excessive supply was related to a decrease in empowerment or an increase in strain. Instead, empowerment continued to increase as task and social characteristics supply surpassed need, and strain continued to decrease as task characteristics supply surpassed need. Additionally, supplemental analyses illustrated that task characteristics oversupply and social characteristics oversupply were related to an increase in active-oriented performance behavior. The majority of P-J fit research suggests that oversupply is rarely detrimental for employee attitudes (Kristof-Brown et al., 2005; Kristof-Brown & Guay, 2011). The findings of this research extend this perspective by illustrating that not only is

oversupply non-threatening, it may initiate productive behaviors such as proactivity and OCBI.

P-E fit research suggests that undersupply is detrimental to employee well-being and work attitudes (Kristof-Brown et al., 2005; Kristof-Brown & Guay, 2011). To-date, however, research has not investigated how undersupply of work characteristics, a form of P-J incongruence, affects employee reactions and behaviors. This study illustrates that when employees are embedded in work environments where they have less knowledge and social characteristics than what they prefer, they will have increasing levels of strain. Additionally, this study illustrates that undersupply of work characteristics also initiates active employee behaviors. When employees received less autonomy and discretion than what they preferred, they reacted by making proactive, self-initiated attempts at changing their work characteristics. Similarly, when employees prefer high levels of interdependence and social support, yet they were embedded in an environment that lacked these characteristics, they engaged in higher levels of OCBI. Both of these scenarios illustrate that employees are not likely to sit idly when working in jobs that don't meet their preferences. Instead, employees are likely to proactively create the environment that fulfills their needs.

Practical Implications

There are multiple implications of this study that may be pertinent for practicing managers. First, organizations may benefit by paying careful attention to employee preference levels in terms of task, knowledge, and social needs. The findings of this study suggest that employees who prefer and receive high levels

of work characteristics will manifest higher levels of empowerment and active-oriented performance behaviors. Thus, understanding and evaluating employees' needs, in coordination with work characteristics supply, may help managers and organizations accomplish more with work design initiatives than simply improving employees' attitudes. Work design, when considering the joint effects of needs and supplies, has the potential to influence employees towards being proactive and innovative employees who go out of their way to help the organization improve, adapt, and innovate. Thus, managers may be able to maximize their work design initiatives by tracking the work characteristics preferences of employees and then making proactive attempts at designing work that matches these preference levels.

Second, it is useful for managers to know whether or not there is a "tipping point" in which increasing supply of work characteristics goes from being beneficial to detrimental (Pierce & Aguinis, 2013). From the perspective of the employee, oversupply may always be beneficial because it helps reduce manifestations of psychological strain. Additionally, to the degree that organizations are concerned with employee well-being, oversupply is considered productive because well-being is related to enhanced employee performance and commitment (Wright & Cropanzano, 2004). If the organizational goal is to increase employee motivation, not all forms of oversupply will be beneficial. For example, employees receiving excess opportunities for challenging or specialized work may not necessarily translate into increased employee motivation. Alternatively, oversupply of social characteristics may be beneficial for both

employee well-being and employee motivation. Thus, it may be beneficial for organizations to continuously strive to design work so that employees have opportunities to support each other or work interdependently.

Third, it may be useful for managers to recognize that employees with unfulfilled needs may engage in behaviors that satisfy their unmet needs. Both employees and managers are capable of changing work characteristics supply, and these changes may be consistently taking place without planned efforts by management (Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012). Thus, managers should pay particular attention to employee preferences, listen carefully to employee requests for work characteristics changes, and consistently observe employees' proactive attempts at work characteristics alterations. From the organization's perspective, employee attempts at garnering additional discretion through job crafting, or attempts at being more interdependent by engaging in OCBI, could lead to beneficial outcomes. Employees may customize the amount of discretion or interdependence in their work in order to feel fulfilled, which may subsequently lead to beneficial employee outcomes. However, in some cases, employees that attempt to increase discretion or their interaction with others could be a detriment to the organization because it goes against the strategic direction set forth by management (Wrzesniewski & Dutton, 2001). For example, if management is attempting to maintain quality and consistency by giving precise direction to employees on how to do their work tasks, employees who alter their job so that they have increased discretion may contradict the organizational attempts for uniformity. Thus, organizations should be aware that employees who

are unfulfilled might attempt to adjust their work task or work environment in ways that are misaligned with organizational human resource strategy. Managers who acknowledge the potential for this type of behavior can then be proactive in making appropriate work design changes.

Limitations

It is important to acknowledge and address the limitations of this study. The first limitation involves the usage of Mechanical Turk for recruiting a sample of participants. Social science researchers commonly market survey opportunities to workers using the Mechanical Turk service (Cho & Allen, 2012; Fast, Sivanathan Mayer, & Galinsky, 2011; Lemay, Overall, & Clark, 2012; Piff, Stancato, Martinez, Kraus, & Keltner, 2012; Polman, 2012; Polman & Russo, 2012) because the subject pool includes over 500,000 registered users from a broad array of industries, job types, incomes, ages, ethnicities, and countries (Barger, Behrend, Sharek, & Sinar, 2011). Thus, using Mechanical Turk enabled me to test the hypotheses across a diverse sample of participants and across a range of organizations, industries, jobs, and nationalities.

A potential concern, however, may be that Mechanical Turk users are not representative of the general working population. Mechanical Turk users must be willing to spend free-time completing surveys for minimum wage compensation. Thus, Mechanical Turk may have fewer users with high-level jobs, which likely entail limited free-time and higher salaries. This suggests that the range among study variables may be restricted which may attenuate effects sizes. Specifically, the results may be skewed towards more moderate levels of autonomy and

challenge because the sample lacks users with high-levels jobs that likely have higher amounts of these work characteristics. Research has compared Mechanical Turk to student populations and other online survey populations, and findings suggest that all samples respond similarly to decision making tasks (Paolacci, Chandler, & Ipeirotis, 2010) and have similar non-response errors, attention scores, and test-retest reliability (Behrend, Sharek, Meade, & Wiebe, 2011; Buhrmester, Kwang, & Gosling, 2011; Paolacci et al., 2010). These findings suggest that Mechanical Turk users are likely to respond similarly to other sample populations, however, future research should consider using field studies from a variety of organizations to ensure generalizability of the findings.

Another potential issue with the sample is the inability to quantify differences in non-respondents. It is possible that the survey method and requirements of the participation may have excluded small portions of potential respondents. The survey opportunity was one HIT among approximately 200,000 other HITs that registered Mechanical Turk users had the opportunity to view. The survey was open to all who met the criteria for two weeks. Given that surveys are one of the higher paying HIT opportunities, I received data for 261 dyads rather quickly (two weeks). Thus, users who regularly visit Mechanical Turk to evaluate opportunities had a higher likelihood of seeing and completing the survey opportunity. Additionally, 10% of users state that Mechanical Turk is their primary source of income (Behrend et al., 2011). This 10% of users was unable to participate in the survey because they did not have work experiences to report upon in the survey. Finally, one of the requirements of participation was that the

employee participants have a supervisor complete a survey. Thus, there may have been non-respondents who did not have a supervisor (e.g., self-employed), had a supervisor that was unwilling to complete the survey, or were uncomfortable approaching their supervisor and requesting that a survey be completed on their behalf. Nonetheless, future researchers should consider using field studies from a variety of organizations in order to confirm that online survey populations, such as Mechanical Turk, have similar reactions to work characteristics N-S fit.

A second limitation of the study concerns the recruitment of supervisors. Asking employees to self-select supervisors to participate in a survey may create a bias whereby only employees with high-quality relationships ask their supervisor to participate. This could lead to inflated ratings of active employee behaviors by supervisors. In an attempt to counteract this limitation, I controlled for the tenure of the employee-supervisor relationship. An additional concern is whether the results are skewed because only employee surveys that had a matched supervisor were retained while employee surveys that did not have a matched supervisor were dropped. To investigate this concern, I conducted a non-response bias analysis. Results illustrated that employees who had matched supervisor surveys had significantly higher levels of education, social characteristics need, knowledge characteristics supply, social characteristics supply, and psychological empowerment, than employees that did not have matched supervisor surveys. This suggests that the some of the measures within the sample have a slightly restricted range which may attenuate the benefits of work characteristics and psychological states.

The recruitment method also makes it challenging to ensure that employees are recruiting their actual supervisor to complete the survey. Similar to other studies, I employed conservative methods to exclude any dyadic data whereby the employee may have falsified the supervisor survey (Grant & Mayer, 2009; Greenbaum et al., 2012; Judge, Scott, & Ilies, 2006; Lee & Allen 2002; Piccolo et al., 2010; Mawritz et al., 2012). In total, to overcome the supervisor recruitment limitations, future research should consider alternative dyadic data collection methods. For example, if pursuing field study data, researchers could involve an organizational contact in the distribution of the dyadic survey opportunities in order to alleviate employee self-selection as well as to ensure that surveys are collected from each party.

A third limitation of the study is the potential for CMB. In order to minimize CMB, I employed three techniques recommend by Podsakoff and colleagues (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, I obtained measures of the predictor and outcome variables from different sources in order to reduce consistency motifs. Having supervisor participants rate the employee's behavior made it impossible for the mindset of the employee to bias the observed relationship between predictor and outcome variables. Second, I created a temporal separation between similar measures so that participants did not engage in retrieval bias due to saliency of responses within their short-term memory. Third, I inserted clear statements that reminded participants that their responses were anonymous and confidential. Statements were made in Mechanical Turk, during the introduction of the survey, and at two additional points throughout the

survey. By making these statements, participants should have had reduced evaluation apprehension and were thus less likely to acquiesce to the expectations of researchers or offer socially desirable responses. Overall, our findings from the reliability and CFA analyses suggest that the constructs are distinct. Additionally, the focus on the joint effects of person and environment may mitigate some of these concerns, as interactions are unlikely to be influenced by CMB (Siemsen, Roth, & Oliveira, 2010).

A fourth limitation involves the decision to analyze work characteristics at the category level as opposed to the facet level. From an empirical standpoint, the results of the internal consistency reliability analyses and CFA suggest that testing the effects of work characteristics at the category level was superior to testing the effects of work characteristics at the facet level. However, from a theoretical standpoint, combining facets of decision making autonomy with process autonomy, complexity with specialization, and interdependence with social support, may be hiding more nuanced relationships that only exist for one facet and not the other. For example, employees that prefer high levels of social support may not prefer high levels of interdependence. Employees may view social support as a friendly, informal resource but view interdependence as a formal, constraining source of independence.

A fifth limitation involves the high correlation of needs and supplies of each work characteristic. As listed in Table 1, the zero-order correlations are relatively high for task characteristics need and task characteristics supply ($r = .82, p = .01$), knowledge characteristics need and knowledge characteristics

supply ($r = .78, p = .01$), and social characteristics need and social characteristics supply ($r = .77, p = .01$). The AVE and CFA suggest that there is discriminant validity between needs and supplies of each work characteristics. However, employee ratings of preferences and supplies tended to be somewhat similar and there tended not to be wide discrepancies. To investigate this concern I evaluated the differences between needs and supplies for each work characteristic following recommendations by Fleener, McCauley, and Brutus (1996). I first standardized scores for needs and supplies of each work characteristic. I then grouped the participants into one of three categories. Participants with a supply that was half a standard deviation above need was grouped as oversupply, participants with a supply that was half a standard deviation below need was grouped as undersupply, and the remaining participants were grouped as congruent. As outlined in Table 13, the majority of employees experienced congruence as opposed to incongruence for task (63%), knowledge (59%), and social characteristics (68%). To ensure that results related to incongruence are not misrepresentative of their actual effects, future research should consider collecting larger sample sizes to ensure adequate representation for all forms of congruence (Shanock et al., 2010).

A sixth limitation is that this study employed a cross-sectional survey design which is not appropriate for testing casual relationships. In this study, I suggest that the joint effects of work characteristics need and supply trigger psychological states and motivated behaviors. However, the direction of the relationships could be in the opposite direction. For example, it may be possible

that employees are given increased levels of discretion or challenge because they are perceived by their managers as being capable and deserving through their participation in proactive and prosocial performance behaviors. In total, directionality cannot be inferred given that the study measures were tested for correlation as opposed to causation.

A seventh limitation of the study is that the variables were not studied longitudinally. This is important for two reasons. First, jobs are dynamic in nature, whereby changes to the work characteristics of a job may shift overtime due to new projects or changes in team composition, to name a few. Studying changes in work characteristics supply, psychological states, and active employee behaviors over time ensures that findings are a more accurate snapshot of the employees' psychological need fulfillment and behavioral reactions. Second, recent theoretical development in P-E fit research suggests that employee perceptions of fit should consider both anticipated and retrospective needs and supplies (Shipp & Jansen, 2011). For example, employees may not have their preferred level of a specific work characteristic at the moment, but they anticipate that they will be receiving their preferred level of some work characteristics in the future. This anticipation of future fulfillment may influence their "in the moment" manifestations of motivation or strain. Similarly, employees may not have their preferred level of a specific work characteristic at the moment, but they recognize that their current situation is closer to their preferences than what they remember it being in the past. Again, this retrospective thought process may influence perceptions today regarding manifestations of motivation or strain. In total, future

researchers should consider repeatedly testing psychological need fulfillment processes over a longer course of time.

An eighth limitation of the study is that each work characteristic is studied separately. N-S fit theory suggests that receiving high levels of some work characteristics may carryover and assist in fulfillment of other domains (Edwards, 1996; Edwards & Rothbard, 1999). For example, high levels of autonomy may enable employees to find more challenge or specialization in their jobs because they have more discretion in seeking out these opportunities. Alternatively, high levels of some work characteristics may interfere with fulfillment in other domains (Edwards, 1996; Edwards & Rothbard, 1999). For example, high levels of autonomy may make it more challenging to find opportunities to work interdependently because the employees are pursuing individualistic initiatives with little coordination with others. Future research should consider studying the process of psychological need fulfillment as an all-encompassing system in which the three work characteristics categories all interact with each other to influence employee reactions and behaviors.

A ninth limitation is that this study ignores the possibility that psychological need fulfillment outside of work (e.g., home) may influence psychological need fulfillment at work. Research regarding the work-home interface illustrates that factors such as well-being are heavily influenced by both the work and non-work domains (Greenhaus, Allen, & Spector, 2006; Greenhaus & Powell, 2006). For example, employees may be undersupplied with social characteristics at work but still report low levels of strain because their relatedness

needs have been satisfied through supportive interactions with family or friends. Thus, studying the interactive effect of psychological need fulfillment at work and psychological need fulfillment at home offers a more holistic picture of the proposed relationships (Edwards & Rothbard, 1999).

A tenth limitation is that the study has purposefully grouped all types of employees together, including lower-level administrative employees with higher-level managers, in an attempt to offer a holistic test of the employee population. Research suggests that manifestations of meaningfulness as well as the ability to participate in proactive behaviors may be contingent upon employees' job level (Berg et al., 2010). In this study, job level was offered as a control variable. Future research should consider testing the influence process of psychological need fulfillment within unique job levels, job types, or industries, in order to understand whether or not psychological need fulfillment is contingent upon the makeup of these underlying job factors (Schoonhoven, 1981; Van de Ven & Drazin, 1985).

An eleventh limitation is that work characteristics need-supply congruence does not fully reflect psychological need fulfillment. Employee preferences for task, knowledge, and social characteristics are similar to psychological needs of autonomy, competence, and relatedness, respectively. However, preferences are not equivalent to needs and therefore work characteristics need-supply congruence cannot fully represent psychological need fulfillment. Future research considering testing SDT in work environments should

consider an alternative measurement approach that more precisely encompasses psychological need fulfillment.

Conclusion

Work design is considered one of the most powerful contextual factors that affect employee motivation (Miner, 2003). The majority of this research proposes that enhanced levels of work characteristics supply will increase employee motivation and well-being (Humphrey et al., 2007; Morgeson & Campion, 2003; Morgeson & Humphrey, 2006). This study highlights why future research in work design should consider going beyond supply-only examinations of enhanced work characteristics towards more comprehensive models that incorporate the joint effects of employee need and job supply of work characteristics.

While the majority of hypotheses were not supported, the trends of the findings and supplemental analyses suggest three key elements. First, high levels of need matched with high levels of supply for work characteristics is related to lower levels of strain and higher levels of empowerment and active-employee performance behaviors. Thus, work design initiatives that seek employees with high needs for autonomy, challenge, and interdependence, and then supply them with high amounts of these characteristics, should create highly desired psychological states of empowerment and well-being as well as organizational behaviors such as proactivity, innovativeness, and OCBI. Second, with respect to supplying work characteristics, organizations should not be concerned with the “too much of a good thing effect” (Pierce & Aguinis, 2013), given that the effects

of oversupply are either neutral, or beneficial, as is the case with oversupply of task and social characteristics. Third, undersupply of work characteristics not only affects psychological reactions, it also triggers employees' attempts to change their work tasks and relationships. In particular, undersupply of task characteristics is related to job crafting and undersupply of social characteristics is related to strain as well as proactive attempts to help others. In total, expanding work design to incorporate the extent to which individual preferences are congruent with work characteristics supply may enable a more holistic understanding for how work design can affect active-oriented employee behaviors.

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Appendix A: Tables and Figures

Table 1

<i>Zero-Order Correlations and Descriptive Statistics</i>										
Variable	1	2	3	4	5	6	7	8	9	10
1. Employee Age										
2. Yrs. w/Org.	.63**									
3. Yrs. w/Spv.	.31**	.42**								
4. Job Level	.07	.07	-.01							
5. Task Need	-.04	.04	.14*	.08	.88					
6. Knowledge Need	.03	.06	.13*	.09	.68**	.83				
7. Social Need	-.08	.06	.05	.03	.54**	.60**	.80			
8. Task Supply	.00	.13**	.14*	.01	.82**	.70**	.57**	.88		
9. Knowledge Supply	.08	.11	.10	.15*	.65**	.78**	.52**	.70**	.86	
10. Social Supply	-.06	.07	.09	-.02	.57**	.57**	.77**	.65**	.59**	.84
11. Empowerment	.05	.05	.14*	-.01	.66**	.60**	.45**	.66**	.65**	.51**
12. Strain	-.12	-.02	-.04	.05	-.20**	-.14*	.06	-.20**	-.20**	-.01
13. Proactivity	.08	.07	.07	.08	.58**	.53**	.35**	.52**	.56**	.34**
14. Innovativeness	-.03	.02	.08	.05	.58**	.54**	.44**	.53**	.54**	.45**
15. OCBI	-.02	.02	.10	.09	.53**	.49**	.33**	.48**	.49**	.41**
16. Job Crafting	-.13*	.04	.10	.09	.49**	.53**	.48**	.49**	.52**	.50**
M	28.67	4.08	3.40	2.91	5.37	5.27	5.16	5.36	5.39	5.24
SD	7.58	3.98	3.00	.63	.90	.89	.95	.88	.90	.99

Notes. * $p \leq .05$; ** $p \leq .01$. $N = 261$. Yrs. w/Org. = years employee has worked for current organization; Yrs. w/Spv. = years employee has worked for current supervisor; OCBI = Interpersonal-Focused Citizenship Behaviors. Entries represent unstandardized coefficients. Cronbach alpha reliabilities are reported on the diagonal.

Table 1 (continued)

Zero-Order Correlations and Descriptive Statistics

Variable	11	12	13	14	15	16	AVE	AVE Square Root
1. Employee Age								
2. Yrs. w/Org.								
3. Yrs. w/Spv.								
4. Job Level								
5. Task Need							.94	.97
6. Knowledge Need							.89	.94
7. Social Need							.85	.92
8. Task Supply							.94	.97
9. Knowledge Supply							.91	.95
10. Social Supply							.90	.95
11. Empowerment	.91						.86	.93
12. Strain	-.26**	.96					.92	.96
13. Proactivity	.65**	-.28**	.82				.97	.99
14. Innovativeness	.60**	-.22**	.72**	.89			.94	.97
15. OCBI	.56**	-.25**	.67**	.67**	.86		.85	.92
16. Job Crafting	.53**	-.01	.57**	.66**	.60**	.91	.83	.91
M	5.66	3.30	5.55	5.60	5.38	5.07		
SD	.74	1.32	.88	.88	.82	.88		

Notes. * $p \leq .05$; ** $p \leq .01$. $N = 261$. AVE = Average Variance Extracted; Yrs. w/Org. = years employee has worked for current organization; Yrs. w/Spv. = years employee has worked for current supervisor; OCBI = Interpersonal-Focused Citizenship Behaviors. Entries represent unstandardized coefficients. Cronbach alpha reliabilities are reported on the diagonal.

Table 2

<i>Model Fit Results for Confirmatory Factor Analysis</i>					
Model	χ^2	<i>Df</i>	$\Delta\chi^2(\Delta df)$	CFI	RMSEA
Hypothesized 12-factor model	881.80**	339		.91	.08
18-factor model (work characteristics by facets)	2512.68**	1224	1630.88 (885)	.87	.06
9-factor model (work characteristics need and supply combined)	967.38**	369	85.58 (30)	.89	.08
10-factor model (employee performance variables combined)	990.32**	360	108.52 (21)	.89	.08
9-factor model (all employee outcomes combined)	1096.03**	369	214.23 (30)	.87	.09
2-factor model (employee rated and supervisor rated)	2257.49**	404	1375.69 (65)	.68	.13
1-factor model	2652.68**	405	1770.88 (66)	.61	.15

$N = 216$. All alternative models were compared to hypothesized 12-factor model. All $\Delta\chi^2$ differences are significant at $p \leq .01$. CFI = comparative fit index. RMSEA = root mean squared error of approximation.

Table 3
Polynomial Regression Analysis of Task Characteristics, Psychological States, and Proactivity

Variables and Model	Empowerment		Strain		Proactivity	
	1	2	1	2	1	2
Employee Age	.00	.01*	-.03*	-.04*	.01	.02*
Years with Employer	.00	-.02	.03	.04	.00	-.01
Years with Supervisor	.03*	.01	-.01	.01	.02	-.02
Job Level	-.01	-.04	.11	.12	.11	.05
Task Need		.33**		-.18		.46**
Task Supply		.40**		-.26		.24**
Task Need Squared		.02		.10		-.02
Task Need x Task Supply		-.01		-.14		-.12
Task Supply Squared		.18**		-.14		.30**
R^2	.02	.61	.02	.11	.02	.44
F	1.21	44.13**	1.45	3.42**	.99	21.93**
ΔR^2		.59		.09		.43
F_{inc}		77.03**		4.90**		38.10**
<i>Surface Tests</i>						
a_1		.72**		-.41**		.69**
a_2		.20**		-.19*		.16*
a_3		-.08		.12		.21
a_4		.15		.27		.41
<i>F-Value of the 3 quadratic terms</i>		2.04*		1.62		2.55*

Notes. † $\leq .10$; * $p \leq .05$; ** $p \leq .01$. N = 261. Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 4
Polynomial Regression Analysis of Knowledge Characteristics, Psychological States, and Innovativeness

Variables and Model	Empowerment		Strain		Innovativeness	
	1	2	1	2	1	2
Employee Age	.00	.00	-.03**	-.03*	-.01	-.01
Years with Employer	.00	-.01	.03	.03	.01	.00
Years with Supervisor	.03*	.02	-.01	-.01	.03	.01
Job Level	-.01	-.12*	.11	.12	.07	-.05
Knowledge Need		.28**		.16		.42**
Knowledge Supply		.35**		-.49**		.20*
Knowledge Need Squared		.21**		.10		.26**
Knowledge Need x Knowledge Supply		-.33**		-.23		-.31*
Knowledge Supply Squared		.20**		-.08		.08
R^2	.02	.49	.02	.09	.01	.36
F	1.21	45.60**	1.45	2.74**	.89	15.32**
ΔR^2		.47		.07		.34
F_{inc}		45.60**		3.71**		26.50**
<i>Surface Tests</i>						
a_1		.61**		-.35**		.60**
a_2		.14**		-.24*		.06
a_3		-.15		.53†		.13
a_4		.02		-.07		.05
<i>F-Value of the 3 quadratic terms</i>		1.21		1.19		1.59

Notes. † $\leq .10$; * $p \leq .05$; ** $p \leq .01$. $N = 261$. Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 5

<i>Polynomial Regression Analysis of Social Characteristics, Psychological States, and OCBI</i>						
Variables and Model	Empowerment		Strain		OCBI	
	1	2	1	2	1	2
Employee Age	.00	.01 [†]	-.03 ^{**}	-.03 [*]	-.01	.00
Years with Employer	.00	-.02	.03	.03	.00	-.01
Years with Supervisor	.03 ^{**}	.02	-.01	-.01	.03 [†]	.02
Job Level	-.01	-.02	.11	.10	.12	.12 [†]
Social Need		.09		.21		.03
Social Supply		.44 ^{**}		-.27 [†]		.41 ^{**}
Social Need Squared		.09 [†]		-.02		.14 [*]
Social Need x Social Supply		-.10 [†]		-.15		-.10
Social Supply Squared		.16 ^{**}		-.01		.12 ^{**}
R^2	.02	.41	.02	.06	.02	.27
F	1.21	19.46 ^{**}	1.45	1.92 [*]	1.44	10.53 ^{**}
ΔR^2		.39		.04		.25
F_{inc}		33.44 ^{**}		2.25 [*]		17.44 ^{**}
<i>Surface Tests</i>						
a_1		.52 ^{**}		-.04		.45 ^{**}
a_2		.15 [*]		-.18 ^{**}		.16 ^{**}
a_3		-.37 ^{**}		.50 [†]		-.38 [*]
a_4		.36 [†]		.12		.37 [†]
<i>F-Value of the 3 quadratic terms</i>		1.59		1.94 [†]		1.96 [†]

Notes. [†] $p \leq .10$; ^{*} $p \leq .05$; ^{**} $p \leq .01$. $N = 261$. Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 6

<i>Direct Effects of Empowerment to Active Work Behaviors</i>						
Variables and Model	Proactivity		Innovativeness		OCBI	
	1	2	1	2	1	2
Employee Age	.02*	.01	-.01	-.01	.00	.00
Years with Employer	-.01	.00	.00	.00	-.01	.00
Years with Supervisor	-.02	-.02	.01	.00	.02	.01
Job Level	.05	.07	-.05	.01	.12 [†]	.13 [†]
Task Need	.46**	.31**				
Task Supply	.24**	.06				
Task Need Squared	-.02	-.03				
Task Need x Task Supply	-.12	-.12				
Task Supply Squared	.30**	.22*				
Knowledge Need			.42**	.29**		
Knowledge Supply			.20*	.04		
Knowledge Need Squared			.26**	.16*		
Knowledge Need x Knowledge Supply			-.31*	-.16		
Knowledge Supply Squared			.08	-.01		
Social Need					.03	-.01
Social Supply					.41**	.22**
Social Need Squared					.14*	.10
Social Need x Social Supply					-.09	-.05
Social Supply Squared					.12**	.05
Psychological Empowerment		.46**		.46**		.44**
R^2	.44	.50	.60	.66	.52	.61
F	21.93**	24.78**	15.32**	19.01**	10.53**	14.62**
ΔR^2		.06		.08		.10
F_{inc}		28.68**		34.11**		37.57**

Notes. [†] $p \leq .10$; * $p \leq .05$; ** $p \leq .01$. $N = 261$. OCBI = Interpersonal-Focused Citizenship Behaviors; Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 7
Direct Effects of Strain to Task-Focused Employee Outcomes

Variables and Model	Proactivity		Job Crafting	
	1	2	1	2
Employee Age	.02*	.01 [†]	-.02**	-.02*
Years with Employer	-.01	.00	.02	.02
Years with Supervisor	-.02	-.01	.01	.01
Job Level	.05	.06	.10	.09
Task Need	.46**	.45**	.32**	.34**
Task Supply	.24**	.23*	.29**	.31**
Task Need Squared	-.02	-.01	.19*	.19 [†]
Task Need x Social Supply	-.12	-.13	-.25	-.24
Task Supply Squared	.30**	.29**	.19 [†]	.20 [†]
Psychological Strain		-.07*		.07*
R^2	.44	.45	.35	.36
F	21.93**	20.50**	14.71**	13.84**
ΔR^2		.01		.01
F_{inc}		4.72*		4.31*

Notes. [†] $p \leq .10$; * $p \leq .05$; ** $p \leq .01$. $N = 261$. Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 8
Direct Effects of Strain to Knowledge-Focused Employee Outcomes

Variables and Model	Innovativeness		Job Crafting	
	1	2	1	2
Employee Age	-.01	-.01	-.03**	-.03**
Years with Employer	.00	.00	.03 [†]	.02
Years with Supervisor	.01	.01	.02	.02
Job Level	-.05	-.04	.03	.02
Knowledge Need	.42**	.43**	.43**	.43**
Knowledge Supply	.20*	.15 [†]	.16 [†]	.18*
Knowledge Need Squared	.26**	.27**	.27**	.27**
Knowledge Need x Knowledge Supply	-.31*	-.33*	-.28 [†]	-.27 [†]
Knowledge Supply Squared	.08	.07	.06	.06
Psychological Strain		-.10**		.04
R^2	.36	.67	.38	.38
F	15.32**	14.88**	17.11**	15.54**
ΔR^2		.02		.00
F_{inc}		7.42**		1.25

Notes. [†] $p \leq .10$; * $p \leq .05$; ** $p \leq .01$. $N = 261$. Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 9
Direct Effects of Strain to Social-Focused Employee Outcomes

Variables and Model	OCBI		Job Crafting	
	1	2	1	2
Employee Age	.00	.00	-.02**	-.02**
Years with Employer	-.01	.00	.02	.02
Years with Supervisor	.02	.02	.02	.02
Job Level	.12 [†]	.13 [†]	.13 [†]	.13 [†]
Social Need	.03	.06	.22**	.22**
Social Supply	.41**	.38**	.35**	.34**
Social Need Squared	.14*	.13*	.12 [†]	.12 [†]
Social Need x Social Supply	-.09	-.11 [†]	-.03	-.03
Social Supply Squared	.12**	.12**	.06	.06
Psychological Strain		-.14**		.00
R^2	.27	.32	.36	.36
F	10.53**	11.79**	15.74**	14.11**
ΔR^2		.05		.00
F_{inc}		17.06**		.01

Notes. [†] $p \leq .10$; * $p \leq .05$; ** $p \leq .01$. $N = 261$. OCBI = Interpersonal-Focused Citizenship Behaviors; Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 10
Polynomial Regression of Task Characteristics and Job Crafting

Variables and Model	Job Crafting	
	1	2
Employee Age	-.03**	-.02**
Years with Employer	.03 [†]	.02
Years with Supervisor	.03 [†]	.01
Job Level	.14 [†]	.10
Task Need		.32**
Task Supply		.29**
Task Need Squared		.19*
Task Need x Task Supply		-.25
Task Supply Squared		.19 [†]
R^2	.06	.35
F	4.15**	14.71**
ΔR^2		.28
F_{inc}		21.80**
a_1		.64**
a_2		.14
a_3		.08
a_4		.74**
<i>F-Value of the 3 quadratic terms</i>		2.38*

Notes. [†] $p \leq .10$; * $p \leq .05$; ** $p \leq .01$. $N = 261$. Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 11

Polynomial Regression of Knowledge Characteristics, Innovativeness, and Job Crafting

Variables and Model	Innovativeness		Job Crafting	
	1	2	1	2
Employee Age	-.01	-.01	-.03**	-.03**
Years with Employer	.01	.00	.03 [†]	.03 [†]
Years with Supervisor	.03	.01	.03 [†]	.02
Job Level	.07	-.04	.14 [†]	.03
Knowledge Need		.43**		.43**
Knowledge Supply		.15 [†]		.16 [†]
Knowledge Need Squared		.27**		.27**
Knowledge Need x Knowledge Supply		-.33*		-.28 [†]
Knowledge Supply Squared		.07		.06
Psychological Empowerment				
Psychological Strain		-.10**		
R^2	.01	.37	.06	.38
F	.89	14.88**	4.15**	17.11**
ΔR^2		.36		.32
F_{inc}		23.89**		25.87**
a_1		.59**		.58**
a_2		.02		.07
a_3		.31 [†]		.20
a_4		.68 [†]		.05
<i>F-Value of the 3 quadratic terms</i>		1.59		3.64**

Notes. [†] $p \leq .10$; * $p \leq .05$; ** $p \leq .01$. $N = 261$. Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 12

<i>Polynomial Regression of Social Characteristics, OCBI, and Job Crafting</i>				
Variables and Model	OCBI		Job Crafting	
	1	2	1	2
Employee Age	-.01	.00	-.03**	-.02**
Years with Employer	.00	.00	.03 [†]	.02
Years with Supervisor	.03 [†]	.02	.03 [†]	.02
Job Level	.12	.13 [†]	.14 [†]	.13 [†]
Social Need		.06		.22**
Social Supply		.38**		.35**
Social Need Squared		.13*		.12 [†]
Social Need x Social Supply		-.11 [†]		-.03
Social Supply Squared		.12**		.06
Psychological Empowerment				
Psychological Strain		-.14**		
R^2	.02	.32	.06	.36
F	1.44	11.79**	4.15**	15.74**
ΔR^2		.30		.30
F_{inc}		18.31**		23.54**
a_1		.44**		.59**
a_2		.14**		.15**
a_3		-.31*		-.12
a_4		.38*		.25
<i>F-Value of the 3 quadratic terms</i>		1.96 [†]		2.91**

Notes. [†] $\leq .10$; * $p \leq .05$; ** $p \leq .01$. N = 261. OCBI = Interpersonal-Focused Citizenship Behaviors; Years with Employer = years employee has worked for current organization; Years with Supervisor; years employee has worked for current supervisor. Entries represent unstandardized coefficients.

Table 13

<i>Frequencies of Congruence, Oversupply, and Undersupply</i>			
Work Characteristics	Task	Knowledge	Social
Oversupply	17%	18%	18%
Congruence	63%	59%	68%
Undersupply	20%	23%	14%

Notes. $N = 261$. Oversupply grouping = $+1/2$ standard deviation from the mean; Undersupply grouping = $-1/2$ standard deviation from the mean.

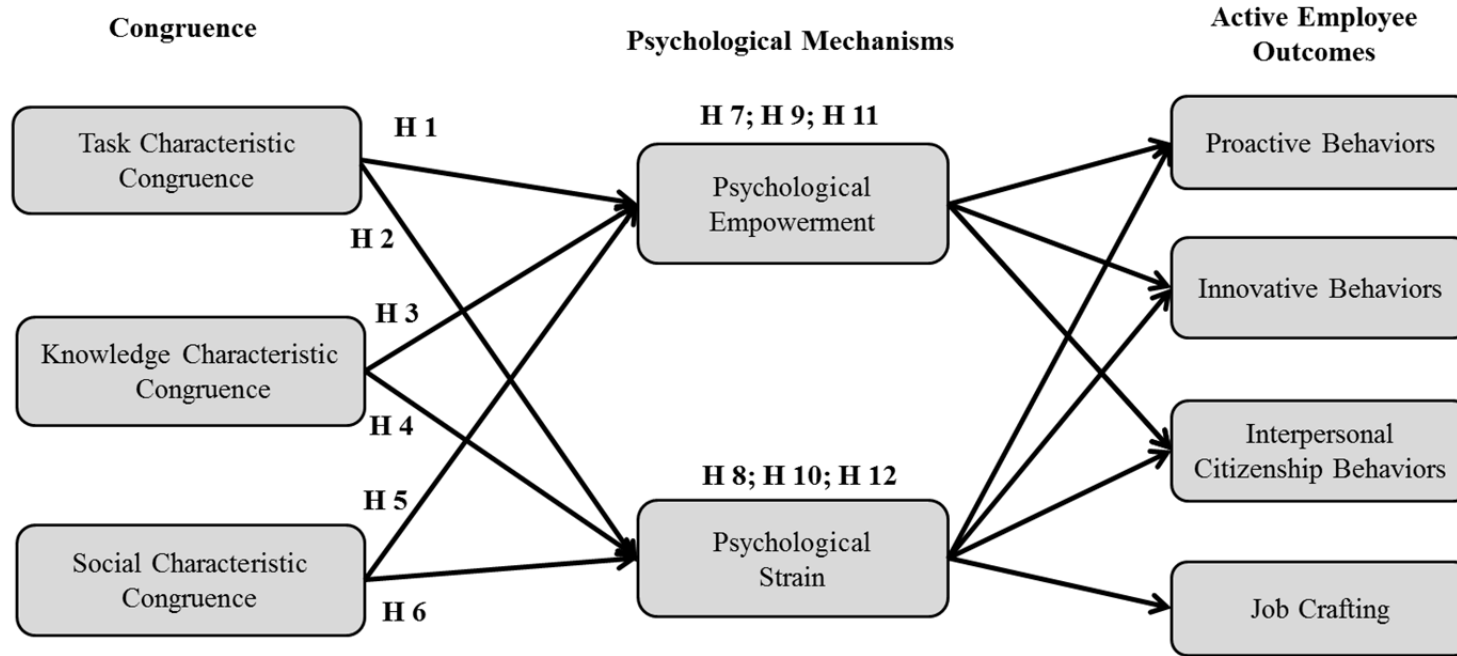


Figure 1: The Effects of Work Characteristics Congruence on Active Employee Behaviors through Mediating Mechanisms

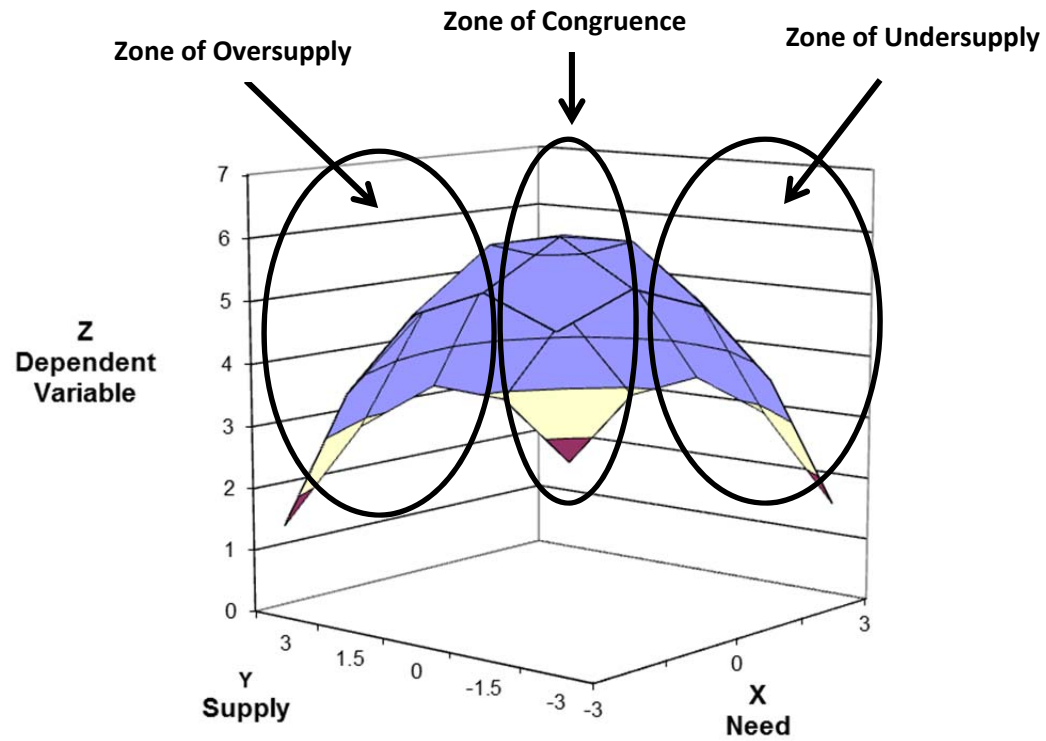


Figure 2. Sample Surface Plot Illustrating Zone of Congruence, Oversupply, and Undersupply

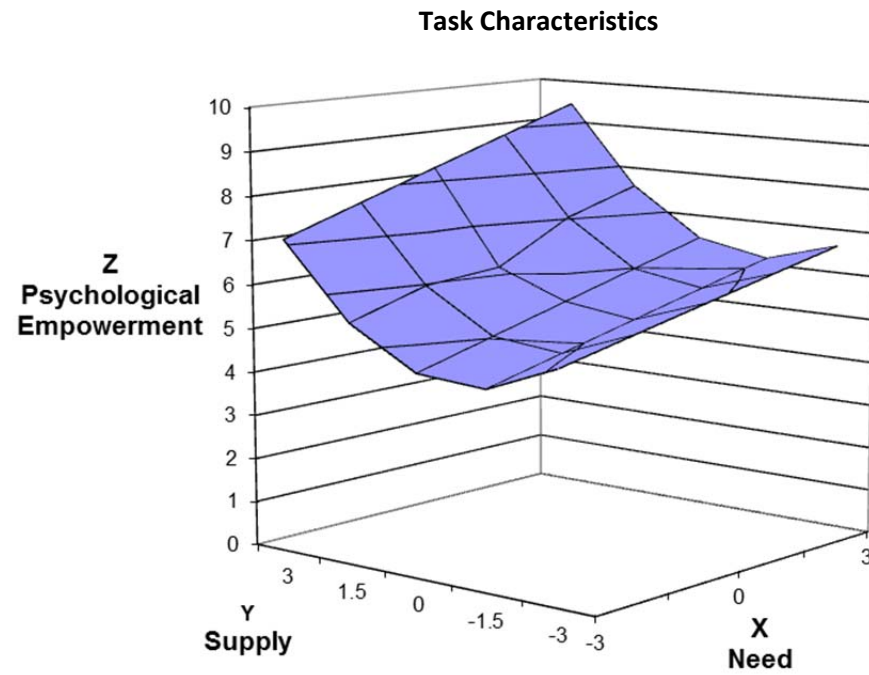


Figure 3. Surface Graphs of the Relationship between Task Characteristics Need and Task Characteristics Supply with Psychological Empowerment

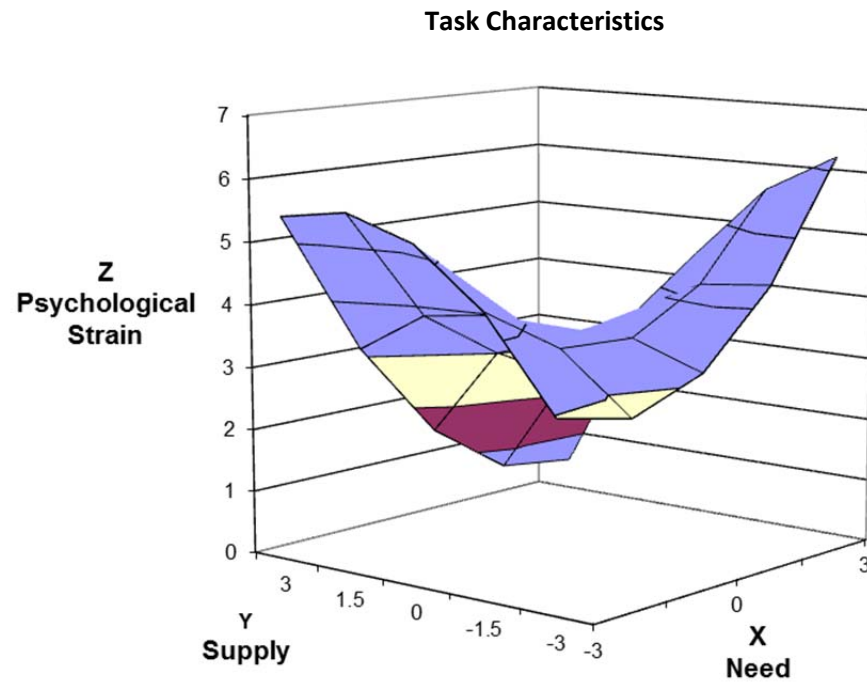


Figure 4. Surface Graph of the Relationship between Task Characteristics Need and Task Characteristics Supply with Psychological Strain

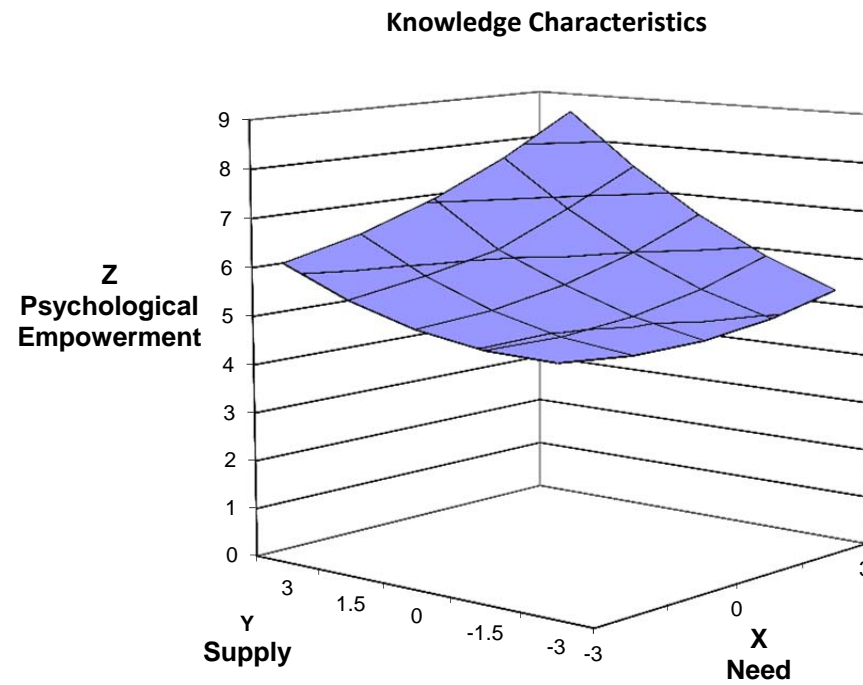


Figure 5. Surface Graph of the Relationship between Knowledge Characteristics Need and Knowledge Characteristics Supply with Psychological Empowerment

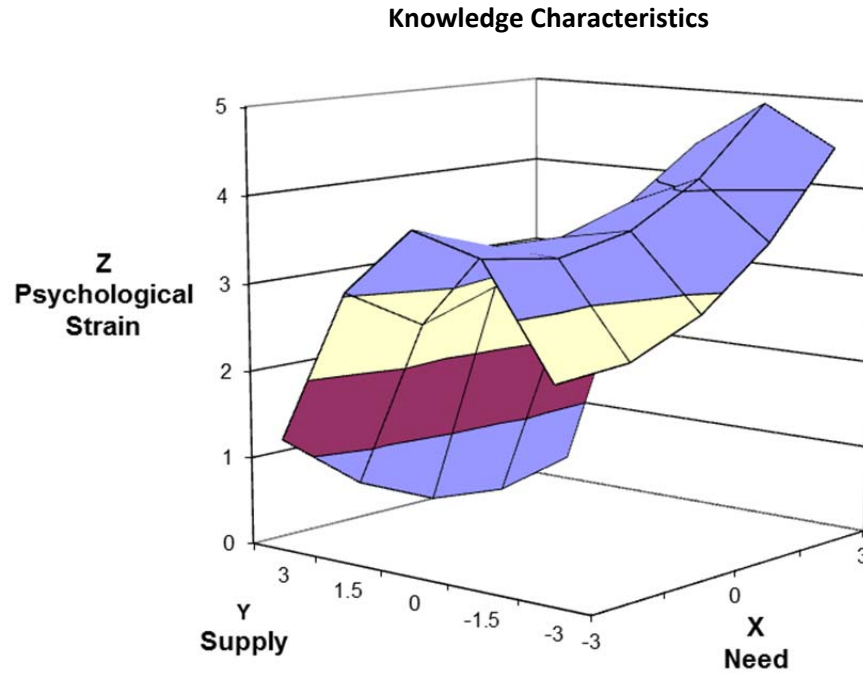


Figure 6. Surface Graph of the Relationship between Knowledge Characteristics Need and Knowledge Characteristics Supply with Psychological Strain

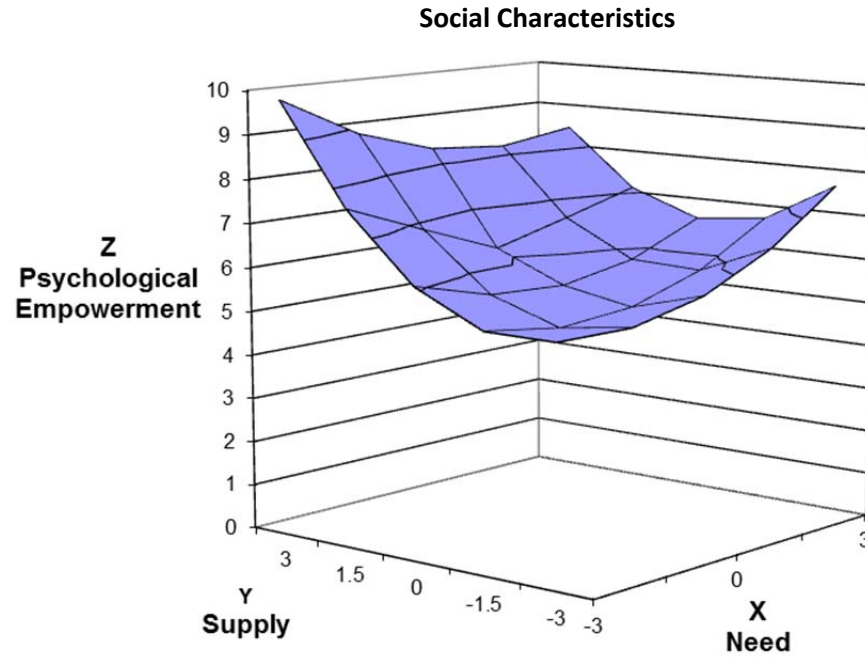


Figure 7. Surface Graph of the Relationship between Social Characteristics Need and Social Characteristics Supply with Psychological Empowerment

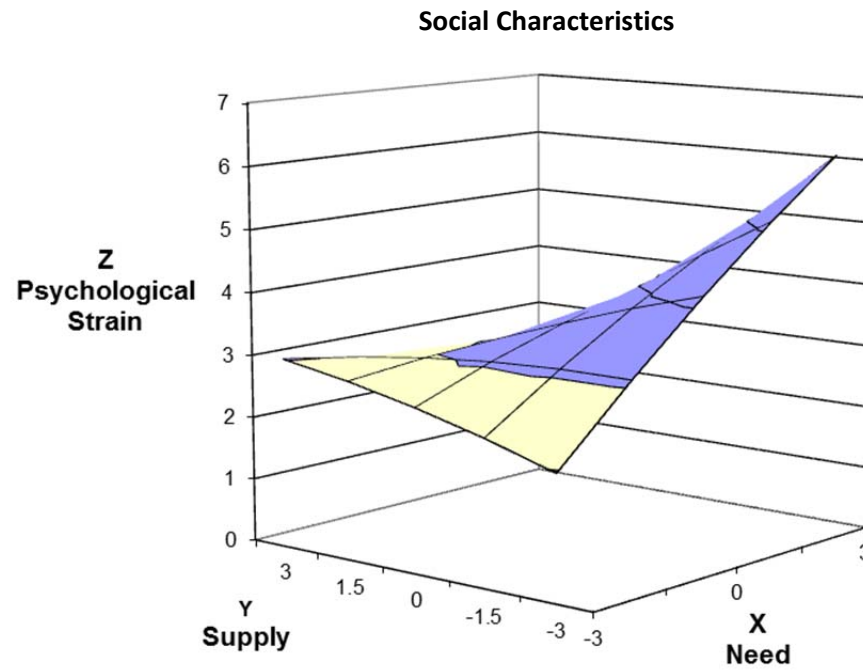


Figure 8. Surface Graph of the Relationship between Social Characteristics Need and Social Characteristics Supply with Psychological Strain

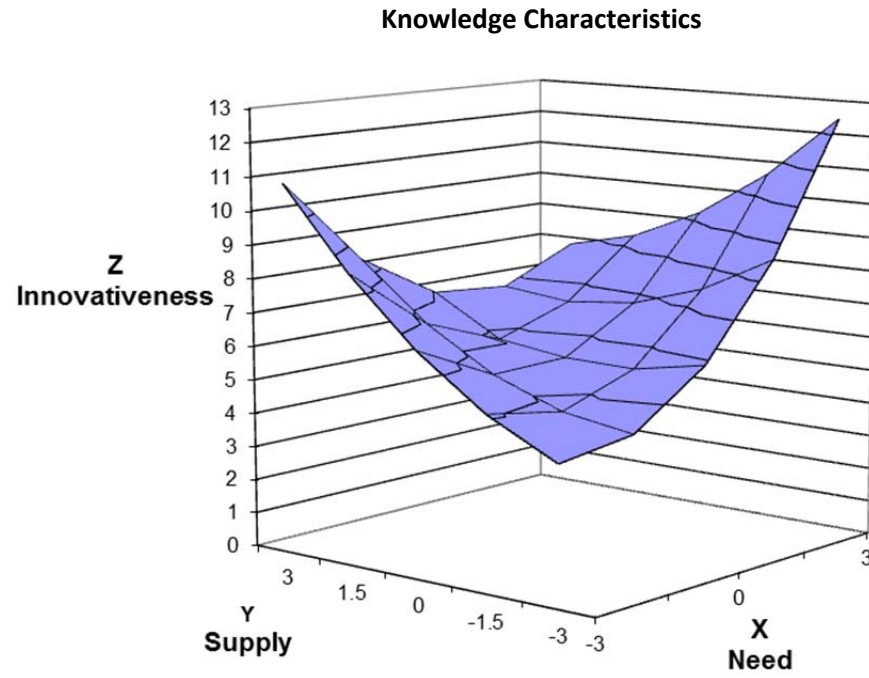


Figure 9. Surface Graph of the Relationship between Knowledge Characteristics Need and Knowledge Characteristics Supply with Innovativeness through Psychological Strain

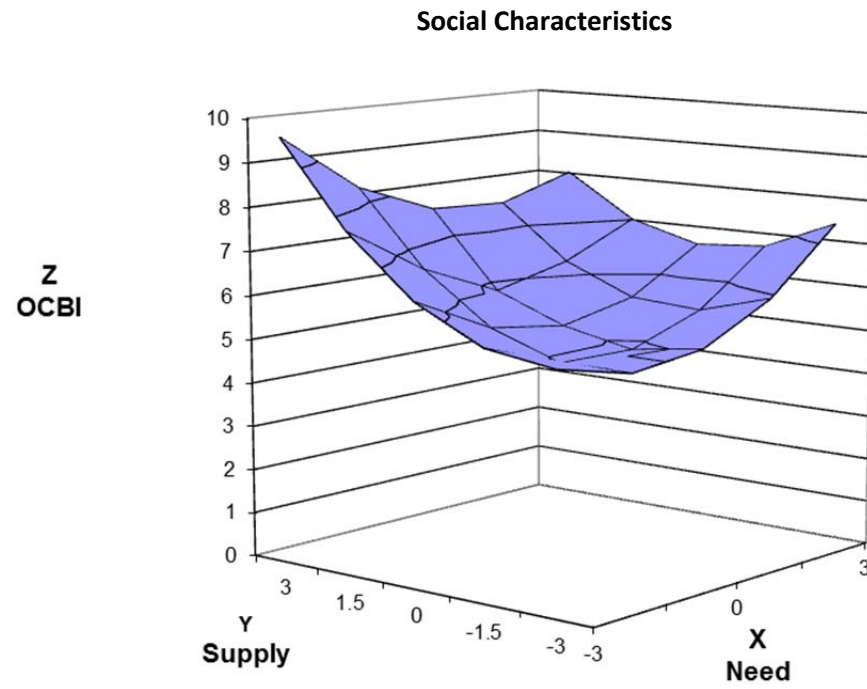


Figure 10. Surface Graph of the Relationship between Social Characteristics Need and Social Characteristics Supply with OCBI through Psychological Strain

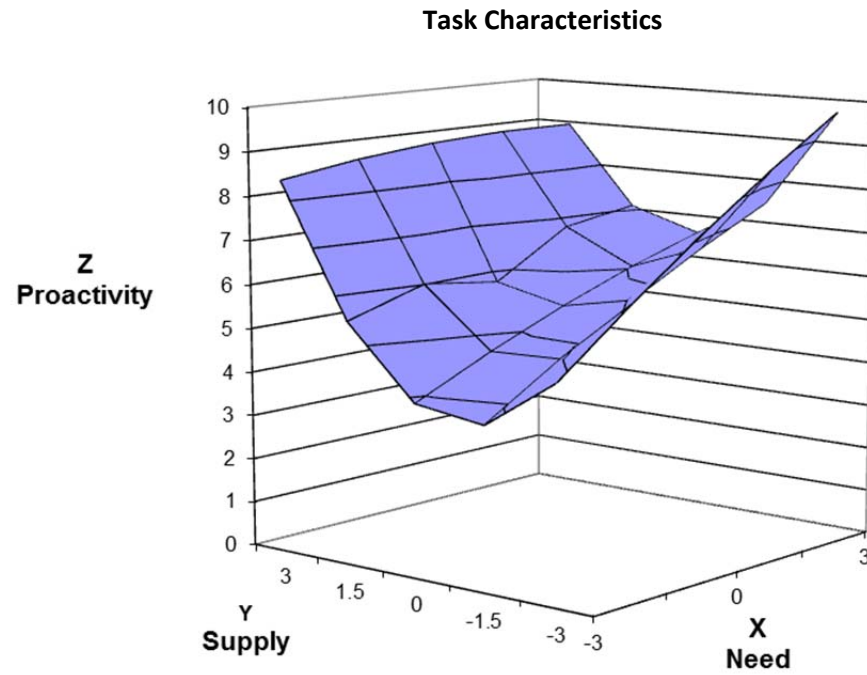


Figure 11. Surface Graph of the Relationship between Task Characteristics Need and Task Characteristics Supply with Proactivity

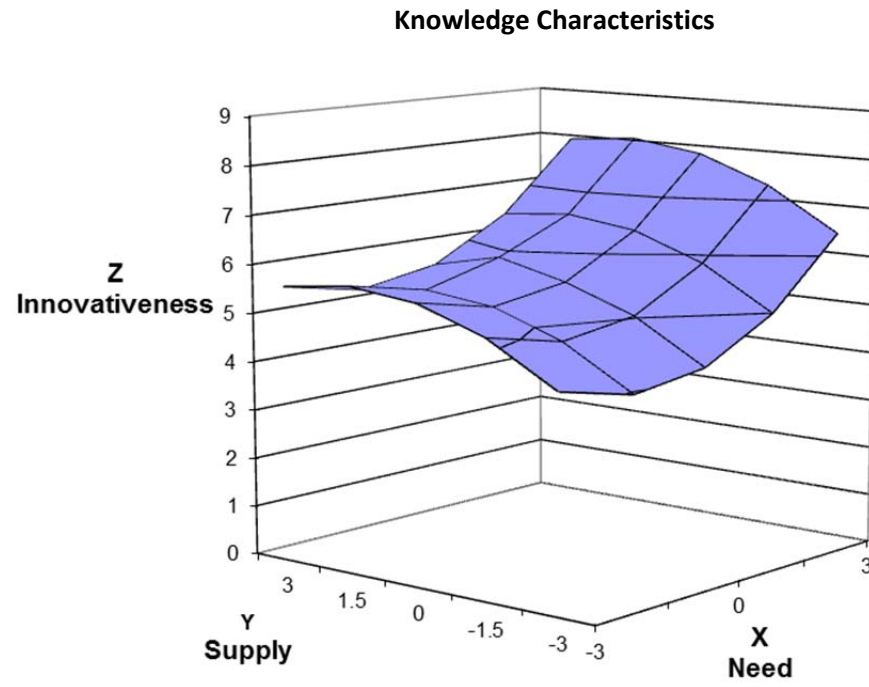


Figure 12. Surface Graph of the Relationship between Knowledge Characteristics Need and Knowledge Characteristics Supply with Innovativeness

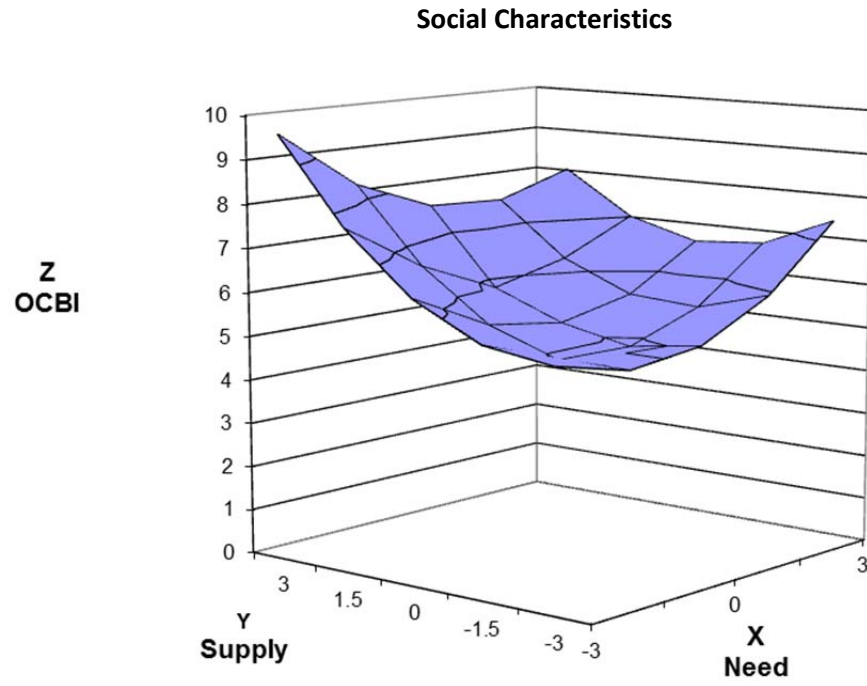


Figure 13. Surface Graph of the Relationship between Social Characteristics Need and Social Characteristics Supply with OCBI

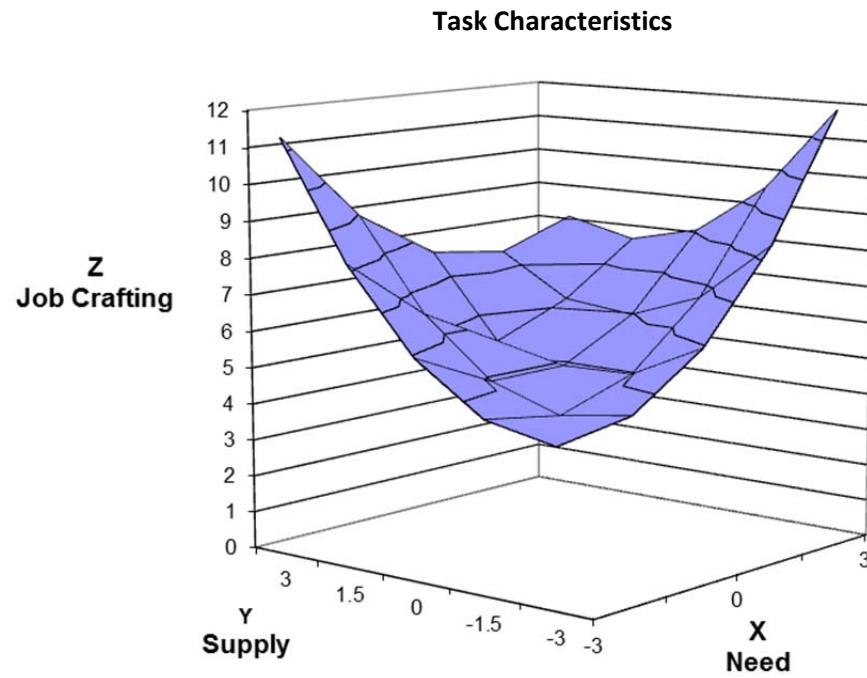


Figure 14. Surface Graph of the Relationship between Task Characteristics Need and Task Characteristics Supply with Job Crafting

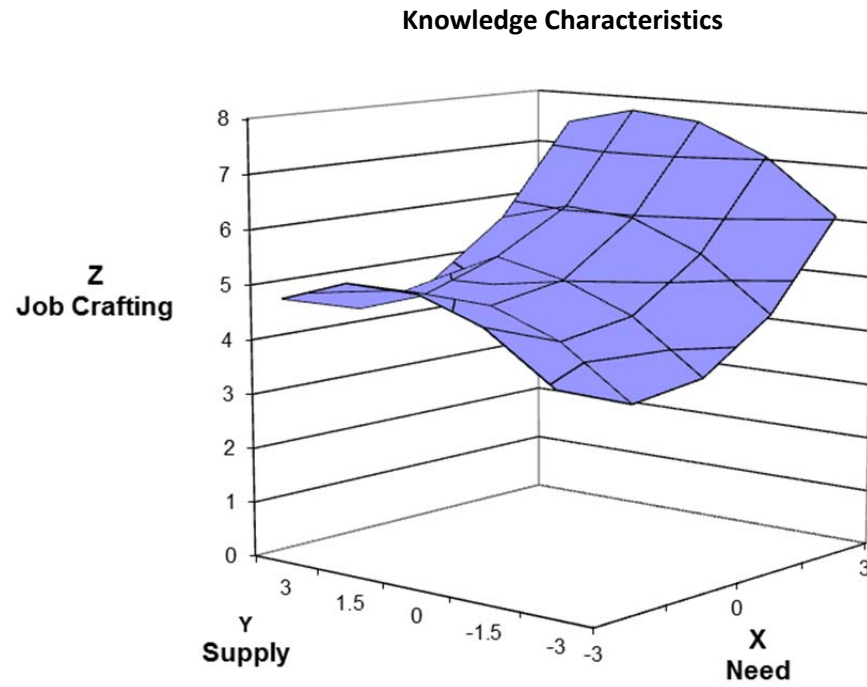


Figure 15. Surface Graph of the Relationship between Knowledge Characteristics Need and Knowledge Characteristics Supply with Job Crafting

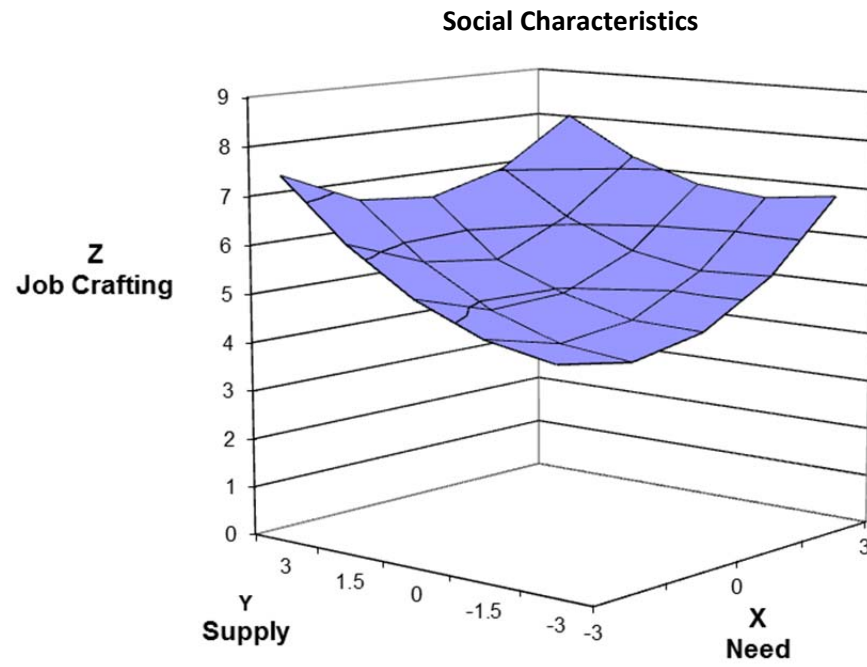


Figure 16. Surface Graph of the Relationship between Social Characteristics Need and Social Characteristics Supply with Job Crafting

Vita

Scott B. Dust completed his BS in Business Administration and MBA at the Kelley School of Business, Indiana University. Scott is currently completing his PhD in Organizational Behavior at the LeBow College of Business, Drexel University. As of August 2013, Scott will be an Assistant Professor of Management at the College of Business and Technology, Eastern Kentucky University. Scott's research interests focus on leadership, teams, work design, mindfulness, and spirituality. His work has appeared in journals such as *Human Relations*, *Industrial and Organizational Psychology: Perspectives on Science and Practice*, and the *Journal of Management, Spirituality and Religion*. Scott's teaching focuses on general management, entrepreneurship, organizational behavior, organizational leadership, and self-leadership.

