HIRE FOR PERSONALITY, TRAIN FOR SKILL: THE RELATIONSHIP BETWEEN COGNITIVE AND NONCOGNITIVE HUMAN CAPITAL, DESIRED EMPLOYEE BEHAVIORS, AND PERFORMANCE

By

BRIAN MARTINSON

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Dedication

To Dr. Gary C. McMahan

Thank you for taking me on as a student, your irreverent sense of humor, and your passion for turning practitioners into scholars.

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Abstract

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Brian Martinson, PhD

The University of Texas at Arlington, 2013

Supervising Professor: Gary C. McMahan

This study proposes to examine the relationship between cognitive and noncognitive human capital and work performance as mediated by desired employee behaviors. The study will also explore the moderating effects of high performance work practices (HPWPs) on this relationship. The goal of this study is to explain the distal relationship between human capital and firm performance through the more proximal relationship of the human resources practices used to manage human capital by activating individual employee behaviors. The study uses the individual level inputs of knowledge, skills, abilities, personality, and values, combined with application of HPWPs to test a set of hypotheses predicting that human capital is related to desired employee behaviors and these behaviors are in turn, related to individual work performance.

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Chapter 1

Introduction

As managers of business organizations attempt to execute their responsibility of maximizing shareholder value (Harrison, Bosse, & Phillips, 2010; Lazonick & O'Sullivan, 2000) they have at their disposal three main forms of capital resources: physical, financial, and human. Strategic objectives are identified by managers to guide organizational decision-making directed at deploying resources. Ideally, these strategic objectives are focused on attaining some form of competitive advantage which may yield above average returns for shareholders (Peteraf, 1993). The field of strategic human resource management (SHRM) is concerned with understanding the relationship between an organization's strategic objectives and financial performance through its management of human capital resources (Becker & Huselid, 2006).

As defined by Wright and McMahan (1992), SHRM is, "the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals" (p. 298). Wright and McMahan (1992) provide a framework for analyzing SHRM suggesting linkages between a firm's strategic objectives and human capital, human resource management policies and practices (HRPs), and employee behaviors leading to firm outcomes. They describe the relationship between a firm's strategic objectives and their human capital and HRPs as vertical fit. Their proposition is that when human capital and HRPs are properly aligned with the firm's strategic objectives, resource utilization will be maximized and goal attainment is increased.

Wright and McMahan also make a distinction between SHRM and human resource management (HRM). Whereas SHRM is as defined above, HRM is defined as various practices used to manage people in organizations. Which, based on Fombrum, Tichy, and Devanna (1984), are generally grouped under the functional areas of selection, training, appraisal, and rewards. According to Wright and McMahan (1992) HRM practices within their separate functional areas have, "…evolved in relative isolation from one another, with little coordination across the disciplines" (p. 297). They suggest that, "each function has evolved through technical innovations generated primarily from a micro-perspective that focuses only on the particular function" (p.297).

Since the publication of Wright and McMahan's SHRM framework, hundreds of studies have attempted to test these proposed linkages to determine if a relationship actually exists between strategic human resource management and firm financial outcomes. The results looked promising. Most notably, Huselid (1995) using a set of 13 practices identified by the US Department of Labor (1993) as being associated with high performance work practices (HPWPs), found two factors -- employee skills and organizational structures, and employee motivation – as being related to firm performance. Specifically, he found that one standard deviation increase in the use of HPWPs is associated with a 7.05% decrease in turnover and, on a per employee basis. He proposed that this resulted in $27,044 more in sales, and $18,641 and $3,814 more in market value and profit, respectively. The same year, MacDuffie (1995) found support for the proposition that HR practices could improve economic performance if three conditions were met. First, the practices had to improve worker skill and

knowledge. Second, the practices must be directed at improving worker motivation. And third, the practices must be integrated with firm strategy.

Eleven years later, Combs, Liu, Hall & Ketchen (2006) provided continued support for the predicted relationship between HR practices and firm performance with a meta-analysis using 92 practice-to-performance studies conducted between 1983 and 2006. They tested the relationship between the 13 most common HR practices including incentive compensation, compensation level, training, employee participation, selectivity, internal promotion, HR planning, flexible work, performance appraisal, grievance procedures, use of teams, information sharing, and employment security. They found a positive effect size of .20, suggesting that from their sample of studies, 20% of the ability to predict performances differences among separate organizations was through their use of HPWPs. They also suggested that one standard deviation increase in the use of HPWPs could translate into a 4.6% increase in ROA and a 4.4% decrease in turnover, ceteris paribus.

While the results of the previous studies strongly suggest that a positive relationship between SHRM and firm performance existed, their putative limitations seriously undermine the inferences made in each of the studies (Gerhart, Wright, & McMahan, 2000; Gerhart, Wright, McMahan, & Snell, 2000). Furthermore, some eighteen years have passed since Huselid's (1995) and MacDuffie's (1995) studies were published and scholars still are unable to satisfactorily determine to what extent other factors are responsible for firm performance and whether or not results obtained through correlation studies are specious in nature or actually reflect a true relationship (Boselie,

Dietz, & Boon, 2005; Guest, 2011; Wright & Boswell, 2002). The critical issues that are yet unresolved include establishing causality, assuring construct validity and reliability in measuring HR practices, and sufficiently explaining (preferably with sound theories) the relationship between the HR attributes being measured (i.e., human capital, HR practices, behavioral outcomes) and firm performance.

This study proposes to contribute to SHRM research by addressing two of these critical issues in a single study. Answering the charge put forth by Wright and Boswell (2002), the first objective of this study is to use both micro and macro level approaches to examine the relationship between SHRM and performance. The goal of this study is to explain the distal relationship between human capital and firm performance through the more proximal relationship of the human resources practices used to manage human capital by activating individual employee behaviors. The study uses the individual level inputs of knowledge, skills, abilities, personality, and values, combined with application of HPWPs to test a set of hypotheses predicting that human capital is related to desired employee behaviors and these behaviors are, in turn, related to individual work performance. I propose that higher levels of organizational citizenship behaviors (OCBs) represent increased levels of discretionary effort, and lower levels of withdrawal behaviors represent decreases in potential voluntary turnover, which, in turn, contributes to individual performance. I propose but do not test the proposition that individual performance supports firm performance by providing increased productivity for a given unit of labor based on the production function of achieving maximum output with minimum input (Black & Lynch, 1996). Surprisingly, this

intuitive relationship between individual performance and organization performance has received very little attention.

The second critical area this study addresses is improving the measurement of human capital as a predictor of behavior and performance by simultaneously including in an analytical model multiple key dimensions of human capital. This includes using an objective validated measurement of cognitive ability along with two separate established proxy measures of general and specific knowledge, education and role tenure, respectively. Additionally, three separate noncognitive variables representing the important but understudied human capital dimensions of personality, values, and preference are operationalized as conscientiousness, work centrality, and proactive personality and included in the full model. This was done for two reasons. The first is these noncognitive dimensions of human capital are predicted in this study to be critical contributors to an employees' behavior and performance. The second is that fully specifying the model of human capital by including components from each of the key dimensions as the inclusion of appropriate independent variables mitigates that effects of omitted variable bias and improves the predictive ability of the analytical model (Becker & Huselid, 2006).

This study proposes to explore the following questions: which dimensions of human capital best predict performance? Do employee behaviors mediate the relationship between human capital and performance? Which employee human capital dimensions best predict employee behaviors? Do HPWPs affect this relationship? Do employee behaviors vary given different levels of human capital and HPWPs? This proposal is

organized as follows: Chapter two presents a review of the literature that guides and supports the proposed study. Chapter three discusses the research questions in depth and present hypotheses to be tested. Chapter four describes the sample and methods use to measure and analyze the data, Chapter five provides a discussion of the results and chapter six summarizes the study and provides its conclusion.

Chapter 2

Theoretical Development and Literature Review

The domain of this study is in the field of strategic human resource management. SHRM is concerned with the relationship between firm strategy, a system of HR practices, and firm financial performance (Becker & Huselid, 2006). In Wright and McMahan's (1992) definition of SHRM, "the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals" (p.298), is the integration of two key areas vital to an organization attaining a sustainable competitive advantage: its management of people and its organizational strategy. SHRM seeks to study the antecedents and outcomes associated with the alignment of people management activities and firm strategy. This is referred to as vertical fit. It also seeks to understand the effects of alignment between the policies and practices of the individual HR functional areas (staffing, training, compensation, etc.) referred to as horizontal fit. The general SHRM proposition is that both horizontal fit and vertical fit are essential in order for a firm to achieve maximum productivity.

Wright and McMahan (1992) proposed that the study of SHRM is concerned with the decisions organizations make regarding the use of human resource management practices, the composition of their human capital resource pool, the specification of desired employee behaviors, and how various business strategies and environmental conditions affect the outcomes of these decisions. They propose a framework to depict the relationship between the variables in the main SHRM model (see figure 2.1), which

was further develop by McMahan, Virick, and Wright (1999) to incorporate several additional theoretical perspectives (see figure 2.2) to support the relationships diagramed in the framework.

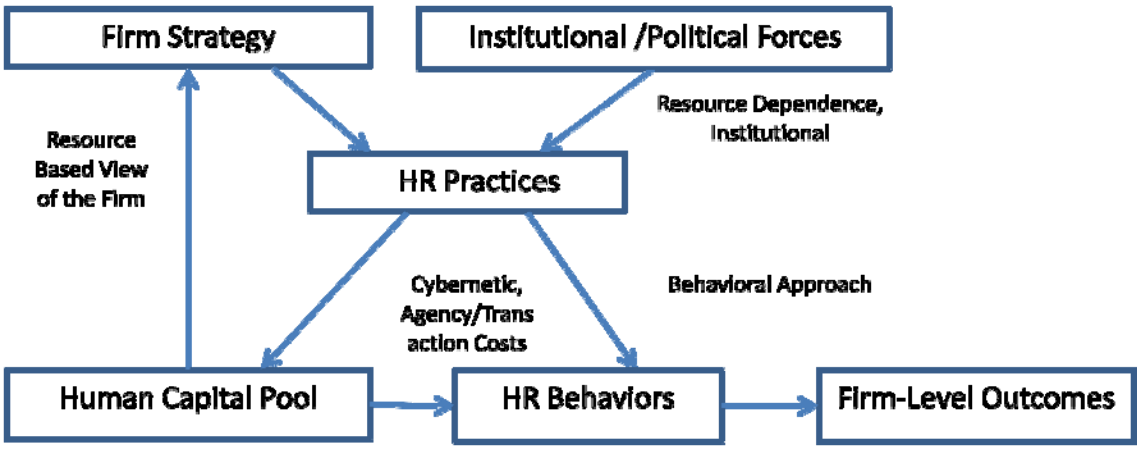


Figure 2.1 - Strategic HRM Model (Wright & McMahan, 1992)

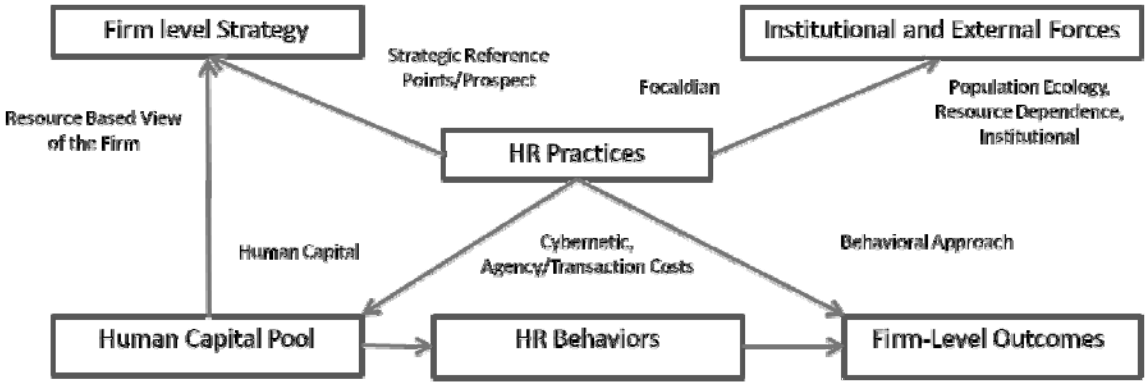


Figure 2.2 – Revised Strategic HRM Model (McMahan, Virick, & Wright, 1999)

The original SHRM model includes the constructs of firm strategy, human capital, institutional and political forces, HRM practices, employee behaviors, and firm

outcomes. The model suggests that each of these variables potentially influences the other variables. It could also be depicted with two-way arrows indicating that it does not suggest causality; but rather, acknowledges how each of these areas has the potential to interact across this dynamic system. The framework also suggests four proactive strategic decision theories as well as two reactive theories to guide empirical tests of the relationships presented in the in the model. The proactive theories include the resource based view (Barney, 1991; Penrose, 1959; Wernerfelt, 1984), behavioral perspective (Schuler & Jackson, 1987), agency theory/transaction cost economics (Jensen, 1976; Williamson, 1975) and cybernetic systems (Boulding, 1956; Wright & Snell, 1991). The reactive theories include resource dependence (Pfeffer & Salancik, 1978) and institutional theory (Meyer & Rowan, 1977). Of these six perspectives, the resource based view (RBV) has received the most attention (Boselie et al., 2005).

The Resource Based View of the Firm (RBV)

RBV posits that four attributes of a resource (or capability) can provide a sustained competitive advantage given that all four are present in a particular resource. A resource must be valuable, rare, imperfectly imitable, and non-substitutable. Furthermore, the introduction of the VRIO framework (Barney, 1995; Barney & Wright, 1998) adds that to achieve a competitive advantage, an organization must be capable of exploiting its resources through systems and practices designed to enable the organization to maximize the utilization of their resources. Organizations seek to

survive and thrive by attaining a sustained competitive advantage over their competitors though strategic resources contained within the organization.

The application of RBV to SHRM studies has generally followed two paths. One path considers a firm's human capital as the strategic resource and the other posits that a firm's system of HR policies and practices provides the strategic advantage. Arguably, the most thorough discussion of human capital as a resource meeting the requirements of RBV for achieving a SCA is by Wright, McMahan, and McWilliams (1994). Using a utility analysis approach, they suggest that the financial value attributed to varying levels of human capital can be theoretically supported and measured. They suggest that since cognitive ability, which is consistently found to be one of the best predictors of performance in work organizations (Hunter & Hunter, 1984; Wright et al., 1994), is normally distributed in the population, individuals possessing the highest levels of cognitive ability are, statistically speaking, rare. They propose that the dimension of inimitability identified as social complexity is by default a dimension fitting the social aspect of people interacting in the work environment. They suggest that an organization's culture, norms, team dynamics, and interpersonal relationships developed though transactions over time are likely to be path dependent and/or causally ambiguous making imitation by competitors highly unlikely. Finally, they argue that even with the accelerating pace of technological change, people will not become obsolete. Technology may substitute for human activity in the short term, but only human resources that are themselves valuable, rare, inimitable and nonsubstitutible can substitute for other strategic human capital resources (Wright et al., 1994).

Interestingly, based on the VRIO framework (Barney, 1997; Barney & Wright, 1998), for human capital to be exploited to achieve its maximum benefit, the framework suggests that HR systems and practices must exist that allow the organization to utilize human capital resources. This brings us to the opposing view.

Contrary to Wright et al., (1994), Lado and Wilson (1994) propose that HR systems are themselves the source of sustained competitive advantage in that they represent resources and capabilities that meet the criteria of RBV. They define HR systems as, "a set of distinct but interrelated activities, functions, and processes that are directed at attracting, developing, and maintaining (or disposing of) a firm's human resources" (p. 701). Specifically, they suggest firms with HR systems capable of enhancing organizational capabilities such as the ability to source better resources at lower costs, the ability to invest in firm-specific human capital most effectively, and the ability to create an internal labor market in order to benefit long term from the investment in firm-specific human capital resources can achieve an SCA. While Lado and Wilson's view is not incompatible with Wright et al., Wright et al., contend that if a firm can acquire an HR system capable of creating organizational capabilities that provide a sustainable competitive advantage, so can other firms. Studies to date have not yet determined to what extent HR systems that meet the RBV criteria are related to a sustainable competitive advantage.

The RBV provides a strong explanation for how one firm may create a strategic advantage over another firm through the acquisition and development of human capital and the design and implementation of HR practices to manage human capital. However,

more is needed to fully understand the linkages between people, practices and outcomes. Scholars have begun to develop theories addressing how HR practices are implemented, how they influence individual behaviors, and how practices interact with dimensions of individual attributes of human capital to yield performance improvements.

Behavioral Perspective

As stated by Wright et al., (1994), it is through employee behaviors that strategies are implemented. The essence of the behavioral approach is that specific employee behaviors are desired for a given organizational strategy and that the desired behaviors are elicited and reinforced using specific HR practices (Jackson, Schuler, & Rivero, 1989; Schuler & Jackson, 1987; Wright & McMahan, 1992). Schuler and Jackson (1987) provide a list of 12 employee role behavior dimensions with brief descriptions of behaviors at opposite ends of a continuum along which individual behaviors might vary. They propose that to achieve optimum results, a given organizational strategy may require a combination of behaviors across the 12 dimensions and the continuums for each dimension. For example, a firm pursing an innovation strategy might benefit from employees whom exhibit:

> *(1) a high degree of creative behavior, (2) a longer-term focus, (3) a relatively high level of cooperative, interdependent behavior, (4) a moderate degree of concern for quality, (5) a moderate concern for quantity, (6) an equal degree of concern for process and results, (7) a*

greater degree of risk taking, and (8) a high tolerance of ambiguity and unpredictability. (p.209-210)

Schuler and Jackson (1987) provide in their article, a menu of HR practices designed to elicit the range of behavioral responses identified as supporting a particular strategy. The key contribution of their perspective is that desired employee behaviors required to support organization strategy need to be identified and then employees need to exhibit these behaviors. Human resources practices are the tools managers use to identify employees willing and able to exhibit desired behaviors and to elicit the behaviors as needed. The tools run the gamut from job design, recruiting and selection, career paths, through compensation and performance management polices and techniques.

Human Capital

From a systems perspective, people, or human resources, are the main inputs in the SHRM model. They are the primary resource that an organization needs to acquire, develop, and utilize all of its other resources. Human resources are a form of capital. Like with physical or financial capital, investment can be made in human capital with the expectation of earning a return on the investment (Becker, 1962). This positive view of people as an asset, a resource in which to invest, has its contemporary beginnings in the field of economics, but such a positive view was not always the case (Becker, 1993; Schultz, 1961). As Theodore W. Schultz acknowledged in his presidential address at the annual meeting of the American Economic Association in 1960:

"The mere thought of investment in human beings is offensive to some among us. Our values and beliefs inhibit us from looking upon human beings as capital goods, except in slavery, and this we abhor. We are not unaffected by the long struggle to rid society of indentured service and to evolve political and legal institutions to keep men free from bondage. These are achievements that we prize highly. Hence, to treat human beings as wealth that can be augmented by investment runs counter to deeply held values. It seems to reduce man once again to a mere material component, to something akin to property. And for man to look upon himself as a capital good, even if it did not impair his freedom, may seem to debase him."(p.2)

However, several prominent economists and philosophers (e.g. Adam Smith, Johann Heinrich von Thünen, and Irving Fisher) maintained that viewing people as capital was not only appropriate, but failing to do so did not properly account for a considerable differentiator of national productivity as well as a major cost of war (Schultz, 1961). One could argue that it is through Gary Becker's Nobel Prize winning work that we are comfortable with the idea of discussing people as assets, one which a nation or firm can acquire, develop, deploy and retain with the intent of investing time and money in to it and expecting a positive return on the investment (Becker, 1993) . The more contemporary view of human capital theory, as articulated by Jackson and Schuler (1995), reinforces the idea that individuals with their knowledge, skills, abilities (KSAs) are of economic value to organizations, and that human capital investments, in the form of the costs associated with "eliciting productive behavior" (p. 241) are made

with the intention of realizing future returns on the investments. Human capital is broadly defined as the knowledge, skills, abilities, and other (KSAOs) attributes, characteristics (including health), and traits possessed by individuals (Becker, 1993; Jackson & Schuler, 1995; Ployhart & Moliterno, 2011; Wright & McMahan, 2011).

Cognitive Human Capital

The primary human capital dimensions of knowledge, skills, and abilities are accumulated by individuals through formal education, training, and experience. Of all human capital dimensions studied, the knowledge dimension has received the most attention (Crook, Todd, Combs, Woehr, & Ketchen, 2011). This is not surprising as scholars have asserted that knowledge is a key input in production and the primary source of value, giving rise to the knowledge based view of the firm (Grant, 1996).

2.1.1 Tacit and Explicit Knowledge

Knowledge can be either tacit or explicit (Grant, 1996), general or firm-specific (Becker, 1993), and context generic or context specific (Ployhart & Moliterno, 2011). Tacit knowledge reflects knowing *how* something is done and is revealed or shared through its application – by doing. Tacit knowledge is knowledge that we cannot easily put into words, "we can know more than we can tell" (Polyani, 1966). Explicit knowledge on the other hand, is information or knowing *about* something. It exits in the form of facts and theories, and is revealed or shared through communication (Grant, 1996; Zander & Kogut, 1995). Explicit knowledge can be codified, stored, and easily shared in written or verbal form.

2.1.2 General and Specific Knowledge

General knowledge represents knowledge that can be usefully applied in a variety of settings, whereas firm-specific knowledge is useful only in the setting in which it was acquired (Becker, 1993). This dichotomy is also referred to as context generic or context specific (Ployhart & Moliterno, 2011). To put it another way, general knowledge can be put to productive use in a wide variety of firms. Individuals possessing certain forms of general knowledge are free to move between firms where a demand for such knowledge exists. Examples of general knowledge include knowing how to use a computer and a variety of general business software, knowing how to repair common office and industrial equipment, and understanding how to interpret and apply government rules and regulations to typical business activities. Since these forms of knowledge would be of use to a variety of organizations, individuals possessing such knowledge would be able to freely trade their services in the labor market and accrue rents based on the market value of their specific form of general knowledge (Wright & McMahan, 2011).

On the other hand, firm-specific knowledge only has productive value for the firm in which the unique knowledge was created and to which it applies. An example of firm-specific knowledge includes knowing how to execute a firm's proprietary production process or how to operate customized equipment or information systems.

Another example would include knowing and understanding a transactive memory system within a firm, department or work group, and being able to access information across specific individuals as needed. This form of knowledge only applies to the systems, equipment, and individuals within a specific organization and is of limited value outside of the firm.

Firm-specific human capital also portends to be a source of a sustained competitive advantage (SCA) based on the resource based view (RBV). Firm-specific knowledge represents a heterogeneous resource that may be valuable, rare, inimitable and nonsubstitutible. And, while the acquisition of this form of knowledge generally requires an significant investment of time, money, and effort on behalf of both the firm and the employee, an individual possessing this form of knowledge would not be able to exchange if for increased wages in the external labor market (Becker, 1964; Coff & Kryscynski, 2011).

Additionally, Campbell, Coff, and Kryscynski (2012) propose that three boundary conditions exist in regards to the view of firm-specific human capital and not general human capital as a source of SCA. For the accepted view to hold true, they propose that the market value of an employee's general human capital cannot exceed its use value. Only in an efficient market where general skills are valued accurately (at or below their use value) does firm-specific human capital help achieve an SCA. The market rate for general human capital possessed by an individual must not exceed the marginal revenue thereby preventing a wage premium attributable to general human capital in the external labor market that is normally available only to firm-specific human capital in the

internal labor market. The second condition is that there must be a strong relationship between an individual's skills and firm specificity with regard to the market value of those skills. Finally, there must be sufficient non-economic mobility constraints on an employee to limit them from accepting substantial financial costs for moving. Given these three conditions, it is possible to anticipate instances when employees with firm-specific human capital may choose to change employers thereby increasing the cost of labor to the firm through unrealized return on investment and increased wages, preventing a firm from acquiring SCA through a uniquely productive work force at lower cost than competitors.

Interestingly, Coff and Kryscynski (2011) also put forth a proposition that while firm-specific knowledge may not, in itself, have market value beyond the source firm, the ability to acquire firm-specific knowledge, as indicated by the possession of it, may lead to higher wages for an individual in the external labor market. Their proposition is more a statement about evidence of learning skills than the marketability of firm-specific knowledge, however, it does aid in defining the relationship between knowledge human capital, and skills and abilities.

2.1.3 Skills and Abilities

In addition to knowledge, skills, abilities, and other characteristics also serve as productive forms of human capital. Skills are defined as, "represent(ing) a person's level of proficiency or competency to perform a task… are capacities that facilitate learning or acquisition of new knowledge" (Peterson et al., 2001 p. 464).

Abilities are defined as, “relatively enduring basic capacities for performing a wide range of different tasks” (Peterson et al., 2001 p. 457) and “the competence to perform an observable behavior or a behavior that results in an observable product,” (p. 4; Pandey, Harris, McMahan, & Wright, 2010; Spector, 2005). They include dimensions of cognitive abilities, physical abilities, psychomotor abilities, and sensory abilities.

Non-cognitive Human Capital

Another view of human capital distinguishes between individual differences along the lines of cognitive attributes such as knowledge, skills, abilities, and experiences, and non-cognitive attributes such as personality, values, and interests or preferences (Ployhart & Moliterno, 2011).

2.1.4 Values

Values are guiding principles individuals use to navigate through their lives and inform and activate patterns of behaviors (Bilsky & Schwartz, 1994). The values construct is used to explain a wide variety of human behaviors (Lyons, Higgins, & Duxbury, 2010). Values drive decisions and behaviors associated with motivation (Locke & Latham, 2004), organizational commitment (Meyer, Becker, & Vandenberghe, 2004), organizational citizenships behaviors (Munyon, Hochwarter, Perrewé, & Ferris, 2010), psychological capital (Avey, Luthans, & Youssef, 2010), and turnover intentions (Hausknecht & Trevor, 2011). Values are concepts or beliefs held by individuals that are “tied inextricably to emotion” (Schwartz, 2006 p. 1). Values focus on behaviors or desirable end states and transcend specific actions and situations.

They serve as standards that guide the selection or evaluation of actions, policies, behaviors, people and events. Moreover, unlike an individual's collection of norms and attitudes, values are prioritized and ordered by individuals based on their relative importance to one another (Schwartz, 2006; Schwartz & Bilsky, 1987). Schwartz and Bilsky (1987) suggests there are three facets underlying the content of values: values have either terminal or instrumental goals, values may serve individualistic or collectivist interests, and values address different motivational domains. Table 2.1 presents ten motivationally distinct value domains proposed to represent conscious goals seen as a responses to three, at times competing, requirements of individual's and societies: 1) an individual's biological needs, 2) the needs for coordinated social interaction, and 3) to facilitate the smooth functioning and survival of groups (Ros, Schwartz, & Surkiss, 1999).

Work values represent the expression of the basic individual values in a work setting (Ros et al., 1999). Work values are considered an individual trait that can be used to predict a variety of behavioral outcomes, such as work adjustment, job satisfaction and even choice of occupation (Taber, Hartung, & Borges, 2011). Values are seen to be closely aligned with personality traits (Bilsky & Schwartz, 1994).

2.1.5 Personality

For many millennia people have been describing other people based on the observable traits they exhibit that seem to transcend time and situation. Since Theophrastus' description of a "A Penurious Man" recorded sometime around 280 B.C.

(Bem & Allen, 1974) to Shakespeare's descriptions of the predictable behavior of the steward, Mavolio, in *Twelfth Night*, people have identified collections of traits that become the basis for describing and predicting a person's responses, actions and behaviors.

Table 2.1 – Motivationally Distinct Value Types

POWER: Social status and prestige, control or dominance over people and resources (Social Power, Authority, Wealth).
ACHIEVEMENT: Personal success through demonstrating competence according to social standards (Successful, Capable, Ambitious, Influential).
HEDONISM: Pleasure and sensuous gratification for oneself (Pleasure, Enjoying Life).
STIMULATION: Excitement, novelty and challenge in life (Daring, a Varied Life, an Exciting Life).
SELF-DIRECTION: independent thought and action choosing, creating, exploring (Creativity, Freedom, Independent, Serious, Choosing own Goals).
UNIVERSALISM: Understanding, appreciation, tolerance and protection for the welfare of all people and for nature (Broad-Minded, Wisdom, Social Justice, The Quality, A World at Peace, A World of Beauty, Unity with Nature, Protecting the Environment).
BENEVOLENCE: Preservation and enhancement of the welfare of people with whom one is frequent and personal contact (Helpful, Honest, Forgiving, Loyal, Responsible).
TRADITION: Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provides (Humble, Accepting my Portion in Life, Devout, Respect for Tradition, Moderate).
CONFORMITY: Restraint of actions, inclinations and impulses likely to accept or harm others and violate social expectations or norms (Politeness, Obedient, Self-Discipline, Honoring Parents and Elders).
SECURITY: Safety, harmony and stability of society, of relationships, (Family, Security, National Security, Social Order, Clean, Reciprocation of Favors).

While the number of terms in the lexicon describing individual traits was reported by Allport and Odbert (1936) to be approximately 18,000, they distilled the list down to a little over 4,400 (Allport et al., 1936; Bem & Allen, 1974). Allport and Odbert (1936) organized the trait descriptions into three levels: cardinal, central, and secondary traits. Cardinal traits are the dominant traits that provide an overarching sense of an individual's personality. Examples would include ambition, altruism, and self-sacrifice. Central traits are general characteristics present in almost every person to some degree, which form the basis of one's personality. Examples would include kindness, meanness, shyness, and honesty. Finally, secondary traits, while still related to enduring personality dimensions, do not explain general behavior as they are not evident across all situations and are less easily observed. They may be represented as preferences or personal styles (Allport et al., 1936; Bem & Allen, 1974; McAdams, 1995; Noller, Law, & Comrey, 1987).

2.1.6 The "Big Five"

After the initial work on trait theory, scholars focused on a much smaller set of traits. It has been proposed that individuals generally exhibit between five and ten of the central traits across all situations and this set of traits remains stable over time (McAdams, 1995). The systematic description and categorization of traits is viewed as the substance of personality and has been codified and distilled into the five-factor model (McCrae & Costa, 1987). This widely accepted model has been used to predict individual job performance (Barrick & Mount, 1991), team performance (Peeters, Van

Tuijl, Rutte, & Reymen, 2006), job choice (Taber et al., 2011), organizational citizenship behaviors (Borman, Penner, Allen, & Motowidlo, 2001), hire-ability (Dunn, Mount, Barrick, & Ones, 1995), entrepreneurial intentions and performance (Hao Zhao, Seibert, & Lumpkin, 2010), and leadership effectiveness (Derue, Nahrgang, Wellman, & Humphrey, 2011).

The first dimension of the five-factor model is *extraversion*. Traits associated with extraversion or its inverse, introversion, include sociability, talkativeness, assertiveness and gregariousness. The second is *neuroticism/emotional stability*. Traits associated with neuroticism or its inverse, emotional stability, include worry, anger, anxiousness, and insecurity. The third factor is *agreeableness*. Traits associated with agreeableness include courteousness, cooperation, forgiving, gentleness and tolerance. Next is *conscientiousness* which includes the traits of dependability, carefulness, thoroughness, perseverance, responsibility and organization. The last, and most difficult factor to identify, is *openness*. Openness is also described as intellect, and includes the traits of being imaginative, original, artistic, curious and broad-minded (Barrick & Mount, 1991, 1993; McAdams, 1995; McCrae & Costa, 1987; Noller et al., 1987). Personality is clearly a critical attribute of human capital as it reflects an individual's predisposition to enact a set of behaviors across most situations. It would be logical to conclude that selecting employees with a predisposition to exhibiting behaviors aligned with an organization's desired behaviors would increase the probability that the desired behaviors would be exhibited more often than by selecting employees that are not

predisposed to the exhibiting the desired behaviors. Testing this hypothesis is one of the goals of this study.

Human Capital and Firm Performance

Prior research has established that a positive relationship between human capital and firm performance does appear to exist. With their meta-analysis of 66 human capital to firm performance studies, (Crook et al., 2011) sought to determine the nature of the relationship between human capital attributes and firm operational as well as financial performance. They also considered how this relationship varied given either general or firm-specific human capital. The main effect identified through their analysis suggests that a one standard deviation increase in human capital (as measured using a variety of operationalizations) relates to a .21 standard deviation increase in performance. As an example, they present that a standard deviation increase in the collective experience of a firm's executive team (from 35.2 years to 59.4years) relates to an increase in return on assets (ROA) of 80% (from .05 to .09).

Crook et al. (2011) also found that more proximal measures of performance yielded stronger results than did distal measures. They hypothesized that powerful stakeholders such as strong unions and influential top management might be able to appropriate higher rents from their human capital contributions to firm performance and therefore it is not captured when measuring a firm's global performance through constructs such as ROA or return on sales (ROS). They also suggest that as these global measures are a

highly aggregated constructs, they may not accurately capture the impact of competing resources (Crook et al., 2011). Operational performance measured through specific value chain activities such as innovation or customer services were found to have an effect size 70% larger than that of global measures.

Human Resource Management Practices

The basic functions of management include planning, organization, directing and controlling the activities of the firm (with evaluating included as an element of control). While each function involves managing people and their human capital contributions to the firm to some extent, the functions of directing and controlling deal most directly with coordinating the actions and behaviors of people toward organizational goals. As discussed by Schuler and Jackson (1987), individual behaviors can be elicited and reinforced through a variety of practices and policies. They suggest that a manager could choose from six human resource practice "menus," reflecting the traditional HR functional areas of planning, staffing, appraising, compensating, and training and development. These six categories tend to dominate the classification and division of HR practices in terms of how firms structure their HR function organization chart, how HR practitioners specialize in their profession, how HR management textbooks are structured, and how academic research is conducted. However, several other categorization schemes bear mentioning.

Tichy, Fombrun and Devanna (1982) considered four generic processes required to manage human resources: selection, training, appraisal, and rewards. Lawler (1986)

classified practices based on the principles of conferring information, knowledge, power, and rewards to employees. Practices have been viewed through the AMO perspective, that is, how practices can be used to enhance employees' ability (selection and training), motivation (intrinsic and extrinsic rewards), and opportunity (involvement in decision making) (Appelbaum, Bailey, Berg, & Kalleberg, 2000; Jiang, Lepak, Hu, & Baer, 2012). Arthur (1992) proposed a two-dimensional categorization of HR practices comprised of cost reduction or commitment maximization, to explain the alignment between HR systems and firm strategy.

Boselie et al., (2005) identified 104 empirical articles, which they contend represents every HRM practice to performance study published between 1993 and 2003 in the leading international refereed journals. They found of 26 distinct HR practice represented in the sample, the top four practices studied in rank order included: training and development, contingent pay and rewards, performance management, and careful recruiting and retention. They also make a distinction between a practice and a technique. They give contingent pay as an example of a practice and profit-sharing as a technique for implementing the practice. Another example is selection as a practice and structured interviews as a technique. Techniques represent the myriad ways managers and organizations attempt to elicit and reinforce behavior. For the sake of manageability, techniques are generally categorized under practice domains that may or may not reflect the intended outcome of the practice (Langevin Heavey et al., 2012).

The standard approach to exploring the relationship between HR practices and firm performance has been to identify a set of practices, usually described as high

performance work practices (HPWS) (Huselid, 1995) or high involvement work systems (HIWS) (Lawler, 1986), and ask managers to report the extent that the practices are used in their organization. Table 2.2 presents a comparison of the systems of practices used in several key studies. The use of practices is then correlated with some measure of firm performance in order to test a variety of hypothesized relationships.

Most studies sample a variety of firms across either a single or small set of industries, and focus on collecting the response of the firm's human resource staff or managers (e.g. Arthur, 1992; Bae & Lawler, 2000; Delery & Doty, 1996; Guest, Michie, Conway, & Sheehan, 2003; Huselid, 1995; MacDuffie, 1995; Ngo, Turban, Lau, & Lui, 1998). Others focus on collecting responses from CEOs or general managers of the firms (e.g. Batt, 2002; Cappelli & Neumark, 2001). Some studies have collected responses from a combination of HR or non-HR managers and senior executives (e.g. Fey & Bjorkman, 2001; Rogg, Schmidt, Shull, & Schmitt, 2001).

The use of practices in the organizations studied has been measured in several ways. A simple dichotomous variable if either yes, the practice is used, or no, it is not (Hoque, 1999; Ichniowski, Shaw, & Prennushi, 1997; Rogg et al., 2001) has been collected. The proportion of the workforce to which practices have been applied has been measured (Guest et al., 2003). The degree or level to which the practice was utilized (Bae & Lawler, 2000; Collins & Clark, 2003; Delery & Doty, 1996; Den Hartog, Boon, Verburg, & Croon, 2012; Fey & Bjorkman, 2001; Fulmer, Gerhart, & Scott, 2003; Huang, 2000; Ngo et al., 1998; Rodríguez & Ventura, 2003). And finally, several studies used a combination of all three operationalizations (Arthur, 1992; Batt, 2002;

Cappelli & Neumark, 2001; Delaney & Huselid, 1996; Huselid, 1995; MacDuffie, 1995).

One of the challenges SHRM research face is what practices should be included in a system of HPWPs and empirically tested? Operationalizing systems of HPWPs using a heterogeneous set of practices limits the ability to accurately compare results across studies. The goal with this study is to test the hypotheses using an existing set of practices in order to allow a direct comparison between the results of several studies using the identical set.

Table 2.2 - HPWP Systems Used in Key Studies

Human Resource Management Practices Studied		
Pfeffer, 1993	**Huselid, 1995**	**Delery & Doty, 1996**
Information Sharing	What is the proportion of the workforce who are included in a formal Information sharing program (e.g., a newsletter)?	
	What is the proportion of the workforce whose job has been subjected to a formal job analysis?	Job descriptions
Promotions from Within	What proportion of non-entry level jobs have been filled from within in recent years?	Internal career opportunities
	What is the proportion of the workforce who are administered attitude surveys on a regular basis?	
Self-managed Teams/Participation and Empowerment	What is the proportion of the workforce who participate in Quality of Work Life (QWL) programs, Quality Circles (QC) and/or labor-management participation teams?	Participation
Incentive Pay/Employee Ownership	What is the proportion of the workforce who have access to company incentive plans, profit-sharing plans, and/or gain-sharing plans?	Profit sharing
Training and Skill Development	What is the average number of hours of training received by a typical employee over the last 12 months?	Training
Symbolic Egalitarianism	What is the proportion of the workforce who have access to a formal grievance procedure and/or complaint resolution system?	
Selectivity in Recruiting	What proportion of the workforce is administered an employment test prior to hiring?	
	What is the proportion of the workforce whose performance appraisals are used to determine their compensation?	
	What proportion of the workforce receives formal performance appraisals.	Results-oriented appraisals
	Which of the following promotion decision rules do you use most often? (a) merit or performance rating alone: (b) seniority only if merit is equal: (c) seniority among employees who meet a minimum merit requirement: (d) seniority."	
	For the five positions that your firm hires most frequently, how many qualified applicants do you have per position (on average)?	
Employment Security		Employment security
High Wages		
Cross-utilization and Cross-training		

Chapter 3

Hypotheses Development

This study seeks to explore the relationships between the inputs of cognitive and noncognitive human capital and the outcomes of behavior and performance. The study will draw upon the research areas of strategy, personnel selection, personality and individual differences, human capital and behavioral theory. Strategic human resource management is concerned with identifying the nature of the relationship between human capital and firm performance. In early studies, HR practices quickly became the dominant independent variable with human capital considered as a mediator (Wright & McMahan, 2011). This study proposes that human capital is a strategic input that firms use to achieve their desired outputs. Through the process of applying human resource management practices designed to activate desirable work behaviors to the human capital inputs, behavior and performance outputs are achieved. Scholars have questioned whether sufficient information exists to establish the relationship between these two very distal measures (HR practices to performance or human capital to performance) (Becker & Huselid, 2006; Wright & Boswell, 2002). As a response to this concern, research in SHRM has begun to focus on identifying the intervening variables that connect the people employed by a firm to the performance of a firm (cf. Kehoe & Wright, 2010). One of the basic assumptions of the human capital to performance relationship is that variation in human capital will be associated with variation in firm performance. To put it another way, a firm's performance may be the result of the performance of individuals employed by the firm.

This study proposes to examine the relationships between cognitive and noncognitive human capital and individual performance as mediated by desired

employee behaviors. The study will also explore the moderating effects of high performance work practices (HPWPs) on these relationships. Figure 3.1 graphically represents the predicted relationships between the focal constructs.

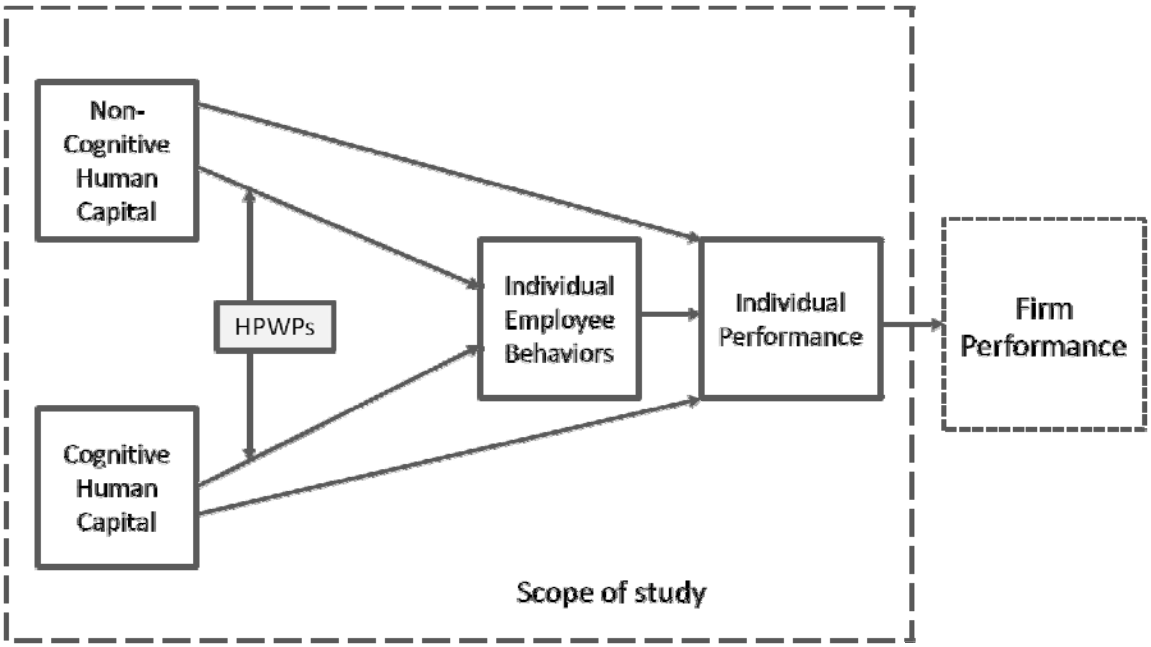


Figure 3.1 – Conceptual Model

Human Capital and Performance

Human capital theory suggests that investments aimed at increasing human capital provide returns for the investment by increasing productive capabilities. Increased productive capabilities yield increase output for a unit of input, which in turn yields increased profit and/or reduced cost per unit of sales. As found by the meta-analysis conducted by Crook et al., (2011) across 60 plus studies, firms that invest more in

acquiring and developing human capital outperform firms that invest less. The resource based view of the firm (RBV) suggests that firms possessing higher levels of human capital than their competitors may be able to attain a sustainable competitive advantage (Barney, 1991; Wright et al., 1994). In a general sense, firms comprised of individuals with superior human capital, defined as possessing more general knowledge, special knowledge, firm specific knowledge, and having higher levels of certain skills and abilities that can be utilized for business purposes, achieve better outcomes than firms comprised of individuals with average or lower levels of these same attributes. Achieving outcomes that allow a firm to create more value for a given a set of resources, or a competitive value using fewer resources results in a competitive advantage.

This study in interested in exploring the construct of human capital delineated in two broad forms. The theory Gary Becker introduced in 1964 was directed at explaining "increasing the resources in people," a theory focusing on investments in human capital. His human capital view proposed that the productivity of people could be changed through investments in their education, skills and knowledge. He extended his view of productive human capital to include an individual's health and their behaviors as well:

> "*The concept of human capital also covers accumulated work and other habits, even including harmful addictions such as smoking and drug use. Human capital in the form of good work habits or addictions to heavy drinking has major positive or negative effects on productivity in both market and non market sectors." (Becker, 1993 p. 392)*

Human capital has operationalized and studied in many forms. Generic human capital, defined as personality and cognitive ability that can be utilized across a variety of firms (Barney & Wright, 1998; Ployhart, Van Iddekinge, & Mackenzie Jr, 2011), has been found to be positively related to unit service performance behavior and unit effectiveness and negatively related to turnover (Ployhart et al., 2011). The operationalization of human capital in the strategy, HR, psychology and economics research streams takes on many forms, however, to date, no single study has considered how the non-cognitive human capital attributes compare with the cognitive human capital attributes in relation to behaviors and performance.

This study proposes that non-cognitive human capital is essential for the utilization of knowledge, skills, and abilities for the purposes of achieving organizational goals and objectives. As Ployhart and Moliterno (2011) reiterate, cognitive human capital represents what a person "can do" and is comprised of their knowledge, skills, and cognitive abilities. Non-cognitive human capital represents what a person "will do" and is comprised of their personality, values and interests (Cronbach, 1949; Kanfer, 1990; Ployhart & Moliterno, 2011). The study proposes that outcomes achieved as a result of cognitive human capital (a person's capacity to do productive work) are influenced by non-cognitive human capital (a person's habitual work oriented behavior). It is through the habitual behavior of applying knowledge, skills, and abilities to work related activities, that productive work is accomplished. Therefore, we will address the relationship between human capital and performance in two parts. First, the cognitive

dimension and its relationship with desired behaviors and performance; and then, with the non-cognitive dimension and desired behaviors and performance.

3.1.1 Cognitive Human Capital

Of the three dimensions of cognitive human capital, knowledge, skills, and abilities, the majority of human capital studies produced in the strategy and SHRM areas focus on the knowledge dimension. As mentioned previously, knowledge represents a key strategic resource that aids in the creation and production of goods and services. From the RBV perspective, knowledge can be valuable, rare, inimitable, and nonsubstitutible (Barney, 1991). From the knowledge based view, the primary role of a firm is the integration of the specialized knowledge held by individuals into the goods and services of the firm (Grant, 1996). The construct knowledge, as defined by Machlup in Grant (1996), represents:

> *"…13 different 'elements of knowing' including: being acquainted with, being familiar with, being aware of, remembering, recollecting, recognizing, distinguishing, understanding, interpreting, being able to explain, being able to demonstrate, being able to talk about, and being able to perform. Machlup also identifies five 'classes of knowledge' including: practical knowledge, intellectual knowledge (embracing scientific, humanistic, and cultural knowledge), pastime knowledge (news, gossip, stories, and the like), spiritual knowledge, and unwanted knowledge." (p. 110)*

Knowledge is also categorized as either declarative or procedural (Campbell, McCloy, Oppler, & Sager, 1993; Motowidlo, Borman, & Schmit, 1997). Declarative knowledge includes knowledge about facts, principles and procedures. This has also been described as explicit knowledge (Grant, 1996). Procedural knowledge is knowing how and what to do and is associated with the skill of being able to do it. This is referred to as tacit knowledge (Grant, 1996). Declarative knowledge can be assessed with traditional achievement tests, where as procedural knowledge can be assessed with aptitude tests or work samples. Declarative knowledge can be codified and communicated. It can be "taught" through presentation, whereas procedural knowledge cannot be as easily transferred between individuals and is acquired through observing its application (Grant, 1996; Zander & Kogut, 1995). These distinctions provide the basis for the two main proxies used in measuring knowledge human capital: level of education and years of experience.

That knowledge is the most studied human capital variable may be as a result of the ease of methodological approaches used and accepted as much as its critical contribution to the functioning of an organization. Experience is the single most specifically defined measure of human capital in the 66 studies comprising the Crook et al., (2011) meta-analysis of the human capital to performance relationship. Experience is closely aligned with procedural knowledge and assumes that during the duration of the experience an individual has observed and acquired tacit knowledge. This form of knowledge can be on a continuum ranging from general to specific. Ostensibly, the more years of experience with a particular firm, in a particular role, would equate to a

higher level of firm specific knowledge. Years of experience in a particular functional area such as finance or human resource management, across several organizations, would represent a higher level of specific knowledge, and years of experience in a variety of roles across a variety of organizations would represent a level of general knowledge.

The prediction of a relationship between experienced based human capital and performance has found much support. Ng and Feldman (2010b) conducted a meta-analysis of 350 empirical studies with a cumulative sample size of 249,841 and found that longer tenured employees have greater in-role performance and citizenship behaviors. Pil and Leana (2009) found that specific human capital for teachers, defined as the number of years teaching in grade, was positively related to student performance. Berg et al. (2001) found support for their prediction that keeping the top executives of an acquired company with longer organizational tenure is related to more successful acquisitions. They defined a successful acquisition as one in which the acquired company was still owned by the acquiring firm five years after the date of acquisition. Their prediction was based on the premise that more experienced executives with higher levels of organization-specific knowledge would facilitate the effective integration of the acquisition.

Two human capital studies utilizing sports teams focused on shared team experience to examine the relationship between procedural knowledge and performance. Berman, Down, and Hill (2002) predicted that shared team experience creates an accumulation of valuable collective knowledge that results in superior performance. Using 23 NBA

teams from the 1980-81 season as the sample, they found shared team experience, measured as an average of years of experience each player had on the specific team weighted by the minutes played in games over the season, was positively associated with the number of team assists and games won. Surprisingly, they found a curvilinear relationship such that over time the advantage diminishes. Possibly due to complacency effects of time spent together and also the increased ability of other teams to predict how the focal team will execute plays as a group.

The second study uses a similar measure described as overlapping tenure. Using a sample of 230 NCAA men's basketball teams over the 2006-2007 season, Harris, McMahan and Wright (2012) predicted the number of seasons team members and coaches spent together would be positively related to the season-ending ranks of each team. Surprisingly, they did not find support for the overlapping tenure of the head coach and players but did find strong support for the time the players played together providing further support of Bermans et al.'s (2002) findings. Additionally, several other studies found a positive relationship between experience or tenure and firm performance. Entrepreneurship experience, measured as the number of start-ups undertaken (Dimov & Shepherd, 2005; Haber & Reichel, 2007), average years of partner's experience in a law firm (Hitt, Bierman, Uhlenbruck, & Shimizu, 2006; Hitt, Biermant, Shimizu, & Kochhar, 2001), years of international assignment experience (Carpenter, Sanders, & Gregersen, 2001), work experience (Carmeli & Tishler, 2004); and industry experience (Brush & Chaganti, 1999) have all been related to performance.

The second most studied cognitive human capital construct was education. While it is assumed that some explicit knowledge is also accumulated over time as individuals experience training and are introduced to new technologies and processes, level and type of education are the predominate operationalizations used to assess declarative knowledge. The supposition is that the more years of education a person has completed the higher their level of declarative knowledge.

Support for the prediction that level of education is positively related to performance is robust. (Gruber, MacMillan, & Thompson, 2012) identified that a founding team's educational diversity, both level and major area of study, influences a firm's ability to identify market opportunities. Dimov and Shepherd (2005) studied specific and general human capital using education to operationalize both forms. They considered an MBA, law (JD), or finance degree, or consulting experience as specific human capital. Bachelor and masters' degrees in mathematics, the natural sciences, and engineering as well as all degrees in art or social sciences (excluding economics) and entrepreneurial experience were considered general human capital. Using a sample of 122 venture capital firms (VCF) they found that general human capital was positively related with the proportion of portfolio companies that went public, and specific human capital was negatively related with the proportion of portfolio companies that went bankrupt. Their belief about these relationships is expressed as:

> *"Specific human capital provides the VCF with the ability to critically analyze business plans, find holes in business models, negotiate venture capital contracts, and implement some risk-reduction strategies... General human*

capital facilitates the integration and accumulation of new knowledge, which provides individuals with larger opportunity sets (cf. Gimeno, Folta, Cooper, & Woo, 1997) and assists them in adapting to new situations." (p.8)

Chandler and Lyon (2009) found support for their prediction that average team member education level was positively related to sales growth in a sample of 124 five-year old business start-ups. Skaggs and Youndt (2004) used a perception scale (see table 3) consisting of five items to assess the level of human capital possessed by the organization's employees directly involved in the service production and delivery process. The scale measured an organization's approach to selection and training with items focused on the degree to which they select production employees with high levels of prior education, training, and experience; and how much time and money they spend on training activities. Their research focused on the relationship between strategic choices and levels of human capital. Using a survey completed by either the CEO or COO of 234 service organizations across 96 different industries, they found that organizations matching high levels of human capital with highly adaptable service production and high levels of customer contact exhibited high levels of ROI and ROE. They found the opposite effect with firms matching high levels of human capital with customer co-production. As they predicted, their finding suggest that the cost of high levels of human capital may not always benefit a service organization when customer co-production shifts some of the production cost to customers and requires less human capital of the offering firm due to standardized customer inputs into the firm's production process.

In addition to serving as a proxies for explicit or declarative knowledge, level and source of education has also been used to measure prestige (Hitt et al., 2001) and cognitive ability (Martinson, 2012) based on the reputation and selectivity of the institution where the education occurred respectively.

Table 3.1 - Skaggs and Youndt (2004) Human Capital Measures

1. Our employees are highly skilled
2. Our employees are widely considered the best in our industry
3. Our employees are creative and bright
4. Our employees are experts in their particular jobs and functions
5. Our employees develop new ideas and knowledge

The third dimension of cognitive human capital includes skills and abilities. Skills are a person's level of proficiency or competency to perform a task and include the capacities to learn and acquire new knowledge (Peterson et al., 2001). Abilities are the basic capacities for performing a wide range of different tasks (Peterson et al., 2001 p. 457). They are generally grouped under the categories of cognitive abilities (deductive and inductive reasoning, oral and written comprehension, visualization, perceptual speed, memorization, and information ordering), physical abilities (strength, flexibility, coordination, stamina), psychomotor abilities (arm-hand steadiness, manual dexterity, reaction time) and sensory abilities (auditory, depth perception, far vision, night vision,

speech clarity and recognition). Not surprisingly, there are relatively few studies that consider the skills and abilities form of human capital given the difficulty of accurately measuring these constructs. Of those that do, the majority of studies have focused on cognitive ability. This is understandable since general mental ability would be a component of many types of jobs in a variety of organizations, and the availability of a variety of tests that have found acceptance as valid measures of certain dimensions of cognitive ability exist. These include the Wonderlic Cognitive Ability Test and the Wechsler Adult Intelligence Scale (Baldwin, Pierce, Joines, & Farouk, 2011; Dodrill & Warner, 1988; Wright, Kacmar, McMahan, & Deleeuw, 1995).

Park, Mitsuhashi, Fey, and Björkman (2003) found that employee skill mediated the positive relationship between human resource management systems and firm performance. Employee skills were measured using a single respondent survey, completed by the human resources manager or general manager from each of 52 subsidiaries of Japanese multinational companies operating in the US and Russia. The perception scale was based on several published scales (cf. Huselid, 1995; Wright & Snell, 1998) and included a three items to measure skill using a using a Likert type scale from 1 to 7. They included, "Relative to the employees of your competitors in your industry, how would you rate the quality of your subsidiary's employees on each of the following dimensions? (1) Overall ability, (2) Job related skills, (3) Education level."

Using this type of scale in which only one item specifically addresses skill would suffer from issues regarding reliability and validity. In this instance education is combined with skill. In most studies these represent distinctly separate constructs. As

Wright and McMahan (2011) point out, using direct assessments better measure the variability in the characteristics being assessed by reducing error variance. They also point out that direct assessments are more likely to focus on specific human capital characteristics related to the specific job of the respondent under study. Studies utilizing sports teams as the sample have provided the strongest support for the relationship between skills and abilities and performance. Sirmon, Gove and Hitt (2008) tested industry-specific human capital, defined as skills relevant for success in an industry using major league baseball teams. They created indexes for batting, pitching, and fielding skills from available past performance statistics and found a positive relationship between batting and pitching with winning games. Another sports skill study featured player ratings compiled by a team of recruiting analysts based on film evaluation, personal observations, and input from professional, college, and high school coaches. Harris, McMahan and Wright, (2012) used the Rivals ratings of NCAA men's basketball players and found a positive relationship between skill ratings and overall team rank amongst its competitors.

Finally, one interesting study conducted by Miller and Shamsie (1996) of the major U.S. film studios from 1936 to 1965 used industry specific skills including expertise in script development, set design, direction, camera work, sound, and editing, to predict studio profits, return on sales, and market share. They measured skills by the number of Academy Awards received for each skill area. They found that during the period of 1951 to 1965, a period described as experiencing highly uncertain market conditions,

industry specific skills were positively related to all three measures of studio performance.

Given this body of empirical support of a relationship between cognitive human capital and various firm outcomes, and considering the work of selection scholars whose models are designed to predict the relationship between individual differences and individual work performance (cf. Campbell, 1990; Campbell et al., 1993; Hunter & Hunter, 1984; Schmidt & Hunter, 1998), it seems reasonable to connect these two levels of analysis by looking at individual predictors of work performance and suggesting they will lead to firm levels of performance. Work performance has been defined as the level of contribution by an individual to a firm's goals and objectives. Selection scholars have identified a variety of individual attributes that have predictive validity in relation to individual work performance. Of particular interest is the individual attribute of cognitive ability or general mental ability (GMA). Hunter, Campbell, and other scholars have successfully identified that cognitive ability appears to be one of the single best predictors of work performance.

The first hypothesis of this study is proposes a positive relationship between the cognitive human capital characteristics of individuals and their performance. These forms of cognitive human capital include cognitive ability, knowledge, and experience. They are generally referred to as the knowledge, skills and abilities or KSAs possessed by a firm's employees and establish the basis from which the employees are able to make meaningful contributions to the firm’s objectives and goals. Given this expected relationship, the following hypotheses are proposed:

Hypothesis 1: Cognitive human capital is positively related to performance.

H1a: General knowledge is positively related to performance.

H1b: Firm specific knowledge is positively related to performance.

H1c: Cognitive ability is positively related to performance.

Desired Behaviors and Performance

Two key employee behaviors are expected to be related to organizational performance through their support of organizational goals and use of organizational resources. They include organizational citizenship behaviors, and withdrawal behaviors. Organizational citizenship behaviors contribute to organizational effectiveness by doing things that are not specified task functions but are valuable because they contribute to the organizational and social environment that supports task activities (Organ & Ryan, 1995). O'Reilly and Chatman (1986) describe the criticality of OCBs:

> *"many critical behaviors in organizations rely on acts of cooperation, altruism, and spontaneous unrewarded help from employees. Katz (1964) also observed that one class of essential behaviors for a functioning organization consisted of those innovative behaviors that go beyond role prescriptions. Mowday et al. (1982, p. 15) addressed this directly, claiming that, "There are many instances where organizations need individual members, especially those in critical positions, to perform above and beyond the call of duty for the benefit of the organization." (p. 493)*

Withdrawal behaviors include behaviors such as voluntary absenteeism, tardiness, and engaging in non-work-related conversations. The cost to organizations of withdrawal and counterproductive behaviors has been estimated to be approximately $200 billion per year (Eder & Eisenberger, 2008; Murphy, 1993). One study proposed that the costs of all withdrawal behaviors to a leading, medium-sized Israeli company was as much as 16.5 per cent of before-tax income (Berry, Lelchook, & Clark, 2012). A variant of withdrawal behavior is turnover or employees voluntarily leaving an organization. This form of withdrawal results in the loss of organization specific human capital and incurs the economic costs associated with replacing and departing employing through the process of acquiring and developing a new employees. Some studies have used the attitudinal measure of turnover intention (Kehoe & Wright, 2010; van Breukelen, van der Vlist, & Steensma, 2004) as a measure of anticipated turnover behavior. This approach is supported by the empirical finding that turnover intention is a strong predictor of actual turnover (Mowday, Koberg, & McArthur, 1984).

It is proposed that increased performance is achieved through employees exhibiting desired behaviors. Organizational citizenship behaviors represents voluntary actions aimed at helping others to execute their task responsibilities or help the organization achieve its goals beyond what is prescribed or even rewarded through the formal employment relationship. Finally, the willingness to participate fully in the working relationship and continue the working relationship represents the absence of the behavior of the reduces productivity and prevents the loss of the human capital

investment made on behalf of the organization. To test these propositions, the following relationships are predicted:

Hypothesis 2: Desired employee behaviors are positively related to performance.

H2a: OCBs are positively related to performance.

H2b: Withdrawal behaviors are negatively related to performance.

Cognitive Human Capital and Behaviors

Cognitive human capital (knowledge, skills and abilities) provides the resources an employee needs to accomplish their assigned tasks. Whether the task involves comprehending a situation, analyzing and interpreting information, choosing between alternatives, or physically executing a move or action, an employee's knowledge, skills and abilities are activated and deployed. Wright et al. (1993), in their study of goal setting and extra-role behavior, proposed that an individual's level of human capital resources affects their workplace behavior. They interpreted their findings to suggest that when prescribed role behaviors were demanding, and employees' human capital resources were "taxed," individuals would focus on exhibiting prescribed behaviors (task performance or in-role behaviors) at the expense of extra-role behaviors. The consumption of human capital resources as a determinant of behavior is based on the behavioral theory proposed by Naylor, Pritchard and Ilgen (1980). According to their theory, behavior is an ongoing process comprised of a basic unit called an *"act."* An individual's commitment to an act is the time and effort allocated by the individual to the task of performing that act (Dougherty & Pritchard, 1985).

Pandey (2012) proposed that higher levels of human capital would correlate with higher levels of desired behavior and tested her hypothesis with nurses in a hospital setting. She found a positive relationship between cognitive human capital and in-role performance. Wright et al's (1993) findings that extra-role behaviors may be sacrificed for the sake of in-role behaviors suggests a relationship between cognitive human capital and organizational citizenship behaviors. A surplus of cognitive human capital, beyond that which is required for an employee to execute their prescribed tasks, may be required for an employee to engage in behaviors above and beyond that which are prescribed.

To continue with the demands placed on cognitive human capital by task performance, cognitive human capital is predicted to be related to withdrawal behaviors through burnout and job demands. Research has shown that jobs demanding higher levels of human capital are associated with higher levels of turnover than those with lower demands. The job demands and resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) proposes that, "*Job demands* refer to those physical, social, or organizational aspects of the job that require sustained physical or mental effort… *Job resources* refer to those physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands at the associated physiological and psychological costs; (c) stimulate personal growth and development.," (p. 501). Job demands include cognitive and emotional effort or skills (Bakker & Demerouti, 2007). Schaufeli and Bakker (2004), in a sample of 608 employees drawn from four separate Dutch service

organizations and analyzed using structural equation modeling, found a positive relationship between job demands, burnout, and turnover intentions. Bakker, Demerouti, and Verbeke (2004), using structural equation modeling with a sample of 146 individuals with variety of jobs across a variety of Dutch firms, found that job demands were positively associated with exhaustion, a form of burnout, which in turn, was negatively associated with in-role performance. It is proposed that the relationship between cognitive human capital and performance is mediated through employee behaviors. Human capital represents the resource employees use to support the "acts" the comprise behavior. The more human capital an employee has to drawn on the more frequently or longer they can sustain the desired behavior, therefore the following relationships are predicted:

Hypothesis 3: Cognitive human capital is positively related to desired employee behaviors:

H3a: General knowledge is positively related to OCBs.

H3b: Firm specific knowledge is positively related to OCBs.

H3c: Cognitive ability is positively related to positively related to OCBs .

H3d: General knowledge is negatively related to withdrawal behaviors.

H3e: Firm specific knowledge is negatively related to withdrawal behaviors.

H3f: Cognitive ability is negatively related to withdrawal behaviors.

Additionally, as predicted earlier, it is through employee behaviors that individual cognitive human capital yields individual performance. Therefore:

Hypothesis 4: Desired employee behaviors mediate the relationship between cognitive human capital and performance.

H4a: OCBs mediate the relationship between general knowledge and performance.

H4b: OCBs mediate the relationship between firm specific knowledge and performance.

H4c: OCBs mediate the relationship between cognitive ability and performance.

H4d: Withdrawal behaviors mediate the relationship between general knowledge and performance.

H4e: Withdrawal behaviors mediate the relationship between firm specific knowledge and performance.

H4f: Withdrawal behaviors mediate the relationship between cognitive ability and performance.

Non-Cognitive Human Capital and Desired Behaviors

Non-cognitive human capital domains included in this study are personality and orientations. Personality refers to individual differences in characteristic patterns of thinking, feeling and behaving (APA, 2013). Orientations represent a subset of the affective reactions domain and consists of values and interests (Murphy, 1996). Whereas the five-factor model (FFM) represents collections of behaviors, affective reactions represents feelings or general tendencies to react either positively or

negatively to something. In the case of orientations, interests represent the liking of a person, thing or event.

Values represents a preference for, or like of, a particular end-state (Murphy, 1996). These individual differences are believed to be relatively stable and enduring over time and across various situations. Values are guiding principles individuals use to make decisions and activate patterns of behaviors. They serve as standards that guide the selection or evaluation of actions, policies, behaviors, people and events and are prioritized and ordered by individuals based on their relative importance to one another. Work values are an individual traits associated with a work setting. They have been used to predict a variety of outcomes, including work adjustment, job satisfaction, and choice of occupation (Taber et al., 2011) .

Berings, De Fruyt, and Bouwen (2004) compared the dimensions of the FFM to a set of work values described as general preferences aligned with 12 general job characteristics. They found that individuals with higher levels of conscientiousness were more likely to value structure, rationality, and influence in a job. Higher levels of openness were related to valuing working in a team and less value placed on competition. Individuals with higher levels of extraversion were more likely to value influence and creativity and individuals with higher levels of neuroticism were more likely to value community and stress avoidance. Big Five personality traits also accounted for more than 15% of the variance in 10 of the work values measured in their study.

Arthaud-Day, Rode, and Turnley (2012) using the Schwartz Value Survey (Schwartz, 1992) correlated five composite values with two forms of OCBs. They created five composite values: benevolence, conformity, achievement, power, and self-direction, using 21 of the 56 SVS items (see table 4) and compared them separately to individual directed OCBs (OCB-I) and the group directed OCBs (OCB-O). Benevolence, achievement, and self-direction values were all positively correlated with both OCB-I's OCB-Os; and the power value was negatively correlated to with both OCB-I's OCB-Os.

The personality construct represents the set of basic behaviors an individual exhibits consistently across a wide variety of situations. As previously discussed, the FFM categorizes these behaviors into the dimensions of openness, conscientiousness, extroversion, agreeableness and neuroticism. Several studies examining the relationships between personality defined behaviors and organizational citizenship behaviors have found support for their predictions. Organ (1994) reviewed a set of studies that measured both affect and disposition and found that variables comprised of dimensions of the FFM correlated with the OCB dimensions of altruism or compliance, but were generally at a level of less than .30.

Organ and Ryan (1995) conducted a meta-analysis of personality predictors for OCBs and found similar results with the exception of the dimension of conscientiousness which exhibited a slightly stronger relationship with the OCB dimension of altruism when including self-report measure and with general compliance with or without self-report measures included in the analysis. An updated meta-analysis

(Ilies, Spitzmuller, Fulmer, & Johnson, 2009) found similar results. Conscientiousness and agreeableness were positively related to OCBs but the correlations were relatively low (.24 and .18, respectively). Ilies, Scott, and Judge (2006) found that agreeableness was positively correlated with OCBs at a slightly higher level (.36) and moderated the relationship between positive affect and OCBS.

Personality has been found to predict turnover and turnover intentions. Zimmerman (2008) tested all five dimensions of the FFM against turnover intentions and actual turnover in a meta-analysis. The results indicated that conscientiousness and emotional stability had moderate relationship with intentions to quit. Agreeableness, conscientiousness, openness to experience and emotional stability each had moderate relationships with actual turnover.

Barrick and Mount (1991) found support in their meta-analysis for the relationship between job proficiency (measures included performance ratings and productivity data) and conscientious. With their field study, Kamdar and Van Dyne (2007) found correlations between supervisor rated employee task performance and conscientious and agreeableness at the .34 and .23 levels respectively.

This study will look at three specific noncognitive human capital constructs and hypothesize about their relationships to performance and behaviors. The first is work centrality (WC). WC is a normative belief about the value and importance of work in one's life. It is believed to be a product of cultural conditioning or socialization (Uçanok, 2011). Work centrality represents the degree of importance an individual places on work in general as opposed to the degree of importance one places on their

present job. Individuals with high WC value work in and of itself as a central part of their life. Individuals low in work centrality perhaps view work as a means to achieve other things that are more valued. As a construct, it is different and distinct from job involvement or organizational commitment which focuses on one's job or current employer, respectively (Paullay, Alliger, & Stone-Romero, 1994). It is proposed that individuals high in WC with their increased value on work would be more inclined to be engaged in their jobs and their organizations, and be committed to their organizations as a means of achieved their desired state of satisfaction and fulfillment derived from work. This will be reflected in levels of OCBs and withdrawal behaviors exhibited in their work place.

The second construct is the FFM personality dimension of conscientiousness. It would be hard to imagine personality not being related to performance in some way. The facets of the conscientious personality factor are synonymous with positive performance as they include achievement, dependability, cautiousness/impulse control, order, and persistence (Hough & Ones, 2001). Individuals predisposed to activate these behaviors across all settings, especially work settings would be more inclined to execute their work tasks, assists others with theirs and look out for the organization overall. Additionally, the conscientiousness dimensions of dependability and perseverance would make individuals high in conscientiousness predisposed to resist withdrawing physically or psychological for their responsibilities and the organization overall. This would be reflected in increased OCBS and decreased withdrawal behaviors exhibited in the work setting.

The third noncognitive construct used in this study is proactive personality (PP). Defined as a predispositional, stable set of behaviors that reflect the degree to which an individual believes they are relatively unconstrained by their environment, and can actively seek to effect change in their environment (Bateman & Crant, 1993). Behavioral manifestations of PP include scanning for opportunities, showing initiative, taking action, and persevering until they achieve their goals by causing change. It is proposed that individuals high in PP, with their increased initiative and action-taking, and their ability and focus on bringing about change, would also be more engaged in their jobs and their organizations, and actively seek to achieve their goals and improve their work environment as opposed to withdraw from it. This will be reflected in the levels of OCBs and withdrawal behaviors they exhibit in their work place.

Non-cognitive human capital represents the habits, traits, values and patterns of behavior that are part of, and vary between, every individual. These individual differences attributes affect how people will act in response to workplace demands across a variety of work place settings and situations. It is proposed that these stable, enduring dimensions will be correlated with the desired employee behaviors and individual performance as follows:

Hypothesis 5: Noncognitive human capital is related to desired employee behaviors:

H5a: Conscientiousness is positively related to OCBs.

H5b: Proactive personality is positively related to OCBs.

H5c: Work centrality is positively related to positively related to OCBs.

H5d: Conscientiousness is negatively related to withdrawal behaviors.

H5e: Proactive personality is negatively related to withdrawal behaviors.

H5f: Work centrality is negatively related to withdrawal behaviors.

Hypothesis 6: Noncognitive human capital is related to performance:

H6a: Conscientiousness is positively related to performance.

H6b: Proactive personality is positively related to performance.

H6c: Work centrality is positively related to positively related to performance.

Hypothesis 7: Desired employee behaviors mediate the relationship between noncognitive human capital and performance:

H7a: OCBs mediate the relationship between conscientiousness and performance.

H7b: OCBs mediate the relationship between proactive personality and performance.

H7c: OCBs mediate the relationship between work centrality and performance.

H7d: Withdrawal behaviors mediate the relationship between conscientiousness and performance.

H7e: Withdrawal behaviors mediate the relationship between proactive personality and performance.

H7f: Withdrawal behaviors mediate the relationship between work centrality and performance.

Human Resource Practices Moderate Behaviors

An additional influence on the relationship between human capital and desired behaviors is the application of human resource management practices designed to encourage individual behavior. In accordance with behavioral theory (Schuler & Jackson, 1987), organization policies and practices are used to elicit and reinforce employee behaviors directed toward the accomplishment of organizational goals. Given the empirical support for the positive effect of HPWPs on employee behaviors and performance outcomes (cf. Combs et al., 2006; Huselid, 1995; Kehoe & Wright, 2010; MacDuffie, 1995), it is proposed that:

Hypothesis 8: HPWPs will moderate the relationship between non-cognitive human capital and employee behaviors such that:

H8a: HPWPs will moderate the relationship between conscientiousness and OCBs.

H8b: HPWPs will moderate the relationship between proactive personality and OCBs.

H8c: HPWPs will moderate the relationship between work centrality and OCBs.

H8d: HPWPs will moderate the relationship between conscientiousness and withdrawal behaviors.

H8e: HPWPs will moderate the relationship between proactive personality and withdrawal behaviors.

H8f: HPWPs will moderate the relationship between work centrality and withdrawal behaviors.

Hypothesis 9: HPWPs will moderate the relationship between cognitive human capital and employee behaviors such that:

H9a: HPWPs will moderate the relationship between general knowledge and OCBs.

H9b: HPWPs will moderate the relationship between firm specific knowledge and OCBs.

H9c: HPWPs will moderate the relationship between cognitive ability and OCBs.

H9d: HPWPs will moderate the relationship between general knowledge and withdrawal behaviors.

H9e: HPWPs will moderate the relationship between firm specific knowledge and withdrawal behaviors.

H9f: HPWPs will moderate the relationship between cognitive ability and withdrawal behaviors.

Chapter 4

Analysis and Results

To test the research hypotheses, data was collected using matched surveys from a sample of supervisors and their subordinates using the Qualtrics web based survey system accessed by a web link distributed via email. The initial sample for this study was to be a large manufacturing subsidiary of a public traded firm. A single large employer was selected to control for the variation in HR polices and other extraneous variance attributable to industry, location, and organization culture. The survey was scheduled to be distributed to all employees in the subsidiaries' finance, information technology, and human resource management departments in late spring of 2013. However, as a result of the Budget Control Act of 2011, signed on August 2, 2011, an automatic and severe budget cut (call a 'sequestration") was planned to take effect on January 1, 2013 as a means of encouraging Congress to take action and resolve the pending debt-ceiling crisis before the January 1 deadline. On January 1, 2013, Congress and the President approved an extension of the sequestration until March 1, 2013. Congress failed to resolve the budget debate, the sequestration took effect, and, due to the effects of the sequestration, the organization curtailed its participation in the study as it planned for the reduction of its labor force.

In order to continue with the study another sample was identified. Organizations in the North Texas region were identified and contacted through their membership in a local Society of Human Resource Management Chapter as well as through the authors direct contact with several organizations. Contacts were sent an email describing the

study and requesting their participation. In some cases follow-up phone conversations were held to provide senior leadership with information about the research project and data collection methodology. Five organizations agreed to participate in the research and provided the names and email addresses of their employees. The organizations represented several sectors and industries including a medium sized state university, a small public school system, two separate manufacturing subsidiaries of large publicly traded corporations, and several branch offices of a privately held regional bank.

To determine the desired sample size, an a priori calculation of minimum sample size was conducted. Three separate models were run, one for each of the dependent variables (performance, organizational citizenship behaviors, and withdrawal behaviors). The two largest models included a test of the three cognitive and noncognitive independent variables plus a high performing work practices moderating variable. To achieve the desired level of statistical power of .8 or greater, with an expected effect size in the medium range (.15 for Cohen's f^2 effect size) using the maximum of seven independent variables in each model requires a minimum sample of 103 cases. The calculation was made with Daniel Soper's A-priori Sample Size Calculator for Multiple Regression based on Cohen's f^2 effect size formula (Soper, 2013).

Subjects were contacted by email inviting their participation. Four of the five organizations provided a list of supervisors and their email addresses. For two groups, the list included all supervisors. For the other two groups, the supervisors were selected by an HR contact from a department within the organization. All supervisors from these

four organizations were sent a survey link via email asking them to provide the email addresses of their direct reports and to complete a survey for each of one them. From the responses received, the responding supervisors' direct reports were sent a separate survey via email. 157 supervisors were contacted with 64 completing surveys giving a 41% supervisor response rate. The supervisors across the four organizations provided the names of 182 employees. Of this group, 91 employees responded giving a 50% response rate.

One of the participating organization provided a list of all employees. For this group a direct report survey was distributed which included a field asking for the respondents to provide their supervisors' email address. From the responses received, the responding direct reports' supervisors were sent a separate survey link via email asking them to complete a survey for each of their direct reports that had completed surveys. 302 direct reports were contacted with 18 completing surveys. Of the 18 surveys completed, nine separate supervisors were identified. Each of these nine supervisors was sent a survey link. Eight completed surveys providing an additional 17 cases to the study. The final sample and response rate includes 166 supervisors contacted and 72 responses for an average response rate across all organizations of 43% and a weighted average response rate factoring in organization sample size of 49%. The direct report sample includes 484 contacted and 109 responses for an average response rate across all organizations of 23% and a weighted average response rate factoring in organization sample size of 47%.

Sample Characteristics

The demographic characteristics of the responding direct reports indicates that 78% of the sample are female, 96% are white, and their age ranges from 24 to 67 years with a median age of 46. The median level of education of the sample is 16 years, indicating the completion of a 4-year college degree and the range is from 12 to 22 years corresponding to having completed high school through completing a Ph.D, respectively. The average number of years the direct reports have been in their current positions is 6.2 with a range of less than a year to 26 years and a median of 4 years. 36% indicated their position was classified as Professional, 14% as Clerical, 12% as Managerial, 7% as Technical, and 7% as Customer Service. 21% indicated their position was classified as Other and included the following position types: procurement, recruiting, human resource management, fundraising, teacher.

Measures

4.1.1 Independent variables

Cognitive Human Capital was operationalized as three separate constructs: general knowledge, firm specific knowledge, and cognitive ability and were measured using three well established operationalizations. *Cognitive ability* was measured using the Wonderlic Cognitive Ability Pretest (WCAP). WCAP, formerly known as the Wonderlic Personnel Test - Quicktest (WPT-Q), is considered a reliable measure of the same verbal, quantitative, and spatial abilities indicative of general cognitive ability describes as "*g"(LePine, Colquitt, & Erez, 2000),* and is consistent with previous HRM

research (cf. Wright et al., 1995). WCAP is a shortened version of the Wonderlic Personnel Test (WPT), the traditional 12 minute, 50-item, proctored assessment. The WCAP is a timed, eight minute, 30-item assessment delivered through an online survey system. The WCAP tests verbal, numeric, and logic abilities. Scores from this shortened version has been determined to correlate with scores from the full 50-item, timed paper based WPT at .93 level (Tews, Michel, & Noe, 2011). The other two cognitive human capital dimensions frequently used in strategy research include *General Knowledge* measured as years of education completed (Brüderl, Preisendörfer, & Ziegler, 1992; Frese et al., 2007), and *Firm Specific Knowledge* measured as in-role tenure and operationalized as years of experience in the respondents current position within the participating organization (Chandler & Lyon, 2009; Harris et al., 2012; Hitt et al., 2001; Ng & Feldman, 2010a).

Non-cognitive human capital was measured using three separate constructs including conscientiousness, work centrality, and proactive personality. *Conscientiousness* was measured using a nine-item subset of the The Big Five Inventory scale created by John, Donahue, & Kentle (1991) (see appendix A). *Work Centrality*, which describes the importance an individual places on work in general, as a main component of their life (Diefendorff, Brown, Kamin, & Lord, 2002), was measured using Paullay, Alliger and Stone-Romero's (1994) 12-item scale (see appendix A). The final non-cognitive human capital dimension is *Proactive Personality*. This construct identifies one's ability to shape, as opposed to be shaped by their environment and was measured using Bateman and Crant's (1993) 17-item scale.

The reliabilities for the noncognitive human capital scales were α =.80, .78, and .92 for conscientiousness, work centrality and proactive personality, respectively.

To check for discriminant validity of the three noncognitive human capital measure in order to insure each independent operationalization of the focal construct was measuring a distinct human capital attribute, factor analysis utilized. The analysis was run in SPSS using the Principal Axis Factoring extraction method and Varimax with Kaiser Normalization rotation in order to make the results more interpretable. The analysis provided us with the Kaiser-Meyer-Olkin Measure of Sampling Adequacy statistic of .724 and showed that Bartlett's Test of Sphericity was significant (p<.001) (Table 4.1), indicating there is a sufficient level of intercorrelation between variables to support the use of factor analysis with the data.

Table 4.1 – Test of Intercorrelation for Factor Analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling		.724
Bartlett's Test of Sphericity	Approx. Chi-Square	1853.816
	df	703
	Sig.	.000

Using the principal axis factoring method in SPSS with a Varimax rotation, the rotation converged in 37 iterations to reveal 12 factors with Eigenvalues greater than 1.0 that accounted for 61.2% of the variance (Table 4.2). In all cases, the factors aligned as sub factors of the three constructs of conscientiousness (CO01-09), work centrality

(WC01-12), and proactive personality (PP01-17) (Table 4.3). The final step in the analysis was to review the loadings by factor and eliminate items that cross-loaded across the three constructs in excess of .35 (Bolino & Turnley, 1999). There was a single instance where a conscientiousness scale item -- CO08, "Makes plans and follows through with them.",(.490), cross-loaded with a proactive personality sub factor. The items was removed from further analysis.

Table 4.2 – Total Variance Explained Table

Total Variance Explained									
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.074	21.247	21.247	7.715	20.302	20.302	4.076	10.726	10.726
2	4.553	11.983	33.229	4.187	11.018	31.321	3.509	9.234	19.960
3	3.052	8.031	41.260	2.667	7.019	38.340	2.796	7.357	27.317
4	1.999	5.260	46.520	1.621	4.266	42.607	2.372	6.242	33.560
5	1.735	4.566	51.087	1.323	3.481	46.088	1.655	4.356	37.916
6	1.491	3.924	55.011	1.082	2.847	48.934	1.620	4.263	42.179
7	1.318	3.467	58.478	.937	2.466	51.400	1.390	3.659	45.838
8	1.245	3.276	61.754	.864	2.275	53.675	1.345	3.540	49.378
9	1.186	3.122	64.876	.810	2.131	55.806	1.300	3.421	52.799
10	1.085	2.856	67.732	.734	1.933	57.739	1.114	2.931	55.730
11	1.058	2.784	70.516	.675	1.776	59.515	1.086	2.857	58.587
12	1.013	2.667	73.183	.627	1.649	61.164	.980	2.578	61.164

4.1.2 Outcome Variables

The study predicts a positive relationship between human capital and specific desired employee behaviors measured at the individual level. Two desired employee behaviors considered instrumental in achieving organizational goals and essential for achieving maximum productivity include the existence of *Organizational Citizenship*

Table 4.3 – Rotated Factor Matrix

Rotated Factor Matrix[a]												
	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
WC01					.372			.340	.371			
WC02	.312			.434								
WC03				.601					.326	-.332		
WC04				.865								
WC05				.719								
WC06												.757
WC07				.366	.596							
WC08				.301				.309				
WC09									.725			
WC10									.334			
WC11					.346			.333				
WC12					.817							
PP01	.329					.623						
PP02						.302		.619				
PP03	.576											
PP04	.611											
PP05	.342	.475						.490				
PP06	.315	.466										
PP07	.374	.364										
PP08		.648										
PP09	.331	.763										
PP10	.737											
PP11	.611					.350						
PP12		.794										
PP13	.614	.516										
PP14	.349	.364	.300			.524						
PP15	.614					.305						
PP16	.679											
PP17		.318								.648		
CO01			.731									
CO02							.569					
CO03			.735									
CO04											.706	
CO05							.605					
CO06			.601									
CO07			.665									
CO08			.358			.490						
CO09			.414								.339	

Behaviors (OCBs) and the absence of *Withdrawal Behaviors*. *Task Performance* will be measured using four items from (Williams & Anderson, 1991).

Organizational Citizenship Behaviors was measured using the six-item scale developed by Organizational Citizenship Behavior (Podsakoff, MacKenzie, Moorman, and Fetter (1990).

Withdrawal behaviors were measured using the Hanisch and Hulin (1990) job withdrawal scale. The three-item scale (see appendix A) measures avoidable and unexcused forms of job withdrawal including lateness, absenteeism, and counterproductive work behavior. The scale also incorporates a turnover intention item which was not included in this study. A reliability analysis of the three-item scale produce an internal consistency score using Cronbach's alpha of .68, a value below the desired threshold of .70 for "good" internal consistency. The reliability analysis identified that the removal of the lateness item would increase the internal consistency of the scale to .72. This was done to achieve the desired level of internal consistency and to increase the convergent validity of the measurement.

4.1.3 Moderator Variable

*HPWP*s were measured using the 15-item scale developed by Kehoe and Wright (2010). Respondents were asked to indicate which of fifteen separate HR practices are used in their organization. The presence of the practice was scored as 1 or 0 if practice is not identified. A continuous variable was created by summing the total number of practices identified by the employee with a possible value ranging from 0 to 15 as has

been done in similar studies using HR practices (cf. Casper & Harris, 2008; Kehoe & Wright, 2010)

Missing Data and Regression Assumptions.

As reported earlier, of the 109 total employee responses nine cases were deleted due to a significant amount of missing data. These generally represent a partially completed survey with key variables missing. Several cases were missing a single item of a multiple item scale or provided an incomplete WCAP score. In the four cases missing a WCAP , the series mean value of 24 was substituted. For the eleven cases missing a single item value, the scale mean was computed using the remaining available items. In order to make inferences beyond the sample, OLS regression requires that the variables contain measurement values wherein the residuals are normally distributed, the error variance is homoscedastic, there is a linear relationship between independent and dependent variables, and the measurements are independent of each other. To test these assumptions normal probability plots were generated in SPSS for the variables understudy and a skewness and kurtosis test was undertaken. Using the z-score of skewness and kurtosis method proposed by Field (2009), four variables were found to be beyond the acceptable level. Firm Specific Knowledge and Withdrawal Behaviors variables were substantially positively skewed. These two variables were transformed using a Log_{10} transformation. Organizational Citizenship Behavior and Performance were substantially negatively skewed. They were transformed using the Log_{10} with a reverse score transformation and their signs reversed by multiplying the values by -1

(Tabachnick & Fidell, 2007; Howell, 2007). Table 4.4 presents the zero-order correlations and scale reliability statistics. Correlation coefficients between all independent variables were low ($r \leq .378$) indicating that multicollinearity was not an issue with the data. Tolerance and VIF statistics also provided further support that multicollinearity was not affecting individual parameter estimates.

Table 4.4 Correlation Matrix and Scale Reliabilities

	1	2	3	4	5	6	7	8	9
Performance	(.90)								
OCBs	.521**	(.89)							
Withdrawal Behaviors	-.218	-.074	(.72)						
Work Centrality	.057	-.123	-.346**	(.78)					
Proactive Personality	-.243*	-.249*	.057	.144	(.92)				
Conscientiousness	.060	-.201*	-.053	-.081	.172	(.80)			
Cognitive Ability	-.028	-.176	.155	-.017	.197*	.048			
Firm Specific Knowledge	.215*	.186	.016	-.083	-.255*	-.093	-.135		
General Knowledge	.146	.032	-.171	.113	-.038	-.012	.155	-.130	
HPWPs	-.013	-.024	-.287**	.378**	.004	-.053	-.174	-.213*	.035

All values are standardized with a mean of zero and a standard deviation of 1.

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

n=100

Cronbach's Alpha for scale in parentheses

Multi-Level Analysis

Generally, multivariate regression could be used to test the relationship between the continuous and ordinal independent and dependent variables. However, since the measurements of the individual level variables of Performance and OCBs are nested within the supervisors that provided responses for groups of employees within their work unit, the assumption of independence of measurement is violated. To determine if this grouping variable has any effect on the variation of the individual level measurements, a simple one-way ANOVA model was run testing the within group/between group variance using each dependent variable against the supervisor group.

The analysis suggested that the two dependent variables in the study collected from a group of supervisors (n=52) for a larger set of direct reports (n=100) each had statistically significant between group variance. Performance with a value of F, 2.213, p=.003, and OCBs with a value of F, 2.68, p=.000, indicate that because of the effect of the supervisor level variable on the individual level measurements for models with the dependent variables of Performance and OCBs, using a multilevel modeling analysis technique was provide a more accurate analysis. For the models using the Withdrawal Behaviors dependent variable models, the responses were collected from each individual so a multilevel technique would not be require and hierarchal multiple regression was used.

4.1.4 Results of Mixed Model Analysis using SPSS

To account for the effect of the supervisor group variable, the data was analyzed as a 2-level model using the Mixed Model procedure in SPSS. To confirm the effect of the group variable on the dependent variables, an Intraclass correlation (ICC) value was computed for a null model using each of the two nested dependent variable. The ICC statistics serves as measure of the proportion of the variability in the dependent variable explained by the supervisor group. The following ICC values were determined: *Performance* yielded an ICC of .357, and for OCBs an ICC of .466. Again, this suggests that using a multilevel model to control for the effect of the supervisor would provide for a more precise analysis of the models using the *Performance* and *OCB* dependent variables.

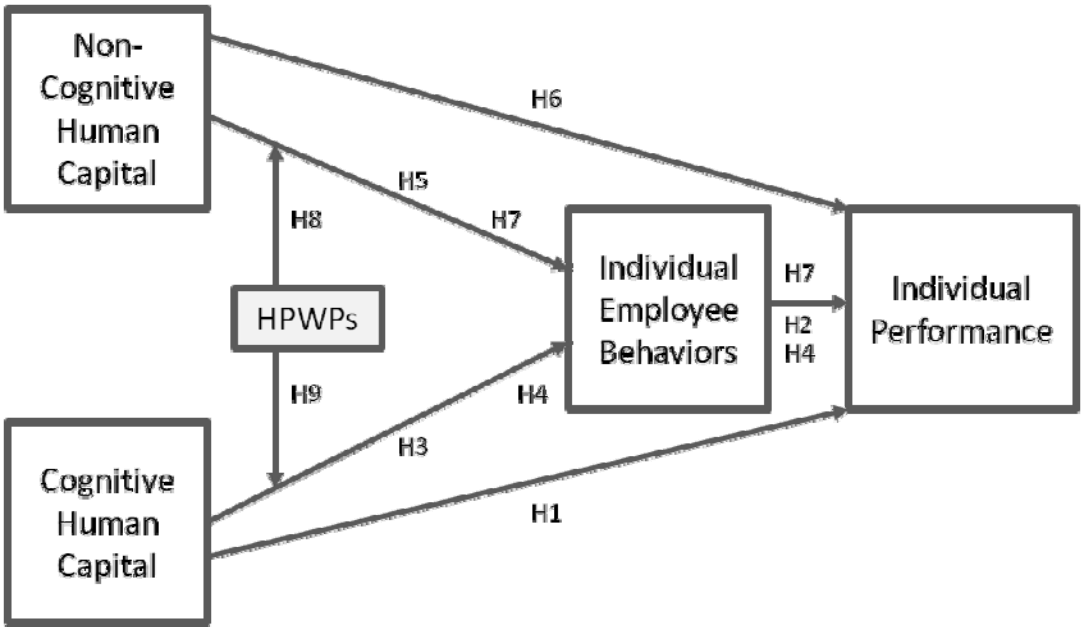


Figure 4.1 – Diagram of Tested Hypotheses

Figure 4.1 graphically depicts the hypotheses tested. Hypothesis 1 predicted that cognitive human capital is positively related to job performance. As shown in table 4.5 hypothesis 1 was not supported for either of the three predictor variables. Firm specific knowledge (H1b) was found to be significant but the direction of the relationship was opposite of the prediction (-.210, p<.035.). Hypothesis 2 predicted that desired employee behaviors are related to job performance. H2a predicted that OCBs were positively related to job performance. H2b predicted that withdrawal behaviors (WB) were negatively related to job performance. Table 4.6 shows hypothesis 2 was supported for OCBs but not for WB. Both independent variables were significant (OCBs - .494, p<.001, WB - .173, p<.05) but WB parameter estimate was opposite the predicted direction.

Hypothesis 3 predicted cognitive human capital is related to desired employee behaviors. Table 4.7 shows that H3c is supported for cognitive ability being positively related to OCBs (.183, p<.10). As shown in Table 4.8, Hypothesis 3 received mixed support for WB. H3d predicting general knowledge was negatively related to WB was supported (-.191, p<.01). The relation between WB and firm specific knowledge (H3e) was not significant, and the relation between WB and cognitive ability (H3f) was significant but in the opposite direction of the prediction (.214, p<.01).

Hypothesis 4 predicts the mediation of the relationship between cognitive human capital and job performance by employee behaviors and which will be discussed after the main effects and moderation relationships are presented. Hypothesis 5 proposed that noncognitive human capital is related to employee behaviors. H5c and H5f find support

for the prediction that work centrality is positively related to OCBs (.153, p≤.10) and negatively related to WB (-.307, p<.01) as shown in tables 4.7 and 4.8 respectively. H5d predicting that conscientiousness is negatively related to WB is also supported (-.160, p≤ .10).

Table 4.5 – Mixed Model Results with Performance as Dependent Variable

Performance	**Null**			**Ivs**			**Full Model**		
	Estimate	St.Error	Sig.	Estimate	St.Error	Sig.	Estimate	St.Error	Sig.
Intercept	.061	.123	.620	-.051	.109	.642	-.044	.100	.664
Cognitive Ability				.033	.100	.743	-.122	.093	.193
Firm Spec Knowledge				.210	.098	.035	.122	.091	.184
General Knowledge				.128	.097	.192	.090	.091	.325
Work Centrality				.094	.098	.339	.158	.089	.079
Proactive Personality				-.172	.098	.083	-.171	.092	.065
Conscientiousness				.133	.093	.159	.194	.085	.024
HPWPs				.029	.107	.784	-.009	.098	.926
HPWPxCogAbil							.000	.009	.967
HPWPxFSKnowl							.123	.086	.157
HPWPxGenKnowl							-.066	.015	.000
HPWPxWC							-.082	.050	.100
HPWPxPP							.103	.045	.025
HPWPxCon							-.116	.071	.105
Intercept	.357	.188	.057	.209	.166	.208	.114	.105	.279
Residual	.669	.141	.000	.666	.146	.000	.557	.111	.000
ICC	.348								
No. Parameters	3			10			16		
-2 Log Likelihood	277.384			266.055			241.497		
Akaike's Information Criterion (AIC)	283.384			286.055			273.497		
Schwarz's Bayesian Criterion (BIC)	291.200			312.107			315.179		
Pseudo R^2				.041			.129		
Δ Pseudo R^2							.089		

n=100

Hypothesis 6 predicts that noncognitive human capital is related to performance. H6b finds support for proactive personality at -.171, p< .10. Hypothesis 7 predicts the

mediation of the relationship between noncognitive human capital and performance by employee behaviors. This will be presented after the following moderation relationships are discussed. Hypotheses 8 and 9 predict a moderating effect of HPWPs on the relationship between cognitive and noncognitive human capital and employee behaviors. To test for these interactions, the unstandardized independent and moderator variables were mean centered and then the product of each of the variable combinations was computed to create the interaction terms. Next, the interaction terms were standardized with a mean of zero and a standard deviation of 1. Tables 4.7 and 4.8 present the results of the moderation test with OCBs and WB as dependent variables respectively. The analysis found a moderately significant result for the moderating effect of HPWPs on the relationship between work centrality and WB (.105, $p<.10$), supporting H8c.

Table 4.6 Mixed Model Results with Performance as Dependent Variable

Performance	**Null**			**Full Model**		
	Estimate	St.Error	Sig.	Estimate	St.Error	Sig.
Intercept	.061	.123	.620	.025	.093	.788
OCBS				.494	.086	.000
Withdrawal Behaviors				.173	.083	.039
Intercept	.357	.188	.057	.109	.108	.314
Residual	.669	.141	.000	.584	.117	.000
ICC	.348					
No. Parameters	3			5		
-2 Log Likelihood	277.384			245.134		
Akaike's Information	283.384			255.134		
Schwarz's Bayesian	291.200			268.160		
Pseudo R^2				0.11626		

n=100

Table 4.7 Mixed Model Results with OCBs as Dependent Variable

OCB	Null			Ivs			Full Model		
	Estimate	St.Error	Sig.	Estimate	St.Error	Sig.	Estimate	St.Error	Sig.
Intercept	.034	.128	.790	-.033	.118	.778	.033	.115	.775
Cognitive Ability				-.064	.097	.508	-.181	.096	.062
Firm Spec Knowledge				.136	.094	.152	.062	.093	.509
General Knowledge				.028	.095	.767	.026	.096	.787
Work Centrality				-.153	.092	.102	-.108	.089	.225
Proactive Personality				-.073	.094	.440	-.089	.093	.340
Conscientiousness				-.109	.090	.228	-.074	.086	.393
HPWPs				.145	.104	.167	.129	.102	.210
HPWPxCogAbil							.003	.010	.750
HPWPxFSKnowl							.206	.089	.023
HPWPxGenKnowl							-.038	.015	.015
HPWPxWC							-.020	.051	.695
HPWPxPP							.063	.046	.175
HPWPxCon							-.116	.073	.114
Intercept	.483	.182	.008	.371	.190	.051	.279	.159	.078
Residual	.553	.113	.000	.535	.122	.000	.498	.113	.000
ICC	.466								
No. Parameters	3			10			16		
-2 Log Likelihood	271.543			261.649			249.083		
Akaike's Information	277.543			281.649			281.083		
Schwarz's Bayesian	285.359			307.701			322.766		
Pseudo R^2				.036			.083		
Δ Pseudo R^2							.046		

n=100

The analysis found a significant result for the moderating effect of HPWPs on the relationship between both general and firm specific knowledge and OCBs (-.038, $p<.05$, .206, $p< .05$, respectively), thus supporting H9b and H9c. The analysis also found a significant result for the moderating effect of HPWPs on the relationship between general knowledge and WB (.030, $p<.10$, supporting H9d. Using the approach proposed by Aiken and West (1991), regression equations were calculated using the beta coefficients plus or minus one standard deviation of each mean and graphed for each

significant moderation relationship. The graphs are shown in figures 4.2 through 4.5. The results in figure 4.2 suggest that at higher levels of work centrality withdrawal behaviors are at their lowest and the level of HPWPs does not affect withdrawal behaviors. However, higher levels of HPWPs are associated with lower levels of withdrawal behaviors in employees with lower levels of work centrality.

Figure 4.3 suggests that higher levels of HPWPs are related to higher levels of OCBs with individuals at any level of general knowledge. However, low levels of HPWPs are associated with lower levels of OCBs generally, and more specifically, individuals with lower levels of general knowledge exhibit the lowest level of OCBs. Figure 4.4 suggests that at the lowest level of firm specific knowledge, higher levels of HPWPs are related to lowest level of OCBs. This relationship appears to flip as the level of firm specific knowledge increases. Among individuals with higher levels of firm specific knowledge, higher levels of HPWPs are related to the highest levels of OCBs and lower levels of HPWPs are related to the lowest level of OCBs.

Table 4.8 Regression Results with Withdrawal Behavior as Dependent Variable

	Step1	*Step 2*	*Step 3*
Step 1			
Cognitive Ability	.160†	.130	.214*
Firm Spec Knowledge	.002	-.036	.025
General Knowledge	-.154	-.156	-.191†
Work Centrality	-.347**	-.287**	-.310**
Proactive Personality	.088	.077	.073
Conscientiousness	-.105	-.109	-.159†
Step 2			
HPWPs		-.164	-.098
Step 3			
HPWP x Cognitive Ability			-.012
HPWP x Firm Spec Knowledge			-.085
HPWP x General Knowledge			.030†
HPWP x Work Centrality			.105†
HPWP x Proactive Personality			-.063
HPWP x Conscientiousness			.047
R^2	.182	.203	.279
ΔR^2		.021	.076

All values are standardized with a mean of zero and a standard deviation of 1.
† p<.10, *p<.05, **p<.01

n=100

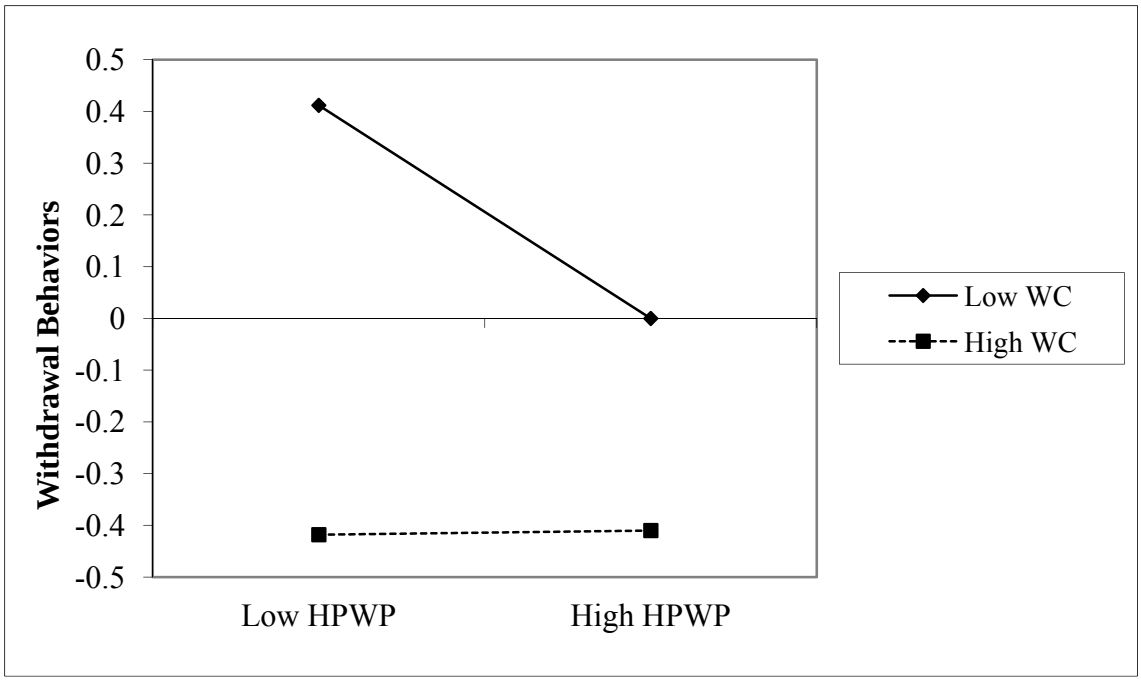


Figure 4.2 – HPWPs Moderating the Relationship Between Work Centrality and Withdrawal Behavior

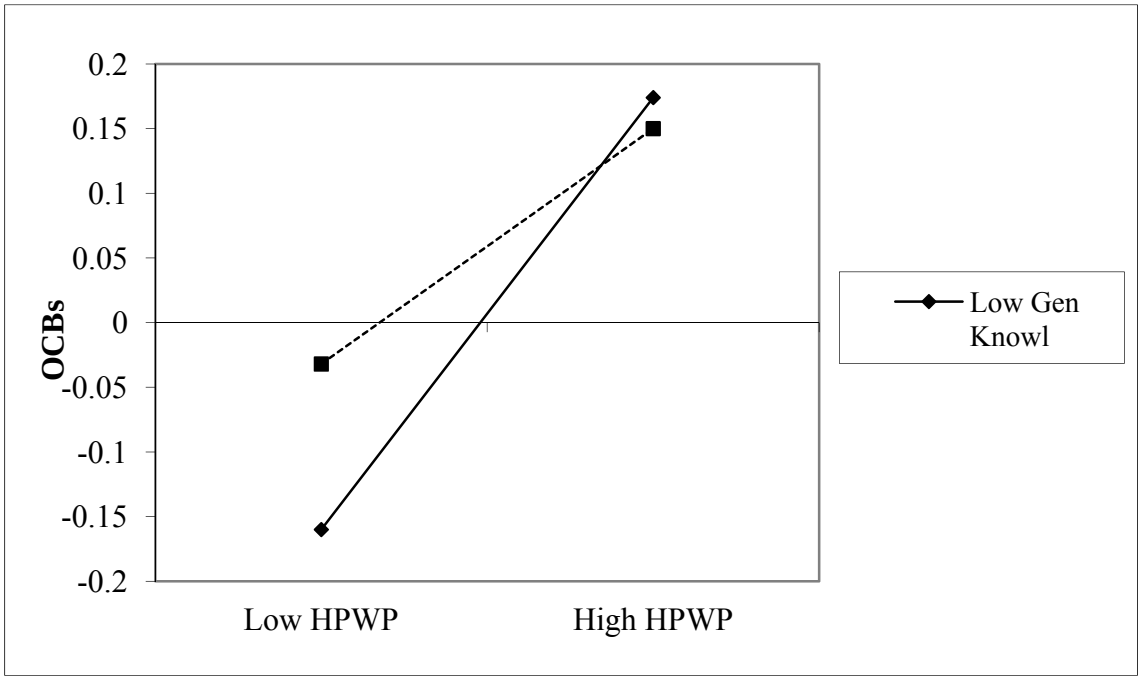


Figure 4.3 - HPWPs Moderating the Relationship Between General Knowledge and OCBs

Figure 4.5 suggests that individual with higher levels of general knowledge report lower levels of withdrawal behaviors regardless of the level of HPWPs reported. However, higher levels of HPWPs are associated with lower levels of withdrawal behaviors across any level of general knowledge.

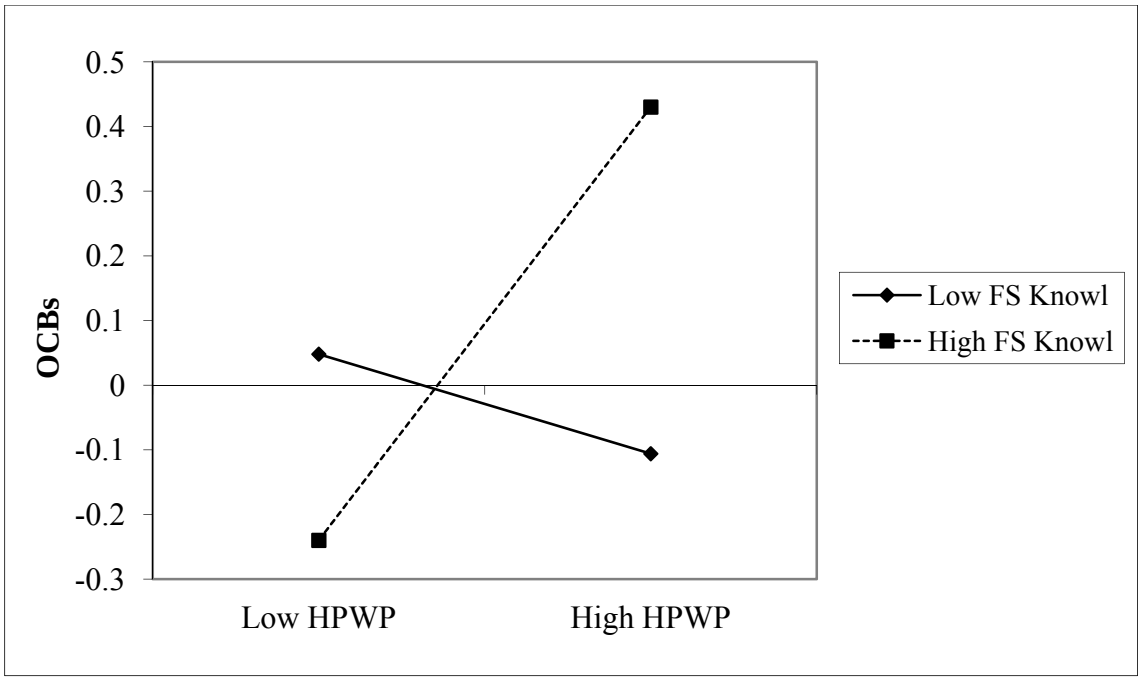


Figure 4.4 – HPWPs Moderating the Relationship Between Firm Specific Knowledge and OCBs

The final analysis was testing for mediation as predicted in hypotheses 4 and 7. The analysis was conducted using MedGraph and the Sobel test statistic (Jose, 2013b). Of the twelve hypotheses predicting mediation (H4a-4f, H7a-7f) only H7b found support. Table 4.9 presents the results of the MedGraph computation of the Sobel z-

value and figure 4.6 presents the model with effect sizes. The analysis found that OCBs partially mediated the effect of proactive personality on performance (Sobel z = 2.308, p<.05). The direct effect is .121 (R^2 = .013). The indirect effect is .122 (R^2 = .045). The indirect to total ratio was .503 (R^2 = .77) suggesting that the indirect path from proactive personality through OCBs to performance accounts for approximately 50% of the total effect (Jose, 2013a).

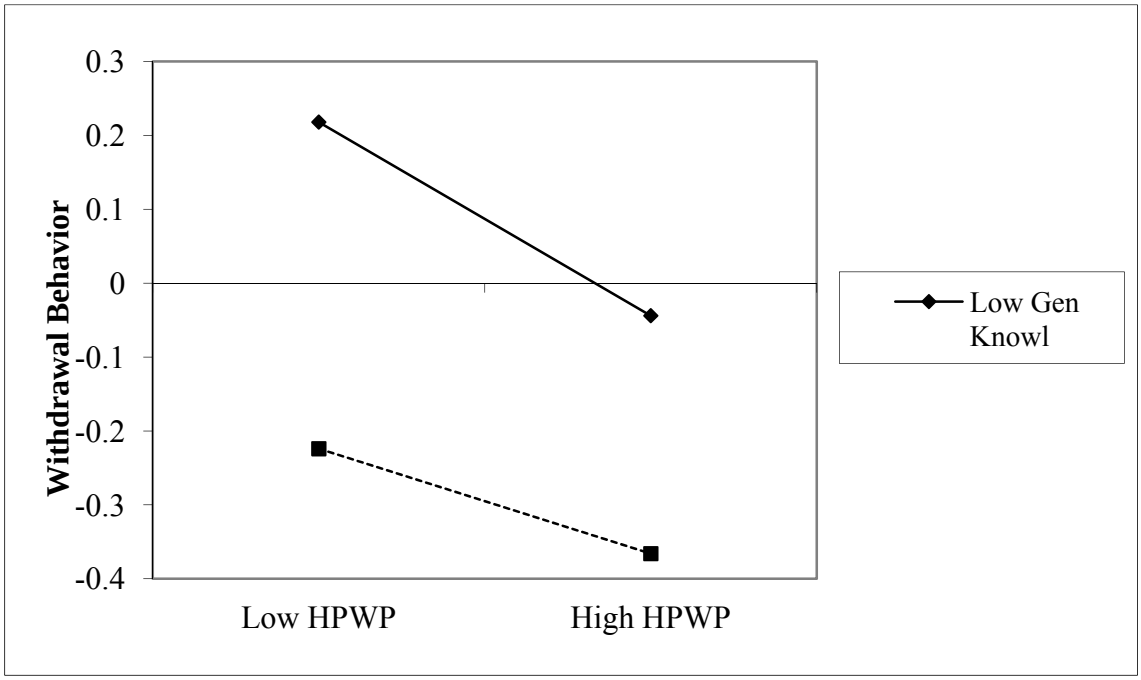
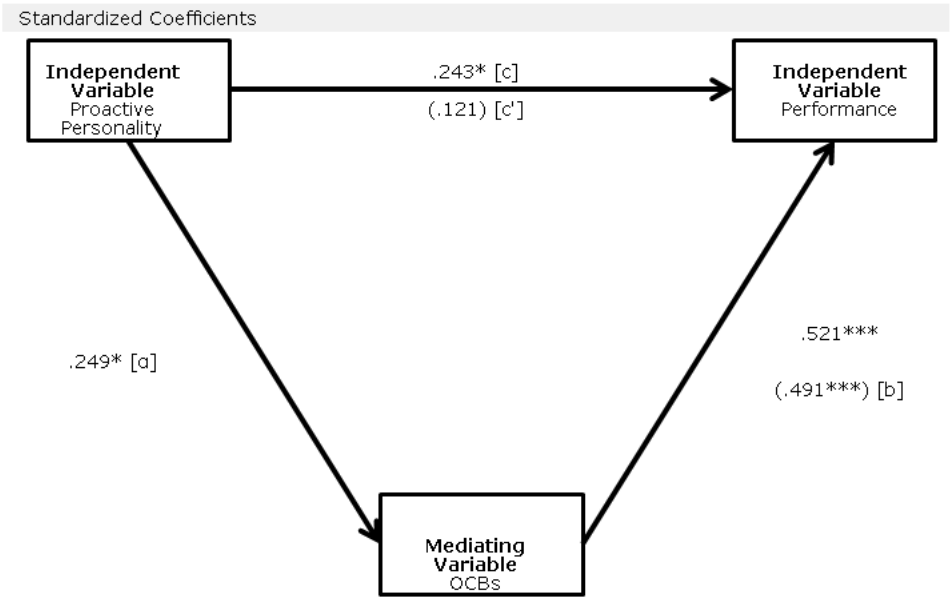


Figure 4.5 – HPWPs Moderating the Relationship Between General Knowledge and Withdrawal Behaviors

Table 4.9 – Sobel Test of Mediation

Proactive Personality > OCBs > Performance		
Significance of Mediation		Significant
Sobel z-value	2.308	p = 0.021
95% Symmetrical Confidence Interval		
Lower	0.018	
Upper	0.226	
Unstandardized indirect effect		
a*b	0.122	
se	0.053	
Effect size Measures		
Standardized Coefficients		R^2 Measures (Variance)
Total:	0.243	0.059
Direct:	0.121	0.013
Indirect:	0.122	0.045
Indirect to Total Ratio:	0.503	0.769



Note: The numerical values in the parentheses are beta weights, the other values are zero order correlations.

Figure 4.6 - Mediation Model 1, OCB Mediating Proactive Personality/Performance Relationship

Table 4.10 Summary of Hypotheses Test Results

Hypotheses Tested	Significant
Hypothesis 2: Desired employee behaviors are related to performance:	
H2a: OCBs are positively related to performance.	yes
H2b: Withdrawal behaviors are negatively related to performance.	yes
Hypothesis 3: Cognitive human capital is related to desired employee behaviors:	
H3c: Cognitive ability is positively related to positively related to OCBs	yes $p<.10$
H3d: General knowledge is negatively related to withdrawal behaviors	yes $p<.10$
H3f: Cognitive ability is negatively related to withdrawal behaviors	opposite
Hypothesis 5: Noncognitive human capital is related to desired employee behaviors:	
H5d: Conscientiousness is negatively related to withdrawal behaviors	yes $p\leq.10$
H5f: Work centrality is negatively related to withdrawal behaviors	yes
Hypothesis 6: Noncognitive human capital is related to performance:	
H6a: Conscientiousness is positively related to performance	yes
H6b: Proactive personality is positively related to performance	yes $p<.10$
H6c: Work centralityis positively related to performance	yes $p<.10$
Hypothesis 7: Desired employee behaviors mediate the relationship between noncognitive human capital and performance:	
H7e: Withdrawal behaviors mediate the relationship between proactive personality and performance	partial
Hypothesis 8: HPWPs will moderate the relationship between noncognitive human capital and employee behaviors:	
H8f: HPWPs will moderate the relationship between Work Centrality and Withdrawal Behaviors	yes $p<.10$
Hypothesis 9: HPWPs will moderate the relationship between cognitive human capital and employee behaviors:	
H9a: HPWPs will moderate the relationship between General knowledge and OCBs.	yes
H9b: HPWPs will moderate the relationship between Firm specific and OCBs	yes
H9d: HPWPs will moderate the relationship between General knowledge and Withdrawal Behaviors	yes $p<.10$

Chapter 5

Discussion

This study seeks to contribute to the SHRM research domain by extending the exploration of human capital variables in an empirical study to include both cognitive and noncognitive human capital in a single study. Including human capital attributes from both of these domains provides a more fully specified model to test of the SHRM model linking human capital to performance through behaviors. The study also contributes to SHRM by exploring these relationships at the individual level. In response to Wright and Boswell (2002), this study seeks to "bridge the micro/macro divide by measuring human capital, perceptions of HPWPs, strategically desirable employee behaviors and performance all at the level where they exits and occur. As Felin and Hesterly (2007) point out in their discussion of value creation, individuals are "real," heterogeneous, and the source of knowledge. Aggregating individuals to the collective level assumes individuals are homogenous and fails to consider individual differences as alternative explanations of the phenomenon under study.

This study contributes to SHRM research by answering the call of scholars for studies directed at explaining the linkages between human capital and firms performance, and HPWPs and firm performance (cf. Becker & Huselid, 2006; Wright & McMahan, 2011). This study explored these linkages by testing the system that connects human capital and HPWPs to firm level performance. This includes the individuals that possess human capital as inputs, their experience with the policies and

practices designed and implemented to stimulate and guide their behavior as processes, and the actual behaviors they exhibit in response to these stimuli as outcomes.

Discussion of results

The first hypothesis attempted to establish the baseline of the study for comparing cognitive to noncognitive human capital by proposing the well study relationship of cognitive human capital predicting performance (cf. Crook et al., 2011). Three separate sub-hypotheses were testing with general knowledge, firm specific knowledge and cognitive ability operationalized as years of education, role tenure, and the Wonderlic Cognitive Ability Pretest, respectively. Hypothesis 1 failed to find support for any of the dimensions of cognitive human capital tested. In contrast, hypotheses 6 proposing that noncognitive human capital would predict performance found support.

As was done in hypotheses 1, three separate sub-hypotheses were proposed with conscientiousness, proactive personality, and work centrality as the human capital attributes tested. Conscientiousness found strong support, and proactive personality and work centrality found moderate support. Proactive personality however, was in the opposite direction of the prediction. As predicted, the traits ascribed to conscientiousness including achievement, dependability, cautiousness/impulse control, order, and persistence (Barrick & Mount, 1991; Hough & Ones, 2001), would be especially valuable in a work settings as individuals possessing these characteristic behaviors would be more inclined to perform their tasks, duties, and responsibilities as requested to the specified level, and under challenging conditions. Similarly, but with

less statistical significance ($p<.10$), work centrality and proactive personality also predicted performance. Work centrality is an individually held value that represents the degree of importance individuals place on work as a part of their life. As a value, it serves as a standard that guides actions and behaviors and is prioritized and ordered by individuals based on its relative importance to other values held by the individual (Schwartz, 2006; Schwartz & Bilsky, 1987). A person reporting high work centrality would likely place a priority and high value on their work and would be more inclined to engage in their jobs and to perform their tasks, duties and responsibilities as requested to the specified level as a means of achieving their desired state of life satisfaction and fulfillment derived from work.

Proactive personality (PP), while moderately significant ($p<.10$), moves in the opposite direction of predicted. PP represents a stable set of behaviors that reflect the degree to which an individual believes they are relatively unconstrained by their environment and can actively seek to effect change in their environment (Bateman & Crant, 1993). PP behaviors include scanning for opportunities, showing initiative, taking action, and persevering until they achieve their goals by causing change. It was proposed that individuals high in PP, with their increased initiative and action-taking, and their ability and focus on bringing about change, would also be more engaged in their jobs and their organizations, and actively seek to achieve their goals and improve their work environment as opposed to withdraw from it. It appears that individuals with higher levels of PP have reduced performance. Perhaps this could be attributed to their attempt to make their work environment conform to their needs and desires above and

beyond the wishes of their supervisors who provided the performance ratings in this study. If a supervisor has specified the performance standard and an individual has chosen to execute their tasks, duties, and responsibilities in a manner that does not conform to the standard, their performance will likely be rated lower by their supervisor than if they fully complied with the supervisor's performance specifications. The relationship between PP and performance would benefit from further study to see if the supervisor/employee relationship moderates the effect of PP on performance.

The second hypothesis proposed that desired employee behaviors were positively related to performance. Two behaviors were identified as supporting two critical strategic goals of human resource management and therefore described as desirable. The first strategic HRM goal is motivating employees to put forth their fullest effort to maximize productivity. Organizational citizenship behaviors, defined as "individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization" (p. 4) (Organ, 1988), was selected to represent a desirable behavior reflecting motivation. The second strategic goal is retaining valuable employees and preventing the loss of valuable human capital. While the best measure of retention would be actual turnover behavior, only those remaining with the firm would be available to complete surveys. Therefore, withdrawal behavior was selected as a behavior reflecting retention since it has been found to moderately correlate with actual turnover (Berry et al., 2012). The results of the analysis supported both sub-hypotheses (H2a, H2b). OCBs were found to be a stronger predictor of performance than the

absence of withdrawal behaviors with a standardized coefficient estimate of .494 compared to -.173.

The next set of hypotheses proposed that varying levels of human capital would predict varying levels of the desired behaviors. The theoretical support for this prediction was based on Wright et al. (1993), and their study of goal setting and extra-role behavior. They proposed that an individual's level of human capital resources affects their workplace behavior. They interpreted their findings to suggest that when prescribed role behaviors were demanding, and employees' human capital resources were "taxed," individuals would focus on exhibiting prescribed behaviors (task performance or in-role behaviors) at the expense of extra-role behaviors. Schaubroeck, Cotton, and Jennings (1989) also provide theoretical support for the effect of insufficient human capital resources on withdrawal behaviors through their conceptualization and study of role overload and its direct effect on tension and role conflict, and its indirect effect on turnover intention.

Of the three cognitive human capital dimensions measured, only cognitive ability was significant at a 95% level and only in relation to withdrawal behavior. However, it was opposite the predicted direction. General knowledge was moderately significant in relation to withdrawal behaviors, supporting the theory that higher levels of knowledge resources relate to higher levels of voluntary behaviors. Cognitive ability was also significant as a predictor of OCBs, but in the opposite direction of the prediction. This result is contrary to the theoretical justification for the predicted relationship which proposed that OCBs, as discretionary behaviors, would only be exhibited if the

individual had sufficient capacity to execute their required job behaviors and excess capacity to go beyond their role responsibilities. The results from this study suggest that individuals with high cognitive ability engage in lowers levels of OCB's. This might indicate that cognitive resource capacity is not a required condition for performing OCBs and perhaps individuals with higher levels of cognitive ability focus their attention on their own work responsibilities.

Coincident to the cognitive ability/OCBs finding is that cognitive ability was also a significant as a predictor of withdrawal behaviors, but in the opposite direction of the prediction. Again, this is contrary to the theoretical justification for the prediction. It was proposed that withdrawal behaviors were a reaction to work stress caused as a result of insufficient cognitive resources to execute the required tasks, duties, and responsibilities. It was predicted that higher levels of cognitive ability would provide sufficient resources to alleviate the withdrawal behaviors. This finding suggests that individuals with high cognitive abilities are more inclined to exhibit withdrawal behaviors. There are several possible interpretations of these results. For individuals with high cognitive abilities, withdrawal behaviors may be the result of their ability to complete their tasks, duties, and responsibilities in less than the allotted time and they withdrawal from the workplace to focus on other activities not related to their job. This would be reflected in the absenteeism and counterproductive work behaviors measured in the study. Another possibility might be that individuals with high cognitive abilities may not be challenged by their work and withdrawal from boredom or lack of interest as found by Spector et al. (2006).

The noncognitive human capital variables fared only slightly better than the cognitive variables at predicting behaviors. None of the hypotheses predicting a relationship between OCBs and noncognitive human capital found support. However, work centrality found strong support for hypothesis 5f predicting a negative relationship with withdrawal behavior. For individuals high in work centrality, work is highly valued as part of their lives. Values direct an individual's focus on behaviors or desirable end states that they strive to attain (Schwartz, 2006). For individuals high in work centrality withdrawing from work would run counter to their values. They would more likely be engaged in their work and pursue satisfaction through their work than engaging in withdrawal behaviors. The results were as predicted and hypothesis 5f found support. Hypothesis 5d, predicting a negative relationship between conscientiousness and withdrawal behaviors predictor only found moderate support ($p = .10$).

Hypotheses 4 and 7 predicted that desired employee behaviors mediated the relationship between human capital and performance. All six independent variables (general knowledge, firm specific knowledge, cognitive ability, conscientiousness, proactive personality, and work centrality) were tested using Sobel's z-statistic with each of the behaviors (OCBs and withdrawal). Only the model with proactive personality as the independent variable and OCBs as the mediator found partial support. The Sobel test result suggests that the indirect path from proactive personality through OCBs to performance accounts for approximately 50% of the total effect of proactive personality on performance (Jose, 2013a). This study provides minimal support for the

role behaviors as mediators of the human capital to performance relationship. This may be the result of the particular sample or the measures of behaviors and performance that were collected. These will be discussed in the limitation sections of the paper.

The final set of hypotheses tested was the effect of HPWPs on the relationship between human capital and employee behaviors. The strongest support for a moderating effect was on the relationships between general and firm specific knowledge and OCBs. Figures 4.3 and 4.4 show how different levels of HPWPs effect the measures of OCBs. Generally, higher levels of HPWPs are associated with higher levels of OCBs. The only exception to this is with low levels of firm specific knowledge. In this case, higher levels of HPWPs do not have much impact on OCBs and appear to be associated with slightly lower levels of OCBs than are lower levels of HPWPs. This may be the result of the operationalization of firm specific knowledge as time spent in the position. Newly hired employees are possibly less able to exhibit OCBs as they may occupied learning their new role and have limited time to help their coworkers and the organization beyond the requirements of their position. Additionally, as firm specific knowledge increases, the level of OCBs decreases in cases where low HPWPs were measured. This suggests that HPWPs may be helpful in stimulating employees to engage in OCBs that have been in their role longer. The results are the opposite for low HPWPs and general knowledge. In these cases OCBs increase as general knowledge increases under conditions of low HPWPs. However, at high levels of HPWPs, OCBs are higher for individuals reporting both lower and higher levels of general knowledge.

Again, this suggest that HPWPs may be helpful in stimulating employees to engage in OCBs.

A moderately significant moderation effect was found with HPWPs and withdrawal behaviors for both work centrality and general knowledge. The effects are quite different. At high levels of work centrality, high levels of OCBs were found across both high and low levels of HPWPs. HPWPs had no effect on OCBs in individual with high work centrality. At lower levels of work centrality high levels of HPWPs yielded higher levels of OCBs than did low levels of HPWPs. With general knowledge as a predictor, higher levels of HPWPs were associated with lower levels of withdrawal behavior at either level of general knowledge. Consistent with the main effect described earlier, higher levels of general knowledge are associated with lower levels of withdrawal behavior. The results of the moderation tests suggest that the level of HPWPs matters when it comes to experiencing the desired employee behaviors of OCBS and the absence of withdrawal. Higher HPWPs may help to elicit the desired behaviors given an employees' level of general or firm specific knowledge. An interesting finding is that work centrality is associated with the highest levels of desired behaviors regardless of the level of HPWPs.

Managerial implications

The results of this study suggest several implications for managing human capital resources. Human capital attributes vary in their relationship to performance and desired behaviors. Some human capital attributes are more predictable and rely less on

management intervention to achieve the desired behaviors than others. Some forms of human capital cannot be developed within an organization and must be acquired through recruiting and selection. Across all human capital attributes tested, conscientiousness was the only predictor of performance at the acceptable level of confidence. This is contrary to the many findings that identify cognitive ability as the single best predictor of performance (Hunter & Hunter, 1984; Wright et al., 1994). This finding indicates that managers could benefit by identifying applicants with high levels of the conscientiousness personality trait. All things being equal, applicants possessing the desired job qualifications that are also predisposed to exhibiting conscientious behaviors are likely to outperform those with lower levels of this personality dimension.

For this study, two behaviors were selected to represent critical outcomes desired by management from their employees. OCBs and withdrawal behaviors were identified as supporting the management objectives of increased motivation and retention. Both behaviors were found to be strong predictors of performance and two human capital attributes were found to be strong predictors of one of the behaviors. The single strongest predictor of the desired behavior was work centrality predicting withdrawal behavior. Like the personality attribute previously discussed, this value based dimension of human capital also portends to distinguish employees levels of workplace behavior and is worthy of managerial consideration. The moderation analysis, although only moderately significant, shows that individuals high in work centrality are low in withdrawal behaviors independent of the effects of HPWPs experienced by them in their workplace. This suggests that individuals possessing high levels of this attribute

may exhibit desirable levels of performance and commitment independent of the HPWPs used to achieve the same results from other employees lower in work centrality.

Cognitive ability was the other variable that predicted withdrawal behavior at the acceptable level of confidence. However, in this study it was discovered that higher levels of cognitive ability predicted higher levels of withdrawal behaviors. This finding suggests that managers need to pay close attention to individuals with higher levels of cognitive ability to protect the organization from lost productivity and possible unnecessary turnover. This unexpected relationship may be the result of some specific conditions in the workplaces sampled for this study such as job design, organization culture, employee/supervisor relationship. Perhaps individuals with high cognitive ability are bored and unchallenged by their jobs because of their increased processing abilities. Perhaps the organizational culture does not appreciate or reward individuals with high cognitive ability causing individuals to withdraw from fully utilizing their abilities and causing them to look for organizations that would appreciate and reward it. Perhaps individuals with high cognitive ability challenge or threaten their supervisors' sense of self-efficacy and as a result, supervisors rate them lower on performance ratings. Management might benefit by working closely with individuals possessing high levels of cognitive ability to determine how to structure the work relationship to best meet their needs in hopes of preventing withdrawal behaviors and possible voluntary turnover.

One of the key considerations for management is that the dimensions of human capital found to be the best predictors of behaviors and performance in this study are

not easily developed through internal investments of training and development. Conscientiousness and work centrality, a personality trait dimension and a central life value, respectively, are believed to be developed over time as a result of many factors beyond the work environment that may or may not be controlled (Bal & Kooij, 2010; Srivastava, John, Gosling, & Potter, 2003). Some scholars contend personality to be an inherited trait (McCrae & Costa, 1996; Srivastava et al., 2003). To possess this valuable form of human capital, managers must seek to acquire it from the external labor market.

To acquire noncognitive human capital managers must go beyond the traditional selection methods which rely almost exclusively on the quantifiable cognitive human capital attributes such as years of experience and education applicants list on a job application as indicators of the potential performance of the applicant. Through job interviews, managers attempt to get a feel for the "fit" of the candidate. This is may be done through conversations with the candidate ranging from unstructured discussions to highly structured questions and scenarios requiring the candidate to explain past behaviors or describe what they might do regarding some future event. The unstructured approach may or may not offer an insight into how the candidate thinks, feels, or would react to events and conditions they are likely to encounter in the workplace, making this an unreliable method for assessing candidates.

Even the more structured approach suffers from reliability issues. The interviewer is required to interpret the applicant's responses and deduce from their interpretation what the response indicates about the applicants thought processes, values, actions and behaviors. Considering the relationship that these noncognitive attributes have with

performance, management could benefit by increasing the accuracy of their measurement by using more quantifiable methods such as validated personality and value inventories, and using these results in part to make informed selection decisions.

Limitations and Future Research

While the inferences made in this study are based upon acceptable research methods used in social science research, there are some limitations that need to be addressed. The study is cross-sectional and causality is not asserted or established. While it seems intuitive that one condition must proceed the other, only the strict controls and sequences of a planned experiment could provide sufficient support for a statement that having certain human capital attributes leads to using them to achieve performance outcomes. This study only suggests that there are relationships between levels of human capital attributes and reported levels of behaviors and performance. While it is considerably more involved to conduct an experiment than a cross-sectional study, the field of SHRM, and human resource management in general, has possibly progressed to the point where establishing causality through experimentation is essential to maintain confidence in assertions SHRM scholars put forth regarding their research findings. Establishing causality with regards to human capital and HR practices and policies may also open the door to new areas of SHRM research where scholars can propose and test new, different, and more effective ways of maximizing the utility of human capital.

The ability to generalize the results of this study are limited by the nature of the population sampling method that was undertaken. In a truly randomized study, a

representative sample of a specified population would have been surveyed for inclusion in the study sample. The initial population identified for this study was employees in three functional areas (human resources, financial management, and information technology) of a for-profit, publicly traded, single, large manufacturing organization. This narrowly defined population would have reduced potential error variance attributed to differences in profit motive, entity type, organization size, job family and system of formal HR policies.

The actual sample of this study includes a wide cross-section of job families in five separate organizations of varying sizes, and includes for-profit, nonprofit, public and private organizations, across five separate industries. The sample was identified across two of these organizations by random selection -- all employees were invited to participate. In three of the organizations, management selected the individuals invited to participate in the study. This may introduce selection bias as some of the participants in the study were not chosen by random selection and the sample is possibly too small and unbalanced across organization size, industry, and job family to be considered representative of a general population.

Another limitation of the study is the effect of common method bias that may have been introduced into the measurements. The data collection instrument contained self-report measures for noncognitive human capital measures such as personality, values, and past characteristic behaviors, and for demographic data including education level attained and tenure in position. All of these measures were collected at the same time using the same web-based survey tool. As reported by Podsakoff and Organ (1986)

using self-reported data, collecting several variables at the same time, and using the same collection method, may introduce artifactual covariance that is difficult to separate from the actual covariance between variables. Common method bias was partially addressed in the study by having supervisors provide two of the dependent variable measurements for the individuals in the study, and using a third party service for administering and scoring the cognitive ability test. However, by collecting measurements of multiple constructs with both the supervisor and direct report surveys in one setting each, and using web based surveys and a web based cognitive ability test introduces variance associated with the collection method that may obscure the actual relationships under study.

The main problem associated with collecting information at one setting is the effect of the consistency motif (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff & Organ, 1986). This occurs when respondents' natural tendencies toward maintaining a consistent line in a series of questions attenuates their uninfluenced cognitions regarding separate lines of inquiry and thought. Effectively, they carry over their thoughts and perspectives activated as a result of answering a set of questions about one topic or construct to the next set of questions, which may be completely unrelated. However, they become related (and thus share some common variance) not because of their actual relationship but because of the carry-over effect of the previously stimulated cognitions.

A second key issue is the effect of a transient mood state at the time the survey is being completed. When all measures are collected at a single sitting, the effects of the

respondent's mood (as influenced by fatigue, stress, recent incidents that stimulate affect) at the moment of the collection, may introduce systematic variance. To avoid these effects it is recommended that measures be separated, in time, to mitigate the effect of the respondent's transient mood and also their striving for cognitive consistency. It is also recommended that several methods of collection be used such as written and oral, and that the location of the data collection varying such as at work and at home.

Another limitation to address is the effects of social desirability and leniency bias. Social desirability refers to individuals responding to questions in a manner that reflects positively on them regardless of their true thoughts, feelings or beliefs about the questions (Podsakoff et al., 2003). As the surveys utilized for this study asked individuals to rate their own behavior and/or the behavior of one of their employees, it is possible that respondents provided responses with the goal of making them, their employees, and by extension, their organizations look better to the third party researcher asking probing questions about their work performance.

Along with the possible effect of social desirability, leniency bias may also affect the accuracy of several of the measurements. Leniency bias is a form of distributional error that occurs when a rater use the most positive end of a rating scale because of their tendency to assign higher ratings. Research on leniency bias suggests this occurs frequently and as a result can yield "above average" rating for 80% to 90% of the employees included in a study (Ng, Koh, Ang, Kennedy, & Chan, 2011) when one would expect approximately half of the employees to be above at, or above average, and

have to be at, or below average. In this study, supervisors gave their employee's the highest possible performance rating 63% of the time. On a scale of 1 to 5, with 5 being employees "always" performing their job as specified. Only 4% were rated lower than a 4. On a scale of 1 to 7, with 7 being "strongly agree," supervisors rated 97% of their employees 5 or higher on exhibiting OCBs. The self-report withdrawal measure also indicates a strong bias which may be more attributed to social desirability as it asks employees to rate the frequency of exhibiting behaviors that would have negative consequences for them. On a scale of 1 to 7, with 1 being "never," and 7 representing more than once a week, 67% responded with a value less that 2 and 96% with a value less than 3. All three of these variable where highly skewed and needed to be transformed.

It may be that because of the nature of research at the individual level in human resource management, these forms of bias are are inevitable. We are asking employees to provide responses that may endanger their employment relationship if they provide honest responses. We are asking supervisors to provide evaluations of their employee's performance and behaviors, and they may fear that someone will see their responses and feelings will be hurt and relationships damaged. To account for this, future research might explore ways to mitigate these biases in the collection of employee performance data. One suggestion would be to develop a survey that requires the supervisor to rank and rate their employees thereby forcing them to adopt a wider range of values. Another might be to calibrate the performance ratings by collection responses from several supervisors or managers for each employee. This would require a considerable increase

in effort but it may help improve on the quality of measurements that are collected in employee performance research. Finally, research could test a variety of scale anchors, ranges of values, and ways to ask performance related questions to mitigate the occurrences of leniency bias.

Another are for research that is stimulated from this study is testing the effects of noncognitive human capital on performance outcomes at the unit or firm level. This study suggests they are stronger predictors of performance at the individual level when compared to the traditional SHRM cognitive human capital variables. It would be interesting and valuable to learn if this hold true at the unit and firm level. What are the effects of aggregating levels of noncognitive capital? Is it beneficial to have many people possessing high levels of conscientiousness and work centrality? Is there an optimal mix? What other personality and value based attributes predict performance when included in a traditional human capital to performance model? Along with this, how do cognitive and noncognitive attributes interact to predict performance? And finally, does industry or job family matter? This study used a broad range of positions across a small but varied set of industries. Perhaps stronger or different results would be found in less or more homogenous samples.

Chapter 6

Conclusion

Individuals and their productive behaviors and actions represent one of the most valuable assets a firm has to compete in the market place. The SHRM model proposes that a firm's performance is a result of the combination of people, processes, and behaviors firms acquire, develop and direct in support of their organization's strategic objectives. This study sought to test and compare a model that has been well studied, one that proposes that human capital comprised of knowledge, skills, and abilities, is related to performance; simultaneously with a model that proposes that noncognitive human capital attributes including personality and values also serves to explain the relationship between human capital and performance.

The findings suggest that certain dimensions of noncognitive human capital may play a key role in the SHRM model and future research could benefit by further exploring the relationship. For managers, one of the critical considerations for creating a human capital pool capable helping the organization to attain a sustainable competitive advantage, is that cognitive human capital can be acquired by a firm through hiring individuals with the desired KSAs or it can be developed through an investment in training and development activities. Noncognitive human capital, on the other hand, is less malleable and for that reason, one of the best HRM strategies might really be to hire for personality and train for skill.

Appendix A

Sample Scales

Proactive Personality Scale (Bateman & Crant, 1993)
Responses are scored with 7-point Likert scale: (1) strongly disagree, (7) strongly agree

1. I am constantly on the lookout for new ways to improve my life
2. I feel driven to make a difference in my community, and maybe the world
3. I tend to let others take the initiative to start new projects*
4. Wherever I have been, I have been a powerful force for constructive change
5. I enjoy facing and overcoming obstacles to my ideas
6. Nothing is more exciting than seeing my ideas turn into reality
7. If I see something I don't like, I fix it
8. No matter what the odds, if I believe in something I will make it happen
9. I love being a champion for my ideas, even against others' opposition
10. I excel at identifying opportunities
11. I am always looking for better ways to do things
12. If I believe in an idea, no obstacle will prevent me from making it happen
13. I love to challenge the status quo
14. When I have a problem, I tackle it head-on
15. I am great at turning problems into opportunities
16. I can spot a good opportunity long before others can
17. If I see someone in trouble, I help out in any way I can

* Reverse coded.

Work Centrality Scale (Hirschfeld & Feild, 2000) based on: (Paullay et al., 1994)
Responses are scored with 6-point Likert scale: (1) strongly disagree, (6) strongly agree

1. Work should only be a small part of one's life (reverse scored)
2. In my view, an individual's personal life goals should be work oriented
3. Life is worth living only when people get absorbed in work
4. The major satisfaction in my life comes from my work
5. The most important things that happen to me involve my work
6. I have other activities more important than my work (reverse scored)
7. Work should be considered central to life
8. I would probably keep working even if I didn't need the money
9. To me, my work is only a small part of who I am (reverse scored)
10. Most things in life are more important than work (reverse scored)
11. If [the] unemployment benefit was really high, I would still prefer to work
12. Overall, I consider work to be very central to my existence

Task Performance (Williams & Anderson, 1991)

1. Adequately completes assigned duties
2. Fulfills responsibilities specified in job description
3. Performs tasks that are expected of him/her
4. Meets formal performance requirements of the job

Scored using a 5-point scale (1) never, (5) always (O'Reilly & Chatman, 1986)

High Performance Work Practices (Kehoe & Wright, 2010)

Responses are scored with a *yes/no* response identifying if the practice exists in the employee/supervisor's unit. An additive index is created to measure the total number of HPWPs being used in the unit to illicit desired behaviors.

1. Applicants for this job take formal tests (paper and pencil or work sample) before being hired.
2. Applicants for this job undergo structured interviews (job related questions, same questions asked for all applicants) before being hired.
3. Associates in this job are involved in formal participation processes such as quality improvement groups, problem solving groups, or roundtable discussions.
4. Associates in this job have a reasonable and fair complaint process.
5. Associates in this job have the opportunity to earn group bonuses for productivity, performance, or other group performance outcomes.
6. Associates in this job have the opportunity to earn individual bonuses (or commissions) for productivity, performance, or other individual performance outcomes.
7. At least once a year associates in this job receive a formal evaluation of their performance.
8. Associates in this job regularly receive formal communication regarding company goals and objectives.
9. In the last 4 months, the company has made a change in how work is completed in my department based on the suggestion(s) of an associate or group of associates.
10. Pay raises for associates in this job are based on job performance.
11. Qualified associates in this job have the opportunity to be promoted to positions of greater pay and/or responsibility within the company.
12. Associates in this job are allowed to make important work related decisions such as how the work is done or implement new ideas.
13. The company hires only the very best people for this job.
14. Total pay for this job is the highest for the type of work in the area.
15. On average, how many hours of formal training do associates in this job receive each year?

Organizational Citizenship Behavior (Podsakoff et al., 1990)

He/she always considers the impact of his/her actions on coworkers.
He/she takes steps to avoid problems with other workers.
He/she keeps up to date with changes in the organization.
He/she attends meetings that are not compulsory, but are considered important.
He/she willingly helps others who have problems with their work.
He/she is always ready to offer help to those around him/her.

Indicate on a scale from (1) strongly disagree to (7) strongly agree, the extent to which you agreed with each statement.

The Big Five Inventory (BFI), (John et al., 1991)

How I am in general - Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

1	2	3	4	5
Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly

I am someone who…

1. _____ Is talkative
2. _____ Tends to find fault with others
3. _____ Does a thorough job
4. _____ Is depressed, blue
5. _____ Is original, comes up with new ideas
6. _____ Is reserved
7. _____ Is helpful and unselfish with others
8. _____ Can be somewhat careless
9. _____ Is relaxed, handles stress well.
10. _____ Is curious about many different things
11. _____ Is full of energy
12. _____ Starts quarrels with others
13. _____ Is a reliable worker
14. _____ Can be tense
15. _____ Is ingenious, a deep thinker
16. _____ Generates a lot of enthusiasm

17. _____ Has a forgiving nature

18. _____ Tends to be disorganized

19. _____ Worries a lot

20. _____ Has an active imagination

21. _____ Tends to be quiet

22. _____ Is generally trusting

23. _____ Tends to be lazy

24. _____ Is emotionally stable, not easily upset

25. _____ Is inventive

26. _____ Has an assertive personality

27. _____ Can be cold and aloof

28. _____ Perseveres until the task is finished

29. _____ Can be moody

30. _____ Values artistic, aesthetic experiences

31. _____ Is sometimes shy, inhibited

32. _____ Is considerate and kind to almost everyone

33. _____ Does things efficiently

34. _____ Remains calm in tense situations

35. _____ Prefers work that is routine

36. _____ Is outgoing, sociable

37. _____ Is sometimes rude to others

38. _____ Makes plans and follows through with them

39. _____ Gets nervous easily

40. _____ Likes to reflect, play with ideas

41. _____ Has few artistic interests

42. _____ Likes to cooperate with others

43. _____ Is easily distracted

44. _____ Is sophisticated in art, music, or literature

BFI scale scoring: Reverse score the items labeled "R" and compute scale scores as the mean of the following: Conscientiousness (9 items): 3, 8R, 13, 18R, 23R, 28,33,38, 43R

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Biographical Information

Brian Martinson received a Ph.D. in Business Administration with a management major from the University of Texas at Arlington. He received a MBA from the American University in Cairo with a specialization in international business. He received a BA from the University of Minnesota – Duluth with majors in Philosophy and Theater. His main research area is strategic human resource management. He is currently an assistant professor at Tarleton State University.