

Transforming Talent into Triumph: The Mediating Role of HR Behaviors in the Human Capital – Performance Relationship

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ABSTRACT

We examined the relationships between human capital, in-role behaviors and performance for 325 healthcare workers of a hospital in the southwestern United States. We employed a role-based measure of human capital comprising knowledge, skills and abilities needed for a specific job. At the individual level of analysis employees' human capital were positively related to employees' job performance and role behaviors. Employee behaviors were found to be related to their job performance. These behaviors mediated the relationship between employees' human capital and job performance. On examining the human capital measure we found it to consist of a general and a specific component.

Keywords: human capital, healthcare, strategic human resource management, role-based human capital, structural equation modeling, in-role behaviors

INTRODUCTION

Rapid technological changes and a climate of burgeoning growth in the healthcare industry, has made the management of healthcare workers and the knowledge, skills and abilities (KSAs) they bring to their organizations more important than ever. Healthcare workers and their KSAs are thus a valuable, rare, non-substitutable and inimitable resource to healthcare organizations with the potential to provide competitive advantage (Barney & Wright, 1998). The value added by this resource to the organization is known as human capital (Becker, 1964). Human capital is the knowledge, skills, abilities and other characteristics possessed by an employee that can yield positive outcomes (Hitt, Bierman, Shimizu, & Kochhar, 2001). It is an important element in the performance of people at work (Judge, Cable, Boudreau, & Bretz, 1995; Ng, Eby, Sorensen, & Feldman, 2005), but is not sufficient to explain employee performance (Wright, McMahan, & McWilliams, 1994) because employees' must also perform actions to achieve the requisite outcomes. These actions are known as in-role behaviors.

Our study examines the relationships between human capital, employee in-role behaviors and performance for healthcare workers at the individual level of analysis. We distinguish between in-role behaviors, defining them as actions and individual performance, defining it as the outcomes of those actions. Additionally, we distinguish between general human capital, which can be transferred across organizations and specific human capital, which is useful only in a single organization (Becker, 1964). We follow the resource based view (Barney, 1991), human capital theory (Becker, 1964; Jackson & Schuler, 1995) and the Strategic Human Resource Management (strategic HRM) perspective (Wright & McMahan, 1992; Wright & McMahan, 2011; Wright & Snell, 1991) to theoretically develop and test a causal mechanism through which human capital influences job performance.

Our study contributes to human capital and strategic human resource management research by employing a measure of human capital that includes the knowledge, skills, and abilities necessary for hospital registrars. We extend previous research in healthcare (Fauveau, Sherratti & de Bernis, 2008; Harris, Harris, Madden, Wise, Sainsbury, MacDonald & Gill, 2009; Kendall-Gallagher & Blegen, 2009; Patterson, Ferguson, Lane, Farrell, Martlew & Wells, 2000; Sims, 1979) by not only identifying healthcare worker competencies, but also examining the mechanism by which these competencies impact individual performance outcomes through in-role behavior actions. Past literature has examined human capital at the organizational level (Bruns, Holland, Shepherd & Wiklund, 2008; Carmeli and Tishler 2004 a & b; Dimov & Shepard, 2005; Hitt, Bierman, Shimizu, & Kochhar, 2001; Hitt, Bierman, Uhlenbruck & Shimizu, 2006; Hsu, Lin, Lawler & Wu, 2007; Lee, Wong & Chong, 2005; Skaggs & Youndt, 2004; Reed, Lubatkin & Srinivasan, 2006; Sturman, Walsh & Cheramie, 2008; Youndt, Subramaniam & Snell, 2004). Additionally, the studies listed above have tended to focus on the direct effects of human capital on performance; we extend this line of research by examining employee in-role behaviors as a mediator of the human capital – performance relationship.

Using a sample of 325 hospital registrars, we develop a scale for measuring human capital at the individual level, based on the KSAs required by these registrars to perform their jobs in the hospital. This allows us to contribute to human capital research by measuring human capital directly (Ployhart, 2006) and not using proxies as have been used

in previous research. By developing an individual level measurement of human capital, we are also able to address the issue of measuring a complex social phenomenon at the level at which it really occurs (Coleman, 1990; Foss, 2011; Salmon, 1998). We examine the structure of this scale and find it to be a predictor of individual performance, with the relationship mediated by registrar's in-role behaviors. We also examine the mediating effects of behavior on our human capital – performance outcome relationship.

THEORY AND HYPOTHESIS DEVELOPMENT

Resource-Based View and Human Resources

Human resources, comprising the pool of human capital under a firm's control in direct employment relationships may assist a firm in achieving a competitive advantage (Wright et al., 1994) because they are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Human resources could be a source of added value because different jobs require different types and levels of human capital and individuals possess different types and levels of human capital contributing differently to different jobs. Human resources may be rare because human capital may be normally distributed within the population, making individuals with the specific human capital needed for an organization difficult and costly to locate and acquire (Wright et al., 1994). Human resources may be inimitable through the unique history of the firm which dictates the type and levels of human capital a firm acquires and retains. Causal ambiguity may also make human resources inimitable as it might be difficult to understand exactly how the human capital of an organization combines for it to be successful. The many social interactions that take place between individuals would be difficult for another set of human resources to imitate. It is also unlikely that one set of human resources could be substituted with another and the performance would stay the same (Wright et al., 1994). While the RBV has been used to explain how resources contribute to organization level performance, it may be followed to explain individual level performance. If employees have high levels of human capital (KSAs), they may use their human capital to exhibit the in-role behaviors necessary to perform at a higher level (Wright et al., 1994). Therefore, an individual employee's human capital may be a valuable, rare, inimitable and non-substitutable resource.

Role of Human Capital

Human Capital is the repository of the firm's knowledge (Hitt et al., 2001). It is the knowledge created by, and stored in a firm's employees resulting in hard-to-imitate, business-specific advantages, which positively impacts firm performance (Edvinsson & Malone, 1997). The importance of human capital to a firm also finds support in the resource based view (RBV) of the firm (Barney, 1991). Human capital is an important element in employees' job performance (Judge et al., 1995; Ng et al., 2005). According to human capital theory, differences in human capital can create performance differences (Becker, 1965). Thus, individuals with higher levels of human capital should produce performance outcomes at a higher level.

Following Hitt et al. (2001), we define human capital as the full range of KSAs an individual can use to produce a given set of outcomes. Knowledge is a body of information

applied directly to the performance of a function. Job knowledge includes technical information, facts, and procedures required for the job (Hunter, 1993; Schmidt, Hunter, & Outerbridge, 1986). Skill is an observable competence to perform a learned psychomotor act and represents a person's level of proficiency or competency to perform a task (Spector, 2005). Ability is the competence to perform an observable behavior or a behavior that results in an observable product (Spector, 2005). Abilities are relatively enduring basic capacities for performing a wide range of different tasks (Carroll, 1993; Fleishman, 1975; 1982) which can also develop over time with experience (Snow & Lohman, 1984). In this study we specifically employ a measure of the KSAs required for hospital registrars and test its relationship with employees' job performance.

Components of Human Capital

Human Capital is closely related to the nature of the work being done (Gibbons and Waldman, 2004). Becker (1962) discusses that it has a general component and a specific one, and that the distinction between them arises from their origins in "perfectly general" and "on the job" or "specific" training. General human capital refers to overall education and practical experience, while specific human capital refers to education and experience with a scope of application limited to a particular activity or context (Becker, 1964; Gimeno, Folta, Cooper & Woo, 1997). General human capital consists of KSAs that can be used for working in different firms or with different technologies. Specific human capital is defined as KSAs that are productive only in a particular firm or with a certain technology and is useful only in the firm providing it.

The distinction between the two kinds of human capital can also be explained in terms of the specific KSAs. Knowledge can apply to several jobs in its general component, and only to a specific job in its specific component. Content skills are more basic and apply to specific jobs. However, cross-functional and process skills become more general and applicable to several jobs. Also, abilities will have specific and general components. More specific abilities are developed over time in a particular job and will be applicable to that one job only for a longer period of time. KSAs should be closely interrelated to each other. Thus

Hypothesis 1: Individual human capital consists of knowledge, skills and abilities which can be differentiated into a general component and a specific component.

Human Capital and Performance

At the organizational level, Carmeli & Schaubroeck (2005) found human capital positively related to firm performance. Lopez-Cabrales et al. (2006) found firms that utilize the most valuable and unique core employees have higher capability. In most other organizational level studies with human capital, (Bruns et al, 2008; Carmeli & Tishler, 2004; Hsu et al, 2007; Skagg & Youndt, 2004; Reed et al, 2006), human capital is measured by a series of general questions asked of a top manager, CEO, or the top management team about the entire organizations. Research by Hitt et al. (2001; 2007) measure human capital with proxies like quality of law school, total experience, and partner experiences as do other studies (Carmeli & Tishler, 2004, a & b; Dimov & Shepard, 2005; Lee et al., 2005; Lopez-Cabrales et al., 2006; Takeuchi et al., 2007), with Sturman et

al. (2008) assessing human capital in terms of increases in salary for executives that move from one organization to another. While proxy measures are more specific than general questions about the organization asked of one person, they still do not look at particular KSAs. The NCAA team studies (Wright, Smart, & McMahan, 1995; Harris, McMahan & Wright, 2012) employ much more specific measures of human capital, but they are sports team studies.

In order to best examine human capital, it needs to be studied at the individual level of analysis. The organization is a social system consisting of smaller units- i.e. the individuals. In such a situation, there are no phenomena that occur solely at a higher level of analysis (Salmon, 1998). Organizational human capital leads to organizational performance outcomes only through the individual level human capital and individual level performance much like water flowing into a bathtub at one end and out through the other only after filling the volume of the bathtub as in Coleman's(1990) bathtub metaphor.

At the individual level, general cognitive ability has been found to have a positive relationship with performance outcomes across a variety of tasks (Hunter & Hunter, 1984; Phillips & Gully, 1997). Ree & Earles (1991) study of airmen in 82 different jobs found general cognitive ability to be the best predictor of job performance. It is also the best predictor of an Army job performance measure (McHenry, Hough, Toquam & Shworth, 1990) and also related to greater career success (Dreher & Bretz, 1991; O'Reilly & Chatman, 1994). Different jobs have different profiles of KSAs that are required and consequently different people may complement jobs differently (Wise, McHenry & Campbell, 1990), thus the job-related KSAs must be measured. When employees possess the required KSAs for a job, they tend to perform better than employees who do not (Edwards, 1991; Neuman & Wright, 1999; O'Reilly, Chatman, & Caldwell, 1991). Following this logic, we predict that employees with higher levels of individual human capital should have higher job performance.

Hypothesis 2: Healthcare employees' human capital (knowledge, skills, and abilities) will be positively related to their job performance.

Since human capital consists of two elements, we can say

Hypothesis 2a: Healthcare employees' general human capital will be positively related to their job performance.

Hypothesis 2b: Healthcare employees' specific human capital will be positively related to their job performance.

Human Capital and Behaviors

Naylor, Pritchard and Ilgen (1980) define behavior as the "doing of something" (p5). In that aspect behavior differs from the outcome of the act and "can be understood as the verb doing" (Naylor et al., 1980). Behavior distinguishes itself from performance in being the action that leads to the outcome (Campbell, 1990). According to Wright and Snell (1991), individuals convert human capital into performance through behaviors. Therefore, organizations must select individuals that have the human capital necessary to exhibit the required behaviors (Wright et al., 1994).

Wright and McMahan (1992) explained the role of human capital in the strategic HRM model through systems theory (Wright & Snell, 1992) and the behavioral approach (Jackson, Schuler & Rivero, 1989; Schuler & Jackson, 1987) According to the systems

perspective characteristics of human resources (i.e., human capital) are the input and the human resources engage in role behaviors (throughput) that result in performance outcomes (output) (Wright & Snell, 1991). Workforce characteristics (i.e., KSAs, motivation, and empowerment) influence workforce productivity, and workforce productivity then influences unit performance (Delery & Shaw, 2001). Thus human resource behaviors should mediate the relationship between human resources and performance (McMahan, Virick, & Wright, 1999; Wright & McMahan, 1992). Human resources are thus the carriers of effort and motivation and their social structure is responsible for the transformation process (Wright & Snell, 1991). The behavioral approach (Jackson et al., 1989; Schuler & Jackson, 1987) discusses the role of HR practices in controlling employee behavior which may lead to desired performance. Wright et al. (1994) thus state that the potential of human capital is realized only to the extent that the possessors of the human capital choose to use their human capital to exhibit the required behaviors. Based on the function being performed, different behaviors may be needed.

Organizations may need to hire individuals with the specific human capital that would enable them to have the capability to exhibit the necessary behaviors. It thus, becomes important for organizations to consider the specific behaviors that need to be exhibited on a job and the specific KSAs needed to exhibit the behaviors (Ployhart, 2006). Besides the measure of the specific KSAs needed for hospital registrars, we obtained a measure of the role behaviors of hospital registrars. Following the logic of the systems perspective of strategic human resource management, we expect a positive relationship between employees' human capital and employees' role behaviors.

Hypothesis 3: Healthcare employees' human capital will be positively related to their role behaviors.

It therefore follows that

Hypothesis 3a: Healthcare employees' general human capital will be positively related to their role behaviors

Hypothesis 3b: Healthcare employees' Specific human capital will be positively related to their role behaviors

Behaviors and Performance

Individual level performance is multi-dimensional (Sonnentag, Volmer & Spychala, 2008), with a behavior aspect and an outcome aspect (Borman & Motowidlo, 1993; Campbell, McCloy, Oppler & Sager, 1993; Roe, 1999). The behavior aspect consists of what people do at work, while the outcome aspect is the behavior which is goal oriented or what the organization hires the employee to perform (Campbell, 1990). The distinction can be illustrated thus. The outcome aspect of a registration clerk's work is to provide a front end interface for the organization while the behavior aspect is to be courteous and polite to visitors. The clerk may engage in courteous and polite behavior but the customer may not feel satisfied because of other reasons. The relationship between employee behaviors and performance outcomes (Wright & McMahan, 1992; Wright & Snell, 1991) is such that employees convert human capital into performance through behaviors (Wright et al, 1994).

In their study of service firms, Vandaele and Gammell (2006) found that performance quality is directly influenced by in-role employee behaviors oriented towards customers.

Additionally, teams that display coordination behaviors have been found to perform at a high level (Stewart, 2006; Stewart & Barrick, 2000). Therefore, when people exhibit the necessary behaviors, performance outcomes may increase and we can hypothesize

Hypothesis 4: Healthcare employees' role behavior will be positively related to their job performance.

Behaviors Mediating the Relationship between Human Capital and Performance.

The systems perspective of strategic human resource management proposes that characteristics of the workforce act as inputs that are transformed through behaviors of the workforce to result in performance outcomes (Delery & Shaw, 2001; McMahan et al., 1999; Wright & McMahan, 1992; Wright & Snell, 1991). Therefore, behaviors should mediate the relationship between human capital and performance. According to Wright et al. (1994), human capital is a necessary, but not sufficient condition for higher performance to occur. Therefore, in addition to having high levels of human capital, employees must exhibit the necessary behaviors to perform well on their jobs.

According to theories of knowledge acquisition, cognitive ability affects job performance because it accounts for the pace and completeness with which individuals acquire information (Dreher & Bretz, 1991). Higher levels of general cognitive ability enable individuals to acquire job knowledge and this increased knowledge is related to greater job performance (Hunter, 1986). While general cognitive ability is an important predictor of job performance, it is not specific to a given task or situation. In the current study we use a measure of human capital specific to the job of hospital registrar and we also use a specific measure of role behaviors. Therefore, different from previous studies on general cognitive ability, we are able to test the relationships among the specific human capital needed to produce the necessary behaviors for hospital registrars to perform well on their jobs. Therefore, following previous research and the systems perspective of strategic human resource management we hypothesize the following:

Hypothesis 5: Employees' role behaviors will mediate the relationship between employees' human capital and job performance.

Taking into consideration the components of human capital, it would, therefore, follow that

Hypothesis 5a: The relationship between general human capital and performance is mediated by Individual behaviors

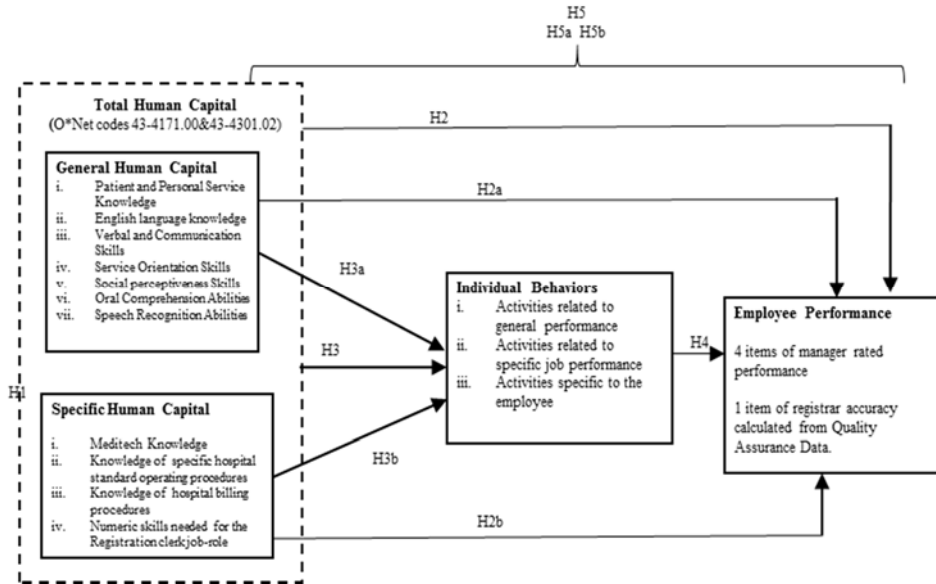
Hypothesis 5b: The relationship between specific human capital and performance is mediated by individual behaviors

However, even though human capital is composed of general and specific components, they cannot really be separated from each other. The general and specific components of human capital will differ from each other, but be related to each other. They will complement each other in the performance of a job. Hospital registrars require both the knowledge of the language which is a general component and a more specific knowledge

of particular software in order to perform their duties. Both the general and specific components of human capital measured together will explain performance better than a single component.

Hypothesis 6: The relationship between human capital- consisting of both its general and specific components and performance is mediated by individual behaviors and this relationship is stronger than the one with general human capital alone or specific human capital alone.

Figure 1: Theoretical Model and Hypotheses



METHODS

Sample

Three hundred and twenty five (325) surveys were distributed to managers of the hospital registrars who worked at the healthcare facilities of a large corporate hospital in the south-western United States. The surveys were administered by the Quality Assurance Department (QAD) of the company. The surveys asked the managers to assess the registrars' human capital, job behaviors, and job performance. The QAD also provided us with data on erroneous cases processed by each registrar and total number of cases processed. We received feedback on 313 employees, giving us a 96% response rate. After list-wise deletion, 285 surveys (88%) were used for this study.

Measures

Human Capital: Our measure of human capital was comprised of the KSAs needed for the job of hospital registrar. We obtained the KSAs listed on the Occupational Information Network (O*NET) for receptionists and information clerks (O*Net code 43-4171.00), and information and record clerks (O*Net code- 43-4301.02). The O*NET is a Department of Labor database. It is a comprehensive system designed to describe occupations, using multiple descriptors, utilizes cross-job descriptors to describe various jobs and a hierarchical taxonomic approach to occupational descriptors incorporating the last 60 years of knowledge about the nature of jobs and work in the USA. (Peterson et al.,2001). Since the O*Net has organized the KSAs of occupations according to their level of importance in the performance of the task, it enables the development of a role-based scale that helps measure human capital as it is defined.

Definitions and additional KSAs were determined based on consultation with five Patient Access Directors (PADs) in the parent company. The PADs were asked to rate separate items on knowledge, skills and abilities in order of their importance to the hospital registration position on a scale of 1 to 5 for this rating (1 being the highest and 5 the lowest). The highest rated items from each list were selected to be included on the final survey. The final scale had 6 knowledge items, 5 skills items and 5 abilities items. On the final survey, managers rated the extent to which the registration clerks had the selected KSAs on a scale of 1 to 7 (1= extremely low, 7= extremely high).

Behaviors: In-role behaviors were assessed with a 3-item scale taken from the organization's performance appraisal form. They included the manager's perception of individual behavior on general performance activities, job specific activities and employee specific activities. Each was rated on a seven point scale and the scale had a reliability of 0.967.

Performance: Performance was measured using a manager rating and an accuracy measure. Managers rated employee performance on a 4 item scale developed by Williams and Anderson (1991). Sample questions included "This employee adequately completes assigned duties". Each item was assessed on a seven point scale (1= extremely low, 7= extremely high). The quality assurance department of the hospital provided us data on the total number of cases processed and the erroneous cases processed by each registrar. Registrar accuracy was calculated from this data (1- erroneous cases/ total cases processed) for each registrar. The total performance measure was calculated as a composite of the manager's assessment of employee performance and the accuracy measure. This total performance measure was found to have a reliability of 0.850.

The study variables were standardized for further analysis. Standardized correlations for the study variables are presented in Table 1. Since our measures were collected from a single survey administered to registered nurses, we conducted a Harman's one-factor test to detect the presence of common method effect. Since all our variables did not load into a single factor explaining more than 50% of the total variance, we conclude that common method variance is not of great concern in this analysis (Podsakoff, MacKenzie, Lee, & Podsakoff,2003).

Table 1: Correlations

		Correlations			
	No. of Items	1	2	3	4
General Human Capital	7	(0.933)			
Specific Human Capital	4	0.704**	(0.836)		
Total Human Capital	11	0.925**	0.921**	(0.934)	
Behaviors	3	0.829**	0.721**	0.840**	(0.960)
Total Performance	5	0.695**	0.643**	0.725**	0.801** (0.850)
All from standardized data					
N= 285					
Coefficient alphas in brackets					
** p<0.01, *p<0.05, + p<0.1					

RESULTS

Exploratory Factor Analysis

In order to identify the underlying structure of the 16 human capital items, we performed an exploratory factor analysis with the knowledge, skills and abilities items. Since the primary aim of this analysis was data reduction we used Common Factor Analysis to yield the simplest solution (Ford, MacCallum & Tait, 1986). The oblique rotation technique Oblimin was used in place of the more mathematically purist orthogonal techniques, since the data was more likely to correlate. Two factors were identified using the Kaiser rule of eigen values greater than 1, scree plot and pattern matrix. Items loading on both factors lower than 0.5 were excluded. The EFA process was repeated until two clear factors with no cross-loadings emerged. The rotation converged in 6 iterations. KMO and Bartlett tests (MSA= 0.938 and Bartlett's test p-value<0.001) showed that there was sufficient collinearity to warrant further analysis. The correlation matrix was not an identity matrix either.

The first factor, consisting of patient and personal service knowledge, English language knowledge, verbal communication skills, service orientation skills, social perceptiveness skills, oral comprehension and expression abilities and speech recognition abilities, was clearly general human capital (GHC), consisting of knowledge, skills and abilities of registrars not specific to the particular hospital. This factor was found to have a high reliability ($\alpha= 0.940$). The second factor consisting of Meditech (a software used at the hospital) knowledge, knowledge of specific hospital standard operating procedures, knowledge of hospital billing procedures and numeric skills needed for the registration clerk job-role was found to be specific human capital (SHC). This factor also had a high reliability ($\alpha= 0.835$). We thus find support for Hypothesis 1.

Structural Equation Modeling Analysis

Measurement Model

We tested our hypotheses using structural equation modeling (SEM) using LISREL 8.80 (Joreskog & Sorbom, 1993). Using the two step approach (Anderson & Gerbing, 1982) we first tested the measurement model. Though the χ^2 was statistically significant, the TLI and CFI indices indicated adequate fit for the model. The loadings for the structural model are all statistically significant ($p \leq 0.001$) and adequately high with values greater than 0.60. The fits for the individual constructs- behavior, performance, GHC and SHC were also adequate, though the χ^2 are statistically significant.

Structural Model

We first tested for the direct effects for GHC, SHC separately and then the direct effect of a model with both GHC and SHC. We then tested for mediation by behavior in each of these models, by comparing the fully mediated models, partly mediated models, and direct effects models (Kelloway, 1998). We found that the direct effects models for GHC and SHC and for the model with SHC and GHC together did not exhibit good fits.

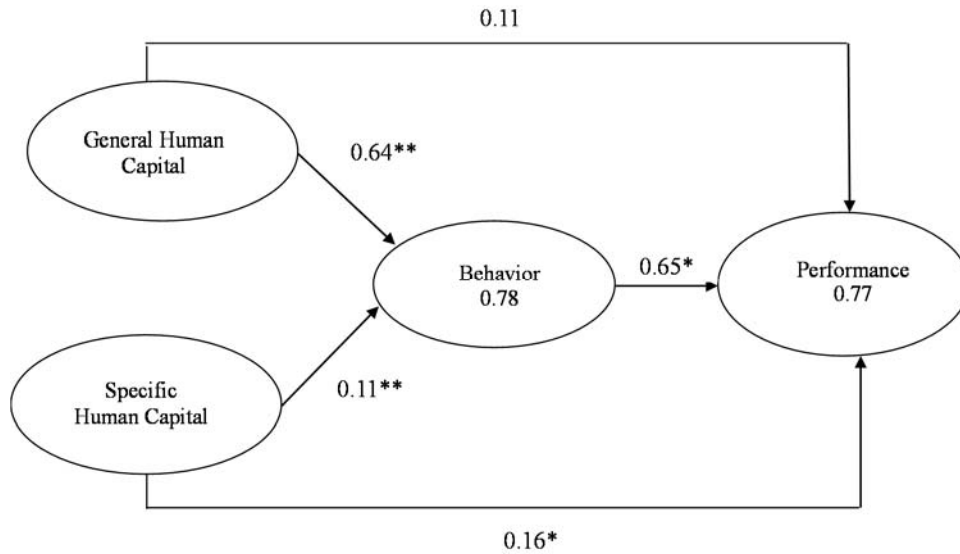
The partially mediated and fully mediated models for GHC, SHC and GHC and SHC together were all found to have adequate fits. The difference in χ^2 between the partial and fully mediated model was significant for the GHC model ($\Delta\chi^2 = 4.61$, $df = 1$, $p \leq 0.05$), the SHC model ($\Delta\chi^2 = 10.61$, $df = 1$, $p < 0.05$) and the model with both GHC and SHC ($\Delta\chi^2 = 78.5$, $df = 19$, $p \leq .05$). We thus found support for hypotheses H2 to H5. The difference in χ^2 fit between the models which contained both GHC and SHC to the models that had only either GHC or SHC supported hypothesis 6 that the model containing both GHC and SHC was a better fit than the ones with only SHC or GHC.

Table 2: Comparison of Model Fit Indices

Model	χ^2	df	TLI (NNFI)	CFI	RMSEA	SRMR
Measurement Model	473.27**	146	0.93	0.94	0.09	0.047
Individual Constructs						
Behavior	3 items so the fit is perfect					
Performance	42.72**	5	0.95	0.97	0.16	0.020
General Human Capital(GHC)	150.49**	14	0.87	0.91	0.19	0.049
Specific Human Capital(SHC)	5.96 ⁺	2	0.97	0.99	0.08	0.021
Direct Effect						
Direct Effect Only with GHC only	838.95**	149	0.86	0.87	0.13	0.36
Direct Effect with SHC only	759.28**	132	0.86	0.88	0.13	0.36
Direct Effect with both factors	831.54**	148	0.86	0.88	0.13	0.36
Mediated Models						
Fully mediated model with GHC only (1)	504.87**	149	0.93	0.93	0.09	0.056
Partially mediated with GHC only (2)	500.26**	148	0.93	0.94	0.09	0.054
Fully mediated with SHC only (3)	465.97**	132	0.92	0.93	0.09	0.054
Partly mediated with SHC only (4)	455.36**	131	0.93	0.94	0.09	0.051
Fully mediated with both factors (5)	482.67**	148	0.93	0.94	0.09	0.049
Partially Mediated with both factors (6)	404.17**	129	0.94	0.95	0.09	0.045
Model Comparisons						
Difference (1-2)	4.61	1	Significant at p<0.05. Select (2)			
Difference (3-4)	10.61	1	Significant at p<0.05. Select (4)			
Difference(5-6)	78.5	19	Significant at p<0.05. Select(6)			
Difference (1-5)	22.2	1	Significant at p<0.05. Select(5)			
Difference (2-6)	96.09	19	Significant at p<0.05. Select(6)			
Difference(3-5)	16.7	16	Non-Significant at p<0.05. Select(5)			
Difference(4-6)	51.19	2	Significant at p<0.05. Select(6)			

TLI= Tucker Lewis Index, CFI= Comparative Fit Index , RMSEA= Root Mean Square Error of Approximation, SRMR= Standardized Root Means Square Residual, ** p<0.01, *p<0.05, + p<0.1

The squared multiple correlations for structural equations were 0.78 for behavior and 0.77 for performance for the fully mediated model.

Figure 2: Structural Equation Modeling Results

Regression Analysis

We also performed a regression analysis to confirm our hypotheses. GHC predicted behavior with an R^2 of 0.686 ($p \leq 0.01$) and performance with an R^2 of 0.482 ($p \leq 0.01$). This R^2 increased to 0.642 ($p \leq 0.001$) while the β decreased to 0.101 from 0.695 ($p \leq 0.001$) on introducing behaviors in the regression. SHC predicted behaviors ($R^2 = 0.518$) and performance ($R^2 = 0.412$), the R^2 increased to 0.648, while the β decreased to 0.137 ($p \leq 0.01$) from 0.643 ($p \leq 0.001$), when we introduced behaviors. Total Human Capital, consisting of both components exhibited a similar relationship of mediation by behaviors. Since our sample exhibited strong correlations between our items, we assessed whether multi-collinearity was a problem by computing the variance inflation factors (VIFs). None of the VIFs approached the threshold value of 10 suggested by Neter, Wasserman, & Kutner (1985).

Table 3: Regression Results

DV= Behavior						
IV	Model 1	Model 2	Model 3			
Constant	β 0.00 (.032)	β 0.00 (0.04)	β 0.00 (0.031)			
General Human Capital	0.945*** (0.038)					
Specific Human Capital		0.847*** (.05)				
Total Human Capital			1.054*** (0.04)			
R ²	0.686***	0.518***	0.705***			
ΔR^2	0.686***	0.518***	0.705***			
DV= Total Performance						
IV	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	β 0.00 (0.03)	β 0.00 (0.03)	β 0.00 (0.04)	β 0.00 (0.03)	β 0.00 (0.03)	β 0.00 (0.03)
General Human Capital	0.695*** (0.04)	0.094(p=0.114) (0.06)				
Specific Human Capital			0.621*** (0.04)	0.132*(p=0.007) (0.05)		
Total Human Capital					0.747*** (0.042)	0.184(p=0.006) (0.07)
Behaviors		0.590*** (0.05)		0.577*** (0.04)		0.535*** (0.053)
R ²	0.482***	0.642***	0.412***	0.648***	0.525***	0.648***
ΔR^2	0.161***		0.237***		0.125***	

Unstandardized betas.

Standard Errors in parentheses.

** p<0.01, *p<0.05, + p<0.1

Our hypotheses of mediation were supported by the Sobel (1982) test also. Results indicate that behavior mediates the relationship between GHC and performance ($z = 2.303$, $p \leq 0.05$), SHC and performance ($z = 2.597$, $p \leq 0.01$) and total human capital and performance ($z = 2.552$, $p \leq 0.05$).

Table 4: Sobel Test Results

Model	a	b	s_a	s_b	z
Model with General Human Capital	0.094	0.590	0.04	0.05	2.303*
Model with Specific Human Capital	0.132	0.577	0.05	0.04	2.597**
Model with both factors	0.184	0.535	0.07	0.05	2.552*

a= unstandardized estimate for the relationship between IV and Mediator

b= unstandardized estimate for the relationship between Mediator and DV

sa= standard error of a

sb= standard error of b

All models use behavior as the mediator.

** p<0.01, *p<0.05, + p<0.1

DISCUSSION

Our study followed the resource-based view of the firm, human capital theory, and the systems perspective of strategic human resource management to theoretically develop and empirically test relationships among human capital, behaviors, and performance. Our role-based scale for human capital included the KSAs needed for the position of hospital registrar and tested its relationship with employees' job performance and role behaviors. We found that employee human capital was positively related to their in-role behaviors and through them to employee performance. We also examined the specific and general components of employee human capital.

Theoretical Implications

Our study expands on previous research which has tended to use more general or generic measures of human capital (Carmeli & Schaubroeck, 2005; Hunter & Hunter, 1984; Lopez-Cabrales et al., 2006; Takeuch et al., 2007). In the current study, we found that employees' human capital was positively related to their job performance. We also found confirmation of the existence of the two components of human capital (Becker, 1975; Gimeno et al., 1997).

We found that employees' human capital was positively related to role behaviors. Therefore, when employees' have the human capital necessary for the job they are doing, then they have the potential to exhibit the behaviors that may lead to job success (Wright et al., 1994).

Our findings support the idea that human capital was a necessary, but not sufficient condition for performance (Wright et al, 1994) as we found that both human capital and behaviors were significantly related to higher job performance by employees. Thus, employees' who exhibited the necessary role behaviors tend to perform well in their positions. So it becomes important for organizations to select and retain individuals who have the human capital and exhibit the behaviors necessary for high levels of job performance. We thus extend the research on healthcare worker competencies (Kabene et al, 2006; Fauveau et al., 2008; Harris et al., 2012; Kendall-Gallagher & Blegen, 2009; Patterson et al., 2000; Sims, 1979) by finding empirical confirmation for the process by which these competencies are positively related to performance through behaviors.

Lastly, we found that behaviors partially mediated the relationship between human capital and performance. This finding follows the systems perspective of strategic human resource management and builds on the findings of Harris et al. (2009) that human capital acts as an input that is transformed through behaviors into an output of performance where behaviors partially mediate the relationship between human capital and performance in NCAA basketball teams. We build upon and extend Harris et al. (2009) by finding similar results at the individual level and within a business organization setting.

Managerial Implications

Research at the organizational and unit levels has consistently demonstrated the vital role human capital plays in determining firm performance. However, this resource is contained at the individual level in the specific role-based KSAs of employees. Thus it needs to be examined at that level. This study provides implications for managers trying to develop the human capital of their employees. Understanding specific role-based KSAs in the context of the work done by the employee is useful to managers since they can then select, train and develop employees who have higher levels of particular KSAs. Thus managers can ensure that the work is carried out by those most competent to do it.

The relationship between human capital and individual performance is found to be mediated by behaviors. Understanding the processes of how human capital influences outcomes will be useful for organizations, since managers can observe and fix discrepancies depending on where they occur- if they are between human capital and behavior, they could be motivational in nature, while those between behavior and outcome will have an organizational environment component to them. Also, an examination of behaviors is necessary since organizations and managers will be more likely to select individuals who have the potential to exhibit the behaviors necessary for performance.

Limitations and Directions for Future Research

While the hypotheses of our study received support, we do recognize some limitations with our study design. The current study had a cross-sectional design. Therefore, the causal impact of the relationships among human capital, behaviors, and performance is uncertain. Future research may consider measuring employees' human capital at one point in time and then measuring behaviors and job performance at a later date. Additionally, longitudinal study designs may be used to examine changes in human capital, behaviors, and performance over time. In the current study managers assessed employees' human capital, behaviors, and a measure of employee performance. One way to avoid having managers assess these may be to have employees take an employment test that would assess their KSAs. For example, Ployhart et al., (2009) had employees complete items that assessed their unit service orientation as a measure of human capital and tested its relationship with performance.

Conclusion

In conclusion our study provides evidence that through their behaviors, employees use their human capital to perform their jobs. Different from previous research, we used a measure of human capital derived from the KSAs needed for the specific position of

hospital registrar. We found this measure to be positively related to employees' job performance and employee's role behaviors. Additionally, we found employees' role behaviors lead to greater job performance. We also found that employees' role behaviors partially mediated the relationship between employees' human capital and their job performance. Taken together these findings indicate the importance of identifying the KSAs required to perform a specific job properly. We are also able to separate out human capital into its general and specific components. By identifying the KSAs for a specific job, organizations may be more likely to select individuals that have the capability to exhibit the behaviors necessary to perform well on the job. If individual employees are able to perform well on their jobs it may translate into greater performance for the overall organization.

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