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Resource-Based Perspectives on Unit-Level Human Capital: A Review and Integration

Anthony J. Nyberg
University of South Carolina
Thomas P. Moliterno
University of Massachusetts Amherst
Donald Hale, Jr.
University of South Carolina
David P. Lepak
Rutgers University

Scholarly interest in leveraging resource-based theory to explore the unit-level human capital resource (HCR) is undergoing a paradigmatic shift in the strategy and strategic human resource management (HRM) literatures. As they undertake this next generation of research, scholars will be informed by a rigorous examination of prior unit-level HCR research. To this end, we present a systematic and multidisciplinary review of scholarship that invokes resource-based theorizing in examining the unit's HCR. We reviewed 156 articles published in the strategy and strategic HRM literatures that conceptualize HC as a unit-level resource. This review suggests that a multidimensional typology of the unit-level HCR has emerged. In particular, research has examined the HCR's type, context, and antecedents. We build on our review of this multidimensional typology to propose a multilevel conceptual integration of current and future unit-level HCR research in the strategy and strategic HRM domains. Current scholarly work in these two areas suggests that these two literatures are converging, and the multidimensional HCR typology suggested by our review informs this convergence. We conclude with a discussion of future research domains that will advance the multilevel theoretical integration we propose.

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Corresponding author: Anthony J. Nyberg, Moore School of Business, University of South Carolina, 1705 College Street, Columbia, SC 29208, USA.

E-mail: anthony.nyberg@moore.sc.edu

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Scholarly interest in human capital (HC) is undergoing a paradigmatic shift, with increased effort to understand HC as a macro-level construct. This perspective draws on resource-based theory (RBT; Barney, 1991) to posit a firm-level *human capital resource* (HCR) that can be a source of sustainable competitive advantage (Barney & Wright, 1998; Kraaijenbrink, 2011). This developing perspective on the HCR is finding expression in current conceptual trends in two distinct research disciplines. In the strategy literature, researchers are becoming more interested in the microfoundations of firm-level constructs in general (Felin & Foss, 2005; Felin & Hesterly, 2007) and the HCR in particular (Coff & Kryscynski, 2011). Similarly, in scholarship examining organizational human resources, strategic human resource management (HRM) researchers are becoming more interested in exploring the HCR as a mediator between human resource policies and unit performance (Wright, Dunford, & Snell, 2001; Wright & McMahan, 1992). In this review, we explore the common thread in these two literatures—namely, conceptualizing HC as a collective or "unit-level" resource (Ployhart & Moliterno, 2011)[1]—and examine the empirical research that relates to and informs these current conceptual trends.

Drawing on theoretical arguments grounded in RBT (Barney, 1991; Rumelt, 1984; Wernerfelt, 1984)—specifically, that the firm's unique internal resource configuration can be a source of sustainable competitive advantage—the current conceptual trends in the strategy and strategic HRM literatures are developing distinct, but complementary, perspectives on the unit-level HCR. In particular, scholars working in both literatures are interested in how units create a valuable HCR and how that resource uniquely relates to unit performance. Consequently, a rigorous, multidisciplinary examination of prior HCR research in both literatures will help integrate and extend the two perspectives. The review we present in this article suggests that each perspective provides a partial perspective of what we know about the unit-level HCR. Thus, mapping insights from the existing empirical research onto the current conceptual trends in each discipline yields new insights regarding the unit-level HCR and suggests many unanswered research questions.

Scholars working in the strategy literature primarily focus attention on the fundamental RBT argument that resources can yield competitive advantage (Barney, 1991), and argue that the HCR can be a valuable unit-level resource (Barney & Wright, 1998; Kraaijenbrink, 2011). One area where this interest in a unit-level HCR has found expression is in the strategy literature's emerging conceptual exploration of "microfoundations," which is often articulated as the effort to better understand the individual-level constructs (Felin & Foss, 2005; Felin & Hesterly, 2007) and organizational processes (Teece, 2007) that are component to, and/or cause, higher-level strategic phenomena such as resources and capabilities (Abell, Felin, & Foss, 2008; Foss, 2011). While the question of microfoundations encompasses more than the HCR, several researchers have made conceptual progress in understanding the HCR by leveraging the logic of microfoundations. For instance, Ployhart and Moliterno (2011) articulate the process through which a unit-level HCR is created through the

combination and transformation of individual human assets and their unique psychological endowments. Coff and Kryscynski (2011) extend this line of thinking by examining how attracting, retaining, and motivating employees can be a source of the resource-based competitive advantage derived from the firm's HCR.

In the strategic HRM literature, one current conceptual trend concerns understanding the "black box," or mechanisms that lead human resource policies and practices to influence unit-level performance. In this way, scholars are interested in understanding how HRM initiatives affect the unit's HCR, which, in turn, influences unit-level performance (Bowen & Ostroff, 2004; Cappelli & Sherer, 1991; Gerhart, 2005; Huselid & Becker, 2011; Lepak, Liao, Chung, & Harden, 2006; Maltarich, Nyberg, & Reilly, 2010). For example, Liao, Toya, Lepak, and Hong (2009) examined the role of high performance work practices on the HCR, and then how attributes of the HCR were related to service performance. Scholars from this perspective have focused less on what the HCR is, and more on how to influence the HCR in a manner that is beneficial for the organization, such as through examining how HRM practices are related to unit performance, assuming a mediating effect of the HCR (e.g., Huselid, 1995).

Taken together, these two bodies of scholarship share an intriguing and novel interest regarding the unit-level HCR, and are developing related conceptual perspectives. Scholars from both areas appreciate that the HCR is a valuable unit-level asset that can be a source of competitive advantage. Strategy scholars are increasingly exploring the HCR asset from the "top down," trying to understand the organizational processes by which a unit-level HCR is created, and the individual-level human resources it comprises. Conversely, strategic HRM scholars are looking at the HCR from the "bottom up," and are trying to understand how HRM policies and practices affect the unit's HCR. Thus, the current conceptual trends in strategy and the strategic HRM literatures suggest that these two bodies of work are converging.

Consistent with, and in support of, this convergence, we present a systematic review of existing research that invokes resource-based theorizing in examining the unit's HCR endowment. Our objective is not solely to review prior empirical work in this area, but also to suggest how the emerging perspectives in the strategy and strategic HRM literatures may be informed by both progress and gaps in the empirical record. To this end, this review article has three main sections. First, we review 92 empirical articles published in the strategy and strategic HRM literatures that examine a unit-level HCR. This review suggests a multidimensional typology of the HCR parameterized along three dimensions and eight subcategories: We begin with a detailed description of this multidimensional typology. Second, after providing this descriptive review of prior empirical work in these literatures, we map this body of scholarship onto the current conceptual trends in the two literatures. In this section, we extend current theoretical perspectives to suggest a multilevel microfoundational structure that undergirds the unit-level HCR. In this way, we draw on our review to propose and discuss an integrated perspective that can direct future research in this area. In the third and final section, we draw on this integration to propose and briefly examine three broad research domains that can inform future research examining and developing our understanding of the HCR.

Theoretical Motivation

We begin by considering briefly the conceptual terrain the HC construct has traversed. The proposition that firm-level resources in general are associated with sustainable competitive advantage (Peteraf, 1993; Rumelt, 1984; Wernerfelt, 1984) quickly led to the proposition that HC is a resource that organizations can leverage to achieve competitive advantage (Barney, 1991). This firm-level conceptualization of HC did not align perfectly with the original conceptualization of HC as an attribute of individual-level human assets (Becker, 1964). Thus, as scholars (particularly in the strategy literature) adopted the conceptualization of HC as a macro-level or collective resource, RBT grew to largely ignore the unique nature of HC as a collective resource that comprises individual human assets (Kraaijenbrink, 2011). A notable exception is Coff (1997), who observes that since human assets have, among other powers, the ability to leave the firm, HC constitutes a somewhat special class of firm-level resource. The proposition that HC is a collective-level resource that has individual-level origins has recently been elaborated by Ployhart and Moliterno, who define the *human capital resource* (HCR) as a "unit-level resource that is created from the emergence of individuals' knowledge, skills, abilities, and other characteristics" (2011: 127). This definition brings to the foreground the collective nature of the HCR, and does so in a way that aligns with how both the strategy and strategic HRM literatures have examined the organizational resource that composes individual human assets.

Within the strategy literature, researchers have drawn on the RBT to argue that HC is a collective resource potentially associated with sustainable competitive advantage. Since the sustainable competitive advantage construct has presented scholars with conceptual and measurement challenges (Armstrong & Shimizu, 2007; Crook, Ketchen, Combs, & Todd, 2008), researchers in this literature have used measures of operational performance as a primary dependent variable of interest. Thus, strategy researchers generally operationalized measures of a unit-level HCR and explored its association with a unit-level performance outcome (e.g., Hatch & Dyer, 2004; Kor & Leblebici, 2005; and see Crook, Todd, Combs, Woehr, & Ketchen, 2011).

At the same time, scholars working in the strategic HRM area, sharing a common interest in the role of human assets in the strategic outcomes of the unit (e.g., Lengnick-Hall & Lengnick-Hall, 1988), quickly embraced RBT as an overarching theoretical framework for associating human resources with sustainable competitive advantage (Wright & McMahan, 1992). This was extended to include the organizational HRM practices through which the firm makes investments in individual human assets (e.g., Snell & Dean, 1992; Youndt, Snell, Dean, & Lepak, 1996). Thus, strategic HRM research draws on RBT to argue that while a unit's HCR can be a source of competitive advantage, the human aspect of it makes it particularly prone to managerial and unit influence (Wright, McMahan, & McWilliams, 1994). In this way, HRM policies and practices are espoused to shape the nature of the unit's HCR via their effect on the employees who make up that resource (Barney & Wright, 1998; Becker & Gerhart, 1996; Boxall & Purcell, 2003).

In short, RBT is the linchpin that connects the strategy and strategic HRM research literature streams (Chadwick & Dabu, 2009; Wright et al., 2001): Both literatures draw on the RBT as the core theoretical perspective to the question of how human assets can be

leveraged to achieve unit-level competitive advantage. In this review, we draw on the conceptualization of the HCR as a unit-level construct, and explore how it has been examined in the strategy and strategic HRM literatures. This unit-level focus serves several purposes. First, inasmuch as both the strategy and strategic HRM literatures operate at this collective level, this review considers the body of research that is of common concern across the two literatures. If a convergence of these two literatures is actually occurring, then an integrated analysis of those studies that are of common interest will be both helpful and valuable. Second, by thoroughly examining the extant empirical record concerning the unit-level HCR, we can advance conceptual efforts to better understand the HCR as a collective construct (Kraaijenbrink, 2011). Finally, focusing on research that employs theory and measurement at the unit level avoids cross-level fallacies (Rousseau, 1985) that can potentially occur when examining the association between an individual-level conceptualization and measurement of HC and a unit-level performance outcome (Ployhart & Moliterno, 2011). One limitation of this approach is that by focusing on HC as a unit-level resource, we necessarily exclude work that has focused on considerations of individual-level HC, whether in economics (e.g., Becker, 1964) or psychology (e.g., Hunter, Schmidt, & Judiesch, 1990).

Review of Current Research: Toward a Multidimensional HCR Typology

Anchoring on the publication of Barney's (1991) seminal article that invoked HC as a firm-level resource and as a potential source of sustainable competitive advantage, we took 1991 as a starting point for our sampling frame and used the leading article databases to conduct an exhaustive search of the core management journals. We searched using the terms *human capital and resource**, and *resource based and human**. To ensure comprehensiveness, we also searched on the terms *resource based and CEO*, *resource based and top management team*, and *resource based and people.* Using these parameters, we queried the abstracts and keywords of all articles published in *Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *Human Resource Management*, *Industrial and Labor Relations Review*, *Journal of Applied Psychology*, *Journal of Management*, *Management Science*, *Organizational Science*, *Personnel Psychology*, and *Strategic Management Journal*. To ensure against electronic database omissions, we also searched the full text of the *Academy of Management Review*, *Academy of Management Journal*, and *Strategic Management Journal.* Finally, we also included appropriate articles that were in reference sections of conceptual reviews of the unit-level HCR (Crook et al., 2011) and RBT (Newbert, 2007). This approach initially yielded 1,585 articles. After reviewing abstracts and examining these articles in detail, we identified 156 that employed a resource-based theoretical perspective on HC. Of these articles, 92 were empirical and 64 were exclusively conceptual.

We conducted a careful reading of each of the 156 articles, and then used the 92 empirical articles to create a typology of how HC has been studied as a unit-level resource. To create this typology, we took an iterative approach, moving back and forth between content

analyzing the articles and constructing a comprehensive typology based on the concepts framed in each article. In the vast majority of cases, the articles' authors clearly specified and defined their core HCR constructs, and so identification of dimensions for the typology, and the coding of articles along those dimensions, reflected the authors' own descriptions and conceptualizations. This process revealed that the body of empirical research on the unit-level HCR can be categorized along three core dimensions and eight subcategories. These three dimensions (and eight subcategories) are *type* ("knowledge," "skills and abilities"), *context* ("leadership context," "global context," "organizational activity"), and *antecedents* ("human resource management," "turnover," "other antecedents"). We found that each of the 92 empirical articles could be categorized in at least one—and that many were characterized by two or more—of these dimensions and subcategories. In addition, we uncovered measurement and methodology issues as we reviewed this literature: We describe these along with the dimensions and subcategories.

The HCR Type *Dimension*

The first dimension of the typology that emerged concerned the specific knowledge, skills, and abilities (KSAOs) that characterize the unit-level HCR. We define the HCR *type* dimension as capturing the individual-level psychological KSAOs that a study's author(s) claimed to examine as characteristic of the unit-level HCR. As a point of entry into this dimension of our typology, it is useful to recall that as a collective construct, HCR comprises individual human assets (Coff, 1997). At the individual level, KSAOs are widely accepted as the underlying components of HC, inasmuch as they are the individual attributes that employees must have to perform a particular task or job (Becker, 1964). The essential logic in making the bridge between the individual and collective level is that since, for example, individual-level knowledge predicts individual-level job performance, the aggregate knowledge of the unit-level HCR should predict unit-level performance.[2] However, since KSAOs are distinct constructs at the individual level, it is reasonable to presume that, at the collective HCR level, they will manifest different "types" of the HCR (e.g., a knowledge-based HCR versus a skills-based HCR; Ployhart & Moliterno, 2011), and that these different types of the HCR may relate differently to unit-level performance outcomes (Kraaijenbrink, 2011). Thus, our typology identifies the *type*, or focal component, of the HCR theorized about and measured within a particular article.

Following Noe, Hollenbeck, Gerhart, and Wright (2006) and Schmitt and Chan (1998), we employed the following working definitions of individual-level KSAOs: "knowledge" is the factual or procedural information necessary for performing a specific job and the foundation on which skills and abilities are developed; "skills" are the individual's level of proficiency and capabilities to perform a specific job task; "ability" is a more enduring capability (usually cognitive) that is necessary for an individual to perform a job; and "other characteristics" often refer to personality traits or other attributes that affect the individual's ability to perform a specific job. In our literature review we identified only two subcategories of the unit-level HCR *type* that derive directly from these definitions of KSAOs: "knowledge" and "skills and abilities."

A total of 29 articles were coded with the "knowledge" subcategory, in that they described the HCR construct in terms of the amount of information that employees had regarding performing specific jobs. For example, Berman, Down, and Hill (2002) examined the National Basketball Association to show that there is a positive relationship between shared knowledge and team performance, but that as the shared experience grows, there may actually be a negative relationship. Of these 29 articles, the majority were from the strategy literature. An additional 26 articles were coded with the "skills and abilities" subcategory. While skills and abilities are considered two different constructs by those who have studied KSAOs at the individual level (e.g., Fleishman & Reilly, 1992), this distinction has not been made empirically in research that has studied the unit-level HCR, and as such we have combined them in our review. For instance, Carpenter, Sanders, and Gregersen (2001) used a resource capability argument to highlight the importance of CEO international experience in relation to unit performance. Of these articles that included "knowledge" and/or "skills and abilities," 16 articles discussed both "knowledge" and "skills and abilities," and were coded with both *type* subcategories (e.g., Hitt, Bierman, Uhlenbruck, & Shimizu, 2006; Kor & Leblebici, 2005; Pennings, Lee, & van Witteloostuijn, 1998).

A total of 35 articles invoked a more general conceptualization of a unit's HCR, without identifying specific individual-level KSAOs embedded in that resource or how those different individual-level KSAOs are combined into a single unit-level HCR. A notable exception is Carmeli and Schaubroeck (2005), which theorizes in general about an HCR, while also discussing in particular the underlying KSAOs of that HCR. Work employing a more general conceptualization of the HCR in this way was much more prevalent in strategic HRM articles than in the strategy literature, and in such cases we were unable to apply a specific *type* subcategory to our coding. This distinction is noteworthy because work examining individual-level HC (e.g., Schmitt & Chan, 1998), as well as that which argues for a unit-level HCR (Ployhart & Moliterno, 2011), is explicit in arguing that since KSAOs make-up the HCR construct, the individual components are not identical, and as a result, not all HCRs are created equally. Accordingly, while work that theorizes generically about a unit's HCR continues to advance our knowledge, it is useful for an overall understanding of the unit's HCR to recognize that the HCR is composed of individual human assets who are endowed with distinct types of individual-level KSAOs (Kraaijenbrink, 2011). In the discussion section, we return to this issue and present potential theoretical and measurement ramifications that may arise due to lack of specificity in the HCR construct.

Methodologically, the HCR *type* dimension was predominantly measured by operationalizing measures of tenure, experience, education, training, and skills. This leads to two specific observations. First, the two most common measures, tenure and experience (which is often a form of tenure), were used in 34 studies,[3] and presume an equality of the unit's HCR based on exposure, meaning that there is not any differentiation due to the quality of that experience (e.g., Chandler & Lyon, 2009). This is also true of another commonly used measure, education, which was used in 23 studies (e.g., Smith, Collins, & Clark, 2005). In all, 31 articles used measures of skills or training (e.g., Carmeli, 2004), 10 included measures of knowledge (e.g., Jin, Hopkins, & Wittmer, 2010), and 5 articles included other contextually derived measures of experience (e.g., project manager career path; Brown, Adams, & Amjad, 2007). Second, 37 articles did not use a specific measure of the HCR *type*. These

articles primarily examined the relationship between organizational policies and organizational performance, assuming an HCR effect (i.e., the "black box"), and of these, the vast majority were in the strategic HRM literature. Viewed in combination, these observations suggest that a more nuanced approach to operationalizing the unit's HCR could be helpful to better understand the unit's HCR. This would lead to greater conceptual consistency and measurement accuracy, as well as move us away from the empirically easier, but conceptually more tenuous, approach of simply counting the number of employees who meet a certain criterion (e.g., percentage of employees with an advanced degree). In the discussion section we comment on these and other methodological issues uncovered by our review.

The HCR Context *Dimension*

We labeled the second dimension we observed "HCR's *context*" as it concerns the organizational setting in which the unit's HCR was observed and studied. Parameterizing the HCR's *context* is important because our review suggested that authors have argued—whether implicitly or explicitly—that the nature of the association between the HCR and unit-level performance outcomes is context dependent. In this way, the unit's HCR *context* dimension in the typology that emerged is consistent with recent theoretical arguments suggesting that context plays an important role in the emergence of the unit-level HCR. For instance, Ployhart and Moliterno (2011) argue that the complexity of the unit's task environment—comprising temporal pacing, dynamism, strength of member linkages, and workflow structure (Bell & Kozlowski, 2002)—affects the degree to which individuals who make up the unit HCR are required to be interdependent and coordinated. Teece (2011) adds to these ideas by identifying national and firm-level capabilities that shape and transform the unit-level HCR.

Within this dimension three subcategories were identified. The first is the "global context" and considers whether the HCR was embedded in a U.S. or an international organizational setting. The 38 articles coded along this subcategory examined the impact of the HCR in countries outside of the United States. For instance, Takeuchi, Lepak, Wang, and Takeuchi (2007) examine how a unit's HCR influences performance in 56 different Japanese companies. Articles coded with the second subcategory, "leadership context," examined the role of the HCR among CEOs and top management teams (TMTs). Of the articles coded along this subdimension, 7 were focused on CEOs and 8 were concerned in particular with the role of the HCR in TMTs (2 articles dealt with both CEOs and TMTs). For instance, Kor and Mahoney (2005) examined the TMT's specific experience and its relationship with unit performance. An additional 11 articles coded within the leadership context focused on the role of the HCR in the leadership of entrepreneurial organizations, such as Haber and Reichel's (2007) examination of the role of a unit's HCR's relationship with performance in 305 entrepreneurial tourism ventures. Finally, the "organizational activity" subdimension was used to code articles that examined the HCR within the domain of unit-level activities, specifically, mergers and acquisitions (M&A) and research and development (R&D). Our investigation identified four studies that examined the role of the HCR when organizations engage in M&As (e.g., Coff, 2002) and four studies that explored the importance of the unit-level HCR for organizational R&D (e.g., Kor, 2006).

While the HCR *context* dimension, then, describes the role of the HCR in a specific organizational context, much of this research did not examine a particular *type* of HCR embedded in the HCR's *context*. A notable exception is Kapoor and Kwanghui (2007), who examined the role of "skills and abilities" in the M&A "organizational activity." Here again the omission of HCR's *type* dimension may have implications for understanding the role of the unit's HCR because different types of HCR may have different influences in different contexts. Illustrative of this argument is recent research that, while not invoking HCR arguments per se, suggests that individual employees are situated in diverse global settings, resulting in divergent social identities, and this combination of contextual and psychological factors affects top-down strategic implementation (Huy, 2011). Thus, inasmuch as the HCR *type* dimension has not been studied widely in the same research that has explored a distinctive HCR *context*, further research could be helpful to fully explore the theorized value of HCR as a unit-level resource (Kraaijenbrink, 2011).

The HCR Antecedents *Dimension*

Our review revealed that a third dimension along which unit-level HC has been parameterized concerns *antecedents*, or those organizational activities that shape and affect the nature of the unit-level HCR. We identified 37 articles that explicitly focused on *antecedents* to the unit's HCR in this way. The vast majority of articles coded along this dimension were found in the strategic HRM literature, where the unit's HCR is often an implied causal link between the HR policies and practices and a unit-level performance outcome. That is, the conceptual causal chain in this literature suggests that HRM policies affect the nature of the unit's HCR, which in turn is associated with sustainable competitive advantage. A few articles attempt to examine the causal process. For example, Wright, McCormick, Sherman, and McMahan (1999) examined how HRM practices (i.e., selection, training, compensation, and appraisal) were related to employee skills and motivation and also examined the financial performance of refineries in the same context. However, many articles spent considerably less (and many spent no) time discussing the actual HCR or the relationship between the unit's HCR and unit-level performance outcomes. Instead, these articles focused on examining how the factors that affect the creation or nature of the unit's HCR are directly related to unit-level performance. For example, Welbourne and Andrews (1996) showed that the reward systems companies used, along with the value placed on employees, positively affected organizational survival.

The most prevalent subcategory of the *antecedent* dimension was "HRM policies." The 32 articles coded along this subcategory reflected interest in identifying the causal processes by which HRM policies and practices affect unit performance, presumably through the effect they have on the unit-level HCR (e.g., Bae & Lawler, 2000; Huselid, 1995; Messersmith & Guthrie, 2010). The "turnover" subcategory, used to code three articles, was used to understand how the quality of the unit's HCR that is leaving affects unit performance (e.g., Glebbeek & Bax, 2004), with the presumption that when more critical or more talented employees leave,

the impact will be greater (Nyberg, 2010). There were also two articles that examined other antecedents to the HCR, with one each exploring strategic decisions (Linnehan & De Carolis, 2005) and investment in the HCR (Galunic & Anderson, 2000).

The Unit's HCR: A Multilevel Integration

Taken together, the three dimensions and eight subcategories of the unit-level HCR that emerged from our review lead to a number of observations. First, there are obvious areas of "white space" in the typology we uncovered. Some dimensions (e.g., *antecedents*) and subcategories (e.g., "knowledge") have received considerable attention, while other areas (e.g., "organizational activity") have received much less empirical examination and might benefit from additional research. Of course, there are also considerable opportunities for research at the intersections of these dimensions and subcategories: How, for example, might HRM programs that develop knowledge-based HCR relate to performance in an international R&D context?

These comments suggest that there is still much work to be done. In the introduction to our review, we summarized two current conceptual trends in the strategy and strategic HRM literatures that explore the unit's HCR. We now consider these conceptual trends through the lens of the multidimensional HCR typology we have described. Our review suggests that the strategy and strategic HRM literatures have taken different routes, and adopted somewhat different perspectives, to examine a similar theoretical phenomenon (i.e., the association between a valuable HCR and unit-level performance). This past body of work, then, motivates a forward-looking theoretical integration of strategy's interests in microfoundations and strategic HRM's interest in the "black box" between HR policies and unit-level performance.

Of course, since the literature we reviewed was derived from the strategy and strategic HRM domains, it is possible to map the dimensions uncovered in our review onto this proposed integration. For strategy researchers, scholarship on the HCR *antecedents* dimension is related to efforts to unpack routines and organizational practices that are microfoundational to the HCR. Likewise, the HCR *type* dimension concerns the individual-level KSAOs that the unit-level HCR comprises. For strategic HRM scholars, consideration of HCR's *context* dimension will allow a more nuanced examination of the processes whereby individual-level employees are aggregated to become a unit-level resource, and focusing more attention on the *type* of HCR that the organization needs or wants to create will further inform the question of how HRM practices develop that HCR.

Thus, inasmuch as strategy and strategic HRM researchers share a common theoretical interest, they can both be informed by the multidimensional typology illuminated by our review. Stated differently, strategy research on microfoundations can be influenced by the topics that have long been central to strategic HRM research. At the same time, the "black box" that strategic HRM research has articulated as a critical component in the relationship between HRM and unit-level performance (i.e., the implicit, but unmeasured unit-level HCR) is what strategy researchers often use as a starting point. When integrated in this way, it becomes apparent that what strategy research has started with (i.e., a unit-level resource that relates meaningfully to unit-level performance outcomes), the strategic HRM research considered to be an important, but often unmeasured, latent construct.

As we have noted, the strategy field's focus on the relationship between the unit's HCR and performance is in keeping with an overarching perspective that HC is a particular class of unit-level resource that can yield sustainable competitive advantage (Barney, 1991; Barney & Wright, 1998; Kraaijenbrink, 2011). Recalling that the strategy literature's current conceptual attention to microfoundations has focused attention on individual-level mechanisms (Felin & Foss, 2005; Felin & Hesterly, 2007) and organizational practices (Teece, 2007) underlying firm-level constructs, we see a point of entry to a more complete theoretical integration of the strategy and strategic HRM literatures on the HCR.

HC's Multilevel Microfoundational Structure

We can extend theory on the HCR by leveraging the recent microfoundations scholarship to suggest an approach to the convergence of strategy and strategic HRM's interests in the unit's HCR. Teece (2007) describes microfoundations as entailing "managerial processes, procedures, systems, and structures." In a somewhat different vein, Abell et al. describe microfoundations as the "explanatory mechanisms that are located at the 'micro-level,' that is, the level of individual action" (2008: 489). This latter perspective is developed in articles by Felin and Foss (2005) and Felin and Hesterly (2007), which contrast individual- versus collective-level explanations for strategic action. There exists an important difference in these streams of work on microfoundations, inasmuch as the routine-centric logic articulated by Teece (2007) operates at the collective level challenged by Felin and colleagues.

Yet there seems to be a natural convergence in these two perspectives on microfoundations, particularly with respect to the unit's HCR. As a collective construct, the HCR not only comprises individual human resources (with their unique KSAO endowments), but also reflects the organizational processes that shape the aggregate resource (Ployhart & Moliterno, 2011). In essence, then, there exists a multilevel microfoundational structure to the unit-level HCR. At the first level there are the individuals with their unique KSAO endowments, while at the second level there exist organizational HRM practices and processes that shape and aggregate the individual human resources into a collective unit-level HCR. Linking this idea back to the literature, we can understand HCR's *type* dimension as existing primarily at the first level of this microfoundational structure and HCR's *antecedent* dimension as existing primarily at the second level.

The two levels of this structure work together. By definition, HRM policies and practices act on individual human resources to develop and manage those resources: Employees are selected (Schmitt & Chan, 1998), trained (Mathieu, Tannenbaum, & Salas, 1992), and retained (Trevor & Nyberg, 2008). Moreover, human resources can voluntarily leave, place demands, be unmotivated, and require supervision (Coff, 1997, 1999). Thus, as Coff (1997) notes, individual human resources require unique systems to create a sustained competitive advantage. Beyond demonstrating the interrelationship of the two levels of HC's microfoundational structure, these observations allow us better to appreciate the importance of HCR's *context* dimension, and how organizational capabilities transform individual-level human resources into a unit-level HCR (Teece, 2011). As described by Ployhart and Moliterno (2011), the task environment will likely affect the individual human assets and

the manner in which organizational HRM practices affect them. This combination of HRM policies and individual human assets situated in an organizational context suggests that sustainable competitive advantage may occur when the unit's strategy is well matched with its unit-level HCR (Becker & Gerhart, 1996; Gottschalg & Zollo, 2007; Lepak & Snell, 1999, 2002; Wright & Snell, 1998).

In short, the multilevel microfoundational structure to the unit-level HCR we posit here not only suggests a pathway forward toward a more complete integration of the strategy and strategic HRM literatures on HCR, but does so in a way that is aligned conceptually with the existing empirical research considered in our review. At its core, this theoretical perspective proposes that insight to the unit-level HCR construct must be derived from understanding both the individual-level human assets it comprises and the organizational processes that affect how those individual-level assets are combined and changed to create the unit-level resource. In the language of the multidimensional typology suggested by our review, this means understanding, respectively, the HCR's *type*, as well as its *antecedents*: Both are necessary, and neither is sufficient, to fully understand the unit-level HCR resource.

Discussion and Future Research Implications

The multilevel theoretical integration proposed based on a review of the prior empirical work and the emerging conceptual trends in the strategy and strategic HRM literatures suggests potentially fruitful future research streams for scholars interested in the unit-level HCR. In this final section, we draw on this review and suggested conceptual integration to outline three broad domains for future research: construct clarification, measurement, and social capital integration. These three broad domains lead to seven specific research areas that could be productively addressed as strategy and strategic HRM converge on the question of the relationship between unit-level HC and unit-level performance.

HCR Construct Clarification

One clear theme that emerged from our review of existing empirical literature is that further fundamental investigation into the unit-level HCR construct could advance our understanding of the relationship between the unit's HCR and performance. We propose that to successfully integrate the strategy and strategic HRM literatures and explicate the multilevel microfoundational structure we describe above, scholars from both literature traditions need to leverage greater construct precision, expand on the dynamic nature of the HCR, and explore the full range of implications that stem from conceptualizing the unit's HCR as a portfolio of individual human assets. We consider each of these research areas in turn.

Construct precision. Employing a unit-level conceptualization of the HCR necessarily implies that theoretical insights regarding individual-level HC are not perfectly isomorphic with the unit-level HCR (Ployhart & Moliterno, 2011). Our review did not uncover many empirical attempts at making clear distinctions between individual-level HC and the unit-level HCR. Rather, looking across studies, there are not clear norms in the treatment of the

unit's HCR. We observed that researchers have not always articulated what they mean by a unit-level HCR, often referring to individual and/or collective HC without defining it or discussing the differences that occur across levels. This approach to defining imprecisely the level of theory (Kozlowski & Klein, 2000) may explain some of the tendency to use constructs such as knowledge and skills interchangeably in the theory development (e.g., Holcomb, Holmes, & Connelly, 2009), and why there has been a limited focus in differentiating across the HCR *type* dimension.

Related to this point, in our discussion of the HCR *type* dimension, we observed that KSAOs are widely accepted as the underlying determinants of individual-level HC (Becker, 1964), and each KSAO component is considered as a distinct construct (e.g., at the individual level "knowledge" has a different definition and different expected outcomes from "skills"). However, we found that in the vast majority of articles we reviewed, researchers took one of two approaches: They either explored one component of the unit's HCR exclusively, or they grouped multiple KSAO components as a singular construct. Illustrative of the former approach is Carpenter et al. (2001), which uses knowledge as the operationalization of the HCR and measures it using international experience. An example of the latter approach (i.e., conflating multiple KSAO constructs into a single HCR construct) can be found in Carmeli and Tishler (2004), which also grounds the HCR in terms of knowledge, but measures it using an operationalization that includes education, training, experience, skills, and attitudes. Similarly, with respect to the use of "skills and abilities" as the type of HCR, many studies considered skills and abilities together and often interchangeably used the terms *skills* and *abilities* within the same article and when referring to the same characteristic. This was surprising since it is well accepted among differential psychologists that skills and abilities are unique constructs (Fleishman & Reilly, 1992).

This widespread tendency to treat knowledge, skills, abilities, and other characteristics as interchangeable and/or undifferentiated HCR operationalizations necessarily leads to some level of ambiguity regarding the precise nature of the unit's HCR. In other words, a knowledge-based HCR is not conceptually equivalent to an ability-based HCR, and so it is imprecise to conceptualize and model them as interchangeable. While discussing the HCR as comprising all KSAOs is most consistent with the larger theoretical concept of the HCR, if not handled carefully this level of generality results in ambiguity regarding the precise theoretical associations being considered, particularly if the measures are not as complete. In contrast, authors who describe a single component (e.g., knowledge) but argue that they are capturing the whole of the HCR construct are then potentially missing substantive aspects of the unit's HCR, as each component is integral to the HCR construct (Schmitt & Chan, 1998).

As a result, the integration we have described could benefit from the research foundations of the differential psychologists (e.g., Ackerman, 1989; Fleishman & Reilly, 1992). Research in this area has long differentiated and explored the relative strengths and weaknesses of individual-level knowledge-based HC, skills-based HC, and personality-based HC. At a minimum, authors may want to be more careful in primarily discussing and theorizing about a specific type of the HCR (e.g., a skills-based HCR) rather than the entire HCR construct (for exemplars, see Kor & Leblebici, 2005; Kor & Mesko, in press; Roth, 1995). While education, training, experience, and so on are each important, when they are combined or

considered as a single construct (e.g., Crook et al., 2011) our understanding regarding the precise nature of the HCR construct and its effects can be confused. Alternatively, if researchers are clear about the multidimensionality of the entire HCR construct, then conceptualizing it as such may further our knowledge regarding how the overall HCR leads to competitive advantage.

One reason, perhaps, that the literature reflects this level of ambiguity surrounding the HCR construct is that data collection and measurement of each component are difficult. As such, we do not discourage authors from continuing research in this manner, but rather propose that the integration of strategy and strategic HRM perspectives on the question of unit-level HCR will be informed by more explicit acknowledgment that the research theorizes about, and examines empirically, only a component of the HCR construct. This approach would then allow a clearer discussion regarding the implication of such a bounded examination of the HCR construct and the degree to which the study's finding may, or may not, generalize to other components of the HCR.

In short, continued movement toward a more precise conceptual specification of the unit-level HCR construct both will facilitate our theoretical and methodological development of the construct and its relationship with unit-level performance, and will provide a foundation for the strategy and strategic HRM integration we have proposed. Work in this vein might, therefore, address a number of unanswered questions regarding this construct, such as the following: *What is the nomological network of the construct? How can we maximize the construct validation process of the unit-level HCR construct? Do different components of the unit-level HCR portfolio have different performance implications? What components are ideal in different organizational contexts? How can organizations use HRM systems to maximize the value of each HCR component?*

The dynamic nature of the HCR. A second consideration in developing the HCR construct is explicit examination of changes to the unit's HCR that necessarily occur over time with the addition of employees, and development of others, and the departure of still others. Despite being a critical conceptual issue owing to the unique status of the HCR as a resource that comprises human beings (Coff, 1997), our review found little empirical consideration of the dynamic nature of unit-level HCR. An example of how the unit's HCR and its effects fluctuate over time can be found in Ployhart, Weekley, and Ramsey (2009), which shows that both the stock and flows of the unit's HCR influence unit-level performance. Along similar lines, Kang, Morris, and Snell (2007) argue that managing knowledge flows is more important than managing knowledge stocks because it is the change in the unit's HCR that may matter more than the level of the resource. The importance of changes to the HCR highlights the idea that a unit's HCR is often more than a simple sum of individual employees, and, perhaps equally important, the issue of time also highlights the process by which changes occur to the unit's HCR (Hausknecht & Holwerda, in press; Nyberg & Ployhart, 2013).

The dynamic nature of the firm's resource portfolio has long been a focal question in RBT. Dierickx and Cool (1989) initially suggested that consideration of both stocks and flows of resources is relevant in understanding resource-based competitive advantage. This

core idea has received conceptual development in the literature examining how the firm manages its resource endowment (Mahoney, 1995; Sirmon, Hitt, & Ireland, 2007), and/or implements dynamic capabilities (Teece, 2007; Teece, Pisano, & Shuen, 1997), defined as the "capacity of an organization to purposefully create, extend, or modify its resource base" (Helfat et al., 2007: 4). The central proposition in these related streams of literature is that the firm's resource portfolio is a collective construct, comprising multiple discrete assets, and the firm's ability to makes changes to the composition of this portfolio is, itself, a core managerial capability (Adner & Helfat, 2003) that can itself be a source of competitive advantage (Sirmon, Hitt, Ireland, & Gilbert, 2011).

Scholarship in these areas necessarily has relevance to the conceptualization of a unit-level HCR. Ployhart and Moliterno (2011) argue that the process by which the firm aggregates individual human resources into a unit-level HCR is a dynamic capability. Teece (2011) takes a related perspective and theorizes more broadly concerning the role of the environmental context in the enactment of the dynamic capability whereby the organization creates the HCR. Of course, it's possible to extend this insight to propose that the HCR itself is bundled with other resources as part of an organizational dynamic capability (e.g., an R&D capability comprises both research scientists and lab space).[4] Tying these ideas back to the multilevel microfoundational structure we have proposed as part of the integration of the strategy and strategic HRM literatures on the HCR, we observe that the implementation of organizational HRM practices and programs necessarily implies a dynamic component to the creation and change of the unit-level HCR (Lepak & Snell, 1999): Individual employees are selected to join the organization, are affected by HRM practices, and become included in a unit-level HCR. Symmetrically, when employees leave the organization the composition of the HCR changes (Nyberg & Ployhart, 2013).

Importantly, an insight from dynamic capabilities literature suggests that the HCR *context* dimension plays an important role in this process, inasmuch as change in the composition of the collective resource portfolio needs to be aligned with changes in the external environment (Eisenhardt & Martin, 2000; Sirmon et al., 2007; Teece, 2011). This argument, by extension, suggests an interesting convergence between HCR's *context* and *antecedents* dimensions: If an organization implements change to its resource portfolio in response to environmental shifts, then the external environment can be thought of as a "contextual antecedent" to the unit's HCR.

In this way, the integration we propose can be explicitly informed by related strategy research that examines how an organization manages its resource portfolio and implements dynamic capabilities. Accordingly, explicit consideration of the dynamics of the HCR creation and management leads to several important research questions focused on the dynamics of the HCR, including the following: *How do inflows and outflows of human assets affect the nature of the HCR (for better or worse)? How do HRM practices "smooth out" changes in the composition of the HCR due to inflows and outflows of human assets? How does the unit-level HCR integrate with other unit-level resources to influence unit capabilities? How do environmental effects manifest in changes to the unit-level HCR? How does environmental change influence the relationship between the unit's HCR and unit-level performance? What is the role of the environment as a "contextual antecedent" to a unit's HCR?*

Implications of a unit-level HCR portfolio. Thinking of the HCR as a portfolio of individual-level human assets raises a third consideration in relation to clarifying the HCR construct. As a point of entry into these issues, it is useful to observe that organizations develop this portfolio from a multitude of sources. As noted by Lepak and Snell (1999), some of the unit's HCR may be viewed as a core internal resource that relates meaningfully to competitive advantage, while other components of the HCR portfolio are less instrumental in this regard. Furthermore, the individual-level human assets that organizations bundle into a collective unit-level HCR come from various external sources such as consultants, contractors, temporary agencies, and partnerships with other companies.

As a result of these organizational realities, there are some obvious questions regarding the composition of the unit's HCR portfolio that are conceptually important and practically relevant. For example, governments prefer more jobs to be sourced domestically, but organizations may have reasons for pursuing off-shoring and global partnerships. Thus, the HCR *context* dimension is again useful when considering the development of a given HCR portfolio. A portfolio perspective also introduces issues of equity or fairness between groups. Core workers are treated differently, and often better, than other support staff and external employees (Lepak & Snell, 2002; Lewin, 2005). Researchers focusing on justice and equity theory have demonstrated that when individuals feel they have been treated unfairly or unjustly, their task performance and citizenship performance may decline. It is possible that an organization may make changes to the composition of the unit-level HCR portfolio that make strategic sense but are fraught with feelings of unfairness among the individual human assets within the portfolio. Thus, examining across levels of analysis leads to considering affective and emotional reactions and perceptions of how employees are managed.

Much of the strategy literature's observations on resource management (Sirmon et al., 2007) and the role of dynamic capabilities in leveraging the HCR (Teece, 2011) may be helpful as strategic HRM scholars grapple with the implications of the unit-level HCR that occur through the integration we propose in this article. There remain, however, a number of research questions about the portfolio of unit-level HCR and the context with which this portfolio is created that are not well understood, such as these: *Do different unit-level HCR portfolio compositions have different performance implications? What portfolios are ideal in different organizational and environmental contexts? How can organizations use HR systems to manage tensions of equity and fairness across individuals and different groups within the HCR portfolio?*

Measurement Considerations

Closely related to the issue of construct validation is the issue of construct measurement. Our review highlighted a number of measurement considerations that future research will want to address while integrating the strategy and strategic HRM literatures. In particular, these considerations focus on refining the operationalization of the HCR, leveraging multilevel modeling, and selecting appropriate empirical designs for future research. To be sure, many of the methodological considerations we outline in this section are manifest in the literature we reviewed as a function of the scholarly traditions in which prior researchers worked: Strategy

scholars have traditionally employed aggregate firm-level measures of collective resources, and strategic HRM scholars have traditionally focused on the association between HRM policies and practices and firm performance. However, for these two literatures to converge in pursuing the integration we have outlined there will necessarily need to be a similar convergence on measurement issues.

Operationalizing HCR. Our review uncovered a considerable variation in how the HCR was operationalized. For instance, and as we observed in our discussion of the typology's *type* dimension, the strategy literature has operationalized the HCR with measures of tenure, experience, and/or education. While these operationalizations are reasonable ways to leverage archival data to proxy a hard-to-measure latent construct, it is also fair to observe that these are rough-grained proxies for that latent construct. Importantly, these measures all represent fundamentally different aspects of the unit's HCR. For example, an experience-based HCR (which proxies for the knowledge embedded in the individual human assets the HCR comprises) may, or may not, be the same as a skills-based HCR. If, however, there is value in our earlier recommendations regarding the need to hew more closely to the long-standing findings in differential psychology, which demonstrate that experience and skills are two distinct psychological endowments, then we might well expect that these two operationalizations are measuring distinct aspects of the unit's HCR. This, in turn, leads to the logical conclusion that these different operationalizations of the unit's HCR may associate differently with unit-level performance. In general, a more comprehensive measure, and one that captures and integrates the multiple HCR components, will bring greater understanding of the total HCR effects than will studies that examine only a single type of HCR (e.g., those examining only experience). Ployhart et al. (2009) make progress in this regard, and might serve as an exemplar for the research that we hope take up this important challenge. At a minimum, we should ask (and expect theoretical guidance on) whether the effects of different HCR components on unit-level performance are additive, redundant, or related in some other way.

A related observation can be made in the articles we reviewed from the strategic HRM literature. Of these articles, 30 did not use a specific measure of experience, education, training, or skill as a measure of the unit's HCRs. For example, Huselid (1995) examined high performance work practices and their relationship with unit-level outcomes (i.e., turnover, productivity, and financial performance), but only implied an effect on the skills and motivation of the unit's HCR. Similarly, Messersmith and Guthrie (2010) examined the relationship between high performance work systems and unit outcomes and discussed the unit's HCR, but again did not measure it. In contrast, Takeuchi and colleagues (2007) examined the mediating effect of a collective HCR in the relationship between high performance work systems and performance outcomes. Nonetheless, the majority of articles we reviewed in the strategic HRM literature did not examine the HCR empirically. Rather, they argued that the HRM practices they examined affected unit performance via the unit's HCR (Wright & McMahan, 2011) as an antecedent that develops, manages, and motivates that resource. Thus, the HCR has remained the "black box" that strategic HRM scholars have argued we need to unpack (Bowen & Ostroff, 2004; Cappelli & Sherer, 1991; Gerhart, 2005).

While the strategic HRM literature's tendency to ignore specific operationalizations of the unit's HCR and instead focus on the policies and procedures that help to develop, manage, and motivate the unit's HCR has yielded important findings, caution may be in order as the literature converges on the question of the HCR and the multilevel microfoundational structure that undergirds it, inasmuch as these models risk underspecification. Indeed, HRM policies and procedures also lead to a number of additional outcomes that may correlate with the HCR in affecting unit performance. For example, Park, Mitsuhashi, Fey, and Björkman (2003) examined how HRM practices are related to motivation and attitudes. Thus, when evaluating the role of HRM policies and practices, it will be useful to consider the additional impact that those procedures and practices have beyond the development of the HCR.[5]

Finally, we note that the scholarship collected for our review found that some researchers operationalized measures of "attitudes" as an aspect of the broader component of a unit-level HCR (e.g., Carmeli, 2004; Carmeli & Tishler, 2004). We note that considering attitudes as part of KSAOs is not common in the broader literature on individual psychological attributes. For example, some strategic HRM scholars have examined how HRM systems differentiate a unit's HCR from the aggregate levels of attitudes possessed by the individuals who comprise that HCR. In this vein, Takeuchi et al. (2007) examined unit-level HCR and attitudes about social exchange as two different mediators between HRM systems and relative establishment-level performance. Thus, while employee attitudes could be relevant to examining a unit-level HCR, we caution against using attitudes as a direct measure of the HCR.

At their core, these observations fundamentally suggest that future research might pay closer attention to HCR measurement issues. This proposition is based squarely on the findings of this review: Different HCR measurements can lead to different interpretations of the HCR and different conclusions regarding the bond between the HCR and unit performance. As a result, a number of questions occur that scholars might grapple with when operationalizing HCR in future research: *What would be alternative and/or better measures of the HCR? How do the different measures of the unit's HCR influence our understanding of the unit's HCR? Do HRM policies and practices work similarly through the unit's HCR to influence unit performance regardless of the specific components of that resource?*

Multilevel models. In our proposed integration of the strategy and strategic HRM perspectives on the HCR, we suggested a multilevel microfoundational structure of the construct. This argument aligns with earlier work on a multilevel model of the HCR emergence (Ployhart & Moliterno, 2011) and work that examines the organizational capabilities that develop the HCR (Teece, 2011). For future research to make progress on this line of reasoning, there will clearly need to be additional empirical work that takes a multilevel perspective (Hitt, Beamish, Jackson, & Mathieu, 2007): Our review shows that the powerful tools of multilevel theory (Kozlowski & Klein, 2000; Rousseau, 1985) have seldom been brought to bear on the question of the unit-level HCR (see Ployhart et al., 2009, for a notable exception). Rather, scholars tend to focus at the individual level or the collective level; rarely do scholars consider both levels or the relationship between them. Yet, at the organizational level, the unit's HCR emerges from individual-level KSAOs, and the theoretical associations between individual-level KSAOs and individual-level performance are only partially isomorphic (Bliese, 2000) with the comparable associations

between the unit-level HCR and unit-level performance. Individual differences in cognitive ability, personality, and other KSAOs *may* coalesce into a unit-level HCR, and the processes by which resources are altered may create competitive advantage (Coff, 1997). However, the extent to which this occurs is dependent on emergence enabling processes (Ployhart & Moliterno, 2011), and we know little about these processes.

Since the unit's HCR is derived, in some form, from the emergence of KSAOs at the individual level, the study of a unit's HCR, and its relationships with unit-level performance should be examined from a multilevel perspective to gain a full appreciation for the effects of the unit's HCR on performance. This leads us to suggest that future researchers consider three broad research questions: *How do differential KSAOs at the individual-level aggregate to the unit level? How can we think about disaggregating the HCR to the individual level? Does one type of individual-level KSAO dominate the emergence process, and does this depend on the organizational and/or industry context?*

Empirical design. Finally, we offer some brief comments on the design of future empirical work that might advance the integration we have proposed in this article. Our review found three primary approaches to designing research to examine the unit's HCRs. The most common was the use of archival data where proxies were used to capture a particular individual-level attribute (e.g., knowledge) and aggregate it to create a measure of the unit-level HCR (e.g., Hitt, Bierman, Shimizu, & Kochhar, 2001). This type of design was split relatively evenly among the strategy and strategic HRM scholars. A second design approach, used by 19 studies, primarily in the strategy literature, captured subjective measures of the HCR. For example, Wright, Smart, and McMahan (1995) asked the head coaches of NCAA basketball teams to assess their teams' skills. Finally, and much less frequently (used in only three studies we reviewed), authors attempted a direct assessment of the unit's HCR. An exemplar of this empirical design is Ployhart et al. (2009), which measured satisfaction, performance, and personality at the individual level and created higher-level averages by job and organization. Many of the survey tools used by studies employing a direct assessment design consisted of questions that sought to elicit multiple KSAOs that may be component to the HCR, and also included items that were designed to measure constructs other than the HCR (e.g., Carmeli, 2004). This type of multidimensional survey can be useful because it can cover more of the overall HCR construct described in this review, but care must be taken to include only those aspects that are related to the HCR. We also point out that, to our knowledge, a validated HCR measurement instrument has not yet been developed.

As noted in our discussion of the HCR *type* dimension, 35 articles conceptualized HCR generally, without acknowledging the specific individual-level KSAOs embedded in that resource or how those different individual-level KSAOs are combined into a single unit-level HCR, while 17 articles measured only a single type of the HCR. As an overarching observation on the HCR measurement, both conceptual and methodological approaches are viable in developing our understanding of the HCR and can potentially advance the multilevel integration we have described. However, scholars must match level of theory and measurement in the design of their studies (Kozlowski & Klein, 2000). Studies that will advance the field furthest will be those studies that match the conceptual framing with the empirical measurement. Thus, this review leads to a number of design questions that future

research might address: *What empirical tools and/or design strategies can researchers use to examine a multilevel HCR? How can we measure the HCR via survey instruments? Does it matter how we distinguish and measure different types of the unit's HCR in terms of its effect on unit performance?*

Social Capital Integration

The third broad domain for additional research suggested by this review concerns the question of the conceptual linkage between the HCR and social capital (SC; Bourdieu, 1986; Coleman, 1988, 1990; Putnam, 1993, 1995). During the course of the review it was evident that relational skills are sometimes measured as a type of the HCR (Shaw, Duffy, Johnson, & Lockhart, 2005). While this is not a core topic in the literature reviewed, it does raise the interesting question of the precise place where the unit's HCR ends and SC begins (Lepak & Shaw, 2008). The SC literature is considerable, and there is some work within the broader literature that considers explicitly how HC and SC are interrelated (e.g., Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998).

Our objective here certainly is not to examine extensively the complicated relationship between HC and SC (a recent review in this vein can be found in Nahapiet, 2011, who calls for a more social perspective on HC). Rather, our purpose is to align the unique conceptual perspective of SC theory with both the multidimensional typology of the HCR and the multilevel theoretical integration proposed. As a point of entry into this question, we use Adler and Kwon's definition of SC as a construct that can be "understood roughly as the good-will that is engendered by the fabric of social relations and that can be mobilized to facilitate action" (2002: 17). This definition comprises conceptual perspectives that understand SC as a function of structural aspects of the network among individuals (e.g., Burt, 2000; Coleman, 1988; Lin, 2001a, 2001b), as well as those that understand SC as the shared values that inhere in those network ties (Nahapiet & Ghoshal, 1998; Putnam, 1995).

Some scholars have conceptualized SC as a property or attribute of individuals (e.g., Bourdieu, 1986; Sobel, 2002), while others have argued that it is owned jointly by all participants in a network (e.g., Burt, 1992). To the degree that scholars conceptualize SC as an attribute of individuals (whether individually or jointly controlled), there is a similarity between SC and definitions of HC at the individual level of analysis, where firm specific HC includes "knowledge of how a unit operates, knowledge about a unit's key suppliers and customers, and knowledge about how to work effectively with other employees" (Wang & Barney, 2006: 466). If, then, the value that inheres in individual human assets' relationships is a resource that they can bring to bear for the benefit of the organization (i.e., much like their skills and abilities), then SC is potentially a viable subcategory of the *type* dimension of the HCR. Indeed, recent arguments about the "fungibility," "substitutability," and "co-evolution" of SC and HC support this proposition (Nahapiet, 2011: 88-89). To avoid definitional ambiguity, it may be preferable to label the HCR characterized by this subcategory of the *type* dimension "relation-based HCR." In any event, future research should consider more explicitly the validity of SC as a socially derived building block of the HCR that is conceptually equivalent—if empirically distinct—from the psychologically derived KSAOs that have predominated in the HCR literature.

Just as SC may align with the type dimension of our HCR typology, so too may it be considered as one of HCR's *antecedents*. Indeed, some of the earliest work on SC argued that the SC embedded in individuals' family and community determines, in part, their individual-level HC development (Coleman, 1988), and much of the research on the links between individual-level HC and SC focuses on SC as an antecedent to individual-level HC development and opportunity-related outcomes. At this individual level of analysis, SC has been shown to affect career success (Burt, 1992; Podolny & Baron, 1997), executive compensation (Belliveau, O'Reilly, & Wade, 1996; Burt, 1997), and job search (Lin, Ensel, & Vaughn, 1981). Importantly, SC has also been shown to be an antecedent to the unit's HCR related outcomes. SC reduces transaction costs by increasing trust (Putnam, 1993), fosters cooperation (Fukuyama, 1995), and facilitates the creation of knowledge (Hargadon & Sutton, 1997) and intellectual capital (Nahapiet & Ghoshal, 1998). It has also been shown to reduce turnover rates (Krackhardt & Hanson, 1993) and unit dissolution rates (Pennings et al., 1998).

While some scholars have questioned the degree to which SC can be seen as a useful theory for understanding how interactions between individual human assets affect the HCR (Hayton & Grant, 2011), existing research does suggest that the development of the HCR has an important antecedent in contextually relevant interpersonal relationships. And while the majority of scholarship in this vein has focused on the individual level of analysis (see Nahapiet, 2011, for a recent review), scholars have argued that this also occurs at the unit level (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). Taken together, this disparate body of research suggests that scholars interested in extending the integrated perspective on the HCR may find value in closer exploration of SC as a meaningful HCR *antecedent*.

Focusing on SC as an HCR *antecedent* to some degree leverages the perspective of SC as the shared values that inhere in those network ties (Nahapiet & Ghoshal, 1988; Putnam, 1995). By considering the companion perspective on SC as embedded in the structural aspects of network among individuals (e.g., Burt, 2000; Coleman, 1988; Lin, 2001b), we can also understand SC as related to the HCR's *context*. If social structures differentially provide opportunities for SC creation (Lin, 2001a), then those structures become important contextual factors that may shape the nature of the unit's HCR. This argument is consistent with the proposition in the SC literature that SC and HC are complementary (Nahapiet, 2011). For instance, Kang et al. (2007) argued that to create customer value, units need to create HRM systems that facilitate the creation of social networks. Similarly, Takeuchi et al. (2007) found that the relationship between HRM policies and practices and unit performance was mediated by HC and SC. Thus, the SC embedded in the structure of an organization's multilevel system of social networks (Moliterno & Mahony, 2011) may well prove an important contextual factor in our understanding of an integrated perspective on HCR.

In sum, while our review uncovered very little work that has explicitly examined the relationship between SC and the HCR, there is good reason to believe that integrating insights from the considerable SC literature—which we only begin to do here—may well offer valuable perspectives on the integration we have proposed. This suggests several open questions, such as the following: *What is the precise relationship between the unit's HCR and SC? Is relational HCR an important predictor of unit-level performance? How does SC within a unit serve as a valuable HCR antecedent? What attributes of the unit's social structure provide the most fertile*

context for the development of the HCR? How does the multilevel system of networks within an organization relate to the multilevel microfoundational structure of the HCR?

Conclusion . . . and a Point of Departure

In this review we have both reviewed previous research and proposed a theoretical path forward. Based on a rigorous review of the research that has used RBT to examine the association between a unit-level HCR and unit performance, we described a multidimensional typology of unit-level HC. We then mapped this typology onto emergent trends in the strategy and strategic HRM literatures and outlined an integrated theoretical perspective focusing on HCR's microfoundational structure. Finally, we outlined a number of open issues surrounding the full realization of such an integrated perspective, and identified future research questions that might merge these two literatures and yield new insights regarding unit-level HCR.

While our review demonstrates that a considerable body of scholarship has leveraged RBT to explore the HCR, it is also clear that there is considerable work to be done. Indeed, the theoretical model we have proposed for integrating the strategy and strategic HRM literatures suggests a relatively untapped vein for scholars to mine. In the previous section we motivated a series of research questions that we hope will be the starting point for new work in this area: We fully expect—and hope—that readers of our review will identify still other questions that might set into motion a new generation of research integrating strategy and strategic HRM perspectives on the HCR. If so, we also hope that our review might inform some of the initial answers to the questions we have identified and those that will occur to others. As a point of departure on that endeavor, we offer some final concluding observations on how our review and proposed integration might link the work that has come before and that which is still to come.

Our review suggests that the HCR construct could be more precisely examined: Indeed, it might not overstate the matter to suggest that the literature does not suggest a common, shared understanding of the unit-level HCR construct. As a result, future research might well make progress in this regard. Our review also suggests that the different components of the HCR will have different effects on the formation of the HCR and how it influences unit performance. Since construct components can vary in their impact (e.g., components of CEO pay are differently related to firm performance; Nyberg, Fulmer, Gerhart, & Carpenter, 2010), it is important to examine the differences that occur between the components of the HCR and unit performance. Furthermore, these differences are likely to behave differently across contexts.

Issues of construct definition notwithstanding, there can be little doubt that future research will need to integrate and explore the dynamic nature of the HCR. Our review of the literature, and the theoretical integration we have proposed to map existing research onto current conceptual trends in the strategy and strategic HRM literatures, suggests that questions of the dynamic nature of the HCR will be central to the multilevel microfoundational structure we have proposed. This is owing to the fact that a multifoundational structure focuses attention both on the individual human assets who are component to the HCR (and

who might join or leave the organization) and the organizational processes through which these human assets are selected, trained, compensated, and so on.

Importantly, and related to the issue of HCR dynamics, the research reviewed in this article says little about the HCR portfolio composition or how this composition could lead to varying performance outcomes, and so the questions we propose in the previous section are truly exploratory on this important topic. However, the research reviewed does suggest that there will be differences in outcomes depending on the composition of the HCR resource, and hence we identify a clear need for further investigation to understand precisely why this is so. Furthermore, a long history of research—albeit at the individual level—shows that equity issues (e.g., Adams, 1963) can meaningfully affect the association between HC and performance. Thus, examining how to mitigate potential equity concerns across groups within an HCR may also prove fruitful.

Much of the conceptual framework we outlined and research questions we subsequently proposed is motivated by the relative silence in the literature on the multilevel nature of the HCR (Ployhart & Moliterno, 2011). This leads us to believe that there is much to be learned regarding precisely how individual-level components of the HCR can be aggregated: Multilevel research suggests that this will be a fruitful area to conduct future research and will likely lead to identifying areas that are not fully isometric (Kozlowski & Klein, 2000). Multilevel examinations in the HR field have helped to show how HR policies motivate individual performance (Lepak et al., 2006), and applying this concept to the HCR will help researchers learn more about how the HCR emerges as well as how its different components work together to efficiently and effectively create a unit-level resource.

Finally, and despite the large volume of existing HCR studies examined in this review, questions remain regarding how to maximize HCR research effectiveness through research design, and the research questions we proposed in this regard are certainly not exhaustive. In addition, the premise described regarding multiple levels and multiple HCR components also applies to the design issue: We anticipate that multilevel research design will be a fertile next wave of empirical work on the HCR. Different research designs for HCR research all have strengths and weaknesses. If possible, given time and economic constraints, one mechanism for maximizing our knowledge about the HCR would be to perform studies that have complex design schemes (e.g., objective as well as subjective measurements of the HCR over time). Though much more difficult, these studies may help us to understand the dynamic nature of the HCR and its full impact on unit performance.

In sum, research on the HCR has both a long heritage and a bright future. In this article we have endeavored to bridge the past and the future by taking stock of what we know and suggesting a path forward for further examination of the HCR as an important unit-level resource. As such, our efforts should be of specific interest to strategy and strategic HRM scholars focusing on the HCR, and should also be relevant to researchers who leverage RBT in general. This review provides insights regarding research interest overlaps between the two research streams and presents specific research questions that could (and, we think, should) be addressed from both research streams. Our ultimate hope is that scholars from both perspectives will work in tandem to continue to construct and explore this area.

Notes

1. We follow recent theoretical research (Ployhart & Moliterno, 2011) in employing the term *unit level* to signify collective levels of employees in general (e.g., departments, organizations, etc.). We recognize that there can be theoretical and methodological implications of focusing on HC aggregations that occur at different organizational levels of analysis, but our objective in the current research is to examine how researchers have examined HC as a collective, rather than individual-level, construct, and leveraging the concept of a unit-level HCR allows us to consider aggregations of individuals regardless of the organizational level at which they occur.

2. We note that the fundamental logic described here assumes isomorphism of theoretical relationships between the individual and collective levels. While there are conceptual and methodological issues with this assumption of isomorphism, those issues are well discussed elsewhere (Bliese, 2000; Kozlowski & Klein, 2000; Rousseau, 1985), and as such are outside the scope of the current review.

3. Note that the counts of articles here don't sum to the total number of articles included in the review since some articles employed multiple operationalizations.

4. We thank an anonymous reviewer for this example and pushing us to consider this issue.

5. We thank an anonymous reviewer for pushing us to think about this issue more clearly.

References

References marked with an asterisk indicate studies included in the review.

Abell, P., Felin, T., & Foss, N. 2008. Building micro-foundations for the routines, capabilities, and performance links. *Managerial and Decision Economics*, 29: 489-502.

Ackerman, P. L. 1989. Within-task intercorrelations of skilled performance: Implications for predicting individual differences? A comment on Henry & Hulin, 1987. *Journal of Applied Psychology*, 74: 360-364.

Adams, J. S. 1963. Toward an understanding of inequity. *Journal of Abnormal and Social Psychology*, 67: 422-436.

Adler, P. S., & Kwon, S. W. 2002. Social capital: Prospects for a new concept. *Academy of Management Review*, 27: 17-40.

Adner, R., & Helfat, C. E. 2003. Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, 24: 1011-1025.

Armstrong, C. E., & Shimizu, K. 2007. A review of approaches to empirical research on the resource-based view of the firm. *Journal of Management*, 33: 959-986.

*Bae, J., & Lawler, J. J. 2000. Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy. *Academy of Management Journal*, 43: 502-517.

Barney, J. B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17: 99-120.

Barney, J. B., & Wright, P. M. 1998. On becoming a strategic partner: The role of human resources in gaining competitive advantage. *Human Resource Management*, 37: 31-46.

*Batjargal, B. 2005. Entrepreneurial versatility, resources and firm performance in Russia: A panel study. *International Journal of Entrepreneurship & Innovation Management*, 5: 284-297.

Becker, B., & Gerhart, B. 1996. The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal*, 39: 779-801.

Becker, G. S. 1964. *Human capital* (3rd ed.). Chicago: University of Chicago Press.

Bell, B. S., & Kozlowski, S. W. J. 2002. A typology of virtual teams: Implications for effective leadership. *Group & Organization Management*, 27: 14-49.

Belliveau, M. A., O'Reilly, C. A., III, & Wade, J. B. 1996. Social capital at the top: Effects of social similarity and status on CEO compensation. *Academy of Management Journal*, 39: 1568-1593.

*Bennett, N., Ketchen, D. J., Jr., & Schultz, E. B. 1998. An examination of factors associated with the integration of human resource management and strategic decision making. *Human Resource Management*, 37: 3-16.

*Bergh, D. D. 2001. Executive retention and acquisition outcomes: A test of opposing views on the influence of organizational tenure. *Journal of Management*, 27: 603-622.

*Berman, S. L., Down, J., & Hill, C. W. L. 2002. Tacit knowledge as a source of competitive advantage in the National Basketball Association. *Academy of Management Journal*, 45: 13-31.

*Birdi, K., Clegg, C., Patterson, M., Robinson, A., Stride, C. B., Wall, T. D., & Wood, S. J. 2008. The impact of human resource and operational management practices on company productivity: A longitudinal study. *Personnel Psychology*, 61: 467-501.

Bliese, P. D. 2000. Within-group agreement, non-independence, and reliability: Implication for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory*, *research and methods in organizations:* 349-381. San Francisco: Jossey-Bass.

Bourdieu, P. 1986. The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education*: 241-258. New York: Greenwood.

*Bowen, D. E., & Ostroff, C. 2004. Understanding HRM-firm performance linkages: The role of the "strength" of the HRM system. *Academy of Management Review*, 29: 203-221.

Boxall, P., & Purcell, J. 2003. *Strategy and human resource management.* New York: Palgrave Macmillan.

*Brown, A. W., Adams, J. D., & Amjad, A. A. 2007. The relationship between human capital and time performance in project management: A path analysis. *International Journal of Project Management*, 25: 77-89.

Burt, R. S. 1992. *Structural holes: The social structure of competition.* Cambridge, MA: Harvard University Press.

Burt, R. S. 1997. The contingent value of social capital. *Administrative Science Quarterly*, 42: 339-365.

Burt, R. S. 2000. The network structure of social capital. In R. Sutton & B. Y. Staw (Eds.), *Research in organizational behavior*, vol. 22: 345-423. Greenwich, CT: JAI.

Cappelli, P., & Sherer, P. D. 1991. The missing role of context in OB: The need for a meso-level approach. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior*, vol. 13: 55-110. Greenwich, CT: JAI.

*Carmeli, A. 2004. Strategic human capital and the performance of public sector organizations. *Scandinavian Journal of Management*, 20: 375-392.

*Carmeli, A., & Schaubroeck, J. 2005. How leveraging human resource capital with its competitive distinctiveness enhances the performance of commercial and public organizations. *Human Resource Management*, 44: 391-412.

*Carmeli, A., & Tishler, A. 2004. The relationships between intangible organizational elements and organizational performance. *Strategic Management Journal*, 25: 1257-1278.

*Carpenter, M. A., Sanders, W. G., & Gregersen, H. B. 2001. Bundling human capital with organizational context: The impact of international assignment experience on multinational firm performance and CEO pay. *Academy of Management Journal*, 44: 493-511.

Chadwick, C., & Dabu, A. 2009. Human resources, human resource management, and the competitive advantage of firms: Toward a more comprehensive model of causal linkages. *Organization Science*, 20: 253-272.

*Chandler, G. N., & Lyon, D. W. 2009. Involvement in knowledge-acquisition activities by venture team members and venture performance. *Entrepreneurship Theory and Practice*, 33: 571-592.

Coff, R. W. 1997. Human assets and management dilemmas: Coping with hazards on the road to resource-based theory. *Academy of Management Review*, 22: 374-402.

*Coff, R. W. 1999. How buyers cope with uncertainty when acquiring firms in knowledge-intensive industries: Caveat emptor. *Organization Science*, 10: 144-161.

*Coff, R. W. 2002. Human capital, shared expertise, and the likelihood of impasse in corporate acquisitions. *Journal of Management*, 28: 107-128.

Coff, R., & Kryscynski, D. 2011. Drilling for micro-foundations of human capital–based competitive advantages. *Journal of Management*, 37: 1429-1443.

Coleman, J. S. 1988. Social capital in the creation of human capital. *American Journal of Sociology*, 94: S95-S120.

Coleman, J. S. 1990. *Foundations of social theory*. Cambridge, MA: Belknap.

*Collings, D. G., McDonnell, A., Gunnigle, P., & Lavelle, J. 2010. Swimming against the tide: Outward staffing flows from multinational subsidiaries. *Human Resource Management*, 49: 575-598.

*Collins, C. J., & Clark, K. D. 2003. Strategic human resource practices, top management team social networks, and firm performance: The role of human resource practices in creating organizational competitive advantage. *Academy of Management Journal*, 46: 740-751.

Crook, T. R., Ketchen, D. J., Jr., Combs, J. G., & Todd, S. Y. 2008. Strategic resources and performance: A meta-analysis. *Strategic Management Journal*, 29: 1141-1154.

Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen, D. J., Jr. 2011. Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of Applied Psychology*, 96: 443-456.

*Datta, D. K., Guthrie, J. P., & Wright, P. M. 2005. Human resource management and labor productivity: Does industry matter? *Academy of Management Journal*, 48: 135-145.

*De la Cruz Déniz-Déniz, M., & De Saá-Pérez, P. 2003. A resource-based view of corporate responsiveness toward employees. *Organization Studies*, 24: 299-319.

*De Saá-Pérez, P., & García-Falcón, J. M. 2002. A resource-based view of human resource management and organizational capabilities development. *International Journal of Human Resource Management*, 13: 123-140.

*De Saá-Pérez, P., & Falcón, J. M. 2004. The influence of human resource management in savings bank performance. *Service Industries Journal*, 24: 51-66.

Dierickx, I., & Cool, K. 1989. Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35: 1504-1511.

*Dimov, D. P., & Shepherd, D. A. 2005. Human capital theory and venture capital firms: Exploring "home runs" and "strike outs." *Journal of Business Venturing*, 20: 1-21.

*Edelman, L. F., Brush, C. G., & Manolova, T. 2005. Co-alignment in the resource-performance relationship: Strategy as mediator. *Journal of Business Venturing*, 20: 359-383.

Eisenhardt, K. M., & Martin, J. A. 2000. Dynamic capabilities: What are they? *Strategic Management Journal*, 21: 1105-1121.

Felin, T., & Foss, N. J. 2005. Strategic organization: A field in search of micro-foundations. *Strategic Organization*, 3: 441-455.

Felin, T., & Hesterly, W. S. 2007. The knowledge-based view, nested heterogeneity, and new value creation: Philosophical considerations on the locus of knowledge. *Academy of Management Review*, 32: 195-218.

Fleishman, E. A., & Reilly, M. E. 1992. *Handbook of human abilities: Definitions*, *measurements*, *and job task requirements*. Palo Alto, CA: Consulting Psychologists Press.

Foss, N. J. 2011. Why micro-foundations for resource-based theory are needed and what they may look like. *Journal of Management*, 37: 1413-1428.

*Frese, M., Krauss, S. I., Keith, N., Escher, S., Grabarkiewicz, R., Luneng, S. T., Heers, C., Unger, J., & Friedrich, C. 2007. Business owners' action planning and its relationship to business success in three African countries. *Journal of Applied Psychology*, 92: 1481-1498.

Fukuyama, F. 1995. *Trust: The social virtues and the creation of prosperity.* New York: Free Press.

*Galunic, D. C., & Anderson, E. 2000. From security to mobility: Generalized investments in human capital and agent commitment. *Organization Science*, 11: 1-20.

*Garg, V. K., Walters, B. A., & Priem, R. L. 2003. Chief executive scanning emphases, environmental dynamism, and manufacturing firm performance. *Strategic Management Journal*, 24: 725-744.

Gerhart, B. 2005. Human resources and business performance: Findings, unanswered questions, and an alternative approach. *Management Revue*, 16: 174-185.

*Glebbeek, A. C., & Bax, E. H. 2004. Is high employee turnover really harmful? An empirical test using company records. *Academy of Management Journal*, 47: 277-286.

*Gong, Y. 2003. Subsidiary staffing in multinational enterprises: Agency, resources, and performance. *Academy of Management Journal*, 46: 728-739.

Gottschalg, O., & Zollo, M. 2007. Interest alignment and competitive advantage. *Academy of Management Review*, 32: 418-437.

*Gruber, M., MacMillan, I. C., & Thompson, J. D. 2012. From minds to markets: How human capital endowments shape market opportunity identification of technology start-ups. *Journal of Management*, 38: 1421-1449. doi:10.1177/0149206310386228

*Guthrie, J. P., Flood, P. C., Liu, W., & MacCurtain, S. 2009. High performance work systems in Ireland: Human resource and organizational outcomes. *International Journal of Human Resource Management*, 20: 112-125.

*Haber, S., & Reichel, A. 2007. The cumulative nature of the entrepreneurial process: The contribution of human capital, planning and environment resources to small venture performance. *Journal of Business Venturing*, 22: 119-145.

*Harel, G. H., & Tzafrir, S. S. 1999. The effect of human resource management practices on the perceptions of organizational and market performance of the firm. *Human Resource Management*, 38: 185-199.

Hargadon, A., & Sutton, R. I. 1997. Technology brokering and innovation in a product development firm. *Administrative Science Quarterly*, 42: 716-749.

*Harris, D., & Helfat, C. 1997. Specificity of CEO human capital and compensation. *Strategic Management Journal*, 18: 895-920.

*Hatch, N. W., & Dyer, J. H. 2004. Human capital and learning as a source of sustainable competitive advantage. *Strategic Management Journal*, 25: 1155-1178.

Hausknecht, J. P., & Holwerda, J. A. in press. When does employee turnover matter? Dynamic member configurations, productive capacity, and collective performance. *Organization Science*. doi:10.1287/orsc.1110.0720

*Hayton, J. C. 2005. Competing in the new economy: The effect of intellectual capital on corporate entrepreneurship in high-technology new ventures. *R&D Management*, 35: 137-155.

Hayton, J. C., & Grant, R. M. 2011. Interdependencies between people in organizations. In J. C. Spender & A. Burton-Jones (Eds.), *The Oxford handbook of human capital*: 403-432 Oxford, UK: Oxford University Press.

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., & Winter, S. G. 2007. *Dynamic capabilities: Understanding strategic change in organizations*. Malden, MA: Blackwell.

Hitt, M. A., Beamish, P. W., Jackson, S. E., & Mathieu, J. E. 2007. Building theoretical and empirical bridges across levels: Multilevel research in management. *Academy of Management Journal*, 50: 1385-1399.

*Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. 2001. Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*, 44: 13-28.

*Hitt, M. A., Bierman, L., Uhlenbruck, K., & Shimizu, K. 2006. The importance of resources in the internationalization of professional service firms: The good, the bad, and the ugly. *Academy of Management Journal*, 49: 1137-1157.

*Holcomb, T. R., Holmes, R. M., Jr., & Connelly, B. L. 2009. Making the most of what you have: Managerial ability as a source of resource value creation. *Strategic Management Journal*, 30: 457-485.

Hunter, J. E., Schmidt, F. L., & Judiesch, M. K. 1990. Individual differences in output variability as a function of job complexity. *Journal of Applied Psychology*, 75: 28-42.

*Huselid, M. A. 1995. The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38: 635-672.

Huselid, M. A., & Becker, B. E. 2011. Bridging micro & macro domains: Workforce differentiation and strategic human resource management. *Journal of Management*, 37: 421-428.

*Huselid, M. A., Jackson, S. E., & Schuler, R. S. 1997. Technical and strategic human resource management effectiveness as determinants of firm performance. *Academy of Management Journal*, 40: 171-188.

Huy, Q. N. 2011. How middle managers' group-focus emotions and social identities influence strategy implementation. *Strategic Management Journal*, 32: 1387-1410.

*Jin, Y., Hopkins, M. M., & Wittmer, J. L. S. 2010. Linking human capital to competitive advantages: Flexibility in a manufacturing firm's supply chain. *Human Resource Management*, 49: 939-963.

Kang, S. C., Morris, S. S., & Snell, S. A. 2007. Relational archetypes, organizational learning, and value creation: Extending the human resource architecture. *Academy of Management Review*, 32: 236-256.

*Kapoor, R., & Kwanghui, L. 2007. The impact of acquisitions on the productivity of inventors at semiconductor firms: A synthesis of knowledge-based and incentive-based perspectives. *Academy of Management Journal*, 50: 1133-1155.

*Koch, M. J., & McGrath, R. G. 1996. Improving labor productivity: Human resource management policies do matter. *Strategic Management Journal*, 17: 335-354.

*Kor, Y. Y. 2006. Direct and interaction effects of top management team and board compositions on R&D investment strategy. *Strategic Management Journal*, 27: 1081-1099.

*Kor, Y. Y., & Leblebici, H. 2005. How do interdependencies among human-capital deployment, development, and diversification strategies affect firms' financial performance? *Strategic Management Journal*, 26: 967-985.

*Kor, Y. Y., & Mahoney, J. T. 2005. How dynamics, management, and governance of resource deployments influence firm-level performance. *Strategic Management Journal*, 26: 489-496.

Kor, Y. Y., & Mesko, A. in press. Dynamic managerial capabilities: Configuration and orchestration of top executives' capabilities and the firm's dominant logic. *Strategic Management Journal*. doi:10.1002/smj.2000

Kozlowski, S., & Klein, K. 2000. A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Koslowski (Eds.), *Multilevel theory*, *research*, *and methods in organizations: Foundations*, *extensions*, *and new directions*: 3-90. San Francisco: Jossey-Bass.

Kraaijenbrink, J. 2011. Human capital in the resource-based view. In J. C. Spender & A. Burton-Jones (Eds.), *The Oxford handbook of human capital*: 218-237 Oxford, UK: Oxford University Press.

Krackhardt, D., & Hanson, J. R. 1993. Informal networks: The company behind the chart. *Harvard Business Review*, 71: 104-111.

*Lahiri, S., Kedia, B. L., Raghunath, S., & Agrawal, N. M. 2009. Anticipated rivalry as a moderator of the relationship between firm resources and performance. *International Journal of Management*, 26: 146-158.

*Lee, C., Lee, K., & Pennings, J. M. 2001. Internal capabilities, external networks, and performance: A study on technology-based ventures. *Strategic Management Journal*, 22: 615-640.

*Lee, J., & Miller, D. 1999. People matter: Commitment to employees, strategy and performance in Korean firms. *Strategic Management Journal*, 20: 579-593.

Lengnick-Hall, C. A., & Lengnick-Hall, M. L. 1988. Strategic human resources management: A review of the literature and a proposed typology. *Academy of Management Review*, 13: 454-470.

Lepak, D. P., Liao, H., Chung, Y., & Harden, E. E. 2006. A conceptual review of human resource management systems in strategic human resource management research. In J. Martocchio (Ed.), *Research in personnel and human resources management*, vol. 25: 217-271. Stamford, CT: JAI.

Lepak, D. P., & Shaw, J. D. 2008. Strategic HRM in North America: Looking to the future. *International Journal of Human Resource Management*, 19: 1486-1499.

Lepak, D. P., & Snell, S. A. 1999. The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review*, 24: 31-48.

Lepak, D. P., & Snell, S. A. 2002. Examining the human resource architecture: The relationships among human capital, employment, and human resource configurations. *Journal of Management*, 28: 517-543.

Lewin, D. 2005. The dual theory of human resource management and business performance: Lessons for HR executives. In D. U. M. Losey, S. Meisinger, & R. Narramore (Eds.), *The future of HR: 50 thought leaders call for change:* 285-292. New York: John Wiley.

Liao, H., Toya, K., Lepak, D. P., & Hong, Y. 2009. Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology*, 94: 371-391.

Lin, N. 2001a. Building a network theory of social capital. In N. Lin, K. Cook, & R. S. Burt (Eds.), *Social capital: Theory and research*: 3-30. New York: de Gruyter.

Lin, N. 2001b. *Social capital: A theory of social structure and action*. New York: Cambridge University Press.

Lin, N., Ensel, W. M., & Vaughn, J. C. 1981. Social resources and strength of ties: Structural factors in occupational status attainment. *American Sociological Review*, 46: 393-405.

*Linnehan, F., & De Carolis, D. 2005. Strategic frameworks for understanding employer participation in school-to-work programs. *Strategic Management Journal*, 26: 523-539.

*Lüneborg, J. L., & Nielsen, J. F. 2003. Customer-focused technology and performance in small and large banks. *European Management Journal*, 21: 258-269.

Mahoney, J. T. 1995. The management of resources and the resource of management. *Journal of Business Research*, 33: 91-101.

Maltarich, M. A., Nyberg, A. J., & Reilly, G. 2010. A conceptual and empirical analysis of the cognitive ability-voluntary turnover relationship. *Journal of Applied Psychology*, 95: 1058-1070.

*Manev, I. M., Gyoshev, B. S., & Manolova, T. S. 2005. The role of human and social capital and entrepreneurial orientation for small business performance in a transitional economy. *International Journal of Entrepreneurship and Innovation Management*, 5: 298-318.

Mathieu, J. E., Tannenbaum, S. I., & Salas, E. 1992. Influences of individual and situational characteristics on measures of training effectiveness. *Academy of Management Journal*, 35: 828-847.

*McKelvie, A., & Davidsson, P. 2009. From resource base to dynamic capabilities: An investigation of new firms. *British Journal of Management*, 20: S63-S80.

*Menguc, B., & Barker, T. 2005. Re-examining field sales unit performance: Insights from the resource-based view and dynamic capabilities perspective. *European Journal of Marketing*, 39: 885-909.

*Messersmith, J. G., & Guthrie, J. P. 2010. High performance work systems in emergent organizations: Implications for firm performance. *Human Resource Management*, 49: 241-264.

*Miller, D., & Shamsie, J. 1996. The resource-based view of the firm in two environments: The Hollywood film studios from 1936 to 1965. *Academy of Management Journal*, 39: 519-543.

Moliterno, T. P., & Mahony, D. M. 2011. Network theory of organization: A multilevel approach. *Journal of Management*, 37: 443-467.

Nahapiet, J. 2011. A social perspective: Exploring the links between human capital and social capital. In J. C. Spender & A. Burton-Jones (Eds.), *The Oxford handbook of human capital*: 71-95. Oxford, UK: Oxford University Press.

Nahapiet, J., & Ghoshal, S. 1998. Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23: 242-266.

Newbert, S. L. 2007. Empirical research on the resource-based view of the firm: An assessment and suggestions for future research. *Strategic Management Journal*, 28: 121-146.

*Nixon, R. D., Hitt, M. A., Lee, H., & Jeong, E. 2004. Market reactions to announcements of corporate downsizing actions and implementation strategies. *Strategic Management Journal*, 25: 1121-1129.

Noe, R. A., Hollenbeck, J. R., Gerhart, B., & Wright, P. M. 2006. *Human resource management: Gaining a competitive advantage* (5th ed.). New York: McGraw-Hill/Irwin.

Nyberg, A. J. 2010. Retaining your high performers: Moderators of the performance-job satisfaction-voluntary turnover relationship. *Journal of Applied Psychology*, 95: 440-453.

Nyberg, A. J., Fulmer, I. S., Gerhart, B., & Carpenter, M. A. 2010. Agency theory revisited: CEO return and shareholder interest alignment. *Academy of Management Journal*, 53: 1029-1049.

Nyberg, A. J. & Ployhart, R. E. 2013. Context-emergent turnover (CET) theory: A theory of collective turnover. *Academy of Management Review*, 38.

*Park, H. J., Mitsuhashi, H., Fey, C. F., & Björkman, I. 2003. The effect of human resource management practices on Japanese MNC subsidiary performance: A partial mediating model. *International Journal of Human Resource Management*, 14: 1391-1406.

*Park, S. H., & Luo, Y. 2001. Guanxi and organizational dynamics: Organizational networking in Chinese firms. *Strategic Management Journal*, 22: 455-477.

*Pennings, J. M., Lee, K., & van Witteloostuijn, A. 1998. Human capital, social capital, and firm dissolution. *Academy of Management Journal*, 41: 425-440.

Peteraf, M. A. 1993. The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14: 179-191.

Ployhart, R. E., & Moliterno, T. P. 2011. Emergence of the human capital resource: A multilevel model. *Academy of Management Revie*w, 36: 127-150.

*Ployhart, R. E., Van Iddekinge, C. H., & MacKenzie, W. 2011. Acquiring and developing human capital in service contexts: The interconnectedness of human capital resources. *Academy of Management Journal*, 54: 353-368.

*Ployhart, R. E., Weekley, J. A., & Ramsey, J. 2009. The consequences of human resource stocks and flows: A longitudinal examination of unit service orientation and unit effectiveness. *Academy of Management Journal*, 52: 996-1015.

Podolny, J. M., & Baron, J. N. 1997. Resources and relationships: Social networks and mobility in the workplace. *American Sociological Review*, 62: 673-693.

Putnam, R. D. 1993. The prosperous community: Social capital and public life. *American Prospect*, 13: 35-42.

Putnam, R. D. 1995. Bowling alone: America's declining social capital. *Journal of Democracy*, 6: 65-78.

*Reed, K. K., Lubatkin, M., & Srinivasan, N. 2006. Proposing and testing an intellectual capital-based view of the firm. *Journal of Management Studies*, 43: 867-893.

*Richard, O. C. 2000. Racial diversity, business strategy, and firm performance: A resource-based view. *Academy of Management Journal*, 43: 164-177.

*Richard, O. C., Barnett, T., Dwyer, S., & Chadwick, K. 2004. Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions. *Academy of Management Journal*, 47: 255-266.

*Richard, O. C., & Johnson, N. B. 2001. Strategic human resource management effectiveness and firm performance. *International Journal of Human Resource Management*, 12: 299-310.

*Roth, K. 1995. Managing international interdependence: CEO characteristics in a resource-based framework. *Academy of Management Journal*, 38: 200-231.

Rousseau, D. M. 1985. Issues of levels in organizational research: Multi-level and cross-level. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior*, vol. 7: 1-37. Greenwich, CT: JAI.

Rumelt, R. P. 1984. Toward a strategic theory of the firm. In B. Lamb (Ed.), *Competitive strategic management:* 556-570. Englewood Cliffs, NJ: Prentice Hall.

*Schlemmer, F., & Webb, B. 2006. The impact of strategic assets on financial performance and on Internet performance. *Electronic Markets*, 16: 371-385.

Schmitt, N., & Chan, D. 1998. *Personnel selection: A theoretical approach*. Thousand Oaks, CA: Sage.

*Selvarajan, T. T., Ramamoorthy, N., Flood, P. C., Guthrie, J. P., MacCurtain, S., & Liu, W. 2007. The role of human capital philosophy in promoting firm innovativeness and performance: Test of a causal model. *International Journal of Human Resource Management*, 18: 1456-1470.

Shaw, J. D., Duffy, M. K., Johnson, J. L., & Lockhart, D. E. 2005. Turnover, social capital losses, and performance. *Academy of Management Journal*, 48: 594-606.

*Sherer, P. D. 1995. Leveraging human assets in law firms: Human capital structures and organizational capabilities. *Industrial and Labor Relations Review*, 48: 671-691.

*Shrader, R., & Siegel, D. S. 2007. Assessing the relationship between human capital and firm performance: Evidence from technology-based new ventures. *Entrepreneurship Theory and Practice*, 31: 893-908.

*Sirmon, D. G., & Hitt, M. A. 2009. Contingencies within dynamic managerial capabilities: Interdependent effects of resource investment and deployment on firm performance. *Strategic Management Journal*, 30: 1375-1394.

Sirmon, D. G., Hitt, M. A., & Ireland, R. D. 2007. Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, 32: 273-292.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. 2011. Resource orchestration to create competitive advantage. *Journal of Management*, 37: 1390-1412.

*Skaggs, B. C., & Youndt, M. 2004. Strategic positioning, human capital and performance in service organizations: A customer interaction approach. *Strategic Management Journal*, 25: 85-99.

*Smith, K. G., Collins, C. J., & Clark, K. D. 2005. Existing knowledge, knowledge creation capability, and the rate of new product introduction in high-technology firms. *Academy of Management Journal*, 48: 346-357.

Snell, S. A., & Dean, J. W., Jr. 1992. Integrated manufacturing and human resource management: A human capital perspective. *Academy of Management Journal*, 35: 467-504.

Sobel, J. 2002. Can we trust social capital? *Journal of Economic Literature*, 40: 139-154.

*Somaya, D., Williamson, I. O., & Lorinkova, N. 2008. Gone but not lost: The different performance impacts of employee mobility between cooperators versus competitors. *Academy of Management Journal*, 51: 936-953.

*Stumpf, S. A., Doh, J. P., & Tymon, W. G., Jr. 2010. The strength of HR practices in India and their effects on employee career success, performance, and potential. *Human Resource Management*, 49: 353-375.

*Sturman, M. C., Walsh, K., & Cheramie, R. A. 2008. The value of human capital specificity versus transferability. *Journal of Management*, 34: 290-316.

*Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, K. 2007. An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *Journal of Applied Psychology*, 92: 1069-1083.

Teece, D. J. 2007. Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28: 1319-1350.

Teece, D. J. 2011. Human capital, capabilities and the firm: Literati, numerati, and entrepreneurs in the 21st century enterprise. In J. C. Spender & A. Burton-Jones (Eds.), *The Oxford handbook of human capital*: 527-562. Oxford, UK: Oxford University Press.

Teece, D. J., Pisano, G., & Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18: 509-533.

*Thompson, M., & Heron, P. 2005. Management capability and high performance work organization. *International Journal of Human Resource Management*, 16: 1029-1048.

*Toole, A. A., & Czarnitzki, D. 2009. Exploring the relationship between scientist human capital and firm performance: The case of biomedical academic entrepreneurs in the SBIR program. *Management Science*, 55:

101-114.
Trevor, C. O., & Nyberg, A. J. 2008. Keeping your headcount when all about you are losing theirs: Downsizing, voluntary turnover rates, and the moderating role of HR practices. *Academy of Management Journal*, 51: 259-276.
*Tseng, C., & Goo, Y. 2005. Intellectual capital and corporate value in an emerging economy: Empirical study of Taiwanese manufacturers. *R&D Management*, 35: 187-201.
*Van Iddekinge, C. H., Ferris, G. R., Perrewé, P. L., Perryman, A. A., Blass, F. R., & Heetderks, T. D. 2009. Effects of selection and training on unit-level performance over time: A latent growth modeling approach. *Journal of Applied Psychology*, 94: 829-843.
Wang, H. C., & Barney, J. B. 2006. Employee incentives to make firm-specific investments: Implications for resource-based theories of corporate diversification. *Academy of Management Review*, 31: 466-476.
*Welbourne, T. M., & Andrews, A. O. 1996. Predicting the performance of initial public offerings: Should human resource management be in the equation? *Academy of Management Journal*, 39: 891-919.
Wernerfelt, B. 1984. A resource-based view of the firm. *Strategic Management Journal*, 5: 171-180.
*West, G. P., III, & Noel, T. W. 2009. The impact of knowledge resources on new venture performance. *Journal of Small Business Management*, 47: 1-22.
Wright, P. M., Dunford, B. B., & Snell, S. A. 2001. Human resources and the resource based view of the firm. *Journal of Management*, 27: 701-721.
*Wright, P., Ferris, S. P., Hiller, J. S., & Kroll, M. 1995. Competitiveness through management of diversity: Effects on stock price valuation. *Academy of Management Journal*, 38: 272-287.
*Wright, P. M., McCormick, B., Sherman, W. S., & McMahan, G. C. 1999. The role of human resource practices in petro-chemical refinery performance. *International Journal of Human Resource Management*, 10: 551-571.
Wright, P. M., & McMahan, G. C. 1992. Theoretical perspectives for strategic human resource management. *Journal of Management*, 18: 295-320.
Wright, P. M., & McMahan, G. C. 2011. Exploring human capital: Putting human back into strategic human resource management. *Human Resource Management Journal*, 21: 93-104.
Wright, P. M., McMahan, G. C., & McWilliams, A. 1994. Human resources and sustained competitive advantage: A resource-based perspective. *International Journal of Human Resource Management*, 5: 301-326.
*Wright, P. M., Smart, D. L., & McMahan, G. C. 1995. Matches between human resources and strategy among NCAA basketball teams. *Academy of Management Journal*, 38: 1052-1074.
Wright, P. M., & Snell, S. A. 1998. Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of Management Review*, 23: 756-772.
*Yanadori, Y., & Kato, T. 2007. Average employee tenure, voluntary turnover ratio, and labour productivity: Evidence from Japanese firms. *International Journal of Human Resource Management*, 18: 1841-1857.
*Yeoh, P. L. 2004. International learning: Antecedents and performance implications among newly internationalizing companies in an exporting context. *International Marketing Review*, 21: 511-535.
*Youndt, M. A., & Snell, S. A. 2004. Human resource configurations, intellectual capital, and organizational performance. *Journal of Managerial Issues*, 16: 337-360.
*Youndt, M. A., Snell, S. A., Dean, J. W., Jr., & Lepak, D. P. 1996. Human resource management, manufacturing strategy, and firm performance. *Academy of Management Journal*, 39: 836-866.
*Zahra, S. A., & Nielsen, A. P. 2002. Sources of capabilities, integration and technology commercialization. *Strategic Management Journal*, 23: 377-398.