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Do High-Commitment Work Systems Affect Creativity? A Multilevel Combinational Approach to Employee Creativity

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This study uses 3-level, 2-wave time-lagged data from a random sample of 55 high-technology firms, 238 teams, and 1,059 individuals in China to investigate a multilevel combinational model of employee creativity. First, we hypothesize that firm (macrolevel) high-commitment work systems are conducive to individual (microlevel) creativity. Furthermore, we hypothesize that this positive crosslevel main impact may be combined with middle-level (mesolevel) factors, including team cohesion and team task complexity, such that the positive impact of firm high-commitment work systems on individual creativity is stronger when team cohesion is high and the team task more complex. The findings from random coefficient modeling analyses provide support for our hypotheses. These sets of results offer novel insight into how firms can use macrolevel and mesolevel contextual variables in a systematic manner to promote employee creativity in the workplace, despite its complex nature.

Keywords: high-commitment work systems, team cohesion, team task complexity, creativity, multilevel combinational approach

Employee creativity is defined as the generation of both novel and useful ideas (e.g., Zhou, 1998; Zhou & Shalley, 2003) and is recognized as a major contributor to organizational innovation and competitive advantage in dynamic environments (e.g., Amabile, 1988). Therefore, the topic of employee creativity has attracted increasing attention from both scholars and practitioners (e.g., Amabile, 1983; Florida & Goodnight, 2005). Extant research has suggested that creativity is often a result of distinctive individual features, such as intrinsic motivation (e.g., Amabile, 1983), creative personality (e.g., Oldham & Cummings, 1996), learning goal orientation (e.g., Gong, Huang, & Farh, 2009), openness to experience (e.g., McCrae, 1987), creative self-efficacy (e.g., Tierney & Farmer, 2002), and affect and mood (e.g., Amabile, Barsade, Mueller, & Staw, 2005; George & Zhou, 2002).

Because of the critical importance of employee creativity for firms to gain competitive advantages, scholars have also devoted vast interest in understanding whether and how employee creativity can be promoted through contextual influences or interventions. In a seminal work along this line of research, Amabile (1983) alerts to the fact that "there has been a concentration on the creative person to the neglect of 'creative situations,' that is, circumstances conducive to creativity" (p. 358). Similarly, Sternberg and Lubart (1996) noted:

> One needs an environment that is supportive and rewarding of creative ideas. One could have all of the internal resources needed to think creatively, but without some environmental support (e.g., a forum for proposing those ideas), the creativity that a person has within him or her may never be displayed. (p. 684)

Existing research has suggested that creativity is subject to a variety of contextual influences, such as transformational leadership (e.g., Gong et al., 2009; Shin & Zhou, 2003), abusive supervision (Liu, Liao, & Loi, 2012), leader–member exchange (e.g., Tierney, Farmer, & Graen, 1999) and team–member exchange (Liao, Liu, & Loi, 2010), supervisor expectations (e.g., Tierney & Farmer, 2004), team bureaucratic practices (e.g., Hirst, Van Knippenberg, Chen, & Sacramento, 2011), autonomy (e.g., Liu, Chen, & Yao, 2011; Zhou, 1998), the presence of creative role models (e.g., Zhou, 2003), team-level cognitive diversity (Shin, Kim, Lee, & Bian, 2012), and team knowledge management processes (Sung & Choi, 2012).

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Interestingly, despite the consensus that creativity can be meaningfully enhanced via contextual influences, considerably less research has been devoted to how firms use their strategic human resource management (SHRM) systems to promote creativity (for reviews, see Shalley & Gilson, 2004; Zhou & Shalley, 2003). *SHRM*, defined as "the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals" (Wright & McMahan, 1992, p. 298), imposes one of the most systematic contextual influences on employees' attitudinal and behavior outcomes as it creates a condition in which the exchange relationships between employees and organizations are formed, communicated, and managed (e.g., Bowen & Ostroff, 2004; Tsui, Pearce, Porter, & Tripoli, 1997). As a result, it seems imperative to investigate whether, when, and how SHRM (or the particular human resource strategies implemented by firms) affects individual employees' creativity (cf. Shalley & Gilson, 2004; Zhou & Shalley, 2003). In this study, our first goal was to integrate the SHRM and creativity literatures and develop a conceptual argument for the contextual impact of firm SHRM on individual employee creativity (cf. Shalley & Gilson, 2004; Zhou & Shalley, 2003). As one example of SHRM, we specifically focus on *high-commitment work systems* (HCWS), which refer to a "system of human resource management practices (such as employee participation, internal promotion, team rewards, profit sharing, extensive training and benefits, job security, and so on) that signal commitment to the employees" (Xiao & Tsui, 2007, p. 2).[1]

We further posit that studying HCWS alone as an environmental condition of creativity may not fully capture the overall picture of multilevel, yet nested environmental conditions that lead to enhanced creativity (e.g., Hennessey, 2003). In particular, scholars have suggested that the impact of environmental factors on individual creativity is highly complex because of the nested nature of the environment, and scholars and practicing managers have to take a systems perspective so as to develop a truly dynamic and systemic understanding of creativity (Hennessey, 2003; Hennessey & Amabile, 2010). George (2007) made a similar call that

> future theorizing and research might benefit from adopting what Lee and colleagues [2004] referred to as a *combinational perspective* regarding contextual conditions with the potential to influence creativity in organizations. . . . The combinational approach suggests the need to look at how contextual conditions interact with each other (e.g., their consistency or inconsistency). . . . (p. 456)

Similarly SHRM scholars have suggested that one has to acknowledge the multilevel nature of HR systems and the intraorganizational variability to advance the SHRM research. In a seminal work, Bowen and Ostroff (2004) build from the communication and attribution theories and stated, "*All* HRM practices communicate messages constantly and in unintended ways, and messages can be understood idiosyncratically, whereby two employees interpret the same practices differently . . . (p. 206) Nishii and Wright (2008) further suggested that one overlooked area in extant SHRM research is the lack of attention to the variability within organizations, stating that "we are concerned with the lack of attention which has been paid to variability within SHRM research. By variability we mean variability at all relevant levels of analysis, but particularly variability within organizations (i.e., individual and group levels)" (p. 226).[2] Two pioneering empirical studies along this line of research have indeed revealed substantial variations across units, or even across employees from the same unit, on both their perceptions of SHRM (Liao, Toya, Lepak, & Hong, 2009) and the actual human capital (the likely outcomes of such perceived differences in SHRM) (Liao et al., 2009; Ployhart, Weekley, & Ramsey, 2009).

Following such conceptual calls (e.g., Bowen & Ostroff, 2004; George, 2007; Hennessey, 2003; Hennessey & Amabile, 2010; Nishii & Wright, 2008) and the evidence from prior pioneering empirical work (Liao et al., 2009; Ployhart et al., 2009), our second goal in this study was to integrate the nested nature of the environment where individual creativity arises and propose a multilevel, combinational approach to creativity by assessing how firms can use macrolevel HCWS (i.e., firm) and important mesolevel characteristics (i.e., team cohesion, team task complexity) in a systematic manner to promote an environment conducive to employee creativity.[3] In particular, we are interested in investigating how mesolevel contextual variables could strengthen (or weaken) the impact of firm HCWS on individual creativity.

In summary, we make primary contributions to both the extant creativity and SHRM literature. First, we provide systematic evidence with regard to whether or not HCWS would generate an environment conducive to employee creativity (Shalley & Gilson, 2004; Zhou & Shalley, 2003). To do so, we develop a multilevel, combinational approach to studying the macro- and mesolevel environmental factors that lead to employee creativity, offering an improved understanding of the complex nature of the environments within organizations (e.g., George, 2007; Hennessey, 2003; Hennessey & Amabile, 2010; Woodman, Sawyer, & Griffin, 1993). Second, we contribute to the SHRM literature by considering imperative variety within organizations and illustrating employee creativity as an important outcome that has not been considered in detail (e.g., Nishii & Wright, 2008). Practically, we inform managers of more integrative and systematic suggestions on when and how to create a "creative situation" so as to allow employee creativity to flourish in their companies. Figure 1 presents our conceptual model.

Theoretical Overview and Hypotheses

HCWS as a Contextual Influence on Individual Outcomes

A firm's SHRM, equipped with a set of universalistic HRM practices (e.g., selective hiring, comprehensive training, compar-

[1] Whereas Lepak, Liao, Chung, and Harden (2006) have noted the conceptual distinctions between various HR systems, Wood, de Menezes, and Lasaosa (2003) have noted that the terms *high commitment*, *high involvement*, and *high performance* are used interchangeably by various scholars in describing these systems. In line with the current practice in SHRM, we consider these terms to represent a particular type of HR strategy that treats employees as valuable assets to the firm. For the specific line of research that has focused on HCWS, please see Arthur (1994); Collins and Smith (2006); Hom and Xiao (2011); Walton (1985); Whitner (2001), and Xiao and Tsui (2007) for examples.

[2] We especially thank the Editor, Robert Ployhart, for this suggestion.

[3] Scholars from different disciplines may have different interpretations of "micro" and "macro" (cf. Molloy, Ployhart, & Wright, 2011). In this study, we follow a typical organizational behavior scholarly definition of micro (individual), meso (team), and macro (firm) (e.g., Kozlowski, 2009).

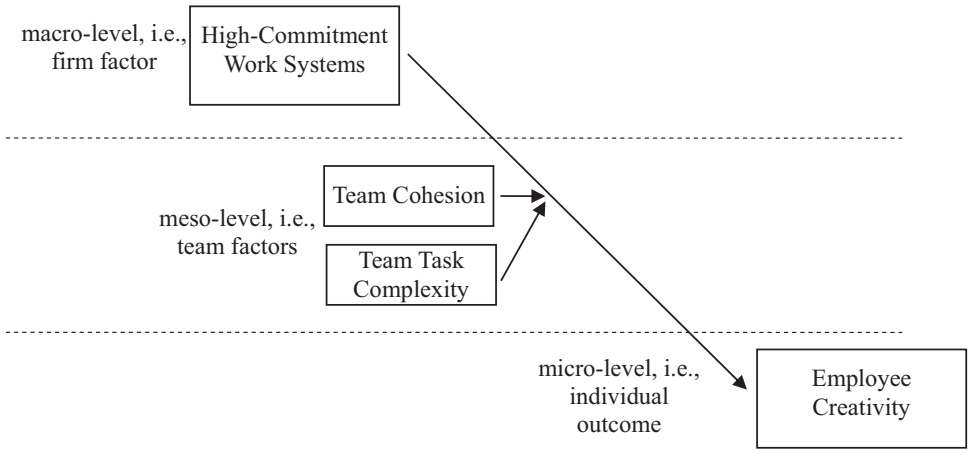

Figure 1. A multilevel combinational approach to employee creativity.

atively high pay, pay contingent on performance, incentive programs) represents the firm's strategic approach to managing its workforce. For example, HR strategies can be commitment based or control based (Arthur, 1992, 1994). They can also be based on mutual-investment, overinvestment, quasi-spot-contract, or underinvestment approaches (Tsui et al., 1997). Compared with the prior research that has focused on single HR practices, the complexity involved in creating a coherent HR system makes such advantages hard to identify and imitate (Barney & Wright, 1998). Research has convincingly shown that the creation and implementation of an HR system with a set of universal HRM practices leads to various firm-level HR outcomes, such as labor productivity (Youndt, Snell, Dean, & Lepak, 1996) and turnover rates (Batt, 2002), as well as financial outcomes, such as financial performance (Gong, Law, Chang, & Xin, 2009; Huselid, 1995) and sales growth (Collins & Clark, 2003).

Although a great deal of SHRM research has focused on the firm-level HR and financial performance as the outcomes (for reviews, see Becker & Huselid, 1998; Chadwick, 2010; Combs, Liu, Hall, & Ketchen, 2006; Jiang, Lepak, Hu, & Baer, 2012; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009), a particular HR strategy is only effective to the extent that it influences employees' attitudes and behaviors first (cf. Schuler & Jackson, 1987; Wright & Haggerty, 2005). Accordingly, scholars have specifically posited to advance the SHRM research by building a bridge between macrolevel SHRM (i.e., firm) and microlevel (i.e., individual) outcomes (e.g., Bowen & Ostroff, 2004; Wright & Boswell, 2002; Wright & Haggerty, 2005).[4] As Wright and Nishii (2007) suggested, to provide a deeper understanding of the SHRM research, scholars need "to develop comprehensive theories that integrate across levels of analysis" (p. 20). Empirically, there is also growing interest in understanding the crosslevel impacts of SHRM on individual employees' attitudinal and behavioral outcomes, such as satisfaction and affective commitment (Takeuchi, Chen, & Lepak, 2009), job performance (Liao et al., 2009), and service performance (Chuang & Liao, 2010).

Despite the great conceptual and empirical understandings obtained in the role of SHRM as a contextual influence on individual-level outcomes in organizations (e.g., Bowen & Ostroff, 2004; Chuang & Liao, 2010; Liao et al., 2009; Takeuchi et al., 2009), to date no study has systematically assessed whether SHRM has implications on individual employees' creativity (see, Shalley & Gilson, 2004; Zhou & Shalley, 2003, for reviews). Given the critical importance of creativity in organizations, it is vital for scholars to fill in this gap. For instance, in their conceptual work, Woodman et al. (1993) has specifically posited the possibility of using SHRM to promote creativity in the workplace. In this study, we focus on HCWS that include a bundle of internally consistent HRM practices, such as extensive training, ownership of stock options and profit-sharing plans, developmental performance appraisal, group-based performance appraisal, job rotation, participative management, team-based work, information-sharing programs, socialization, and promotion of egalitarianism (Xiao & Tsui, 2007). This system of HR practices has been extensively examined in major prior SHRM studies (see, Posthuma, Campion, Masimova, & Campion, 2013, for a recent review).

HCWS and Individual Creativity

We mainly draw on the componential theory of creativity (Amabile, 1983) to develop our prediction about why HCWS may represent a "creative situation." We also rely on the cognitive evaluation theory (Deci, 1975; Deci & Ryan, 1985), the individual learning theory (Ellis, 1965), and the organizational learning theory (Huber, 1991) to complement the componential theory of creativity in developing our main prediction. Amabile (1983) offered one of the most influential frameworks to date, explaining how environment factors affect individual creativity. According to this framework, environmental factors affect individual creativity via three important components (i.e., task motivation, domain-relevant skills, creativity-relevant skills); all three components are necessary, and "not one is sufficient for creativity in and of itself" (Amabile, 1983, p. 367). We posit that by offering HCWS, firms

[4] Another potential area of research to link the macro- and microlevel SHRM research is to examine the "emergence" idea, through which individual-level human capital emerges into higher level competitive advantages (e.g., Kozlowski & Klein, 2000; Molloy et al., 2011; Ployhart & Moliterno, 2011). Because of the scope of the current research, however, we do not focus on this area.

create situations in which individual employees' task motivation, domain-relevant skills, and creativity-relevant skills are all enhanced. As a result, individual employees' levels of creativity are improved.

We first posit that three HR practices may affect employees' domain-relevant skills and, in turn, creativity. Amabile (1983) proposed that domain-relevant skills are important to creativity, because "it is impossible to be creative in nuclear physics unless one knows something (and probably a great deal) about nuclear physics" (p. 363). Among the HR practices within the HCWS bundle, *extensive training* mainly broadens employees' repertoire of domain-relevant knowledge and skills necessary for being creative (Amabile, 1983). Besides, organizations regularly conduct performance appraisal for various HR management purposes (Murphy & Cleveland, 1995; Rynes, Gerhart, & Parks, 2005). When the performance appraisal and associated feedback have a developmental purpose and are delivered in an informational manner (i.e., as a *developmental performance appraisal*), this boosts employee creativity because such appraisals inform employees about areas of improvements in terms of their domain-relevant skills (e.g., Shalley & Perry-Smith, 2001; Zhou, 1998; Zhou & Oldham, 2001).

Job rotation is another important component of HCWS and encourages employees to gain greater knowledge and skills by assigning them to various positions within the company. The improved knowledge and skills thus represent an important antecedent of creativity (Amabile, 1983). Moreover, job rotation "makes organizational knowledge more 'fluid' and easier to put into practice" (Nonaka, 2007, p. 169). As a result, job rotation facilitates knowledge sharing and knowledge combination in the workplace. According to the organizational learning theory, knowledge sharing and knowledge combination are important elements of organizational learning, which lead to creative or innovative outcomes (Huber, 1991).

We also posit that two HR practices may affect employees' task motivation levels and therefore creativity. Organizations have increasingly used *participative management* to manage employees. Participative management is often associated with enhanced job autonomy or perceived empowerment (see, Seibert, Wang, & Courtright, 2011, for a review). According to the cognitive evaluation theory (as a subtheory of self-determination theory), when the informational aspect of the environment is more salient, individuals have more intrinsic motivation and perceived competence; by contrast, when the controlling or motivating aspect is more prominent, individuals feel that the environment constrains their thinking, feeling, and actions, and these individuals experience merely compliance or even undermined intrinsic motivation and competence (Deci, 1975). Empirical research has shown that the enhanced job autonomy indeed represents an important element of an informational environment conducive to creativity (Liu et al., 2011). Similarly, we expect that the *use of teams* leads to creativity via enhanced intrinsic motivation. Research has revealed that having employees work in autonomous teams has a strong impact on members' intrinsic motivation (Wall, Kemp, Jackson, & Clegg, 1986). Such enhanced intrinsic motivation further leads to employee creativity (Amabile, 1983).

We expect that at least four HR practices may affect employees' acquisition of creativity-relevant skills and thus creativity. According to Amabile (1983), creativity-relevant skills include aspects such as breaking perceptual and cognitive sets, using wide categories (see connections between diverse bits of information), accurate memory, and breaking out of performance scripts. Among the HCWS bundle, *extensive training* is often not closely related to employees' immediate job requirements (Arthur, 1994; Guthrie, 2001), and such training brings opportunities for employees to use wide categories. According to the individual learning theory, individuals learn by establishing connections between what they already know and the new area of learning, and learning is the greatest when an overlap exists between the existing knowledge base and the new knowledge (Ellis, 1965). The breadth of knowledge resulting from extensive training is thus useful for employees to establish connections between the existing knowledge base and new knowledge more easily (i.e., improved creativity-relevant skills), which then leads to creative solutions. We expect that *job rotation* may have a similar impact on employees' creativity-relevant skills because it also enables employees to view problems from different perspectives. For example, the fast-moving consumer goods company Unilever lets its young managers work in more than one product group, and finds that a surprising number of new ideas come from such cross-fertilization efforts (Maljers, 1992).

In addition, organizations' HR strategies are distinguishable by their *egalitarian orientations*. Companies with egalitarian environments help individuals to feel greater psychological safety (Edmondson, 1999). This safety perception represents one type of creativity-relevant skill because it is human capital (or human mind-set) that allows employees to break existing scripts and generate creative solutions (Amabile, 1983; Keltner, Gruenfeld, & Anderson, 2003). It is important because creativity "may entail some kind of challenge to the status quo" and ultimately may involve risks, uncertainties, and potential failures; therefore, people need signs of trust and safe exchange relationships with the company to be creative in the workplace (George, 2007, p. 454). By contrast, firms that have hierarchical orders are dominated by a few powerful members, yet the majority of members are powerless and inhibited in many aspects (Staw, 2009). Such powerless individuals generally exhibit inhibition-related tendencies and may fear that their creative ideas are likely to be rejected (Keltner et al., 2003).

Similarly, organizations use rewards and incentives to induce desirable attitudinal and behavioral outcomes in employees. Research suggests that the reward–creativity relationship is not clear-cut (Amabile, Hennessey, & Grossman, 1986). Nonetheless, we expect companies' typical reward arrangements such as *stock option plans* or *gain-sharing programs* enhance employee creativity (cf. Zhou & Shalley, 2003). Research has suggested that stock ownership and gain-sharing communicate the organization's intention to develop a long-term and open-ended exchange relationship with employees (Rousseau & Wade-Benzoni, 1994; Tsui et al., 1997). As mentioned previously, after all creativity entails challenge to the status quo, and therefore a trusting exchange relationship is needed to nurture employees' mind-sets about generating and speaking up about creative ideas in the workplace (George, 2007). Empirical evidence indeed shows that such an exchange relationship allows employees to remain committed to change (Shin, Taylor, & Seo, 2012).

We also posit that, although three HR practices may not have direct implications for employee domain-relevant skills, creativity-

relevant skills, and task motivation, they may affect employee creativity on the basis of the organizational learning theory. For instance, a *group-based performance appraisal* generally facilitates intragroup collaboration and helps group members to leverage each other's diverse knowledge and skills to generate creative ideas (Baer, Leenders, Oldham, & Vadera, 2010). According to the organizational learning theory, information sharing, information distribution, and the combination of information from diverse partiers—which are all likely outcomes of group-based performance appraisal—are key components in organizational learning that can lead to innovative or creative outcomes (e.g., Huber, 1991). Similarly, prior research has suggested that *information distribution* or *sharing* is crucial to organizational learning (Huber, 1991). Failing to disseminate needed information is often regarded as a major deterrent to creativity (e.g., Amabile, Hill, Hennessey, & Tighe, 1994).

Although *socialization* has been studied relatively less often in SHRM research, some studies have included it (e.g., Arthur, 1994; Collins & Smith, 2006; Xiao & Tsui, 2007). Similar to the above-mentioned two HR practices, socialization enhances information sharing and knowledge creation among employees, and therefore enhances creativity (Huber, 1991). Indeed, Gilson and Shalley (2004) have found that members of more creative teams spend more time on socialization activities.

Finally, SHRM researchers have established that, when bundled together, firms' HRM practices create a system communicating consistent messages with employees regarding the company's willingness to devote valuable resources for employees to develop and grow (e.g., Bowen & Ostroff, 2004). Put differently, HCWS is more likely to create an environment perceived by individual employees as being supportive and informational, which further fosters employees' domain-relevant skills, task motivation, and creativity-relevant skills. All three components may increase employee creativity (Amabile, 1983; Deci & Ryan, 1985). Moreover, such an environment facilitates learning, knowledge sharing, and knowledge combination in the workplace, and, in turn, promotes employee creativity (Huber, 1991). Thus, we hypothesize:

> *Hypothesis 1:* Firms' HCWS positively predicts individual employees' creativity.

The Combinational Roles of Team Cohesion and Team Task Complexity

We further posit that, in addition to the firm-level (i.e., macrolevel) contextual influences such as HCWS, teams also represent important contextual factors (i.e., mesolevel) to individual creativity because teams are the actual places where individual creativity arises. Prior creativity theorists have suggested that it is important to understand joint or combinational influences of crosslevel factors on employee creativity (e.g., Amabile, 1983; George, 2007; Liu et al., 2011; Woodman et al., 1993; Zhou & Shalley, 2003). For instance, Hennessey and Amabile (2010) suggested, "Only by using multiple lenses simultaneously, looking across levels, and thinking about creativity systematically, will we be able to unlock and use its secrets" (p. 590).

As discussed previously, scholars from the SHRM line of research have made similar calls (e.g., Bowen & Ostroff, 2004; Nishii & Wright, 2008; Wright & Haggerty, 2005). For instance, Nishii and Wright (2008) suggested that

> subunits within a single organization that are subjected to the same set of HR practices may still differ in their performance. . . . An interesting question, then, is: What can organizations do to influence these group-level factors in ways that optimize the HR practices-performance relationship? (p. 237)

In this study, we follow such calls and integrate both macrolevel (i.e., firm HCWS) and mesolevel (i.e., team cohesion, team task complexity) contextual variables to assess their joint impact on individual creativity. Such a framework allows us to consider the nested nature of the environment in which creativity arises in a systematic manner and to "optimize the HR practices-performance relationship" by considering mesolevel variability in organizations (Nishii & Wright, 2008, p. 237). These two mesolevel variables are chosen because they are prominent characteristics of teams (e.g., Beal, Cohen, Burke, & McLendon, 2003; Stewart, 2006). Furthermore, scholars have indeed specifically posited the importance of introducing mesolevel factors such as team cohesion and team task characteristics to advance both the crosslevel creativity (Woodman et al., 1993) and SHRM research (Wright & Nishii, 2007).

The combinational role of team cohesion. *Team cohesion* is defined as the degree to which members of a group are attached to each other and are motivated to maintain their membership of the team (Organ & Hammer, 1950). In this study, we posit that although high team cohesion may optimize the impact of HCWS on individual creativity, low team cohesion may offset the beneficial impact of HCWS on individual creativity.

First, prior research has shown that team cohesion leads to desirable outcomes such as member-rated team performance (Keller, 1986) and team productivity (Greene, 1989), as well as intermediate outcomes, including satisfaction (Summers, Coffelt, & Horton, 1988), less personalized or negative conflict (Pace, 1990), and reduced social loafing (Karau & Hart, 1998). In addition, research has revealed that collective team identification, a possible outcome of team cohesion, facilitates team learning (Van Der Vegt & Bunderson, 2005). Team-shared mental models also enhance team processes, including better coordination, cooperation, and communication (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). As a result, when team members are encouraged by HCWS to learn new knowledge, information, and skills, teams with higher cohesion may benefit more because of all these potential mechanisms (e.g., better team performance and productivity and the resultant higher perceived competence and self-determination, more intensive communication, less personalized conflict, and more team learning and intrateam knowledge sharing). In other words, cohesive teams create "a shared context where individuals can interact with each other and engage in the constant dialogue on which effective reflection depends" (Nonaka, 2007, p. 171), and therefore team members are likely to communicate more effectively and develop more innovative ideas or opinions (Huber, 1991), if the firm also provides HCWS. Moreover, employees need a safe and open-ended firm culture or employee–organization relationship to have the courage to suggest creative, yet risky ideas (George, 2007). Without the support from HCWS (e.g., the promotion of egalitarian culture), cohesive teams indeed may be more easily to be subject to the groupthink symptom because team members may be less likely to suggest creative, yet risky ideas and more likely to conform to team opinions (Janis, 1973). Accordingly, without the provision of HCWS, individual members within cohesive teams may not necessarily display high levels of creativity.

By contrast, when teams are less cohesive, even if firms offer generous and expensive investments (such as HCWS), the less cohesive team environment will act as a negative mesolevel contingency, which prevents individuals from learning and being creative. First, creativity or innovation often requires extensive knowledge exchange and combination (Huber, 1991). Under less cohesive conditions, individuals will be discouraged from sharing knowledge, and thus the potential benefit associated with the use of HCWS in turn will be minimized. For instance, teams with low cohesion often hold biases and experience more personalized conflicts among teammates, with members overlooking or even attacking the ideas of other members (Pace, 1990). Similarly, research shows that team members from less cohesive teams often cannot agree with each other and work toward different objectives (Mathieu et al., 2000), which makes it hard for team members to benefit from the potential positive synergy associated with the use of HCWS. Moreover, low cohesion may even amplify the dark side of teamwork, such as process loss and relational loss (Mueller, 2012). Taken together, we hypothesize:

> *Hypothesis 2:* The impact of HCWS on individual creativity is contingent on team cohesion such that the positive impact is stronger when team cohesion is high and weaker when team cohesion is low.

The combinational role of team task complexity. Teams vary significantly in the amount of complexity inherent in their tasks (Dean & Snell, 1991; Perrow, 1967; Van de Ven & Delbecq, 1974). Tasks are often assigned to a team with a particular level of complexity, irrespective of how subtasks are assigned within that unit (Kleingeld, van Mierlo, & Arends, 2011). This is especially true in the knowledge and development areas, where teams are often responsible for knowledge creation. As a result, we suggest that task complexity could be an important team-level characteristic. In this study, we adopt a definition of team task complexity from Dean and Snell (1991), which defines team task complexity as "the extent to which a job [in a unit] was mentally demanding and involved problem solving and technical knowledge" (p. 788). The same definition has been used in earlier work (e.g., Perrow, 1967; Van de Ven & Delbecq, 1974). The domain of this team task complexity conceptualization mainly focuses on the challenging and demanding aspects of tasks and does not necessarily include the task autonomy and feedback. The concept thus has minimal overlap with the construct of HCWS.

By definition, mentally challenging and demanding tasks are difficult to be solved in conventional ways. To complete such challenging and demanding tasks, employees may need to have better ability (e.g., domain-relevant and creativity-relevant skills) and motivation to come up with creative solutions. Therefore, when tasks are challenging and demanding and when companies also invest heavily in HCWS (e.g., extensive training, job autonomy, socialization opportunities for employees to share their problems and concerns), the impact of HCWS on employee creativity will be optimized because employees really need to have the necessary domain-relevant skills, creativity-relevant skills, and task motivation to develop new ideas and solve such challenging problems (Amabile, 1983; Amabile et al., 1996). Moreover, when tasks are challenging and demanding, and when companies also invest greatly in HCWS, employees will be more likely to have necessary opportunities to engage in learning, knowledge sharing, and knowledge combination, which also lead to creative outcomes (Huber, 1991). For instance, the global food company Groupe Danone purposely organizes knowledge "marketplaces" (i.e., lively events that occur during company conferences), which creates great opportunities for frontline managers to exchange their ideas, share best practices, and innovate (Edmondson, 2008). By contrast, when tasks are challenging and demanding, yet firms do not invest in HCWS, employees may simply have insufficient knowledge, skills, and motivation to generate creative ideas to complete their tasks (Amabile, 1983). In other words, employees' creativity may suffer to a greater extent when team task complexity is high, yet HCWS is low.

Under the conditions of low team task complexity, however, we first expect that the costly investment in employee skills and motivations will not necessarily produce desirable payoffs. Supposing that Groupe Danone administered the same type of events for employee groups whose tasks are simple and straightforward, the potential benefit may not be that large because employees may simply have limited problem-solving skills and technical knowledge to learn and share (Huber, 1991). Second, research based on the cognitive evaluation theory offers indirect evidence to support this prediction. In particular, research has suggested that the findings of the cognitive evaluation theory are usually based on the assumption that the task is interesting so that the focal individual will have a stronger intrinsic motivation to engage in the task. When the task is not interesting, or is even boring, the typical findings of the theory do not hold (i.e., the perceived controlling aspect of the environment may not necessarily undermine the intrinsic motivation or satisfaction of the focal individual) (cf. Deci, Koestner, & Ryan, 1999, p. 651). On the basis of such logic, in the low team task complexity context, we expect that the difference between offering HCWS and its counterpart (i.e., "low-commitment" work systems) might be minimized (Deci et al., 1999). Taken together, we hypothesize:

> *Hypothesis 3:* The impact of HCWS on individual creativity is contingent on team task complexity such that the positive impact is stronger when team task complexity is high and weaker when team task complexity is low.

Method

We collected data from an eastern province of People's Republic of China. We targeted high-technology firms accredited by the Chinese Ministry of Science and Technology (http://www.innocom.gov.cn/web/static/catalogs/catalog_6/6.html).[5] We randomly selected 102 firms from the whole population of 2,043 such accredited high-technology firms in the province (i.e., 5%). The number of firms

[5] Firms must meet five requirements to be considered high-technology firms. First, the key technology of the firm must be covered by self-owned intellectual property rights. Second, the product or service domain of the firm must fall within the area of electronics and communication, biotechnology and pharmaceuticals, aeronautics and astronautics, new materials, high-tech service, new energy and energy saving, resource and environmental protection, or high-tech transformation for traditional industries, all of which are areas regarded as high-technology fields by the Chinese government. Third, more than 30% of the employees must hold a college-level degree or higher, and more than 10% of the employees must work in research and development (R&D) units. Fourth, the firm should pursue R&D for creation and application of new science and technology or improvement of current technologies, products, and services. Investment in R&D should constitute no less than 6% of annual revenue, of which the lower bound is 50 million RMB. Fifth, the annual revenue of high-tech products and services should constitute to at least 60% of the firm's total annual revenue.

sampled was not particularly large because we intended to collect multiple-wave and multiple-source data. With the help of the local government, we contacted CEOs of the firms, and 65 of them agreed to participate in the survey. These CEOs then instructed us to contact the HR executives in their companies; we then worked with the HR executives on the specific data collection plan at each firm. Within each targeted firm, we asked the HR executive to randomly pick core-knowledge employee teams responsible for knowledge creation, such as research and development teams, technical support teams, manufacturing teams, and quality management teams. Such core-knowledge employees have been the focus of prior SHRM research (e.g., Collins & Smith, 2006).

We conducted two-wave, multiple-source, on-site surveys at an average 3-month interval. This time lag was set so that the supervisors' ratings of individual creativity would not be affected by how they responded to team cohesion and team task complexity measures. Specifically, at Time 1, HR executives rated the HCWS used in the firms; supervisors reported their team's cohesion and task complexity, and their openness to experience personality; and employees reported their openness to experience personality and demographic information such as age, gender, education, and tenure. At this stage, all core-knowledge employees within the randomly selected teams participated in the Time 1 survey. At Time 2 (around 3 months later), supervisors rated employees' creativity. At this stage, for teams of five employees or fewer, we asked the supervisors to rate the creativity of all employees. For teams of greater than five employees, the research team (rather than the HR executive or the team supervisor) randomly chose five employees from each participating team and asked the supervisors to rate the creativity of these employees based on an employee list offered by the HR executive in advance. We used this design to reduce respondent fatigue for both response rate and response validity considerations (i.e., if the creativity ratings demand too many cognitive resources from the supervisors, the accuracy of the individual creativity ratings may suffer).

The response rate was higher than 90% as a result of the use of on-site surveys. A total of 2,317 employees from 317 teams in 65 firms participated in the Time 1 survey. We targeted this sample at Time 2, and the final sample matched the first-round and second-round data collection, with 1,059 employees nested in 238 teams within 55 firms.[6] We performed ad hoc *t* tests based on teams with more than five employees; there were no significant differences in these teams between the employees who were randomly selected to be included in the Time 2 survey and those who participated in the Time 1 survey but not in the Time 2 survey, for age, $t(1826) = 0.10$, *ns*; education, $t(1826) = 0.62$, *ns*; firm tenure, $t(1826) = 0.16$, *ns*; and openness to experience, $t(1813) = 0.07$, *ns*. The average age of these firms was 17.11 years ($SD = 12.01$), the average number of employees was 508 ($SD = 816.46$), and the average sales value was 201 million RMB. Among the 238 teams, team size ranged from two to 22, with an average team size of 8.24.

Measures

The four core constructs were measured at three levels: HCWS is the firm-level construct, assessed by the HR manager of each firm at Time 1 survey; team cohesion and team task complexity are the team-level constructs, reported by the team supervisors at Time 1 survey; employee creativity is the individual-level construct, rated by the team supervisor at Time 2 survey. We reported Cronbach's alpha and composite reliability to evaluate the internal consistency of each measure,[7] and reported the average variance extracted (AVE) information to evaluate the convergent validity of each measure (Hair et al., 2013).

HCWS. We adapted the High-Commitment Work System scale of Xiao and Tsui (2007). The original scale had 10 items. Because two of the items contained two key words each (i.e., *extensive training* and *socialization*, *expanded job design* and *job rotation*), we divided the two original items into four items, which made the scale into a 12-item scale. Following Collins and Smith (2006), we asked HR executives to assess the companies' HCWS applicable to core-knowledge employees based on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). One example item read "in our company, we emphasize the appraisal of team performance rather than individual performance." A preliminary confirmatory factor analysis (CFA) suggested two items (i.e., careful selection procedures in recruiting and expanded job design) had weak loadings (i.e., less than .40) on the latent factor. Thus, we removed the two items from the operationalization of HCWS. However, we also conducted alternative tests and found that including or excluding the two items generated the same patterns of hypothesis-testing results (the results are available from the first author upon request).

The CFA of the 10-item High-Commitment Work System scale yielded an acceptable fit, $\chi^2(35) = 51.87$, $p < .05$; comparative fit index (CFI) = .95; root-mean-square error of approximation (RMSEA) = .08. The Cronbach's alpha of this scale was .83, and the composite reliability was .87. The loadings of the 10 items were all higher than .60, and the AVE was .50. These results showed that the measure had a high level of internal consistency and an acceptable convergent validity (Hair et al., 2013). Following prior literature, we used an additive approach to conceptualizing HCWS by averaging all of the items to create a single score of HCWS for each firm (e.g., Aryee, Walumbwa, Seidu, & Otaye, 2012; Bae & Lawler, 2000; Datta, Guthrie, & Wright, 2005; Liao et al., 2009; Messersmith, Patel, Lepak, & Gould-Williams, 2011; Xiao & Tsui, 2007).

To ensure that the additive approach captured the concept better than other alternative possible approaches, we also categorized the 10 HCWS items based on the "ability-motivation-opportunity" framework (Appelbaum, Bailey, Berg, & Kallenberg, 2000; Delery & Shaw, 2001; Jiang et al., 2012), and then created interactions

[6] On the basis of one reviewer's comment, upon the completion of the study, we randomly selected seven firms from this list and checked these firms' strategic goals, and found that these firms consistently stated innovation and market responsiveness as their primary strategic goals. Although it demonstrates that creativity is important in this context, it may potentially limit the generalizibility of our study findings. We discuss this issue in the Discussion section in more detail.

[7] The traditional criterion for internal consistency is Cronbach's alpha. However, Cronbach's alpha tends to underestimate the internal consistency of the measure due to the following reasons (Hair, Hult, Ringle, & Sarstedt, 2013). First, Cronbach's alpha "assumes that all indicators are equally reliable, i.e., all the indicators have equal factor loadings on the construct," and second, it is "sensitive to the number of items in the scale" (Hair et al., 2013, p. 101). Composite reliability takes into account the different factor loadings and the item number of the scale. Therefore, we reported both Cronbach's alpha and composite reliability to evaluate internal consistency.

among the three sub-HR bundles. Only the Ability × Opportunity interaction had a marginally positive impact on creativity; none of the other two interactions or the three-way interaction among the three bundles was significantly related to creativity. The result suggested that an additive index was appropriate for the current study (Chadwick, 2010).

Team cohesion and team task complexity. We adapted the three-item Team Cohesion scale from Harrison, Price, and Bell (1998). One sample item read "the group of employees as a whole gets along well with each other." Supervisors responded to the scale on a Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The Cronbach's alpha of the scale was .88, and the composite reliability was .93. The loadings of the three items were high, ranging from .85 to .92, and the AVE was .81. The results showed that the measure had a high level of both internal consistency and convergent validity. We used a three-item team task complexity scale from Dean and Snell (1991). The three items were: "How much technical knowledge do the jobs in this unit require?"; "To what extent do the jobs in this unit involve solving problems?"; and "How complicated are the jobs in this unit?" Supervisors again responded to the scale on a Likert scale from 1 (*very little*) to 6 (*a great deal*). Although the Cronbach's alpha of the scale was a bit low (.60), the composite reliability was acceptable (.78), showing the internal consistency among the three items. The loadings of the three items ranged from .73 to .78, and the AVE was .55, indicating an adequate convergent validity (Hair et al., 2013).

Creativity. We used Farmer, Tierney, and Kung-McIntyre's (2003) four-item Creativity scale, which has been used in greater China. One sample read "this subordinate seeks new ideas and ways to solve problems." Supervisors rated their subordinates' creativity on a scale from 1 (*below average*) to 5 (*above average*). The Cronbach's alpha of the scale was .90, and composite reliability was .93. The loadings of the four items were high, ranging from .86 to .92, and the AVE was .78. These results displayed high levels of both internal consistency and convergent validity for this measure.

Control variables. To rule out alternative explanations, we included control variables at the individual and team levels, as suggested by prior creativity research.[8] All control variables were measured at Time 1. At the individual level, we controlled for team members' demographic information, including age, gender, education level, and firm tenure. *Age* was measured on a scale from 1 (*25 years or below*) to 9 (*61 years or above*) with 5-year intervals. *Gender* was coded as 1 = female and 2 = male. *Education* was measured by the last education received (1 = *middle school or below*, 2 = *technical or high school*, 3 = *junior college*, 4 = *undergraduate*, 5 = *master's degree*, 6 = *doctoral degree*). *Firm tenure* was measured in years. Prior research has shown that the personality trait of openness to experience is significantly related to creativity (McCrae, 1987); thus, we controlled for team leader and members' *openness to experience* using a nine-item scale adapted from Goldberg (1992). Coefficient alpha reliabilities were .79 for supervisors and .81 for team members, respectively.

Analyses

In our data, individuals were nested within teams, and teams were nested within firms. As a result, we used a three-level random-coefficient modeling with HLM 6.02 (Raudenbush, Bryk, & Congdon, 2004) to account for the nonindependence in our observations. We first ran a three-level null model with employee creativity as the dependent variable. The result showed sufficient between-team variance, $\chi^2(183) = 1051.80$, $p < .01$; $ICC1_{team} = .52$, indicating that 52% of the variance resided in between-teams, yet also showed very small between-firm variance, $\chi^2(54) = 54.90$, *ns*; $ICC1_{firm} = .0005$, indicating that only .05% of the variance resided in between-firms in creativity. Despite the very small between-firm variance, the correlation between HCWS and aggregated creativity at the firm level was highly significant ($r = .33$, $p = .014$, $n = 55$). A further analysis suggested that an alternative $ICC1_{firm}$ was indeed significant ($ICC1_{firm} = .11$, $p < .01$), if we treated the data as if there were only two levels (i.e., individual and firm but ignored teams in-between). Therefore, we concluded that there were indeed systematic between-firm differences in creativity and proceeded to approach the data with three-level random-coefficient modeling analyses.

Finally, following the best-practice recommendations for estimating crosslevel interaction effects (Aguinis, Gottfredson, & Culpepper, 2013), we reported results based on the null model (Step 1), the random-intercept and fixed slope model (Step 3), the random-intercept and random-slope model (Step 4), and the cross-level interaction models (Steps 5 and 6). Step 2 served as a control model. We also reported variance components among intercepts and slopes and information such as deviance and R^2 at different levels.[9]

Results

Table 1 shows the means, standard deviations, and correlations. As shown in Table 1, creativity was positively related to HCWS ($r = .14$, $p < .01$) and team cohesion ($r = .13$, $p < .01$), but had a nonsignificant relationship with team task complexity ($r = .01$, *ns*).

Hypothesis Testing

Table 2 shows the results of hypothesis testing. As presented in the models at Steps 3 and 4, HCWS were positively related to employee creativity (both γs = .13, $p < .01$), supporting Hypothesis 1. Comparing the model at Step 3 with that at Step 2, HCWS explained an additional 1.5% within-team variance, an additional 2.4% between-team variance, and an additional 2.4% between-firm variance in creativity. It also showed an incremental 2.0% in the total variance explained in creativity.

To test the crosslevel effects posited in Hypotheses 2 and 3, we used the group-mean centering approach for all Level 2 variables and the grand-mean centering approach for all Level 3 variables to

[8] We also controlled for more team- and firm-level variables, including team size, team type, team supervisors' age, gender, education level, and firm tenure at the team level, and firm age, size, and sales in the prior fiscal year at the firm level. Additionally, the data set contained three listed firms, and we created a dummy variable to capture the difference between listed and nonlisted firms. In exploratory analyses, the inclusion of all these controls generated essentially the same patterns of results. We therefore excluded them from further analyses. We thank the Editor and one anonymous reviewer for their comments and suggestions.

[9] We thank the Editor and an anonymous reviewer for this suggestion.

Table 1
Individual-Level Descriptive Statistics and Intercorrelations

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
Level 1: Individual employee											
1. Age	2.81	1.67	—								
2. Gender[a]	1.66	0.47	.11**	—							
3. Education level	3.12	0.99	−.38**	.05	—						
4. Firm tenure	2.05	1.15	.57**	−.02	−.35**	—					
5. Openness to experience	5.71	1.60	−.14**	.13**	.13**	−.12**	—				
6. Creativity[b]	3.31	0.81	.09**	.05	.06	.09**	.04	—			
Level 2: Team supervisor											
7. Openness to experience	5.84	1.45	−.00	−.02	−.06	−.09**	.05	.11**	—		
8. Team cohesion	5.29	0.69	−.02	−.07*	−.05	.06*	.02	.13**	.06*	—	
9. Task Complexity	4.46	0.76	−.08**	−.06	.17**	−.08**	−.00	.01	.07*	.07*	
Level 3: firm HR executive											
10. HCWS	4.25	0.74	.13**	−.04	.01	.16**	−.04	.14**	−.03	.14**	−.05

Note. $N = 1{,}059$. Firm-level and team-level variables were assigned to the individual level. HCWS = high-commitment work systems.
[a] Gender: 1 = female, 2 = male. [b] Time 2 supervisor rating. All other variables were rated at Time 1.
* $p < .05$. ** $p < .01$.

generate unbiased coefficient parameters (Hofmann & Gavin, 1998). Because we were only interested in the crosslevel interactions between HCWS and team cohesion and task complexity, we did not put the firm mean of team cohesion and task complexity back into the equation as firm-level predictors (Zhang, Zyphur, & Preacher, 2009). Furthermore, because testing crosslevel interactions often suffers from extremely low statistical power, we tested the two interactive effects in two separate equations (Aguinis et al., 2013; Mathieu, Aguinis, Culpepper, & Chen, 2012). As shown in the model at Step 5 of Table 2, the crosslevel interaction between HCWS and team cohesion on creativity was significant ($\gamma = .20$, $p < .05$). Comparing the model at Step 5 with that at Step 4, HCWS accounted for 67% of the total variance of the slope of team cohesion across firms.[10] This result led to the support of Hypothesis 2. As presented in the model at Step 6, the crosslevel interaction of HCWS and task complexity on creativity was also significant ($\gamma = .13$, $p < .05$). Comparing the model at Step 6 with that at Step 4, HCWS accounted for 33% of the total variance of the slope of task complexity across firms, lending support to Hypothesis 3.[11]

To further explore the crosslevel moderating effects, we plotted the simple slopes of the two significant crosslevel moderating effects using the procedure recommended by Aiken and West (1991) and calculated the simple slopes using the approach suggested by Bauer and Curran (2005) and Preacher, Curran, and Bauer (2003).[12] As shown in Figure 2, there was a significant positive relationship ($\gamma = .25$, $p = .001$) between HCWS and creativity when team cohesion was high (i.e., +1 *SD*), but a nonsignificant relationship ($\gamma = .01$, $p = .93$) when team cohesion was low (i.e., −1 *SD*). Again, as shown in Figure 3, there was a significant positive relationship ($\gamma = .21$, $p = .004$) between HCWS and creativity when task complexity was high (i.e., +1 *SD*), but a nonsignificant relationship ($\gamma = .05$, $p = .33$) when task complexity was low (i.e., −1 *SD*).

Discussion

In this study, we developed a multilevel combinational approach to employee creativity. In particular, scholars have called an integration of multilevel concepts within organizations to advance both the SHRM (e.g., Bowen & Ostroff, 2004; Nishii & Wright, 2008; Wright & Boswell, 2002; Wright & Nishii, 2007) and creativity research (e.g., Hennessey, 2003; Hennessey & Amabile, 2010; George, 2007; Woodman et al., 1993). Drawing on prior conceptual research (e.g., Amabile, 1983; Ellis, 1965; Huber, 1991; Shalley & Gilson, 2004; Zhou & Shalley, 2003), we hypothesized that providing HCWS would be conducive to employee creativity. Results based on a randomly selected 55 firms, 238 teams, and 1,059 individuals supported this prediction. Furthermore, we found that this macrolevel to microlevel relationship indeed depended on variability in two mesolevel organizational characteristics, lending support to a multilevel combinational approach to employee creativity. In particular, the impact of HCWS on employee creativity was optimized when teams were more cohesive and when the collective tasks handled by the team were more complex. Conversely, the impact of HCWS had a nonsignificant relationship with employees' creativity when teams were less cohesive or the team tasks were less complex. In sum, our study shows that in order to increase creativity, organizations need an integrative strategy, combining elements across multiple levels within organizations systematically.

Theoretical Contributions and Practical Implications

First, prior creativity research has suggested that contextual influences play an important role in employee creativity (e.g., Amabile, 1983; Amabile et al., 1996; Gong et al., 2009; Liu et al.,

[10] This is the cross-level interaction's explanatory power, calculated as the change in the percentage of team cohesion slope variance between the models at Step 5 and Step 4 in Table 2, that is, 67% = (.0239 − .0079)/.0239. For further details, see Aguinis et al. (2013).

[11] On the basis of the same logic as in Footnote 10, that is, 33% = (.0592 − .0399)/.0592.

[12] Because the HCWS variable has been centered on its grand mean, and team task complexity and team cohesion have been centered on their group means, respectively, we have used the centered values of HCWS ($M = 0$, $SD = .74$), team task complexity ($M = 0$, $SD = .62$), and team cohesion ($M = 0$, $SD = .62$) in the simple slope analyses.

Table 2
HLM Results for Crosslevel Interactions of HCWS and Team Contingencies on Creativity

Level and variable	Creativity (Time 2, supervisor rated)						
	Null (Step 1)	Control (Step 2)	Random-intercept and fixed slope (Step 3)	Random-intercept and random slope (Step 4)	Crosslevel interaction (Step 5)	Crosslevel interaction (Step 6)	Crosslevel interaction (Step 7)
Level 1							
Intercept	3.31** (.041)	3.31** (.040)	3.31** (.037)	3.31** (.037)	3.31** (.037)	3.31** (.037)	3.31** (.037)
Age		.06** (.018)	.06** (.018)	.06** (.018)	.06** (.018)	.06** (.018)	.06** (.018)
Gender		.06 (.038)	.06 (.039)	.06 (.039)	.06 (.039)	.06 (.039)	.06 (.039)
Education		.12** (.031)	.12** (.031)	.11** (.031)	.11** (.031)	.11** (.031)	.11** (.031)
Firm tenure		.05* (.022)	.05* (.022)	.05* (.022)	.05* (.022)	.05* (.022)	.05* (.022)
Openness to experience		.03** (.011)	.03** (.012)	.03** (.012)	.03** (.012)	.03** (.012)	.03** (.012)
Level 2							
Openness to experience		.07* (.034)	.07* (.034)	.07* (.034)	.07* (.033)	.07* (.034)	.07* (.033)
Team cohesion		.13* (.064)	.13* (.064)	.16* (.062)	.17** (.055)	.16* (.062)	.17** (.055)
Task complexity		−.02 (.072)	−.02 (.072)	−.03 (.071)	−.03 (.073)	−.03 (.068)	−.02 (.071)
Level 3							
HCWS			.13** (.046)	.13** (.046)	.13** (.045)	.13** (.046)	.13** (.045)
Cross-level interaction							
HCWS × Team Cohesion					.20* (.085)		.19* (.080)
HCWS × Task Complexity						.13* (.063)	.12* (.060)
Variance components							
Within-team (L1) variance	.318	.301	.301	.301	.301	.301	.301
Intercept (L2) variance	.342	.325	.315	.278	.274	.282	.275
Intercept (L3) variance	.0003	.0001	.0001	.0009	.0016	.0006	.0012
Team cohesion slope (L3) variance				.0239	.0079	.0200	.0096
Intercept-team cohesion slope (L3) covariance				.0019	.0026	.0011	.0021
Task complexity slope (L3) variance				.0592	.0669	.0399	.0528
Intercept-task complexity slope (L3) covariance				.0036	.0082	.0018	.0054
Additional information							
−2 log likelihood (FIML)	2,204	2,145	2,140	2,135	2,130	2,131	2,126
Number of estimating parameters	4	12	13	18	19	19	20
$R^2_{\text{Within-team(L1)}}$		.052	.067	.122	.127	.116	.126
$R^2_{\text{Between-team(L2)}}$		.050	.074	.162	.172	.153	.169
$R^2_{\text{Between-firm(L3)}}$		.052	.076	.158	.160	.150	.161
Pseudo R^2		.051	.071	.143	.150	.135	.148

Note. HLM = hierarchical linear modeling; HCWS = high-commitment work systems; FIML = full information maximum likelihood estimation; n = 1,059 at individual level (L1 = Level 1), n = 238 at team level (L2 = Level 2), and n = 55 at firm level (L3 = Level 3). Unstandardized coefficients are reported; values in parentheses are standard errors. We calculated R^2 at each of the three levels using the formula recommended by Snijders and Bosker (1999), which adjusts the variances based on the harmonic means at Levels 2 and 3. We calculated the pseudo R^2 according to proportional change of error variance at different levels. Step 7 is to demonstrate the robustness of the two interaction effects.
* $p < .05$. ** $p < .01$.

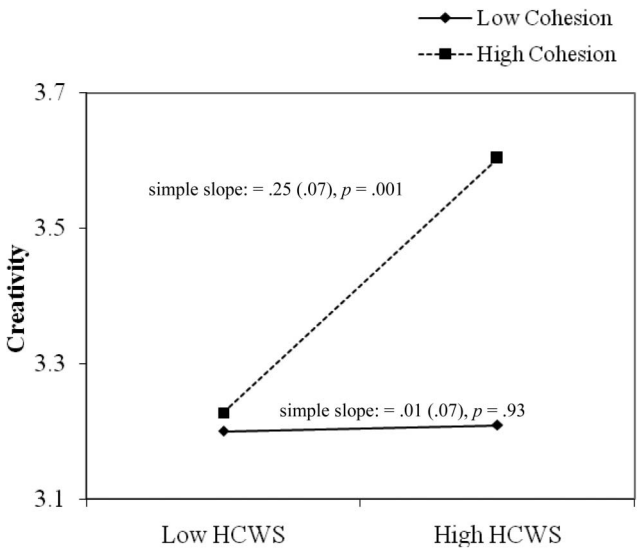

Figure 2. The interactive effect of high-commitment work systems (HCWS) and team cohesion on creativity. Values in parentheses are standard errors.

2011; Shin & Zhou, 2003; Zhou, 1998). To date, there has been limited understanding of whether SHRM, one of the most systematic and important contextual influences, can affect creativity (cf. Shalley & Gilson, 2004; Zhou & Shalley, 2003). Drawing on the componential theory of creativity (Amabile, 1983) and others (Bowen & Ostroff, 2004; Deci & Ryan, 1985; Ellis, 1965; Huber, 1991), we hypothesize and indeed find that firm-level HCWS represents a "conducive environment" or "creative situation" that can promote individual creativity.

Second, because of the complex and nested nature of "creative environments," prior research has also suggested that an integrative or combinational perspective is needed to develop a dynamic understanding about creativity (e.g., George, 2007; Hennessey, 2003; Hennessey & Amabile, 2010; Liu et al., 2011; Woodman et al., 1993). In this study, we posit a multilevel combinational perspective and find that the actual crosslevel relationship between HCWS and creativity depends on important mesolevel characteristics (i.e., team cohesion and task complexity). Overall, our study specifically addresses the prior conceptual calls to assess the combinational influences of predictors on creativity across multiple levels within organizations (e.g., George, 2007; Hennessey, 2003; Hennessey & Amabile, 2010; Woodman et al., 1993).

On a related note, this study also allows us to communicate well with prior SHRM research. Scholars from SHRM research posit a similar integration of multilevel theories and constructs to advance the SHRM research (e.g., Bowen & Ostroff, 2004; Nishii & Wright, 2008; Wright & Boswell, 2002; Wright & Nishii, 2007). For instance, Wright and Nishii (2007, p. 19) suggested that "the teams and/or group process literature [see Kozlowski & Bell, 2003, for a review] may also provide insight into the processes through which SHRM impacts performance," and Nishii and Wright (2008) specifically asked, "What can organizations do to influence these group-level factors in ways that optimize the HR practices-performance relationship?" (p. 237) Ployhart et al. (2009) also posited that "because HR practices are forms of communication, employees vary in how well they understand, perceive, and respond (i.e., within-unit variability is present)" (p. 998). Liao et al. (2009) indeed found "substantial variance in employee-HPWS among groups of employees with different status and among employees within the same group" (p. 384). Although we do not directly measure the variances of employees' perceptions of SHRM, as other prior SHRM researchers have done (e.g., Kehoe & Wright, 2013; Liao et al., 2009), in the current study we do suggest that although the firm-level HR systems may exist, their impacts on individual outcomes indeed depend on the variability in mesolevel factors such as team cohesion and team task complexity. Overall, departing from most of the existing empirical SHRM research, our study shows that although designing a coherent and effective HR system is essentially important, it is also important to adopt a systematic perspective and think about the mesolevel contextual characteristics that may strengthen (or weaken) the impact of HR systems on individual outcomes, supporting a core proposition posited in prior multilevel SHRM research (Bowen & Ostroff, 2004; Nishii & Wright, 2008).

Fourth, this study contributes to cohesion research. Beal and colleagues (2003) suggested that future research should ask "when are cohesive groups advantageous?" (p. 998). We address this question and posit that, although cohesive groups may potentially suffer from groupthinking (Janis, 1973), providing HCWS may be a condition that makes cohesive groups more advantageous by allowing group members to think and behave more actively with the knowledge, skills, and motivation learned through the provision of HCWS.

Finally, this study offers important practical implications. Investment in HCWS is costly, and companies have limited resources; thus, companies should be well aware of the conditions

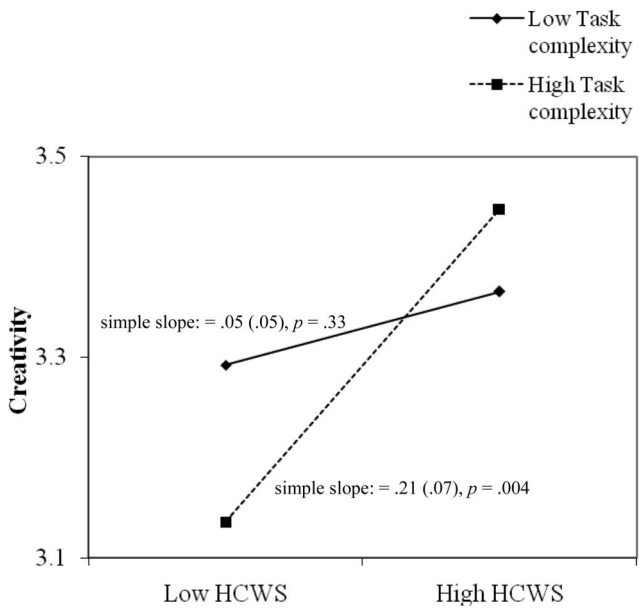

Figure 3. The interactive effect of high-commitment work systems (HCWS) and task complexity on creativity. Values in parentheses are standard errors.

when such investment will have higher (or lower) payoffs (e.g., Tsui et al., 1997) and prioritize their allocation of resources. This study offers concrete knowledge in this regard. In particular, when team cohesion is low and tasks are simple, organizations should be more careful about making such costly investment decisions. By contrast, when team cohesion is high and team tasks are complex, such investment should be generously applied. Overall, investment in SHRM alone is not sufficient; HR functions or directors can be strategic partners of focal firms when and only when they have the "HR intelligence" to diagnose the specific external and internal conditions and help firms make optimized choices in managing people.

Study Limitations and Future Research Directions

In this study, we used three-level, two-wave labor-intensive data collection and controlled for variables that have been found to affect creativity (e.g., openness to experience). Despite these strengths, this study is not without limitations. First, we only focused on two team-level characteristics. More refined understandings can be obtained if scholars can further identify other meaningful team-level or even individual-level contingencies. For instance, the impact of transformational leadership has been well documented in creativity research (e.g., Gong et al., 2009; Shin & Zhou, 2003). However, one can advance research by investigating whether HCWS interact with team leadership in affecting employee creativity. In addition, it would be interesting to test whether individual employees with certain types of traits (e.g., exchange ideology, emotional intelligence) will react more (or less) favorably to SHRM, leading to enhanced (or reduced) individual-level outcomes (e.g., creativity).

Second, although we used the communication theory of SHRM to explain why SHRM may lead to individual creativity, we did not measure the actual communication process (i.e., how the objective, firm-level HCWS leads to variations in the perceived HCWS at team or even individual levels, and which further lead to variations in individual-level outcomes). Addressing such questions can better connect the current research with prior pioneering research that has focused on the implications of SHRM perceptions within organizations (e.g., Bowen & Ostroff, 2004; Liao et al., 2009; Ployhart et al., 2009).

A third limitation of the study is that it relies heavily on the componential model of creativity to develop the hypotheses (Amabile, 1983). We, however, did not directly test whether the impact of HCWS on creativity would indeed work through such mediating variables (i.e., creativity-relevant skills, domain-relevant skills, and task motivation). Future studies should extend this study and test the mediating mechanisms between HCWS and creativity.

Fourth, we used single raters in reporting both HCWS and employee creativity. Although such approaches have been used in both prior SHRM (e.g., Collins & Smith, 2006) and creativity research (Zhou, Shin, Brass, Choi, & Zhang, 2009), the use of single raters did pose weakness to the current research. For example, the use of a single rater for multiple team members posed a serious concern for the construct validity of creativity. Although this creativity rating may contain the true variance regarding employee creativity, it may also contain the method variance due to supervisors' rating leniency (or severity). As a result, future research should use multiraters in organizations to increase the reliability and validity of both HCWS and creativity variables.[13]

Fifth, in this study, although studying creativity as the outcome of HCWS represents a meaningful extension to the existing SHRM research, we were unable to assess the discriminant validity of creativity with other related performance dimensions (e.g., organizational citizenship behavior or job performance). Future research should provide richer evidence of the discriminant validity regarding these performance dimensions.

Sixth, we have focused this research on high-technology industry. Although a post hoc small scale qualitative analysis suggested that these companies did highlight innovation and market responsiveness as their primary strategic goals, it led to a concern about whether such findings (especially the HCWS–creativity relationship) may still hold in other contexts. Therefore, future research may continue to examine the crosslevel HCWS–creativity relationship.[14]

Seventh, we largely treated team task complexity as an exogenous variable in the current research. Prior SHRM research, however, has suggested that task complexity is not completely exogenous to HCWS. In this particular study, we only found a nonsignificant correlation between HCWS and team task complexity ($r = -.05$, *ns*). We suspect that this might be partly attributed to the fact that in this study, task complexity was captured at the team level, and therefore the degree of team task complexity may not be strongly associated with firm characteristics such as HCWS. Future research should continue to explore the relationships among HCWS, task complexity, and creativity.[15]

Finally, we focused on creativity in Chinese organizations. Although scholars have advocated that creativity research be contextualized (Morris & Leung, 2010), we did not specify how the Chinese context may affect our study conclusions or whether the study results are applicable to the West. Thus, generalizability remains a central concern, and future studies should test whether the conclusions apply in other contexts.

Conclusions

In an influential practitioner-oriented publication, Nonaka (2007) suggested that companies should "[put] knowledge creation exactly where it belongs: at the very center of a company's human resource strategy" (p. 164). This study used a three-level, two-wave data set to assess how firms can use their HR strategies (i.e., HCWS) to promote employee creativity. Through the study, we not only advanced conceptual knowledge on the relationship between HCWS and creativity but also provided concrete, practical suggestions for how firms can prioritize their limited resources and optimize the impact of such costly resource allocation decisions so as to wisely manage and develop their talents.

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[14] We thank one anonymous reviewer for this comment.
[15] We thank one anonymous reviewer for this comment.

References

Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management, 39,* 1490–1528. doi: 10.1177/0149206313478188

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Amabile, T. M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology, 45,* 357–376. doi:10.1037/0022-3514.45.2.357

Amabile, T. M. (1988). A model of creativity and innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 10, pp. 123–167). Greenwich, CT: JAI Press.

Amabile, T. M., Barsade, S., Mueller, J., & Staw, B. (2005). Affect and creativity at work. *Administrative Science Quarterly, 50,* 367–403. doi:10.2189/asqu.2005.50.3.367

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal, 39,* 1154–1184. doi:10.2307/256995

Amabile, T. M., Hennessey, B. A., & Grossman, B. (1986). Social influences on creativity: The effects of contracted-for reward. *Journal of Personality and Social Psychology, 50,* 14–23. doi:10.1037/0022-3514.50.1.14

Amabile, T. M., Hill, K. G., Hennessey, B. A., & Tighe, E. M. (1994). The Work Preference Inventory: Assessing intrinsic and extrinsic motivational orientations. *Journal of Personality and Social Psychology, 66,* 950–967. doi:10.1037/0022-3514.66.5.950

Appelbaum, E., Bailey, T., Berg, P., & Kallenberg, A. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Ithaca, NY: ILR Press.

Arthur, J. B. (1992). The link between business strategy and industrial relations systems in American steel minimills. *Industrial and Labor Relations Review, 45,* 488–506. doi:10.2307/2524274

Arthur, J. B. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal, 37,* 670–687. doi:10.2307/256705

Aryee, S., Walumbwa, F. O., Seidu, E. Y. M., & Otaye, L. E. (2012). Impact of high-performance work systems on individual- and branch-level performance: Test of a multilevel model of intermediate linkages. *Journal of Applied Psychology, 97,* 287–300. doi:10.1037/a0025739

Bae, J., & Lawler, J. (2000). Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy. *Academy of Management Journal, 43,* 502–517. doi:10.2307/1556407

Baer, M., Leenders, R. T. A. J., Oldham, G. R., & Vadera, A. (2010). Win or lose the battle for creativity: The power and perils of intergroup competition. *Academy of Management Journal, 53,* 827–845. doi:10.5465/AMJ.2010.52814611

Barney, J. B., & Wright, P. M. (1998). On becoming a strategic partner: The role of human resource in gaining competitive advantage. *Human Resource Management, 37,* 31–46. doi:10.1002/(SICI)1099-050X(199821)37:1<31::AID-HRM4>3.0.CO;2-W

Batt, R. (2002). Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal, 45,* 587–597. doi:10.2307/3069383

Bauer, D. J., & Curran, P. J. (2005). Probing interactions in fixed and multilevel regression: Inferential and graphical techniques. *Multivariate Behavioral Research, 40,* 373–400. doi:10.1207/s15327906mbr4003_5

Beal, D. J., Cohen, R. R., Burke, M. J., & McLendon, C. L. (2003). Cohesion and performance in groups: A meta-analytic clarification of construct relations. *Journal of Applied Psychology, 88,* 989–1004. doi:10.1037/0021-9010.88.6.989

Becker, B. E., & Huselid, M. A. (1998). High performance work systems and firm performance: A synthesis of research and managerial implications. In G. R. Ferris (Ed.), *Research in personnel and human resource management* (Vol. 16, pp. 53–101). Greenwich, CT: JAI Press.

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. doi:10.5465/AMR.2004.12736076

Campbell, D. J. (1988). Task complexity: A review and analysis. *Academy of Management Review, 13,* 40–52.

Chadwick, C. (2010). Theoretic insights on the nature of synergies in human resource systems: Toward greater precision. *Human Resource Management Review, 20,* 85–101. doi:10.1016/j.hrmr.2009.06.001

Chuang, C. H., & Liao, H. (2010). Strategic human resource management in service context: Taking care of business by taking care of employees and customers. *Personnel Psychology, 63,* 153–196. doi:10.1111/j.1744-6570.2009.01165.x

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. doi:10.2307/30040665

Collins, C., & Smith, K. (2006). Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal, 49,* 544–560. doi:10.5465/AMJ.2006.21794671

Combs, J. G., Liu, Y., Hall, A., & Ketchen, D. J. (2006). Do high performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology, 59,* 501–528. doi:10.1111/j.1744-6570.2006.00045.x

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. doi:10.5465/AMJ.2005.15993158

Dean, J. W., Jr., & Snell, S. A. (1991). Integrated manufacturing and job design: The moderating effect of organizational inertia. *Academy of Management Journal, 34,* 776–804. doi:10.2307/256389

Deci, E. L. (1975). *Intrinsic motivation*. New York, NY: Plenum Press. doi:10.1007/978-1-4613-4446-9

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125,* 627–668. doi:10.1037/0033-2909.125.6.627

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press. doi:10.1007/978-1-4899-2271-7

Delery, J. E., & Shaw, J. D. (2001). The strategic management of people in work organizations: Review, synthesis, and extension. In G. R. Ferris (Ed.), *Research in personnel and human resources management* (Vol. 20, pp. 165–197). Stamford, CT: JAI Press.

Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44,* 350–383. doi:10.2307/2666999

Edmondson, A. C. (2008). The competitive imperative of learning. *Harvard Business Review, 86,* 60–67.

Ellis, H. C. (1965). *The transfer of learning*. New York, NY: MacMillan.

Farmer, S. M., Tierney, P., & Kung-McIntyre, K. (2003). Employee creativity in Taiwan: An application of role identity theory. *Academy of Management Journal, 46,* 618–630. doi:10.2307/30040653

Florida, R., & Goodnight, J. (2005). Managing for creativity. *Harvard Business Review, 83,* 124–131.

George, J. M. (2007). Creativity in organizations. *Academy of Management Annals, 1,* 439–477. doi:10.1080/078559814

George, J. M., & Zhou, J. (2002). Understanding when bad moods foster creativity and good ones don't: The role of context and clarity of feelings. *Journal of Applied Psychology, 87,* 687–697. doi:10.1037/0021-9010.87.4.687

Gilson, L. L., & Shalley, C. E. (2004). A little creativity goes a long way: An examination of team's engagement in creative processes. *Journal of Management, 30,* 453–470. doi:10.1016/j.jm.2003.07.001

Goldberg, L. R. (1992). The development of markers for the Big Five factor structure. *Psychological Assessment, 4,* 26–42. doi:10.1037/1040-3590.4.1.26

Gong, Y., Huang, J. C., & Farh, J. L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal, 52,* 765–778. doi:10.5465/AMJ.2009.43670890

Gong, Y., Law, K. S., Chang, S., & Xin, K. (2009). Human resource management and firm performance: The differential role of managerial affective and continuance commitment. *Journal of Applied Psychology, 94,* 263–275. doi:10.1037/a0013116

Greene, C. (1989). Cohesion and productivity in work groups. *Small Group Research, 20,* 70–86. doi:10.1177/104649648902000106

Guthrie, J. P. (2001). High-involvement work practices, turnover, and productivity: Evidence from New Zealand. *Academy of Management Journal, 44,* 180–190. doi:10.2307/3069345

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2013). *A primer on partial least squares structural equation modeling (PLS-SEM).* Thousand Oaks, CA: Sage.

Harrison, D. A., Price, K. H., & Bell, M. P. (1998). Beyond relational demography: Time and the effects of surface- and deep-level diversity on work group cohesion. *Academy of Management Journal, 41,* 96–107. doi:10.2307/256901

Hennessey, B. A. (2003). The social psychology of creativity. *Scandinavian Journal of Educational Research, 47,* 253–271. doi:10.1080/00313830308601

Hennessey, B. A., & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology, 61,* 569–598. doi:10.1146/annurev.psych.093008.100416

Hirst, G., van Knippenberg, D., Chen, C. H., & Sacramento, C. A. (2011). How does bureaucracy impact on individual creativity? A cross-level investigation of team contextual influences on goal orientation-creativity relationships. *Academy of Management Journal, 54,* 624–641. doi:10.5465/AMJ.2011.61968124

Hofmann, D., & Gavin, M. (1998). Centering decisions in hierarchical linear models: Theoretical and methodological implications for organizational science. *Journal of Management, 24,* 623–641. doi:10.1016/S0149-2063(99)80077-4

Hom, P. W., & Xiao, Z. (2011). Embedding social networks: How guanxi ties reinforce Chinese employees' retention. *Organizational Behavior and Human Decision Processes, 116,* 188–202. doi:10.1016/j.obhdp.2011.06.001

Huber, G. P. (1991). Organizational learning: The contributing processes and literatures. *Organization Science, 2,* 88–115. doi:10.1287/orsc.2.1.88

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. doi:10.2307/256741

Janis, I. L. (1973). Groupthink and group dynamics: A social psychological analysis of defective policy decisions. *Policy Studies Journal, 2,* 19–25. doi:10.1111/j.1541-0072.1973.tb00117.x

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55,* 1264–1294. doi:10.5465/amj.2011.0088

Karau, S. J., & Hart, J. W. (1998). Group cohesiveness and social loafing: Effects of a social interaction manipulation on individual motivation within groups. *Group Dynamics: Theory, Research, and Practice, 2,* 185–191. doi:10.1037/1089-2699.2.3.185

Kehoe, R. R., & Wright, P. M. (2013). The impact of high performance HR practices on employees' attitudes and behaviors. *Journal of Management, 39,* 366–391. doi:10.1177/0149206310365901

Keller, R. T. (1986). Predictors of the performance of project groups in R&D organizations. *Academy of Management Journal, 29,* 715–726. doi:10.2307/255941

Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review, 110,* 265–284. doi:10.1037/0033-295X.110.2.265

Kleingeld, A., van Mierlo, H., & Arends, L. (2011). The effect of goal setting on group performance: A meta-analysis. *Journal of Applied Psychology, 96,* 1289–1304. doi:10.1037/a0024315

Kozlowski, S. W. J. (2009). Editorial. *Journal of Applied Psychology, 94,* 1–4. doi:10.1037/a0014990

Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Comprehensive handbook of psychology: Industrial and organizational psychology* (pp. 333–375). New York, NY: Wiley. doi:10.1002/0471264385.wei1214

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

Lengnick-Hall, M. L., Lengnick-Hall, C. A., Andrade, L. S., & Drake, B. (2009). Strategic human resource management: The evolution of the field. *Human Resource Management Review, 19,* 64–85. doi:10.1016/j.hrmr.2009.01.002

Lepak, D. P., Liao, H., Chung, Y., & Harden, 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, pp. 217–271). Oxford, United Kingdom: Elsevier.

Liao, H., Liu, D., & Loi, R. (2010). Looking at both sides of the social exchange coin: A social cognitive perspective on the joint effects of relationship quality and differentiation on creativity. *Academy of Management Journal, 53,* 1090–1109. doi:10.5465/AMJ.2010.54533207

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. doi:10.1037/a0013504

Liu, D., Chen, X. P., & Yao, X. (2011). From autonomy to creativity: A multilevel investigation of the mediating role of harmonious passion. *Journal of Applied Psychology, 96,* 294–309. doi:10.1037/a0021294

Liu, D., Liao, H., & Loi, R. (2012). The dark side of leadership: A three-level investigation of the cascading effect of abusive supervision on employee creativity. *Academy of Management Journal, 55,* 1187–1212. doi:10.5465/amj.2010.0400

Maljers, F. (1992). Inside Unilever: The evolving transnational company. *Harvard Business Review, 70,* 46–52.

Mathieu, J. E., Aguinis, H., Culpepper, S. A., & Chen, G. (2012). Understanding and estimating the power to detect cross-level interaction effects in multilevel modeling. *Journal of Applied Psychology, 97,* 951–966. doi:10.1037/a0028380

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology, 85,* 273–283. doi:10.1037/0021-9010.85.2.273

McCrae, R. R. (1987). Creativity, divergent thinking, and openness to experience. *Journal of Personality and Social Psychology, 52,* 1258–1265. doi:10.1037/0022-3514.52.6.1258

Messersmith, J. G., Patel, P. C., Lepak, D. P., & Gould-Williams, J. S. (2011). Unlocking the black box: Exploring the link between high performance work systems and performance. *Journal of Applied Psychology, 96,* 1105–1118. doi:10.1037/a0024710

Molloy, J. C., Ployhart, R. E., & Wright, P. M. (2011). The myth of "the" micro -macro divide. *Journal of Management, 37,* 581–609. doi:10.1177/0149206310365000

Morris, M. W., & Leung, K. (2010). Creativity east and west: Perspectives and parallels. *Management and Organization Review, 6,* 313–327. doi:10.1111/j.1740-8784.2010.00193.x

Mueller, J. S. (2012). Why individuals in larger teams perform worse. *Organizational Behavior and Human Decision Processes, 117,* 111–124. doi:10.1016/j.obhdp.2011.08.004

Murphy, K., & Cleveland, J. (1995). *Understanding performance appraisal: Social, organizational and goal-oriented perspectives*. Newbury Park, CA: Sage.

Nishii, L. H., & Wright, P. (2008). Variability within organizations: Implications for strategic human resource management. In D. B. Smith (Ed.), *The people make the place* (pp. 225–248). Mahwah, NJ: Lawrence Erlbaum Associates.

Nonaka, I. (2007). The knowledge-creating company. *Harvard Business Review, 85,* 162–171.

Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal, 39,* 607–634. doi:10.2307/256657

Organ, D., & Hammer, W. C. (1950). *Organizational behavior*. Plano, TX: Business Publications.

Pace, R. (1990). Personalized and depersonalized conflict in small group discussions: An examination of differentiation. *Small Group Research, 21,* 79–96. doi:10.1177/1046496490211006

Perrow, C. (1967). A framework for the comparative analysis of organizations. *American Sociological Review, 32,* 194–208. doi:10.2307/2091811

Ployhart, R. E., & Moliterno, T. P. (2011). Emergence of the human capital resource: A multilevel model. *Academy of Management Review, 36,* 127–150. doi:10.5465/AMR.2011.55662569

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. doi:10.5465/AMJ.2009.44635041

Posthuma, R. A., Campion, M. C., Masimova, M., & Campion, M. A. (2013). A high performance work practices taxonomy: Integrating the literature and directing future research. *Journal of Management, 39,* 1184–1220. doi:10.1177/0149206313478184

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2003). *Probing interactions in multiple linear regression, latent curve analysis, and hierarchical linear modeling: Interactive calculation tools for establishing simple intercepts, simple slopes, and regions of significance [Computer software]*. Available from http://quantpsy.org

Raudenbush, S., Bryk, A., & Congdon, R. (2004). *HLM: Hierarchical and nonlinear modeling* (Version 6.0). Lincolnwood, IL: Scientific Software International.

Rousseau, D. M., & Wade-Benzoni, K. A. (1994). Linking strategy and human resource practices: How employee and customer contracts are created. *Human Resource Management, 33,* 463–489. doi:10.1002/hrm.3930330312

Rynes, S. L., Gerhart, B., & Parks, L. (2005). Personnel psychology: Performance evaluation and pay for performance. *Annual Review of Psychology, 56,* 571–600.

Schuler, R. S., & Jackson, S. E. (1987). Linking competitive strategies with human resource management practices. *Academy of Management Executive, 1,* 207–219. doi:10.5465/AME.1987.4275740

Seibert, S. E., Wang, G., & Courtright, S. H. (2011). Antecedents and consequences of psychological and team empowerment in organizations: A meta-analytic review. *Journal of Applied Psychology, 96,* 981–1003. doi:10.1037/a0022676

Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *Leadership Quarterly, 15,* 33–53. doi:10.1016/j.leaqua.2003.12.004

Shalley, C. E., & Perry-Smith, J. E. (2001). Effects of social-psychological factors on creative performance: The role of informational and controlling expected evaluation and modeling experience. *Organizational Behavior and Human Decision Processes, 84,* 1–22. doi:10.1006/obhd.2000.2918

Shin, J., Taylor, M. S., & Seo, M. (2012). Resources for change: The relationships of organizational inducements and psychological resilience to employees' attitudes and behaviors toward organizational change. *Academy of Management Journal, 55,* 727–748. doi:10.5465/amj.2010.0325

Shin, S., Kim, T.-Y., Lee, J., & Bian, L. (2012). Cognitive team diversity and individual team member creativity: A cross-level interaction, *Academy of Management Journal, 55,* 197–212. doi:10.5465/amj.2010.0270

Shin, S. J., & Zhou, J. (2003). Transformational leadership, conservation, and creativity: Evidence from Korea. *Academy of Management Journal, 46,* 703–714. doi:10.2307/30040662

Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. Thousand Oaks, CA: Sage.

Staw, B. (2009). Is group creativity really an oxymoron? Some thoughts on bridging the cohesion-creativity divide. In E. Mannix, M. Neal, & J. Goncalo (Eds.), *Research on managing groups and teams: Creativity in groups* (pp. 311–323). Stamford, CT: JAI Press.

Sternberg, R. J., & Lubart, T. I. (1996). Investing in creativity. *American Psychologist, 51,* 677–688. doi:10.1037/0003-066X.51.7.677

Stewart, G. L. (2006). A meta-analytic review of relationships between team design features and team performance. *Journal of Management, 32,* 29–55. doi:10.1177/0149206305277792

Summers, I., Coffelt, T., & Horton, R. E. (1988). Work-group cohesion. *Psychological Reports, 63,* 627–636. doi:10.2466/pr0.1988.63.2.627

Sung, S. Y., & Choi, J. N. (2012). Effects of team knowledge management on the creativity and financial performance of organizational teams. *Organizational Behavior and Human Decision Processes, 118,* 4–13. doi:10.1016/j.obhdp.2012.01.001

Takeuchi, R., Chen, G., & Lepak, D. P. (2009). Through the looking glass of a social system: Cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology, 62,* 1–29. doi:10.1111/j.1744-6570.2008.01127.x

Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Potential antecedents and relationship to creative performance. *Academy of Management Journal, 45,* 1137–1148. doi:10.2307/3069429

Tierney, P., & Farmer, S. M. (2004). The Pygmalion process and employee creativity. *Journal of Management, 30,* 413–432. doi:10.1016/j.jm.2002.12.001

Tierney, P., Farmer, S. M., & Graen, C. B. (1999). An examination of leadership and employee creativity: The relevance of traits and relationships. *Personnel Psychology, 52,* 591–620. doi:10.1111/j.1744-6570.1999.tb00173.x

Tsui, A. S., Pearce, J. L., Porter, L. W., & Tripoli, A. M. (1997). Alternative approaches to the employee-organization relationship: Does investment in employees pay off? *Academy of Management Journal, 40,* 1089–1121. doi:10.2307/256928

Van Der Vegt, G. S., & Bunderson, J. S. (2005). Learning and performance in multidisciplinary teams: The importance of collective team identification. *Academy of Management Journal, 48,* 532–547. doi:10.5465/AMJ.2005.17407918

Van de Ven, A. H., & Delbecq, A. L. (1974). A task contingent model of work unit structure. *Administrative Science Quarterly, 19,* 183–197. doi:10.2307/2393888

Wall, T. D., Kemp, N. J., Jackson, P. R., & Clegg, C. W. (1986). Outcomes of autonomous workgroups: A long-term field experiment. *Academy of Management Journal, 29,* 280–304. doi:10.2307/256189

Walton, R. E. (1985). From control to commitment in the workplace. In M. J. Handel (Ed.), *The sociology of organization: Classic, contemporary, and critical readings* (pp. 114–122). Newbury Park, CA: Sage.

Whitener, E. M. (2001). Do "high commitment" human resource practices affect employee commitment? A cross-level analysis using hierarchical liner modeling. *Journal of Management, 27,* 515–535. doi:10.1177/014920630102700502

Wood, S., de Menezes, L. M., & Lasaosa, A. (2003). Family-friendly management in Great Britain: Testing various perspectives. *Industrial Relations, 42,* 221–250. doi:10.1111/1468-232X.00288

Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1993). Toward a theory of organizational creativity. *Academy of management Review, 18,* 293–321. doi:10.2307/258761

Wright, P., & Boswell, W. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. *Journal of Management, 28,* 247–276. doi:10.1177/014920630202800302

Wright, P. M., & Haggerty, J. J. (2005). Missing variables in theories of strategic human resource management: Time, cause, and individuals. *Management Revue, 16,* 164–173.

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. doi:10.1111/j.1748-8583.2010.00165.x

Wright, P. M., & Nishii, L. H. (2007). *Strategic HRM and organizational behavior: Integrating multiple levels of analysis* (CAHRS Working Paper #07–03). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies.

Xiao, Z. X., & Tsui, A. S. (2007). When brokers may not work: The cultural contingency of social capital in Chinese high-tech firms. *Administrative Science Quarterly, 51,* 1–31. doi:10.2189/asqu.52.1.1

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. doi:10.2307/256714

Zhang, Z., Zyphur, M. J., & Preacher, K. J. (2009). Testing multilevel mediation using hierarchical linear models: Problems and solutions. *Organizational Research Methods, 12,* 695–719. doi:10.1177/1094428108327450

Zhou, J. (1998). Feedback valence, feedback style, task autonomy, and achievement orientation: Interactive effects on creative performance. *Journal of Applied Psychology, 83,* 261–276. doi:10.1037/0021-9010.83.2.261

Zhou, J. (2003). When the presence of creative coworkers is related to creativity: Role of supervisor close monitoring, developmental feedback, and creative personality. *Journal of Applied Psychology, 88,* 413–422. doi:10.1037/0021-9010.88.3.413

Zhou, J., & Oldham, G. R. (2001). Enhancing creative performance: Effects of expected developmental assessment strategies and creative personality. *Journal of Creative Behavior, 35,* 151–167. doi:10.1002/j.2162-6057.2001.tb01044.x

Zhou, J., & Shalley, C. E. (2003). Research on employee creativity: A critical review and directions for future research. In J. Martocchio & G. R. Ferris (Eds.), *Research in personnel and human resource management* (Vol. 22, pp. 165–217). Oxford, United Kingdom: Emerald Group Publishing Limited. doi:10.1016/S0742-7301(03)22004-1

Zhou, J., Shin, S. J., Brass, D. J., Choi, J., & Zhang, Z.-X. (2009). Social networks, personal values, and creativity: Evidence for curvilinear and interaction effects. *Journal of Applied Psychology, 94,* 1544–1552. doi:10.1037/a0016285

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Correction to Chang et al. (2014)

In the article "Do High-Commitment Work Systems Affect Creativity? A Multilevel Combinational Approach to Employee Creativity" by Song Chang, Liangding Jia, Riki Takeuchi, and Yahua Cai (*Journal of Applied Psychology*, Advance online publication. February 3, 2014. doi:10.1037/a0035679), some information about the data used in the article and a citation were not included. The details of the correction are as follows:

The data used in this article were part of a larger data set which was used in an article by Jia, Shaw, Tsui, & Park (*Academy of Management Journal*, in press). The *Academy of Management Journal* article was written at least two years prior to this article and was accepted while this article was still under review. The prior use of the data was disclosed when the *Journal of Applied Psychology* article was submitted and was transparent during the review process. This information and the citation were inadvertently omitted in the final version of the manuscript.

Jia, L., Shaw, J. D., Tsui, A. S., & Park, T.-Y. (in press). A social-structural perspective on employee-organization relationships and team creativity. *Academy of Management Journal*.

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