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A SOCIAL–STRUCTURAL PERSPECTIVE ON EMPLOYEE–ORGANIZATION RELATIONSHIPS AND TEAM CREATIVITY

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We develop a social–structural perspective on the relationship between employee–organization relationships (EORs) and team creativity. We argue that the mutual investment EOR approach, in which employers expect high levels of employee contributions and offer extensive inducements, will be associated with higher team creativity relative to other EOR approaches. We also advance the argument that this relationship will be mediated by team member work-related communication density and that the mediated relationship will be stronger when team members' tasks are complex. We find support for the model in a two-wave study of 1,807 employees in 229 teams in 55 Chinese high-technology organizations. We discuss the implications for future employment relationship research and practice.

Research into the nature and consequences of different forms of employment relationships has burgeoned in recent years, in part because dramatic changes in the competitive environment have forced organizations to reevaluate their approaches to managing people (Delery & Shaw, 2001; Hom et al., 2009; Lepak & Shaw, 2008; Shaw, Gupta, & Delery, 2005; Shore, Coyle-Shapiro, Chen, & Tetrick, 2009). From this perspective, decision makers face two key choices when establishing employee–organization relationships (EORs): (1) choosing the types and level of inducements and investments to offer employees, and (2) determining the types and level of contributions expected of employees (Tsui, Pearce, Porter, & Hite, 1995; Tsui, Pearce, Porter, & Tripoli, 1997). Offered inducements and investments comprise material rewards such as competitive pay levels and benefits packages, as well as developmental rewards such as training, career development, and empowerment. Alternatively, expected contributions comprise both the breadth and depth of in- and extra-role requirements expected of team members. The intersection of these two continua—offered inducements and expected contributions—forms the basis for two balanced (quasi-spot and mutual investment) and two unbalanced (underinvestment and overinvestment) generic employment relationship approaches (Tsui et al., 1997). Empirical findings demonstrate various outcomes associated with these EOR approaches, including employees' organizational commitment and job performance (e.g., Hom et al., 2009; Tsui et al., 1997; Zhang, Tsui, Song, Li, & Jia, 2008), employees' quit patterns (Shaw, Dineen, Fang, & Vellella, 2009), and organizational performance (Wang, Tsui, Zhang, & Ma, 2003).

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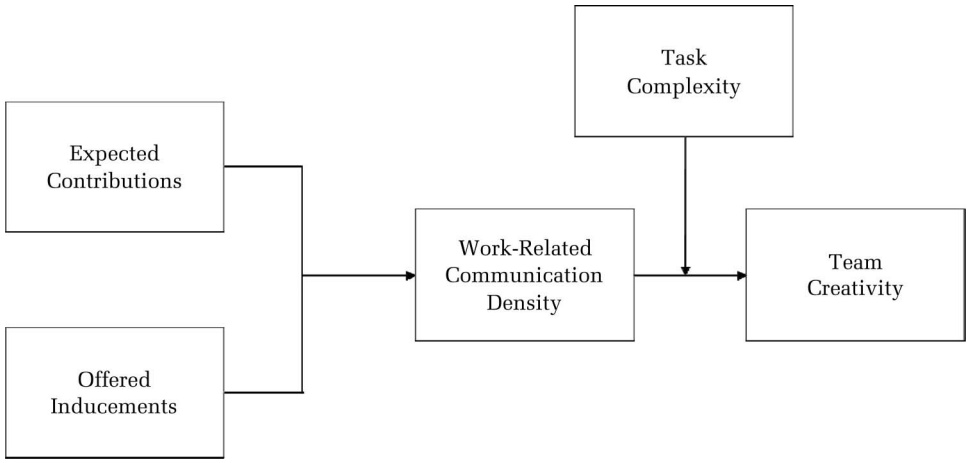
A noticeable omission from this set of outcomes is employee or work team creativity. Understanding whether and how EOR may stimulate creativity would add value to both the theory and the practice of employment relationships. EOR researchers have speculated that certain EOR forms can inspire novel, creative, or innovative solutions to problems (e.g., Coyle-Shapiro & Shore, 2007; Tsui et al., 1997; Tsui & Wu, 2005; Zhang & Jia, 2010), but, as yet, the EOR literature lacks theoretical and empirical exploration of these speculations. Indeed, Coyle-Shapiro and Shore (2007) called this gap a pressing need in the EOR literature. In this study, we aim to theorize the relationship between EOR forms and creativity at the work team level.

Most prior studies view social exchange as the underlying mechanism between EOR and outcomes (e.g., Shaw et al., 2009; but see Hom et al., 2009, for an exception). From this view, decision makers offer employees certain investments and set certain expectation levels for behavior, while employees respond with levels of commitment and performance commensurate with those investments and expectations. A social exchange view presumes that individuals will reciprocate with attitudes and behaviors that match the level of inducements provided by, and expectations from, their employers. Understanding team creativity is, however, more complicated than reciprocation, as researchers view team creativity as more than the sum of its parts (Sacramento, Dawson, & West, 2008). In particular, researchers suggest that team creativity requires the transfer and combination of knowledge *among* employees, suggesting the existence of a different process from that of a social exchange between employers and employees (e.g., Perry-Smith, 2006). In this study, we propose a social–structural theoretical framework of EOR to explain team creativity. Building on research suggesting that social capital, the value inherent in relationships (Coleman, 1988), is "the bedrock of innovation" (Zheng, 2010: 151), we argue that EOR forms have implications for the density of work-related communication patterns, which, in turn, relate to team creativity.

We further extend our model of EOR and team creativity by identifying a key boundary condition of our presumed causal sequence. Social capital theorists typically develop their perspectives under the assumption of high task complexity. For example, Oh, Labianca, and Chung (2006) argued that their theoretical propositions would hold only when team members were working on "at least moderately complex and interdependent tasks" (571). Moreover, task complexity has also been highlighted as a key contextual moderator in both employment relationships (e.g., Datta, Guthrie, & Wright, 2005) and creativity (Amabile & Conti, 1999; Taggar, 2002) literatures. In essence, we propose to examine the boundary condition of the EOR–creativity link by testing this assumption in the literature; namely, that social capital can be more effectively mobilized in more complex task environments.

Following Tsui et al.'s (1997) original view, we conceptualized employment relationships at the functional–team level where members perform relatively similar work and are subject to the same employment relationship. Within organizations, employment relationships vary not only across levels (e.g., executives versus production workers), but also across functions or jobs (accountants versus software engineers) (Tsui et al., 1997). This notion is what Lepak and Snell (1999) refer to as the human resource architecture. The assumption we made is that organizational decision makers define some of the cross-team differences in offered inducements and expected contributions, but that team supervisors also influence certain aspects of the employment relationship. Using offered inducements as an example, the organization may set pay levels to lead the market for a key team or job, while other teams or jobs receive pay levels at the market mean. Certain other inducements such as health care benefits may be more uniform across all teams or jobs within an organization, although certain key teams or jobs may receive somewhat different packages (e.g., additional free-of-cost medical examinations and wellness checkups). Further, across teams, supervisors may differentially emphasize developmental rewards by encouraging participation in decision making by some teams more than other teams depending on the nature of jobs and readiness of the employees. The organization may set high standards for indirect inducements such as procedural justice and employee participation, but these standards may also differ across jobs and teams depending on the centrality of their functions in the organization. Thus, in our team-level conceptualization, we expect that some expected contributions and offered inducements will be unique to different jobs or teams, while other expected contributions and offered inducements may be more similar across teams and influenced by supervisors on the margin. To account for

FIGURE 1
A Social–Structural View of Team-Level Employee–Organization Relationships (Expected Contributions and Offered Inducements), Work-Related Communication Density, Task Complexity, and Team Creativity



these within-organization variations with a focus on team creativity, we conceptualized EOR at the team level in this study.

Furthermore, we focus on a specific aspect of social capital—the density in team member work-related communication networks both within and outside the team within the organization. We define team-level communication network density as the average of the network density of all the team members. We argue that under certain employment relationship approaches, team members will have the opportunity and motivation to develop dense communications networks. We anticipate that team members will develop and maintain communication networks not only with others within their teams, but also with others in the organization. By using an aggregate of individual team members' network density, our measure of team communication network density is an additive or configurational conceptualization (Chan, 1998), rather than a bounded-network, single-network density conceptualization. Further, we focus on work-related communications that are central to the creativity process (Reagans & Zuckerman, 2001).

In the following sections, we first describe the prototypical employment relationships in Tsui et al.'s (1997) framework. Second, we develop a social–structural-based approach to theorizing the relationship between EOR forms and work-related communication density. Third, we develop the relationship between work-related communication density and team creativity, and we further develop a mediation prediction that links EOR to team creativity via work-related communication density. Fourth, to sharpen our predication, we argue that the theorized relationships are stronger in complex team task environments. The resulting model, depicted in Figure 1, is a moderated mediation view of the relationship between EOR forms and team creativity. Fifth, we describe tests of our model in a two-wave study of 229 teams from 55 high-technology organizations in China. We conclude by describing the implications of our results for the EOR, social capital, and team creativity literatures.

THEORETICAL BACKGROUND AND HYPOTHESES

Employment Relationships and Communication Density

The social capital literature suggests that work teams, like individuals, can be considered information-processing units; they encode, store, and retrieve information (Nahapiet & Ghoshal, 1998; Sparrowe, Liden, Wayne, & Kraimer, 2001). In their exposition concerning how social capital is created within organizations, and, particularly, in networks, Nahapiet and Ghoshal (1998) outlined four theoretical preconditions for the free flow of work-related communication, knowledge transfer, and combination. First, individuals must be able to develop dense communication networks. Second, team members must believe that work-related communication can create value, even if they are somewhat uncertain regarding the ultimate outcomes.

Social capital theorists often refer to this as *value expectancy* (Moran & Ghoshal, 1996). A third precondition is related to whether team members believe they will gain some personal value. Fourth, teams must also be able to use their communication networks to their advantage. That is, they must recognize, assimilate, and utilize the information. This concept is akin to the idea of absorptive capacity or the ability to recognize and leverage the value of knowledge and information (Cohen & Levinthal, 1990). We argue, below, that the two EOR continua—offered inducements and expected contributions—have direct implications for the development of social capital; in particular, the work-related communication density of team members.

Recall that offered inducements comprise two interrelated dimensions—developmental and material rewards. By adopting high levels of developmental inducements, such as opportunities for career development, high levels of empowerment, participation in decision making, and access to training, employers signal to employees that they have a long-term view of the employment relationship and are willing to invest in their human capital. More direct forms of material rewards, such as competitive pay and generous benefits, also indicate a long-term view and substantial investment in human capital. Based on Nahapiet and Ghoshal's (1998) conditions for the development of communication links, offered inducements should increase the opportunity to form and solidify communication by increasing the time frame associated with the employment relationship. Low inducements signal a short-term perspective, but high inducements lead to a more stable workforce over time (e.g., Shaw, Delery, Jenkins, & Gupta, 1998), which allows employees more opportunities to exchange information with coworkers. Indeed, research has demonstrated clearly that higher levels of offered inducements increase loyalty and reduce quit propensity (Hom et al., 2009), and also are related to lower quit rates in organizations (Shaw et al., 1998; Shaw et al., 2009). In addition, training and development opportunities increase the team's absorptive capacity, or ability to transfer and use information effectively. Spender (1996) argued that absorptive capacity resides not within individuals but, rather, depends on the "links across a mosaic of individual capabilities" (Nahapiet & Ghoshal, 1998: 250). From the employees' perspective, offered inducements allow access and opportunity to develop social capital over time. Fang, Duffy, and Shaw (2011), for example, argued that socialization programs, often viewed as a form of offered inducements, would increase newcomers' ability to develop strong social networks. Thus, higher offered inducements address some, but not all, of Nahapiet and Ghoshal's (1998) conditions for developing dense communication networks among team members.

To set high contribution expectations, team supervisors often set high standards for performance quality, emphasize teamwork and cooperation, expect extra assignments to be completed quickly and accurately, and presume that team members will take the initiative to improve work methods and procedures (Shaw et al., 2009). Again, based on Nahapiet and Ghoshal's (1998) model, expected contributions are strongly aligned with their motivation-based preconditions. Because contributions are broadly defined, employees are likely to perceive that their inputs create value. Compared with offered inducements, higher levels of expected contributions provide greater value expectancy. Related to value expectancy, the parties involved must expect the process to yield them personal value. Borrowing from Quinn, Anderson, and Finkelstein (1996), Nahapiet and Ghoshal (1998) referred to this precondition as the "care–why" component of the development and use of social capital.

We expect that team members in mutual investment employment relationships will exhibit the densest communication networks. Here, all four preconditions from Nahapiet and Ghoshal (1998) are satisfied. Because offered inducements are high, employers provide team members the opportunity (through long-term investments) and capability (through training and development) to develop work-related communication links, as well as the motivation to do so through the fulfillment of duties within and outside the job requirements. We contend that the mutual investment approach will affect team members in the same fashion; that is, it will not only provide employees the opportunity to develop strong networks, but also will be instrumental in selecting communication partners within and outside the team that allow the free flow of information as well as the exchange of knowledge. Under the mutual investment EOR, the social capital development opportunities and motivation should provide the seeds for developing dense networks. In suggesting that the mutual investment form will yield the densest communication networks, relative to other forms, we contend that each dimension of EOR—offered inducements and ex-

pected contributions—provides a necessary but insufficient condition for the development of dense social networks. That is, the opportunity created by high offered inducements must be matched with the motivation created by high expectations in order for dense team member networks to form. In increasing the time frame associated with the employment relationship, offered inducements may allow team members to generate more communication with more members, but, without the instrumental motivation provided by high expectations, they are unlikely to judiciously select communication partners within and outside the team in order for work-related communication to flow freely and for knowledge to be combined and transferred.

We posit that low work-related communication density will occur under the quasi-spot contract, underinvestment, and overinvestment forms. In the quasi-spot situation, employers offer few long-term inducements and provide team members neither the opportunity nor the capabilities to develop dense communication networks. In addition, employers have low expectations for employee contributions and therefore do not anticipate or provide the motivational or value-expecting opportunities to develop strong communication networks.

In underinvestment situations, employers offer team members few inducements but expect significant contributions. From the social capital development view, in such situations, team members have little opportunity or capacity to develop network links, but have substantial value expectancy in terms of expected contributions. The literature provides mixed evidence on the effects of the underinvestment EOR form. Tsui et al. (1997) found that these conditions were associated with the lowest job attitudes and performance, while Shaw et al.'s (2009) study revealed that good performers showed low quit rates in the underinvestment situation. In terms of the development of work-related communication networks, underinvestment situations set up competitive within-team environments. Although team members may be motivated by their broad task challenges, the lack of strong or meaningful inducements means they must compete for resources, which may supplant or interfere with the development of work-related communication ties. In essence, the underinvestment form provides only one necessary element for social capital development—motivation—but gives employees little opportunity or capacity to develop dense networks. As such, we expect low communication density in such situations.

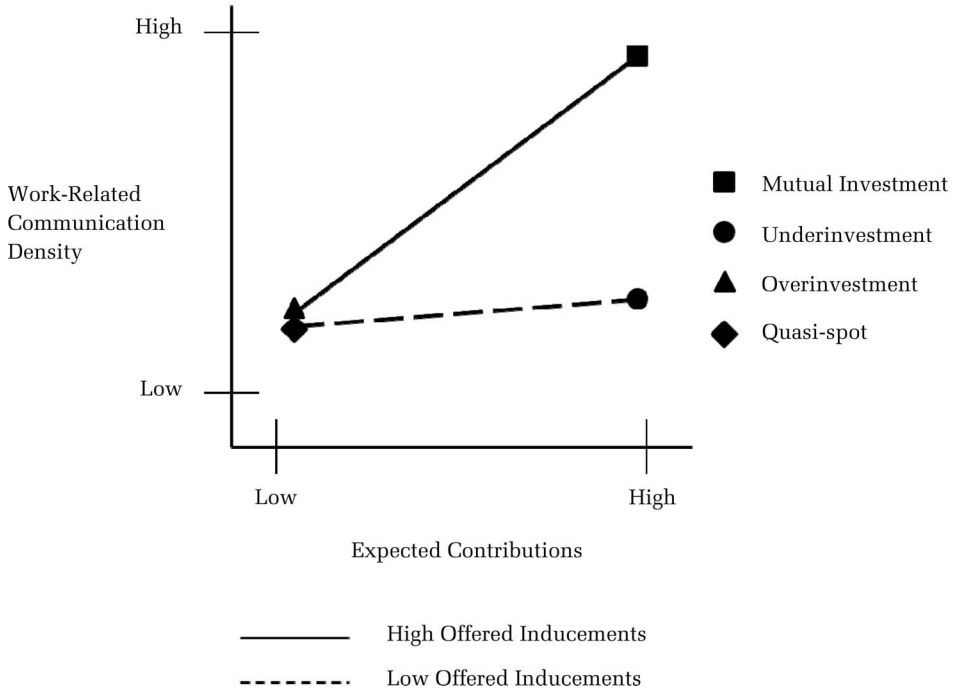
Overinvestment situations provide opportunity and capability for developing communication ties, but little value expectancy for doing so. As such, the overinvestment form may be characterized by lethargy or apathy, rather than the within-team competition for resources that mark underinvestment forms. In partial support of this reasoning, Hom et al. (2009) found the overinvestment relationship to be unrelated to individual job embeddedness or to employee commitment. Like the underinvestment form, an overinvestment situation provides only one necessary element for social capital development—opportunity—but this approach gives employees little motivation for building social capital. As a result, we expect low communication density in such situations. Following Shaw et al. (2009), we express our hypotheses in terms of an interaction between offered inducements and expected contributions. The predicted form is depicted in Figure 2. With high offered inducements, the relationship between expected contributions and work-related communication density should be significant and positive (the difference between overinvestment and mutual investment situations). With low offered inducements, the relationship between expected contributions and work-related communication density should be weaker or not significant. Formally:

Hypothesis 1. The relationship between expected contributions and team members' work-related communication density will be positive and significant when offered inducements are high, but the relationship will be attenuated when offered inducements are low.

Work-Related Communication Density and Team Creativity

Team creativity is defined as the development of "valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system" (Woodman, Sawyer, & Griffin, 1993: 293). We expected communication density to relate to team creativity for several reasons. First, dense communication networks have been shown to foster coordinated action and to facilitate the development and refinement of ideas (e.g., Edmondson, 1999; Reagans & McEvily, 2003; Reagans & Zuckerman, 2001), factors that the empirical literature has shown to be central to creativity. The exchange of work-related information makes each member aware of a broad range of per-

FIGURE 2
Predicted Interaction Between Offered Inducements and Expected Contributions on Work-Related Communication Density



spectives, skills, and information that they can use to generate new ideas about doing the work (Tesluk, Farr, & Klein, 1997). Also, creativity can be increased through effective interactions and cross-fertilization of ideas (Gilson, Mathieu, Shalley, & Ruddy, 2005; Perry-Smith & Shalley, 2003).

Second, dense communication networks facilitate the transfer of tacit knowledge or unarticulated information tied to intuition and informal "rules of thumb" in social settings (Nonaka & von Krogh, 2009). This type of information is not readily identifiable, understandable, or easily transferred among peripheral group members or those with weak ties. As Kijkuit and van den Ende (2010) argued, innovative solutions to problems often involve rapid information transmission between members, and commonly this transmission is accomplished in a shared informal language developed through frequent interactions. Third, dense communication networks are associated with the effectiveness of interpersonal communication, a factor that is critical for speed and timeliness in creativity-based situations (e.g., Amabile, 1996; Cohen & Levinthal, 1990; Moenaert & Souder, 1996). Indeed, tacit knowledge is rooted in communication-based action and routines, and transfer of tacit knowledge is viewed as the foundation for innovation (Nonaka & von Krogh, 2009). Total communication or frequency of communication is less important in such situations than the density of the communication network and the "intertwining" of information (see, for example, Dyck, Starke, Mischke, & Mauws' (2005) study of innovation in automobile manufacturing). Therefore, where density is high, team members "can achieve more accurate or 'true' representations and make better decisions" (Nonaka & von Krogh, 2009: 637). In terms of creativity in particular, Kratzer, Leenders, and van Engelen (2008) showed that the number of multiple direct contacts were "more productive to the creativity of teams than open and efficient networks," and, further, that overlapping network connections were more effective at fostering team creativity and innovation than sparse networks (Kratzer, Leenders, & van Engelen, 2010). Thus, we predict:

Hypothesis 2. Team members' work-related communication density will relate positively to team creativity.

As noted, researchers have often suggested that mutual investment employment relationships can foster team creativity and innovation (e.g., Zhang &

Jia, 2010), although empirical evidence to support this speculation has been lacking. Because dense communication networks are considered a strong precursor to creativity and innovation (Tsai & Ghoshal, 1998; Zheng, 2010), it is logical that employment relationships will relate to team creativity through encouraging the development of overlapping ties and strengthening coordination between individuals within and outside the team (e.g., Gittell, Seidner, & Wimbush, 2010). Accordingly, we expect that the requisite preconditions for developing dense communication networks, the mutual investment EOR, will be related to work-related communication network density among team members, and this density will be positively associated with team creativity. Thus:

Hypothesis 3. The relationship between EORs and team creativity will be mediated by team members' work-related communication density such that the mediated effect will be the strongest for the mutual investment approach of the EOR.

The Moderating Effect of Task Complexity

The importance of task complexity, defined as the extent to which a task entails low routine, high cognitive demand, and uncertainty (Herold, 1978; Schroder, Driver, & Streufert, 1967), has been highlighted as a contextual moderator in literatures of employment relationships (e.g., Datta et al., 2005), social capital (Gant, Ichniowski, & Shaw, 2002; Tsai & Ghoshal, 1998), and creativity (Amabile & Conti, 1999; Taggar, 2002). Social capital theory also explicitly assumes a complex task environment. By extension, the relationship between EOR and team creativity, via social capital development, should be weakened when tasks are relatively simple. We expect that work-related communication density is more likely to be effectively mobilized into creativity under high work-team task complexity than under low complexity for two reasons.

First, complex tasks require team members to generate and evaluate alternative approaches and solutions where none readily exists. As Tushman (1979) noted, nonroutine and difficult tasks increase the importance of information exchange and information processing requirements among employees. Dense communication networks facilitate the free flow of information, and the social capital inherent in dense networks can be more effectively utilized for complex tasks, while routine, simple tasks require less communication exchange. Second, the more complex the tasks, the less likely any one individual will have the requisite task information. Dense communication networks allow team members to access other team members who have the requisite information for developing creative approaches to complex tasks. Dense networks also allow them to share, compare, and contrast information with one another and develop synergistic solutions. In sum, in highly complex tasks, dense communication networks allow team members to mobilize the inherent value in their networks to improve team creativity.

Hypothesis 4. The relationship between team members' work-related communication density and team creativity will be moderated by task complexity such that the positive relationship will be stronger when task complexity is high.

By combining these lines of reasoning, we form the basis for a moderated mediation framework of the relationships among EOR, team members' work-related communication density, task complexity, and team creativity. We expect to observe benefits of the mutual investment form of the employment relationship in terms of denser communication networks and higher team creativity only under high task complexity. Stated formally:

Hypothesis 5. The strength of the mediated relationship between EORs and team creativity (through team members' work-related communication density) will depend on task complexity; the indirect and total effects of EORs (specifically, the mutual investment approach) on team creativity will be stronger when task complexity is high.

METHOD

Research Design and Procedure

We used a two-wave onsite survey of high-technology organizations located in an eastern province of China. Chinese high-technology organizations were selected because the organizations emphasize employee creativity to develop newer and better products or services. In October 2009, we randomly selected 102 organizations, 5% of 2,043 accredited high-technology organizations in one province. The accredited organizations were listed on the official website affiliated with the Ministry of Science and Technology of the People's Republic

of China (see http://www.innocom.gov.cn/web/static/catalogs/catalog_6/6.html; in Chinese). To be accredited as "high technology," an organization must (a) have self-owned intellectual property rights to their core technologies, (b) have a minimum R&D investment of 6% of total annual sales of no less than 50 million renminbi (RMB), and (c) 60% of their annual sales must come from high-technology products and services released within the past five years, among other criteria. To facilitate high response rates (Gupta, Shaw, & Delery, 2000), we first sent letters explaining our research to the top executives of the selected organizations. Then, with their approval, we met with HR directors to learn about the organizational structures, to discuss the survey timeline and methods, and to select which teams and employees would be asked to participate. After receiving a list of functional teams in the organization, we randomly chose a minimum of five and a maximum of ten innovation-related teams associated with R&D, product design, technical support, manufacturing, quality testing, or customer service. All participants were full-time professional or white-collar employees. Then, we conducted onsite surveys with the help of the HR directors, who brought participants to a company meeting room. In some cases, a member of the research team delivered questionnaires to employees who could not leave their workstation. Each participant received a business card from the research team member, a small gift, and an explanation of our confidentiality commitment. For absent participants, we left business cards, gifts, surveys, and self-addressed stamped envelopes for them to return the survey by mail. The research team collected 90% of the completed surveys at the workplace. Subsequent *t* tests revealed no significant differences on study variables across those returned to the research team at the work site and those returned by mail.

In December 2009, we conducted a pilot test of seven organizations to test our survey procedures. From March to August of 2010, we conducted the first-wave survey, then conducted the second-wave survey two to four months later, also on site. We used the first-wave surveys of the work team supervisors to measure EOR forms and task complexity, the first-wave surveys of team members to assess their work-related communication density, and the second-wave surveys of the work team supervisors to rate team creativity.

Sample

Participating in our first-wave survey were 65 organizations, 64% of the 102 randomly selected organizations. An average of 4.72 teams and an average of 36.65 employees (ranging from 2 to 93) participated from each organization. A total of 307 team supervisors and 2,317 employees completed the first-wave survey. Of these 65 organizations, 55 participated in the second-wave survey. An average of 4.35 teams (ranging from 1 to 7) per organization and 239 team supervisors completed the second-wave survey. We conducted response bias tests across several factors and levels. Organizations participating in the second-wave survey were not significantly different from Time 1 organizations in firm age, number of employees, total sales, R&D investment, ownership, or industry. Teams participating in both waves were not significantly different from Time 1 teams in team size, communication network size, or task complexity. Team supervisors participating in the second-wave survey were not significantly different from Time 1 supervisors in age, education, and company tenure.

The average within-team response rate was 96%, ranging from 46.7% to 100% across the 307 teams. Thirteen teams had response rates of less than 80% and were dropped following network research recommendations (Sparrowe et al., 2001). The overall 96% response rate is comparable to recent studies published in top-tier journals; for example, the within-group response rate was 93.34% in Wu, Tsui, and Kinicki (2010), 74.92% in Hu and Liden (2011), and 97% in Hirst, van Knippenberg, Chen, and Sacramento (2011). The final sample for hypotheses testing included 55 organizations and 229 work teams with 1,807 employees who participated in both Time 1 and Time 2 surveys and provided usable data on all key variables. The within-team response rate for the final analysis sample was 97.8%. Each team averaged about 8 members and 35% of them were female. Team members averaged 3.7 years of team tenure. The modal education level was a junior college degree. Nearly 30% of the organizations were engaged in high-technology service or high-technology transformation in traditional industries, as defined by the government (e.g., automobile, control system, and new machine manufacturing); 18.2% in electronic or communication products; 16.4% in new materials manufacturing; 12.7% in new energy and energy-saving technology; 7.3% in software and system integration; 5.5% in biotechnology and pharmaceuticals;

9.1% in meters and equipment manufacturing; and 1.8% in resources and environment protection technology. The average proportion of R&D investment as total sales was about 11.3%. About 83.3% of supervisors and 70.9% of employees had college or university degrees. Of these teams, 34.9% were related to R&D, 6.7% technical support, 16.4% quality management, 12.6% marketing and service, 18.1% operation and manufacturing, and 11.3% others (project management or human resource management).

Measures

Employee–organization relationships. We used items from previous research of Hom et al. (2009) and Wang et al. (2003) who measured expected contributions and offered inducements for middle managers. To make it appropriate for first-line employees in high-technology organizations, we contextualized the EOR measure. First, we conducted one-hour interviews with each of six HR directors from separate high-technology organizations—two state owned, three private, and one foreign owned. We asked, "What does your organization provide to first-line employees in the way of inducements?" and "What does your organization expect from first-line employees in the way of contributions?" We then asked follow-up questions to clarify responses. After the interviews, we modified and added EOR items.

In the second step, 319 full-time employees, including 134 MBA graduates and 185 of their subordinates, formed the pilot sample and they completed the survey for the exploratory factor analysis (EFA). The respondents assessed how extensively their organizations offered inducements within their work teams (e.g., emphasized career development, provided competitive salaries). The response scale was "0" for "not existing," "1" for "seldom provided," through to "7" for "provided a lot." Furthermore, respondents described their employer's expectations of work contributions from their work teams (e.g., complete performance goals for quality and quantity, take initiative to carry out new or challenging assignments). An eight-point response scale was used, from "0" for "not existing" and "1" for "seldom emphasized" through to "7" for "emphasized very much."

In the main study, 229 work team supervisors from 55 companies completed the same measures as the pilot study for confirmatory factor analysis (CFA). Each supervisor described the EOR of the team of employees he or she supervised. The instruction asked supervisors to focus on a team of employees "with similar or the same job within your department." For offered inducements, the item stem was, "To what extent does your firm provide each of the inducements to the employees in this team?" For expected contributions, the item stem was, "To what extent does your firm emphasize each of the expected contributions from the employees in this team?" Table 1 shows the EFA and CFA results from the pilot sample and the main study sample. The results suggest a structure consistent with Wang et al. (2003) and Hom et al. (2009). The dimension of offered inducements contained the factors of developmental and material rewards, and the dimension of expected contributions involved the two factors of in-role and extra-role work requirements. Because our theory concerns the variance on the broad continua, rather than the subdimensions, we performed a second-order factor analysis. The second-order structure yielded good fit ($\chi^2 = 553.93$, $df = 308$, $\chi^2/df = 1.80$, CFI = .98, TLI = .97, RMSEA = .059). Thus, we averaged items across the subdimensions to create offered inducements ($\alpha = .90$) and expected contributions ($\alpha = .92$) measures.

Work-related communication density. On the first-wave survey, following Xiao and Tsui (2007), we collected data on "ego-centered" networks by first asking the respondents ("egos") to identify up to five coworkers ("alters") with whom they most frequently communicated about work-related matters. We chose an egocentric approach rather than a roster approach for the following reasons. Our conceptualization of network density included the possibility that team members would develop overlapping or dense network ties within the team, and with other employees outside of the team but within the organization. Roster methods are typically used when the boundary of a network is defined (Chung, Hossain, & Davis, 2005). When network boundaries differ from person to person within the team, the roster approach yields inaccurate network data (Reagans & McEvily, 2003). Although ego-centered network data may be biased toward strong ties (Krackhardt & Kilduff, 1999), reports of ego–alter and alter–alter relationships are reliable (Burt, 1992; Podolny & Baron, 1997; Seibert, Kraimer, & Liden, 2001; Xiao & Tsui, 2007), in part because an individual will "report on that part of the network with which he or she is most familiar" (Reagans & McEvily, 2003: 252). These advantages may be counterbalanced by the potential

TABLE 1
EFAs and CFAs on Offered Inducements and Expected Contributions[a,b]

	Offered Inducements				Expected Contributions			
	Factor 1		Factor 2		Factor 3		Factor 4	
	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA
Developmental rewards[c]								
Value employees' feedback on company's overall policies	.76	.75	.16		.25		.12	
Emphasize employee's career development	.77	.71	.15		.13		.26	
Care about employees' satisfaction at work	.81	.78	.19		.13		.27	
Create opportunities for employees to show their talents	.81	.76	.15		.19		.26	
Treat each employee fairly	.80	.70	.13		.14		.11	
Value employees' suggestions on work	.86	.78	.11		.16		.09	
Empower employees fully within their sphere of responsibility	.68	.61	.06		.11		.27	
Encourage employees to participate actively in department- or firm-level decision making	.77	.67	.04		.06		.23	
Respect human dignity	.76	.67	.05		.23		-.03	
Train employees on knowledge and skills for their jobs and career development	.65	.57	.14		.22		.11	
Material rewards[c]								
Provide competitive salaries	.61		.42	.80	.20		-.03	
Provide generous housing subsidies beyond legal requirements	.06		.84	.40	.04		.20	
Provide competitive bonuses	.31		.73	.73	.27		-.05	
Offer good health care and medical insurance beyond legal requirements	.21		.76	.52	.10		.10	
In-role work requirements								
Fulfill the job inside and out	.19		.04		.77	.74	.14	
Complete performance goals in quality and quantity	.18		.01		.69	.57	.15	
Operate legally and follow company rules and policies	.25		.09		.60	.75	.15	
Conscientiously complete extra assignments at a moment's notice[d]	.04		.15		.76	.74	.04	
Work seriously and accurately[d]	.07		.11		.72	.78	.20	
Team up with others in the job	.49		.05		.47	.75	.37	
Work hard without complaints[d,e]						.69		
Contribute to the future development of the company or department[e]						.74		
Promote actively the company's image and reputation	.28		.14		.63	.74	.19	
Extra-role work requirements								
Take initiative to make constructive suggestions	.22		.14		.28		.81	.72
Adopt new ideas and methods actively to improve work[d]	.20		.18		.27		.83	.81
Continuously improve work procedures and methods[d]	.36		.00		.25		.72	.77
Take initiative to carry out new or challenging assignments[d]	.47		.05		.39		.38	.78
Eigenvalue	7.29		2.26		3.92		2.72	
Percent variance explained	29.16		9.05		15.67		10.89	
Cumulative percent variance explained	29.16		38.21		53.88		64.73	
Alpha coefficients − EFA sample (n = 319)	.94		.77		.85		.87	
Composite reliabilities − CFA sample (n = 229)		.91		.72		.91		.85

Notes.

[a] The EFA sample consists of 319 full-time employees including MBA graduates and their subordinates in the pilot study. The CFA sample consists of 229 team supervisors from 55 hi-technology firms in the main study.

[b] Second-order structure fit indices: χ^2 = 553.93, df = 308, χ^2/df = 1.80, CFI = .98, TLI = .97, RMSEA = .059.

[c] Items under the two factors were original from Wang et al. (2003).

[d] Original Wang et al.'s (2003) item.

[e] The two items were omitted in the pilot study but added in the main study.

drawback that the technique may underestimate links out of the individual's frame of reference (Reagans & McEvily, 2003).

We next asked for information on the communication frequency of ego–alter and alter–alter relationships in the network. In these teams, on average, 68% of alters were within the team, with 32% of alters outside of the team but within the company. We asked team members how often they engaged in work-related communicated with the individuals listed in their matrix. Responses ranged from "0" to "2" ("0" = no or rare communication;

"1" = some communication: two or three times weekly; "2" = frequent communication: more than three times weekly). We transformed the frequency of communication into binary data ("some communication" and "frequent communication" were coded "1") to calculate the density of each respondent's network. We used Scott's (2000) formula to calculate density: the number of communication ties in the network divided by $N \times (N - 1)$, where N is the number of ties in the network. We expect team members' communication network density to be more similar within teams than between teams due to the same EOR they experience. Therefore, following Soda, Usai, and Zaheer's (2004) aggregation of constraint, we obtained the team-level work-related communication density by averaging the density of member networks within the team. Thus, we conceptualize and operationalize average team member communication density as an additive (Chan, 1998) or a configurational (Soda et al., 2004) team-level measure. Within-team agreement for the density estimates was high (mean r_{wg} = .96, range = .63–1.00). ICC(1), the reliability of a single or individual assessment of the group mean and a comparison of the variance between teams to the variance within teams on network density, was .10 ($p < .01$). ICC(2), or the reliability of team means, was .46.

Task complexity. This variable was operationalized with seven items from Dean and Snell (1991) that captured the mental challenges associated with tasks in the work team and the variety in the work, as rated by supervisors at Time 1. This approach is consistent with the view that task complexity refers to how extensively the job makes multiple "demands that require skill and training on the part of job incumbents" (Schaubroeck, Ganster, & Kemmerer, 1994: 427; see also Shaw & Gupta, 2004). Sample items are (a) "To what extent do the jobs involve solving problems?" and (b) "How much variety in tasks, clients, or things do members of your work unit generally encounter in a working day?" Coefficient alpha reliability was .80.

Team creativity. We measured team creativity using a six-item measure. We adopted four items from Farmer, Tierney, and Kung-Mcintyre (2003) and two items from Leenders, van Engelen, and Kratzer (2003): (1) "This group of employees seeks new ideas and ways to solve problems"; (2) "This group of employees tries new ideas or methods first"; (3) "This group of employees generates ground-breaking ideas related to the field"; (4) "This group of employees is a good role model for creativity"; (5) "This group of employees generates new applications"; and (6) "This group of employees generates new inventions." We administered the measure to the work-team supervisors in the second-wave survey. The items had six Likert-type response options, from "1" (strongly disagree) to "6" (strongly agree). Coefficient alpha reliability was .86.

Control variables. We also controlled for potential confounds for EOR, team creativity, and work-related communication density as suggested in previous research (e.g., Farmer et al., 2003). The number of team members measures *team size*. Team-level *communication network size* was measured as the average of the team employees' communication networks size. We also controlled for average *team tenure*, *percentage female*, and *percentage of outside network members* to account for their potential influence on work-related communication density and team creativity. In addition, we controlled for the *average education level of the team members*, with six response options: (1) middle school or below; (2) technical or high school; (3) junior college; (4) bachelor; (5) master; and (6) doctorate. Finally, we included a measure of perceived supervisor support as a proxy for the social exchange mechanism. We considered supervisors to be viewed as the representatives or the embodiment of the organization, following Eisenberger et al. (2010). We adopted a seven-item measure developed by Pearce, Sommer, Morris, and Frideger (1992). Sample items include "My supervisor is considerate of subordinate's feelings" and "I really feel that my supervisor and I are working toward shared or team objectives." Coefficient alpha reliability was .92. Team members completed these items in the Time 1 survey. We aggregated the items to the team level. The estimate of between-team variance in relationship to total variance (ICC(1)) was .10 ($p < .00$), and the reliability (ICC(2)) of this team-level measure was .46. Within-team agreement indices were acceptable (mean r_{wg} = .87, median r_{wg} = .92, range = .05–.99). Finally, we controlled for team performance to assess EOR's net effect on team creativity through communication density. It was measured with five items encompassing knowledge of tasks, quality of work, quantity of work, planning and allocation, and an overall evaluation of team performance (Barrick, Stewart, Neubert, & Mount, 1998). The team supervisor completed this measure in the Time 1 questionnaire (α = .80).

Analyses

Teams in the same organizations are interdependent, which violates the independent assumption of traditional ordinary least squares regression and causes biased estimators. Therefore, we used a clustered regression with a White correction that allows covariance between individuals within groups and corrects for heteroscedasticity across groups (Rogers, 1993). Given our teams were nested within organizations and within industry, we used a three-level model that partitioned variance into team, organization, and industry components. A null model analyses revealed that the estimate of between-industry variance in relationship to total variance was not significant for team-member density (ICC(1) = .00, p = .37), nor for team creativity (ICC(1) = .02, p = .18). Thus, we clustered only on organization in the primary analyses.

We tested the moderated mediation hypothesis using the nested-equations path analytic approach (Edwards & Lambert, 2007). This approach expresses the relationships as the integration of the family of equations, which is accomplished by substituting the regression equation(s) for the mediating variable(s) (work-related communication density) into the equation for a given dependent variable (team creativity). These reduced form equations are then used to derive direct, indirect, and total effects of the independent variable (expected contributions) across the moderator variables. Our theoretical model is an example of a first- and second-stage moderated mediation hypothesis because the indirect effect of expected contributions on team creativity is moderated by offered inducements in the first stage and by task complexity in the second stage. The full set of nested equations is available upon request from the authors. We described the direct, indirect, and total effects of expected contributions on team creativity at different levels of offered inducements and task complexity using path analysis conventions. Because calculations of the indirect effects involve products of regression coefficients, the distribution of products is non-normal, and significance tests of product terms have a high Type 1 error rate (Shrout & Bolger, 2002). Therefore, we followed Edwards and Lambert's (2007) suggestions and estimated the sampling distributions of the product of regression coefficients using a bootstrap procedure with 1,000 samples to construct confidence intervals for the significance tests of indirect and total effects.

RESULTS

Descriptive statistics and correlations of the study variables are presented in Table 2. The clustered regression results are shown in Table 3. As the regression results in the left two columns of Table 3 show, expected contributions significantly related to work-related communication density (b = .22, $p < .01$) explain 14% of the variance, but the main effect of offered inducements was not significant (b = −.03, *n.s.*). In Step 2 of the work-related communication density equation, the interaction of offered inducements and expected contributions was significant (b = .16, $p < .01$), and explained an additional 2% of the variance. As predicted, the relationship between expected contributions and work-related communication density was significant and positive for high offered inducements ($b_{\text{high OI}}$ = .45, $p < .01$), but was not significant for low offered inducements ($b_{\text{low OI}}$ = .13, *n.s.*). Figure 3 shows the plot of the interaction using values of +1 and −1 standard deviations from the mean. As shown, communication density was the highest when both expected contributions and offered inducements were high, relative to the other three EOR types. Thus, Hypothesis 1 was supported.

Table 3 also shows the regression results for team creativity. In Step 1, only offered inducements (b = .15, $p < .05$), but not expected contributed contributions (b = .05, *n.s.*), relate to team creativity. Step 2 of the creativity model shows a significant interaction between expected contributions and offered inducements (b = .13, $p < .05$). Work-related communication density was not significantly related to team creativity (b = .11, *n.s.*), however, and thus Hypothesis 2 was not supported. In Step 3, the interaction of work-related communication density and task complexity was significantly and positively related to team creativity (b = .17, $p < .01$), explaining an additional 4% of variance. The plot of the task complexity moderation effect, presented in Figure 4, shows that the work-related communication density and team creativity relationship was positive for high task complexity ($b_{\text{high task complexity}}$ = .29, $p < .01$), but not for low task complexity ($b_{\text{low task complexity}}$ = −.05, *n.s.*). Thus, Hypothesis 4 was supported, and the crossing simple slopes explain why Hypothesis 2 was not supported.

The information from the regression results in Table 3 was used to conduct path analytic tests at low and high levels of offered inducements for a precise test of Hypotheses 3 and 5. The results for Hypothesis 3 are shown in Table 4. The path esti-

TABLE 2
Correlations and Descriptive Statistics

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Team size (time 1, organization)	7.78	4.35												
2. Average team tenure (time 1, team members)	3.70	3.31	−.10											
3. Average communication network size (time 1, team members)	3.86	.69	−.08	−.10										
4. Female percentage (time 1, team members)	.35	.28	−.10	.09	.09									
5. Average education (time 1, team members)	3.09	.73	.04	−.34**	.13*	−.12*								
6. Outside network percentage (time 1, team members)	.32	.16	−.28**	−.03	.31**	.21**	.01							
7. Perceived supervisor support (time 1, team members)	4.59	.54	−.02	−.02	.01	.10	−.10	−.06						
8. Team performance (time 1, supervisor)	3.98	.59	.07	−.01	−.04	−.05	.06	.02	.06					
9. Expected contributions (time 1, supervisor)	5.27	.81	−.05	−.06	.03	.10	−.00	.09	.03	.30**				
10. Offered inducements (time 1, supervisor)	4.94	1.07	−.04	−.02	.04	.03	−.07	.06	.18**	.19**	.52**			
11. Work-related communication density (time 1, team members)	.42	.07	−.02	.10	−.29**	−.05	−.06	−.11	.10	.03	.16*	.08		
12. Task complexity (time 1, supervisors)	4.48	.76	−.03	−.15*	.02	−.00	.21**	.15*	−.06	.27**	.21**	.03	.09	
13. Team creativity (time 2, supervisors)	4.49	.79	.01	.04	.07	−.14*	−.06	−.00	.04	.30**	.21**	.26**	.14	.09

Notes. $n = 229$.
*$p < .05$
**$p < .01$

mates revealed that the effects of expected contributions on team creativity through work-related communication density network varied across levels of offered inducements. With high offered inducements, the indirect effect of expected contributions on team creativity was significant ($P_{YM}P_{MX} = .05$, $p < .05$) and the total effect of expected contributions on team creativity was significant ($P_{YX} + P_{YM}P_{MX} = .26$, $p < .05$). In addition, these effects were significantly stronger than the indirect ($P_{YM}P_{MX} = .01$, *n.s.*) and total effects ($P_{YX} + P_{YM}P_{MX} = -.04$, *n.s.*) for low offered inducements. A plot of the total effects in Figure 5 shows that the expected contributions effects on team creativity via work-related communication density was positive for high offered inducements, but the effects were not different from zero for low offered inducements. Thus, Hypothesis 3 was supported.

Table 5 shows the results of the path analytic analysis for the extended model to test Hypothesis 5. As the path estimates show, the effects of expected contributions on team creativity differed across levels of both the first-stage moderator (offered inducements) and second-stage moderator (task complexity). Specifically, when offered inducements and task complexity were both high, the indirect effects of expected contributions on team creativity were positive and significant ($P_{YM}P_{MX} = .13$, $p < .01$), and also the total effects of expected contributions on team creativity were positive and significant ($P_{YX} + P_{YM}P_{MX} = .36$, $p < .01$). When offered inducements were high but task complexity was low, neither the indirect effects ($P_{YM}P_{MX} = -.02$, *n.s.*) nor the total effects of expected contributions on team creativity were significant ($P_{YX} + P_{YM}P_{MX} = .21$, *n.s.*). The conditional indirect and total effects of expected contributions on team creativity were not significant when offered inducements were low, regardless of task complexity levels. Figure 6 shows the plot of the moderated total effects of expected contributions on team creativity through work-related communication density network for the four combinations of low and high offered inducements and task complexity. As the

TABLE 3
Hierarchical Regression Analysis Results

	Work-Related Communication Density (Time 1, Team Members)		Team Creativity (Time 2, Supervisors)		
	Step 1	Step 2	Step 1	Step 2	Step 3
Team size (time 1, provided by organization)	−.01	−.01	.00	.00	.01
Average tenure (time 1, team members)	.03	.03	.01	.01	.01
Average network size (time 1, team members)	−.35**	−.34**	.11	.17*	.18*
Female percentage (time 1, team members)	−.22	−.23	−.43*	−.41*	−.48**
Average education (time 1, team members)	−.00	.01	−.10	−.09	−.09
Outside network percentage (time 1, team members)	−.19	−.14	−.09	−.02	−.08
Perceived supervisor support (time 1, team members)	.17	.18	.00	−.02	−.02
Team performance (time 1, supervisor)	−.07	−.12	.35**	.32**	.28**
Expected contributions (time 1, supervisor)	.22**	.29**	.05	.08	.08
Offered inducements (time 1, supervisor)	−.03	−.07	.15*	.12	.13
Expected contributions × Offered inducements (Hypothesis 1)		.16**		.13*	.15**
Work-related communication density (Hypothesis 2)				.11	.12
Task complexity					.02
Work-related communication density × Task complexity (Hypothesis 4)					.17**
Total R^2	.14**	.16**	.17**	.21**	.25**
Δ R^2	.14**	.02*	.17**	.04**	.04**

Notes. $n = 229$.
*$p < .05$
**$p < .01$

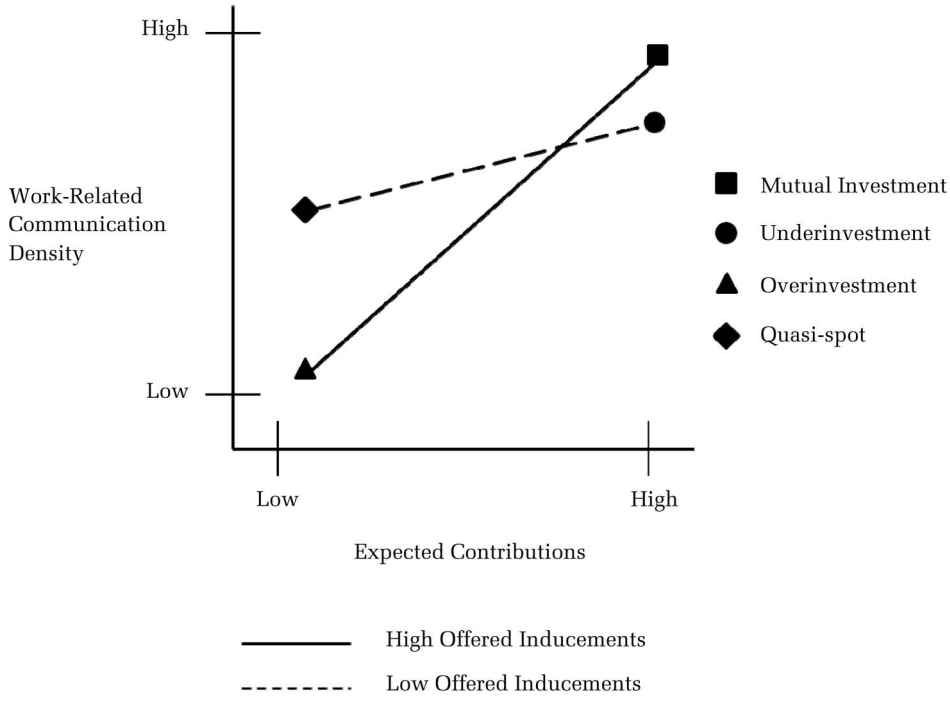
figure illustrates, the total effect was significant and the most positive under the combination of high offered inducements and high task complexity. In Table 6, we further illustrate the statistical differences among the four slopes by adopting Dawson and Richter's (2006) approach. The slope difference tests show that the combination of high offered inducements and high task complexity was significantly different from all other conditions, although the difference with high offered inducements and low task complexity situation was marginal ($t = 1.91$, $p = .06$).

DISCUSSION

The results of our study provide several new insights into the study of employee–organization relationships, social capital development, and team creativity. Drawing on the social capital literature, we develop a social–structural framework that links the intersection of the two components of the EOR—expected contributions and offered inducements—to team creativity via the mediating mechanism of work-related communication density. We argue further that the advantages of higher levels of work-related communication density would be better realized in team situations that are characterized by highly complex tasks. The empirical results are in line with our theoretical predictions. Estimates from our path analytic models (and Figures 5 and 6) reveal the overall results of our study. Even though the findings regarding the combined EOR effects on density (from Figure 3) depart somewhat from our hypothesized outcomes (in Figure 2), in that the lowest density was reported by employees in the overinvestment EOR type, the mutual investment relationship, in general, is associated with highest levels of work-related communication density as well as higher team creativity. But this general effect is evident only for teams performing complex tasks. In essence, the advantages of mutual investment relationships—comprising high inducement levels as well as broad and open-ended expected contributions—are more effectively leveraged when team tasks are highly complex.

This study makes several theoretical contributions to the literature. First, researchers have noted recently that "social or economic exchange perceptions may not fully capture the psychological experience of employees influenced by various forms of organizational exchange mechanisms" (Song, Tsui, & Law, 2009: 83; see also Hom et al., 2009). Based

FIGURE 3
First-Stage Moderated Effect of Expected Contributions on Work-Related Communication Density at Low and High Levels of Offered Inducements—Hypothesis 1

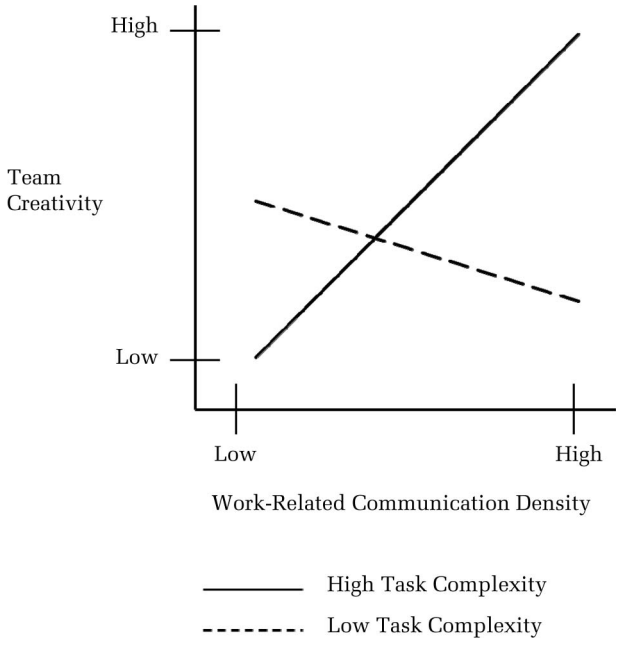


on the wealth of literature on EOR, we do not dispute the clear findings that social exchange plays a role in employee reactions to employment relationships. Instead, we reorient the literature and argue that organizational decisions to offer inducements and set expected contribution levels also have implications for structural issues and the exchange and combination of information over and above the social exchange explanation. Previous researchers have stepped somewhat in this direction (e.g., Collins & Smith, 2006; Hom et al., 2009), but those studies focus on a single employment relationship dimension or on the traditional outcome of commitment. Our results reveal a more nuanced and fuller explanation for these dynamics for team creativity.

Building on social capital theory (Nahapiet & Ghoshal, 1998), we propose that expected contributions motivate team members to develop dense communication networks, while offered inducements provide capabilities and opportunities to do so. In the absence of both conditions, our arguments and findings demonstrate clearly that dense networks and creativity are less likely. Our results further suggest that, in terms of facilitating structures and creative solutions, decisions to change the employment relationship along one dimension do not offset a failure to move higher on the other dimensions. In such cases, although communication density and creativity may be marginally better than in quasi-spot contract situations, our findings show that significant improvements are unlikely. Higher offered inducements without higher expected contributions (an overinvestment form) may give employees the ability to develop creativity-facilitating networks, but provide little motivation to do so. High expected contributions without substantial inducements (an underinvestment form) allow team members to realize some motivational benefits, but little capability to do so.

Our study also contributes to the social capital and team creativity literatures. EOR researchers have speculated that certain employment relationships foster creativity (Tsui & Wu, 2005; Zhang & Jia, 2010), while social capital researchers have considered social networks to be the foundation for organizational creativity and innovation (e.g., Tsai & Ghoshal, 1998; Zheng, 2010). We combine these two views in an integrative model with evidence to support both lines of reasoning, and confirm task complexity as a key condition facilitating the real-

FIGURE 4
Second-Stage Moderation Effect of Work-Related Communication Density on Team Creativity at Low and High Levels of Task Complexity—Hypothesis 4



ization of social capital values inherent in dense communication networks.

Moreover, our results are consistent with a substantial body of research that shows generally positive outcomes of the mutual investment EOR, extended here to team creativity. Our results also caution that, in relatively simple task environments, organizational decision makers may not fully realize the benefits of establishing a mutual investment form, at least where team creativity is concerned. Although our results are but an initial step in this direction, they suggest that, when searching for innovative solutions to problems, the value in mutual investment is more effectively leveraged for highly complex tasks.

Limitations

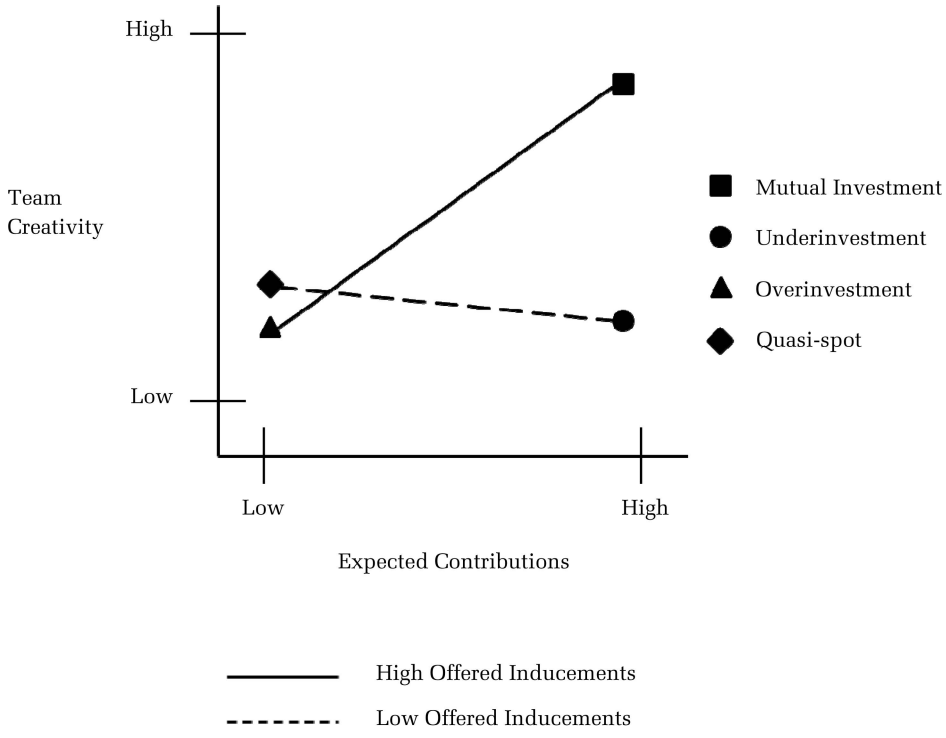
We cannot firmly establish causality, although our underlying theoretical foundation presumes a certain causal sequence, and we took steps in this direction by designing a two-wave study. Thus, our model and results should be evaluated as suggesting rather than confirming causal sequence. Additional studies that examine how changes to employment relationships relate to changes in network structures would be a step toward establishing causality (e.g., Gant et al., 2002). Second, although we propose work-related communication density as a potential mediator between EOR and creativity, other unmeasured variables could be related to EOR and creativity. To address this concern, we controlled for perceived supervisor support (an index of social exchange mechanism), team performance, percentage of females, average education levels, and outside network percentages, which are known as predictors of creativity. We also ran robustness checks accounting for the potential confounding factors such as industry and controlled for team types. The results were substantively identical in these checks. We cannot guarantee, however, that we controlled for all possible confounding factors. Thus, we encourage future researchers to explore possible alternative mechanisms of the EOR effects on creativity. To connect offered inducements to communication links, we invoked the idea of long-term time frame and value expectancy. However, we did not measure the presumed cognitive processes that prompted employ-

TABLE 4
Path Analytic Results—Direct, Indirect, and Total Effects of Expected Contributions on Team Creativity (via Work-Related Communication Density) at Low and High Levels of Offered Inducements—Hypothesis 3

	P_{MX}	P_{YM}	Direct Effects (P_{YX})	Indirect Effects ($P_{YM}P_{MX}$)	Total Effects ($P_{YX} + P_{YM}P_{MX}$)
Simple paths for low offered inducements	**.13**	.11*	**−.05**	**.01**	**−.04**
Simple paths for high offered inducements	**.45****	.11*	**.21***	**.05***	**.26***

Notes. $n = 229$. Coefficients in bold are significantly different across offered inducement levels.
P_{MX} = path from X (expected contributions) to M (work-related communication density).
P_{YM} = path from M to Y (team creativity).
P_{YX} = path from X to Y.
*$p < .05$
**$p < .01$

FIGURE 5
Total Effects of Expected Contributions on Team Creativity (via Work-Related Communication Density) at Low and High Levels of Offered Inducements—Hypothesis 3



ees to seek out communication ties. Future research should examine the cognitive processes associated with an environmental stimulus (i.e., EOR) and behavioral responses (e.g., communication).

Third, we obtained only egocentric network data using a fixed response format (a maximum of 5 alters) from team members and aggregated egocentric densities to the team level to estimate this

TABLE 5
Path Analytic Results—Direct, Indirect, and Total Effects of Expected Contributions on Team Creativity (via Work-Related Communication Density) at Low and High Levels of Offered Inducements (First-Stage Moderator) and Low and High Levels of Task Complexity (Second-Stage Moderator)—Hypothesis 5

	P_{MX}	P_{YM}	Direct Effects (P_{YX})	Indirect Effects ($P_{YM}P_{MX}$)	Total Effects ($P_{YX} + P_{YM}P_{MX}$)
When offered inducements are low					
Simple paths for low task complexity	*.13*	**−.05**	*−.07*	−.01	*−.08*
Simple paths for high task complexity	*.13*	**.29****	*−.07*	*.04*	*−.03*
When offered inducements are high					
Simple paths for low task complexity	.45**	**−.05**	*.23**	**−.02**	***.21***
Simple paths for high task complexity	*.45***	**.29****	*.23**	***.13*****	***.36*****

Notes. $n = 229$. Coefficients in bold are significantly different across task complexity levels. Coefficients in italics are significantly different across offered inducements levels.

P_{MX} = path from X (expected contributions) to M (work-related communication density).

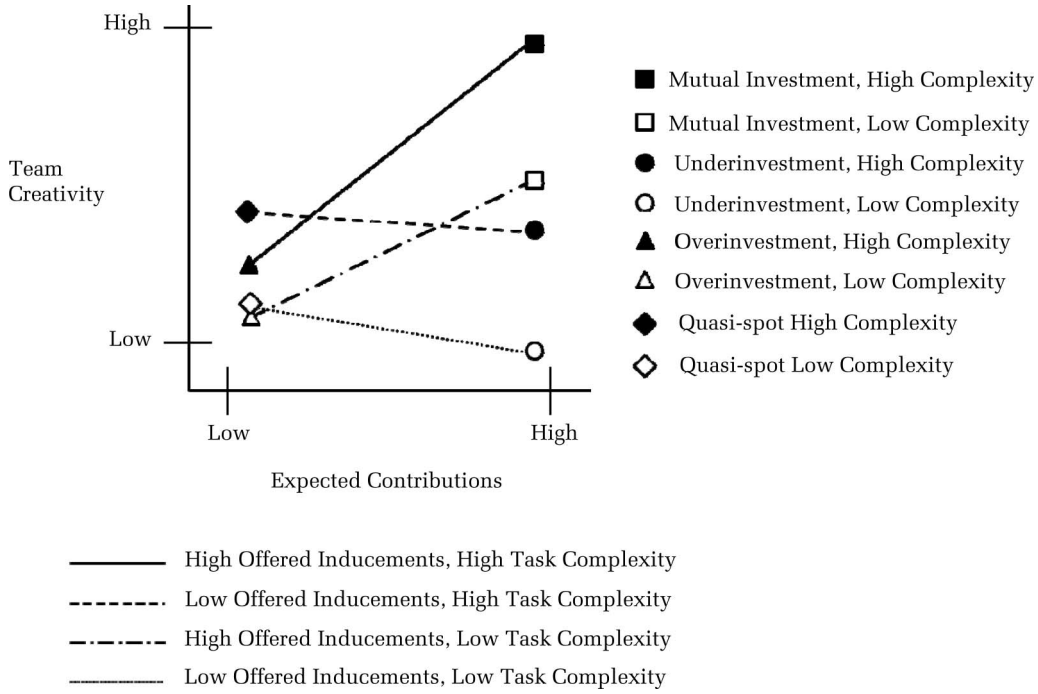
P_{YM} = path from M to Y (team creativity).

P_{YX} = path from X to Y.

*$p < .05$

**$p < .01$

FIGURE 6
Total Effects of Expected Contributions on Team Creativity (via Work-Related Communication Density) at Low and High Levels of Offered Inducements and Low and High Levels of Task Complexity—Hypothesis 5



configurational property of teams, following other researchers (e.g., Shaw, Duffy, Johnson, & Lockhart, 2005; Soda et al., 2004). But, egocentric measures are limited in various ways, especially as team and network size increases. As an anonymous reviewer pointed out, the greatest risk for our operationalization was if team members developed dense but separate networks. As a check, following Ibarra's (1992) approach, we constructed a single-network measure for a subsample of 30 teams in our sample. This measure correlated .60 ($p < .01$) with our density measure, giving us some confidence that our team network measure overlaps considerably with the within-team network. Another issue is that the estimate of the reliability of team means (ICC(2)) for communication network density fell below the conventional .70 benchmark. As an anonymous reviewer pointed out, despite our clear

TABLE 6
Slope Difference Tests for the Moderated Total Effects of Expected Contributions on Team Creativity (via Work-Related Communication Density) at Low and High Levels of Offered Inducements and Task Complexity—Hypothesis 5

Pair of Slopes	*t*-value for Slope Difference	*p*-value for Slope Difference
High offered inducements & High task complexity vs. High offered inducements & Low task complexity	1.91	.06
High offered inducements & High task complexity vs. Low offered inducements & High task complexity	3.49	.00
High offered inducements & High task complexity vs. Low offered inducements & Low task complexity	3.58	.00
High offered inducements & Low task complexity vs. Low offered inducements & High task complexity	2.25	.03
High offered inducements & Low task complexity vs. Low offered inducements & Low task complexity	2.77	.01
Low offered inducements & High task complexity vs. Low offered inducements & Low task complexity	1.22	.22

instruction to focus on work-related communication, it is possible that some team members may have reported communications that were nonwork-related, which may have reduced the reliability of the measure. However, Bliese (2000) argued that low ICC(2) values are more common for relatively small teams, as is the case in our study. Bliese further stated that a likely consequence of low team mean reliability is that actual team-level relationships will be underestimated. Additional studies should rectify these measurement shortcomings.

Those limitations notwithstanding, we hope our study advances understanding of the total effects of EORs, particularly the mutual investment form, with implications for theory and practice. To the extent that team creativity offers organizations competitive advantages in hypercompetitive environments, whether in China or elsewhere, we must consider the promises of the mutual investment employment relationship.

Future Research Directions

We examined only one social network: work-related communication density. However, social network research has found that weak ties and bridging positions offer benefits for individuals in terms of nonredundant information (Balkundi & Harrison, 2006; Burt, 2004), which may also be important for creativity. Creative teams might have both communication density and bridging members. Future researchers may design ways to concurrently assess intra-team and extra-team networks of employees under different employment forms. Studies also may investigate the role of other social network types, such as advice or friendship, in different employment relationships and associated outcomes. For example, some studies have shown possible curvilinear relationships between various forms of social network and creative performance (Chen & Gable, 2013; Perry-Smith, 2006; Perry-Smith & Shalley, 2003). Exploring alternative patterns of the relationships with various types of social network, creativity, and complexity will extend understandings. In China, social networks can be a mixture of instrumental and affective ties (Chen, Chen, & Huang, 2013), and often involve kinship or kinship-like ties (Luo, 2011). Future research can examine the nature of the ties and how they may influence network structure in terms of density, centrality or structural holes, and creativity. Another interesting aspect of network effect is the stability of networks. Even though networks are unlike to change within a two- to four-month period (the time span between our first- and second-wave data collection), it would be interesting to theorize if a dynamic network might be more conductive to creativity than a stable network.

The long-term and extensive investment or inducements involved in the mutual investment employment relationship may cause work teams, or even entire organizations, to have employees sharing similar values and perspectives because of rigorous hiring processes and strong socialization (Tsui & Wu, 2005). While the empirical evidence has been consistent on the positive outcomes of EORs, innovations in management systems (Damanpour & Aravind, 2012) also would contribute to further development of the employment framework. The EOR framework does not focus on financial incentives, such as profit sharing, stock options, bonuses, and other types of incentives, which are important to workers in developing economies like China and are shown to have important effects on performance (Jenkins, Mitra, Gupta, & Shaw, 1998) and quit patterns (Shaw & Gupta, 2007) in other contexts. Would financial incentives enhance or mitigate the EOR effect for creativity at the personal, team, or firm levels?

Recent research has also begun to explain why Eastern and Western creativity seem to differ (Morris & Leung, 2010). China has some unique cultural traditions (Pan, Rowney, & Peterson, 2012), which may not be shared by employees that come from Western contexts. Cultural background may be an important factor that may influence creative behavior. Further, research has shown that individuals with bicultural identity may exhibit different levels of creativity depending on the context (Mok & Morris, 2010). Diversity is known to be a source of creativity (Tsui & Gutek, 1999), so it would be useful to investigate whether cultural diversity moderates EOR forms and creativity. The implications of culture and the distribution of team member cultural identity in the context of employment relationships is unknown and should be addressed in future research.

CONCLUSION

For more than two decades, employment relationships have captured the attention of economists, psychologists, and management scholars (Shaw et al., 2009; Shore et al., 2004; Tsui & Wang, 2002). Such research assumes that social exchange is the major mediating mechanism. Recent attention has begun to address that assumption's empirical veracity and has

introduced new potential mechanisms (Hom et al., 2009). Our study contributes by offering a social–structural view of EOR effects by relating EOR forms to communication network density and creativity, moderated by task complexity. As such, we contribute to a more comprehensive understanding of different employment relationship approaches as they affect employees and firms, and the conditions that engender the best outcomes.

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