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The China-West divide on social capital: A meta-analysis

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Abstract The mixed empirical results on the impact of social capital call for a better understanding of the conditioning effect of contextual differences. We conducted a meta-analysis to assess whether and how social capital functions similarly or differently between China and the West. Both network centrality and the bridging of structural holes are positively related to performance, but the impact of structural holes is not significant in China. The findings suggest that network centrality is more effective than the bridging of structural holes in China, whereas network centrality and the bridging of structural holes both have a positive impact on performance in the West.

Keywords China · Social capital · Network centrality · Structural holes

Social capital is a set of nonfinancial resources embedded in social relations (Bourdieu & Wacquant, 1992; Coleman, 1988; Loury, 1977). It can be mobilized by individuals or organizations for their own advantage (Burt, 1992, 2000). For example, social capital can influence career success (Burt, 1992; Xiao & Tsui, 2007), help workers find jobs (Granovetter, 1973; Lin, 1982), reduce turnover rates (Krackhardt & Hanson, 1993), ease knowledge transfer among actors (Reagans & McEvily, 2003), and enhance organizational innovation performance (Ahuja, 2000; Tsai & Ghoshal, 1998).

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Advocated as a new concept for management and organization research a decade ago (Adler & Kwon, 2002), social capital has acquired such a substantive amount of attention that it has become routinized in everyday conversation and policy discourse (Woolcock, 2010). Kwon and Adler (2014) argued that social capital as a field of research has already reached maturity because its basic thesis (i.e., the beneficial impact of social capital on information, influence, control, power and solidarity) has been widely accepted across disciplines.

Given the maturation of social capital as a field of research, it is surprising to observe empirical results that are in stark contrast to social capital theory, which historically develops from contextualization in Western society. For example, Xiao and Tsui (2007) found a detrimental impact of structural holes on employee career performance in four high-tech companies in China. They attributed the counterintuitive results to the collectivistic culture of China, positing that "the role of social capital is different in Chinese culture from its role in Western culture" (Xiao & Tsui, 2007: 22) and "managers must consider cultural aspects when they attempt to exploit advantages of the social capital that is embedded in their networks" (Xiao & Tsui, 2007: 26–27). Their ideas have been echoed by subsequent empirical studies situated in other Chinese contexts (e.g., Chen, Zhang, & Tian, 2012; Zhao & Zheng, 2013). This discrepancy between the findings in China and the mainstream theory, which is predominately centered on Western countries, highlights the need to examine the conditioning effect of context on how social capital works (Burt, 2000; Hitt, Lee, & Yucel, 2002).

More generally, for a field that is supposedly reaching maturity, it is critical to assess whether the function of social capital is universal across the globe or if it possibly differs across different cultures and countries. Otherwise, the generalizability of the theory will be put at risk, and practical implications derived from one context may become misleading when applied to another. Arguably, social capital's utility as a concept or research focus has attracted controversy (Schuller, 2007). This important theoretical gap regarding the failure to consider possible ways social capital differs across different cultures and countries has yet to be bridged despite the existing excellent reviews of empirical social capital studies (e.g., Burt, 2005; Luo, Huang, & Wang, 2012; Schuller, 2007). In this paper, we attempt to provide a contribution by examining whether and how structural social capital, measured by network centrality and structural holes, functions similarly or differently between China and the West. In other words, we attempt to examine the differences between China and the West in the relationship between structural social capital and performance. We conducted a meta-analysis to statistically aggregate prior empirical results in order to calculate the effect sizes of social capital's impact and assess the conditioning effect of context on how social capital works (Luo et al., 2012). Considering that some empirical social capital studies in China are written in Chinese and are thus not available to the mainstream English-speaking academic community, we endeavored to include empirical studies that were written in Chinese and published in major Chinese journals (Chen, Chen, & Huang, 2013).

It is worth noting that social capital as a theoretical concept is believed to have multiple facets, and Nahapiet and Ghoshal's (1998) seminal study posits that three types of social capital exist: relational, structural and cognitive. Our literature review reveals that there is only a very small number of quantitative studies on cognitive social capital. For example, Lee and Jones (2008) indicated that the effective use of cognitive

social capital enables nascent entrepreneurs to build trust; Ke, Sun, Shi, and Gu (2007) indicated that cognitive social capital contributes to team performance by promoting knowledge sharing among team members. Despite these pioneering studies, however, research on cognitive social capital has not accumulated a sufficient amount of empirical studies to warrant a meta-analysis. In contrast, relational social capital has been well studied, and there are already several excellent literature reviews on the relationship between relational social capital and performance (Chen & Chen, 2004; Chen et al., 2013), including Luo et al.'s (2012) pioneering meta-analysis. Given the above, we focus exclusively on structural social capital and its performance implications because although sufficient studies exist, a meta-analysis is needed to draw a conclusion about the impact of structural social capital on performance.

Intriguingly, the meta-analysis reveals that structural social capital, measured either as network centrality or as a structural hole, overall has positive impacts on an actor's (i.e., an individual or an organization) performance. However, the impact of network centrality is positive in both China and Western countries. The impact of structural holes is positive in Western countries, but this impact is negative and statistically nonsignificant in China. The findings clearly suggest that network centrality matters more than structural holes in China, whereas structural holes are more significant in the West than in China. Our meta-analysis thus demonstrates differences between China and the West in the relationship between structural social capital and performance, which is consistent with Xiao and Tsui's (2007) suggestion that managers consider cultural aspects when attempting to cultivate and utilize social capital. The findings of the China-West social capital divide contribute to the literature not only by clearly demonstrating that social capital works differently between China and the West but also by encouraging future studies to further disentangle how social capital's function is subject to its cultural context.

Theory and hypothesis development

Network scholars in the field of business management have long focused on social capital stemming from an actor's advantageous structural position in networks (e.g., Burt, 1987, 1992; Chai & Rhee, 2010; Coleman, 1988, 1990). From the structural perspective, social capital resides in an actor's position relative to others in a network (Zukin & DiMaggio, 1990). Structural social capital comprises the advantages that individuals gain as a result of being located in certain types of social networks (Burt, 1992; Coleman, 1988). Social network analysis is thus widely used as a methodology for assessing social capital. The primary tenet of the literature is that individuals and organizations accrue benefits from their social networks (Burt, 1992; Coleman, 1988; Nahapiet & Ghoshal, 1998), which can be defined as "a set of actors and some set of relationships that link them" (Hoang & Antoncic, 2003: 167). Structural social capital functions as a network member cultivates and utilizes his or her relationships in the social network to access resources (e.g., capital, knowledge, and information) that will potentially enhance the actor's performance (Wright, Filatotchev, Hoskisson, & Peng, 2005). The actor may benefit from "network-enabled capabilities" via a beneficial network structure (Zaheer & Bell, 2005). Social relationship networks can produce a number of positive outcomes, including information benefits, heightened control and

power, more efficient knowledge transfer, and increased innovation (Lechner, Frankenberger, & Floyd, 2010). As such, an actor's location in a network of relationships with others holds significant implications for his or her performance (Gulati, Nohria, & Zaheer, 2000).

Despite the prevalence of social network studies, the performance implications of social relations are not as clear as the theory posits (Xu & Meyer, 2013), leading to a limited understanding of social capital's efficacy. The extant empirical findings have shown inconsistent and ambiguous findings concerning the impact of structural social capital on performance, ranging from a positive linear relationship (e.g., Cross & Cummings, 2004; Tsai, 2000; Vasudeva, Zaheer, & Hernandez, 2013) to an inverted U-shaped impact (e.g., Wang, Rodan, Fruin, & Xu, 2014) to even negative outcomes (e.g., Moran, 2005).

Research on structural social capital has highlighted network centrality and structural holes as the divergent mechanisms that underlie advantageous locations in a social network (Guan & Liu, 2016; Nahapiet & Ghoshal, 1998; Tan, Zhang, & Wang, 2015). Benefits are available to all members in these networks (e.g., Laursen, Masciarelli, & Prencipe, 2012), but a more centrally located position in the network is regarded as more advantageous because it represents more and/or stronger social relations. From the bridging perspective, Burt (1992, 1997, 2000) posited that social capital results from the information control and brokering opportunities that are available to individuals who hold network bridges that span otherwise disconnected groups. For example, Owen-Smith and Powell (2004) described how successful patenting in biotechnology was predicted by brokering within local networks compared with extra-local networks.

Moreover, the function and impact of social capital are found to be conditioned by the investigatory context. Burt (2000) highlighted five contingency factors that likely affect social capital's impact on performance: personality and culture, types of relationships, uncertainty, network closure, and the insider-outsider distinction. Among them, culture has been revealed as a factor that defines the nature of social relations and thus conditions the way people or firms develop and utilize social relations (Batjargal, 2007; Hofstede, 1980a; House, Hanges, Javidan, Dorfman, & Gupta, 2004). However, evidence on the returns to networks predominately comes from studies situated in Western society (Burt, Hogarth, & Michaud, 2000), and the ways in which social capital mechanisms operate in different cultural contexts remains under-explored except for a small number of pioneering. Park and Ungson (1997) also showed that differences in cultures affect the continuation or dissolution of partnerships. For example, Luk, Yau, Sin, Tse, Chow, and Lee (2008) found that the effects of social capital are more malignant in a transitional economy such as China. Xiao and Tsui (2007) found that structural holes have a detrimental impact on employee career performance in four high-tech companies in China. Concerning network embeddedness and acquisition, structural hole positions will lead to more acquisitions in the US but fewer acquisitions in China (Lin, Peng, Yang, & Sun, 2009; Yang, Sun, Lin, & Peng, 2011). From the above studies, we can see that social capital function differently in China. In other words, the effectiveness of social capital varies across cultures.

Additionally, whereas Xiao and Tsui (2007) found a negative impact of structural holes in China, Burt et al. (2000) found that performance is enhanced for both the French and Americans when a manager's relations span structural holes. This makes one wonder whether the distance between the French and American cultures, both regarded

as part of Western society, is not as far as the distance between the Chinese and American (or French) cultures. Culture, "the collective programming of the mind" (Hofstede, 2001: 9), or "the values, beliefs and assumptions learned in early childhood" (Newman & Nollen, 1996: 754), distinguishes one group of people from another. Hofstede (1983) divided culture into two types, Western and Eastern. As China is becoming the largest economy in Eastern culture, with astonishing growth, it has attracted increasing attention (Boisot & Child, 1999). Similar to Xiao and Tsui (2007), the Chinese context challenges some basic assumptions of theories that were originally developed in the Western culture context (Batjargal, 2007; Xu & Meyer, 2013; Yang, 1994). With regard to social capital research, Chai and Rhee (2010) recently called for the investigation of how the function of social capital differs between the Eastern Asian model of Confucian capitalism and the West, with China as a particularly important testing ground.

In the following sections, we first review the fundamental mechanisms of structural social capital in terms of both network centrality and structural holes and then theorize how the significance of social capital is different between China and the West.

Network centrality and performance

An actor's social relationships with others are both conduits of information and a pattern of obligations and expectations that are based on norms of reciprocity and equity (Ahuja, 2000; Aldrich & Fiol, 1994; Koka & Prescott, 2002). The more relationships an actor in a network has with others, the more central the actor is in the collaborative network. Adler and Kwon (2000) suggested that network centrality is a resource that is available to individuals or organizational actors as a function of their locations. A central location in the network helps a member to acquire resources from its external collaborators. As Ibarra (1993) argued, high network centrality implies a high degree of access to valuable resources. Members in central locations typically participate more actively in the network, and they obtain greater access to other network members, which facilitates the access to and control of resources and information; they are also able to acquire key resources that are favorable for organizational innovation and performance (Powell, Koput, & Smith-Doerr, 1996). A more central position in a social network can provide an actor with information (Floyd & Wooldridge, 1999), status and legitimacy (Burt, 1987; Rogers, 2003). It can also reduce transaction costs between actors, notably search and information costs, bargaining and decision costs, and policing and enforcement costs (Maskell, 2000). A central social network position also provides actors with access to markets, ideas, information, advice, and business opportunities (Gulati et al., 2000; Hoang & Antoncic, 2003). Ties between actors can be sources of key resources such as knowledge and personnel exchanges (Martin & Tsai, 2003). Central teams in an intergroup network tend to be better performers because they have access to a greater number of unique resources through their connections to other teams (Tsai, 2000). Shan, Walker, and Kogut (1994) found that the number of collaborative relationships was positively related to an actor's performance. An actor in a central network position can achieve higher performance by not relying on mediators for access to diversified information (Burt, 2004; Powell et al., 1996; Powell, White, Koput, & Owen-Smith, 2005; Whittington, Owen-Smith, &

Powell, 2009). Overall, the existing literature posits a positive impact of bonding social capital measured as network centrality.

The network centrality divide between China and the West In a pioneering work, Chai and Rhee (2010) argued that network centrality is a more powerful source of productivity in East Asia than it is in the West because the interplay between the traditional Confucian values and modern capitalism (Gerlach, 1992; Yao, 2002) has resulted in economic and social behaviors that are distinct in East Asian countries (Orrú, Biggart, & Hamilton, 1997). The Chinese concept of *guanxi* highlights the importance of trust and obligations in an enduring network of relationships characterized by reciprocity (Lin & Si, 2010; Xiao & Tsui, 2007). Individuals accumulate *guanxi* through long-term investment in social relationships, and a more central network position will therefore increase access to resources, information and knowledge.

China is characterized as a collectivist society (Huff & Kelley, 2003; Xiao & Tsui, 2007). Individuals in collectivist cultures tend to trust in-groups more than out-groups and tend to place more importance on interpersonal ties (Hewett & Bearden, 2001; Huff & Kelley, 2003). Collectivism is characterized by a tight social framework in which people distinguish between in-groups and out-groups; they expect their in-group to look after them, and in exchange, they feel that they owe the in-group absolute loyalty (Hofstede, 1980b). In collectivist societies, individuals expect loyalty and reciprocity from the group (López & Santos, 2014). The Chinese in particular like to grant favors to social network members based on kinship and close friendship. Because Chinese draw sharp boundaries between in-groups and out-groups and between close and distant relationships (Chow & Ng, 2004), in-group members will enjoy high-quality social connections with rich exchanges of mutual trust, affection and respect. Members who are loosely connected and characterized by low network centrality are often excluded from these benefits. In contrast, a Western society dominated by individualism values citizens' independence, self-interest and democratic participation, doubting the notion that social groups' interests should take priority over individuals' interests. The boundaries between in-groups and out-groups are thus not as sharp in the West as in China, and members who are loosely connected and characterized by low network centrality are not completely excluded from in-group benefits.

Moreover, China is considered a high power-distance society in which power inequality is socially accepted (Wu & Leung, 2005). Chinese culture, embodied in Confucian values such as the respect for authority, the embeddedness of collectivism and the preference for personal *guanxi*, fundamentally influences organizational behavior and outcomes (Peng & Luo, 2000). High power distance further amplifies the benefits associated with a more central network position because those who are perceived to be more connected are regarded as more knowledgeable and influential (Hofstede, 1991). Network members prefer to share resources and knowledge with members with high centrality because such members are often considered more powerful. However, this may be less likely to occur in Western society, which is characterized as having a short power distance, and its citizens both accept and expect power to be more equally distributed. Accordingly, individuals will have less desire to provide more powerful individuals (high network centrality) with more information, knowledge or resources.

The above-mentioned differences between Chinese and Western contexts suggest that the benefits of network centrality are stronger in China than in the West because social relations are deeply embedded in China's unique sociocultural structure and have become an integral element of the overall economic structure of the country (Whitley, 1990). For example, Lin and Fan (2012) noted that a scholar's centrality in a collaboration network has a significant positive correlation with the scholar's publication performance in terms of both quality and quantity. Liu, Chen, and Yu's (2006) study of China's firm alliance network shows that central positions in networks help firms to obtain information that affects their innovation capabilities. Consequently, we propose the following:

Hypothesis 1 The impact of network centrality on performance differs between China and the West such that the impact is stronger in China than in the West.

Structural holes and performance

From the bridging perspective of social capital, the advantages of social relations stem from the brokering opportunities that result from bridging disconnected actors (Burt, 1992, 2000). The key underlying mechanism that determines whether a social tie will provide such brokering opportunities is the extent to which the tie spans a structural hole, that is, a gap between disconnected members in a social network (Burt, 1992). By spanning a structural hole, the broker in a network gains two advantages: information and control (Hansen, 1999; Xiao & Tsui, 2007). On the one hand, the bridging of structural holes provides organizations with access to new information (Beckman, Haunschild, & Phillips, 2004) and non-redundant resources (Arya & Lin, 2007). Social ties that bridge disconnected groups provide intermediaries with access to a broader array of ideas, non-redundant information and opportunities (Granovetter, 1973), along with the capacity to create interpersonal and interorganizational intellectual capital (Reiche, Harzing, & Kraimer, 2009). As such, the intermediaries are generally better informed and are able to gain access to knowledge in a timelier manner. A bridging position provides the diversified information and opportunities that are inherent in the holes and that can help actors better leverage their internal strength and utilize external resources (Baum & Ingram, 2002; Yang, Lin, & Lin, 2010). An actor who bridges a structural hole can obtain diverse information from different sub-networks (Burt, 2000), which helps him or her identify threats and opportunities (Uzzi, 1997) and enhance resource integration (Zaheer & Bell, 2005).

In contrast, brokers can control information flows to serve their own interests because bridges in a network are critical to advancing information flows (Burt, 1992), and structural holes give an individual a "disproportionate say in whose interests are served" (Burt, 2000: 354). As bridges between disconnected parties, brokers determine the flow of knowledge and information through the network. An actor can derive benefits from the network by arbitraging the resource and information flows between two otherwise disconnected network actors (Burt, 1992; Shipilov & Li, 2008). The broker can also better exploit gaps in the network and control information flows to play one actor off of another (Yang et al., 2010). If the bridge the actor creates between the two sub-networks is non-redundant, the actor is a monopoly as far as the bridge is

concerned and therefore has bargaining power during certain transactions between the two sub-networks (Afuah, 2013).

The structural holes divide between China and the West

The brokering benefits of information and control (Gargiulo & Benassi, 2000), as discussed above, are well-aligned with Western society, which is characterized by open markets, free competition and individualism (Burt et al., 2000). Individualism implies a loosely knit social framework in which people are encouraged to act more in their own interests and are thus less hesitant to profit from brokering in networks (Batjargal, 2007) without necessarily preserving the interests of the other stakeholders in the same network (Vitell, Nwachukwu, & Barnes, 1993). Consequently, structural holes contribute to individual performance in the West.

In China, as a collectivist culture, individuals ascribe more importance to relationships and nurture them with more care than individualists (Chen, Chen, & Meindl, 1998; Hofstede, 1980a, 1980b). Furthermore, China is characterized as a collectivist society that not only rewards selfless actions performed in the interest of collectivity but also has a strong controlling or inhibiting effect on selfish actions (Ouchi, 1980; Wilkins & Ouchi, 1983). Such a clan-like society provides individuals with less gain when they attempt to form ties with out-group members (Chai & Rhee, 2010). Because an actor positioned at the boundary of two groups is generally distrusted by both groups, brokers who pursue their own interests by brokering structural holes may lose the trust of members in both networks or may even be punished (Xiao & Tsui, 2007). Additionally, China is viewed as a low-trust society in which people are less inclined to trust each other (Atuahene-Gima & Li, 2002; Redding, 2002) but are more dependent on reciprocal interactions and long-term trustworthy relationships (Wu & Leung, 2005). The China-West divide on the function of structural holes is evidenced by the findings of a negative impact of structural holes in China (e.g., Xiao & Tsui, 2007; Zhao & Zheng, 2013). The striking differences between the two societies are also shown in Bian's (1997) findings that strong ties are more important than weak ties in determining job-hunting success in China, which also contradicts the prediction of the structural holes thesis.

Although the above discussion seemingly indicates a detrimental effect of structural holes in China, it is worth noting that empirical studies in China have also found results that are consistent with the findings in the West, that is, a positive impact of structural holes on performance (Jiang, 2009; Qian, Xu, & Yang, 2010; Zheng, 2010). To reconcile the discrepancy, it has been argued that developing trust and reducing opportunism are necessary preconditions for successful resource sharing (Ahuja, 2000). On the one hand, actors who span structural holes may sometimes not be trusted by either of the subgroups to which they are directly linked, owing to their reduced embeddedness in either subgroup, and they may act in favor of one subgroup over the other in any case. The shortage of trust will be harmful for resource sharing among the "bridge" member and other network members. On the other hand, if these strategically located actors are opportunistic, their presence can attract other opportunistic types and/or drive non-opportunistic types, thereby reducing value creation (Akerlof, 1970). Once the "bridge" actors' opportunistic acts are recognized by other related actors, they will

not only receive direct sanctions for their deviant behavior but also face the threat of reputation loss in the network.

Despite the mixed empirical results on the impact of structural holes in China, it is clear that China, as part of Eastern Asian society, presents a strong counterargument to the thesis of bridging advantages that is widely acknowledged and verified in the West. Even if the bridging advantages are supported in some studies in China, in general, we do not expect the positive impact of structural holes on performance to be as strong in China as it is in the West. Consequently, we propose the following:

Hypothesis 2 The impact of structural holes on performance differs between China and the West such that the impact is stronger in the West than in China.

Methods

We choose to conduct a meta-analysis for three reasons. First, one of the most important benefits of meta-analysis lies in its ability to detect the characteristics of original studies (e.g., measure, method, etc.) that are potential moderators of the relationships under investigation (Hunter & Schmidt, 1990; Luo et al., 2012). Second, meta-analysis allows researchers to think about and summarize the results of previous empirical analyses (Carney, Van Essen, Gedajlovic, & Huegens, 2015). Third, meta-analysis, as a form of evidence-based research, can effectively reduce the biases inherent in individual studies as well as fill in the gaps between scientific knowledge and practice (Frese, Bausch, Schmidt, Strauch, & Kabst, 2012).

Identifying and selecting samples

Multiple search techniques were employed in this meta-analysis to identify qualified empirical studies. First, we conducted an electronic search in eight computerized databases (the ABI/Inform, EBSCO, Elsevier Science Direct, Emerald, JSTOR and ProQuest Dissertations & Theses A&I, for English papers and the CNKI, WANFANG DATA, and CQVIP databases for Chinese papers) that include most business journals using the key words *guanxi*, alliance, structural hole, centrality, network, social capital, and performance. Second, we manually searched mainstream Western management and business journals (*Academy of Management Journal* [*AMJ*], *Administrative Science Quarterly* [*ASQ*], *Strategic Management Journal* [*SMJ*], *Management Science* [*MS*] and *Organization Science* [*OS*]) and Chinese journals (*Management World* [*MW*], *Journal of Management Sciences in China* [*JMSC*], *Studies in Science of Science* [*SSS*], and *China Industrial Economics* [*CIE*]). Third, we gathered unpublished works by searching management and business dissertation abstracts and conference proceedings, such as AOM, for the previous 10 years (Luo et al., 2012). Finally, following Luo et al. (2012), Afuah (2013), and Semrau and Werner (2014), we consulted reference sections and citations from several seminal articles (Ahuja, 2000; Burt, 1992; Coleman, 1988; Nahapiet & Ghoshal, 1998; Xiao & Tsui, 2007) to identify studies that we might have overlooked. We found that almost all of the relevant articles searched via snowball

sampling were captured by our primary search outlined in the first three steps, ensuring that our search was exhaustive (Bae, Qian, Miao, & Fiet, 2014).

Because we are attempting to unveil the relationship between structural social capital and performance, the meta-analysis includes only the empirical studies that (1) investigate interrelationships between network members and contain at least one performance indicator at the network member level; (2) directly measure social capital as structural holes and/or network centrality; and (3) report both sample sizes and computable effect sizes (e.g., correlations, *t*-statistics, or *P*-values with sample sizes). This multipronged review process yielded 53 studies published from 1993 to 2016. Two papers were excluded for using the same dataset as the papers included in our analysis. We retained papers that provided more analytical information.[1] We also excluded a computer simulation study (Tan et al., 2015), and a study from India (Vissa & Chacar, 2009). Of the remaining 49 papers, which result in a sample size of 159,[2] 33 are in English (mostly from mainstream journals such as *AMJ*, *ASQ*, *SMJ*, *MS*, *OS*, etc.), and the other 16 are in Chinese (mostly from top Chinese management journals such as *JMSC*, *CIE*, etc.). For the full list of these studies, please see Table 1 and the references marked with asterisks.

Coding and measurement

We prepared a coding protocol that specified the information to be extracted from each study to reduce coding errors. The studies were coded independently by two of our authors. The inter-rater coefficient was over 90%, suggesting that the reliability of the coding process was acceptable. All discrepancies were resolved through discussion, and consensus was reached before the analyses began.

Network centrality includes both statistical measurements (such as *Degree centrality*, *Betweenness centrality*, and *Eigenvector centrality*) and Likert measurements (using 5- or 7-point scales to measure network centrality directly). Of the 52 studies included, 45 (86.5%) calculated network centrality through a consideration of actual network data. The remaining seven papers (13.5%) measured network centrality through Likert scale questions on a survey. *Degree centrality* is the number of alliances a firm has with its partners. The degree centrality measure is widely adopted in existing studies of firms' alliance activity and performance (Ahuja, 2000; Mintz & Schwartz, 1985; Powell et al., 1996). *Betweenness centrality* reflects the extent to which a person is on the shortest information path that will connect individuals who themselves are not connected; it can account for both direct and indirect ties and thereby potentially capture greater access to other network members (Cross & Cummings, 2004). *Eigenvector centrality* takes into account the strength of ties between the partners (Podolny, Stuart, & Hannan, 1996). Based on the measurement index for network centrality (Freeman, 1979), the remaining seven studies (13.5%) developed scales to measure the network index and used questionnaires for the data collection to evaluate network centrality on 5-point (Peng & Fu, 2012) or 7-point (Ren et al., 2011) Likert scales on a survey.

[1] Qian, Xu, and Yang (2010) and Qian, Yang, and Xu (2010) use the same dataset as Ren, Wu, and Wang (2011) and Wu (2010). We choose to retain papers that provide more analytical information. Qian, Yang, and Xu (2010) and Wu (2010) are excluded.

[2] Some of the 49 studies examined multiple networks, and some also reported multiple independent variables and dependent variables.

Table 1 Summary of studies included in the meta-analysis

Authors	N_1	N_2	Region	Network centrality	Structural hole	Levels of analysis	Performance measurement
Ahuja (2000)	97	2	Mixed	+	+	Organization	Patent count
Baldwin, Bedell, and Johnson (1997)	250	3	Western	+	Omitted	Individual	Individual portions (individual assignments and exams) of overall grades
Batjargal et al. (2013)	637	1	Mixed	Omitted	+	Individual	Revenue growth of the new venture
Bell (2005)	77	2	Western (Canada)	+	Omitted	Organization	Firm innovativeness (introducing new product, introducing new service, adopting new technology)
Burt (2007)	1,275	8	Western (US)	Omitted	+	Individual	Salary, annual evaluation, compensation
Chen and Xie (2011)	5,839	6	Chinese	+\−	Omitted	Individual	Investment efficiency
Chen et al. (2012)	350	3	Chinese (Northeast China)	+	−	Organization	Patent count
Cross and Cummings (2004)	226	4	Western (US)	+	Omitted	Individual	Annual employee evaluations
Dong (2011)	119	2	Chinese (Shandong)	+	Omitted	Organization	Innovation performance
Gargiulo, Ertug, and Galunic (2009)	2,000	1	Mixed	−	Omitted	Individual	Bonus, employee evaluation
Gilsing, Nooteboom, Vanhaverbeke, Duysters, and van den Oord (2008)	85	1	Western (US)	+	Omitted	Organization	Patent count
Guan and Liu (2016)	919	8	Mixed	+\−	+\−	Organization	Exploitative innovation, exploratory innovation
Guan, Zuo, Chen, and Yam (2016)	224	16	Mixed	+\−	+\−	Country	R&D efficiency
Gözübüyük (2007)	1,666	1	Western (US)	Omitted	+	Organization	Patent count
Ibarra (1993)	79	2	Mixed	+	Omitted	Individual	Administrative innovation involvement, technical innovation involvement
Jiang (2009)	171	2	Chinese (Mainly Zhejiang)	+	+	Organization	Performance (including sales, competitive capability and profit)
Jin (2012)	129	3	Chinese (Mainly Zhejiang)	+	Omitted	Organization	Innovation performance (product innovation and process innovation)
Koka and Prescott (2008)	585	4	Western (US)	+	−	Organization	Firm performance: Sales per employee

Table 1 (continued)

Authors	N_1	N_2	Region	Network centrality	Structural hole	Levels of analysis	Performance measurement
Lechner et al. (2010)	76	2	Western (Germany and Switzerland)	+	+	Team	The extent to which several goals and objectives were achieved
Lin and Fan (2012)	12,913	9	Chinese	+\−	Omitted	Individual	Citations
Liu et al. (2006)	105	1	Chinese (Shanghai, Zhejiang, Jiangsu and Fujian)	+	Omitted	Organization	Innovation performance (sales of new product/all products)
Markóczy, Sun, Peng, Shi, and Ren (2013)	4,602	4	Chinese	+	−	Organization	CEO compensation, ROE
Mazzola, Perrone, and Kamuriwo (2016)	300	2	Mixed	+	+	Organization	New product evelopment rate
Mehra, Dixon, Brass, and Robertson (2006)	88	3	Western (US)	+\−	Omitted	Individual	Leader reputation
Merluzzi (2013)	256	1	Mixed	Omitted	+	Individual	Total compensation
Moran (2005)	120	4	Western (European)	+\−	Omitted	Individual	Sales performance, innovation performance
Nerkar and Paruchuri (2005)	8,882	3	Western (US)	+	−	Individual	Patent citation
Obstfeld (2005)	152	1	Western (US)	Omitted	−	Individual	Innovation involvement
Peng and Fu (2012)	130	1	Chinese (Pearl River Delta)	+	Omitted	Organization	Innovation performance
Qian, Xu, and Yang (2010)	121	2	Chinese (Shenzhen)	+	+	Organization	Innovation performance
Qin, Yin, and Jing (2010)	21	3	Chinese	+\−	Omitted	Individual	Individual performance (manager evaluation)
Reagans and McEvily (2003)	95	1	Western (US)	Omitted	−	Individual	Ease of knowledge transfer
Ren et al. (2011)	331	2	Chinese	+\−	Omitted	Organization	Innovation behavior (exploratory innovation & exploitative innovation)
Salman (2002)	38	4	Western (Canada)	+	Omitted	Organization	Innovation (patent and/or license count)
Sha and Zeng (2014)	5,153	2	Chinese	+	+	Organization	ROA
Shipilov and Li (2008)	1,261	4	Western (UK)	Omitted	+	Organization	Market performance (dollar value of each offering), status accumulation
Soda, Usai, and Zaheer (2004)	501	4	Western (Italy)	+	+	Team	Product performance (number of audience)
Sparrowe, Liden, Wayne, and Kraimer (2001)	190	4	Western (US)	+	Omitted	Individual	Individual job performance and group performance

Table 1 (continued)

Authors	N_1	N_2	Region	Network centrality	Structural hole	Levels of analysis	Performance measurement
Tsai and Ghoshal (1998)	15	2	Mixed	+	Omitted	Organization	Product innovation
Vasudeva et al. (2013)	626	2	Mixed	+	−	Organization	Firm innovativeness (citation-weighted patent count)
Wang (2008)	209	1	Chinese (Taizhou and Zhejiang)	+	Omitted	Organization	Innovation performance (sales of new product/all products)
Wang et al. (2014)	844	4	Western (US)	−	+	Individual	Number of new knowledge elements
Whittington et al. (2009)	2,868	3	Western (US)	+	Omitted	Organization	Patent count
Xiao and Tsui (2007)	417	2	Chinese	Omitted	−	Individual	Career performance (including bonuses, salaries)
Xue (2006)	228	9	Chinese (Shanghai and Hangzhou)	+	Omitted	Individual	Innovation capability
Zaheer and Bell (2005)	77	1	Western (Canada)	Omitted	+	Organization	Market share
Zaheer and Soda (2009)	249	1	Western (Italy)	Omitted	+	Team	Team performance (audience share)
Zhao and Zheng (2013)	2,025	6	Chinese	+	−	Organization	Patent count
Zheng (2010)	100	2	Chinese	+	+	Organization	Innovation performance

N_1 denotes the total sample size per study; N_2 is the number of samples per study; Region represents the region in which the data used in the paper originated; Network centrality and Structural hole denote whether the correlation between Network centrality and Performance and that between Structural hole and Performance was positive (+) or negative (−). For the studies that used data from multiple countries (including both China and Western countries), we include them only in the analysis of the main effects of Network centrality and Structural holes and not in the Chinese sub-sample or the Western sub-sample

Ren et al. (2011) sent questionnaires to companies across wide areas of China

Sha and Zeng (2014) used a cross-shareholding network of Chinese A-share listed companies

Chen and Xie (2011) used network data from an interlocked network of Chinese A-share listed companies

Lin and Fan (2012) used network data on paper collaboration among Chinese management scholars

Markóczy et al. (2013) used network data from an interlocked network of Chinese listed companies

Structural holes were first proposed by Burt (1992) and measured by "*effect size*," "*efficiency*," "*constraint*," and "*hierarchy*," among which "*constraint*" and "*efficiency*" are the two most commonly used, as was the case in the 52 papers in our analysis.

Efficiency is a redundancy-based structural holes measurement; it is the ratio of a focal actor's non-redundant relations to total relations. Following Burt (1992) and Nerkar and Paruchuri (2005), it is computed as

$$\left[\sum_j \left(1-\sum_q p_{iq}m_{jq}\right)\right]/C_j$$

where p_{iq} is the proportion of i's relationships with q, m_{jq} is the marginal strength of the relationship between j and q (which are both partners of i), and C_j is the total number of relationships for i. Higher values on this index (which ranges from 0 to 1) reflect actors whose ego networks are rich in structural holes; that is, the actors' partners are not connected to one another.

The *constraint* measure of structural holes is computed as

$$C_{ij} = \left(p_{ij} + \sum_q p_{iq}p_{qj}\right)^2, q \neq i, j$$

where p_{ij} is the proportional strength of i's relationship with j (proportion of i's network time and energy invested in the relationship with j), p_{iq} is the proportional strength of i's relationship with q, and p_{qj} is the proportional strength of q's relationship with j (Burt, 1992, 2007; Nerkar & Paruchuri, 2005). $\sum_q p_{iq}p_{qj}$ captures the degree of triadic closure between i, j, and third parties q (Obstfeld, 2005; Reagans, Zuckerman, & McEvily, 2004). The total in parentheses is the proportion of i's relations that are directly or indirectly invested in connection with j. The sum of squared proportions, $\sum_j C_{ij}$, is the *constraint* index of i (Burt, 2007). *Constraint* measures the lack of brokerage opportunities. The higher an actor's *Constraint* value, the fewer the structural holes in that actor's network. Because *Constraint* has a range between 0 and 1, following Xiao and Tsui (2007), we use one minus *Constraint* to directly measure the degree of spanning structural holes.[3] We reverse-coded the correlation coefficient if a paper used "constraint" directly.

Performance studies have linked social capital to performance outcomes such as survival, growth, innovation and profitability. *Performance* is viewed as a multidimensional construct that can have a variety of facets ranging from firm reputation and social responsibility to accounting outcomes (e.g., revenues, ROA) and stock market valuations (e.g., share price, market-to-book ratio) (Meyer & Gupta, 1994). In this study, we include overall performance measures such as innovation (i.e., mostly patent-based measures), financial performance (e.g., ROA, ROE), evaluations of individuals, and sales performance.

[3] Guan et al. (2016) use two minus *Constraint* to measure the degree of spanning structural holes.

We focus on overall performance for three main reasons. First, the performance measurements in the 52 papers included in our analysis are different, and it is difficult to divide them into two or three kinds. From Table 1, "Performance measurement," we can observe that scholars analyze different aspects of subjects' performance in the 52 papers we included. It is difficult to divide them into two or three kinds of performance with a specific standard. Second, although the performance measurement varies to some extent, it is commonly accepted that actors (individuals, teams, or organizations) with better network status and more social capital will have more resources, have more information that they need, and attain higher performance. Third, our main focus in this manuscript is to analyze the effect of structural social capital (network centrality and structural holes) in different cultures (Chinese and Western). If we added another dimension in the analysis, that is, different kinds of performance (innovation performance and economic performance), it would become a 2×2 framework. We would need to separate the 52 papers into four types: Chinese context and innovation performance, Chinese context and economic performance, Western context and innovation performance, and Western context and economic performance. Each type would have a small sample size that would be insufficient for statistical analysis.

Publication bias was measured by investigating whether the social capital and performance relationships in published studies differ from those reported in unpublished studies; differences between published and unpublished studies could be attributable to publication bias. We coded the articles that were published in journals as the published group. We coded conference papers, the working paper, and dissertations as the unpublished group (Bae et al., 2014).

Following Hofstede (1983) that proposed the cultural differences between the Eastern and Western societies, we coded *Contextual difference* between China and the West as a dummy variable. We looked for empirical studies situated in Mainland China and the West. Cultural differences among different groups may not be limited to two samples located in two different countries (Tan, 2002), and culture may transcend national borders. As such, the West sample includes studies that are situated in the US, Europe, Canada, and the UK. Additionally, we conducted two robustness tests: first, we exclude the other Western countries and compare only the US sample and the China sample; second, we compared the West with the greater China region including Mainland China, Hong Kong, Macau and Taiwan, following previous studies (Lu, Wang, Siu, Lu, & Du, 2015; Peng, Lu, Shenkar, & Wang, 2001).[4] We found the results to be consistent, allowing us to draw the same conclusion.

Meta-analytic procedures and results

Meta-analysis is a statistical research synthesis technique that allows for the aggregation of results across separate studies as it corrects for various statistical artifacts to

[4] In the literature review, we did not find papers based on data from Macau and Hong Kong. Thus, the papers in Chinese that are included in the study were all based on data from Mainland China and Taiwan. Whether Singapore should be regarded as part of the greater China region is debatable; however, our literature review did not find studies situated in Singapore.

obtain an estimate of the true relationship between two variables in the population. We performed a primary analysis following Hunter and Schmidt's (2004) meta-analysis method. Observed zero-order correlations between the variables of interest are weighted by the study sample size ($\bar{r}$) in order to calculate effect size (Z) across all of the studies that were included in the analysis. This estimate offers more accuracy than do estimates obtained from any one study because positive and negative sampling errors cancel each other out (Hunter & Schmidt, 1990).

Confidence intervals were constructed around each ($\bar{r}$) to facilitate hypothesis testing (Whitener, 1990). The main effect between network centrality and performance and that between structural holes and performance were tested by determining whether confidence intervals for $\bar{r}$ included zero. The moderator hypotheses (Hypothesis 1 and Hypothesis 2) were tested by grouping the effects according to the moderator of interest, calculating $\bar{r}$ for each subgroup and testing for differences (Hunter & Schmidt, 1990). We conducted a set of subgroup meta-analyses for the dummy-coded moderator *contextual difference*. In particular, we used the Q statistic, which is a chi-square test for which a significant value suggests the heterogeneity of a given relationship and the presence of possible moderator variables (Hedges & Olkin, 1985; Heugens & Lander, 2009). Following Luo et al. (2012), we also relied on the 75% rule of thumb to assess whether there were unsuspected moderating factors (Hunter & Schmidt, 1990) because the interpretation of the Q-statistic is based on a traditional significance test, and Type II error rates can often be high. According to the rule of thumb, there will exist systematic variations, and thus potential moderator factors, among the studies that are included in a meta-analysis if the error variance accounts for less than 75% of the uncorrected variance.

Results

Primary analyses

Using the meta-analytic techniques described above, we synthesized the connections between social capital and performance and reported the number of effect sizes (N), the sample-weighted correlations ($\bar{r}$), the effect sizes of the sample-weighted correlations (Z), the standard errors of the sample-weighted correlations (SE), the corresponding 95% confidence intervals (CI), and the heterogeneity Q-values. Summary findings of the meta-analyses are reported in Table 2.

The overall analysis found that the effect of network centrality on performance was significantly positive: the correlation after the correction for measurement error was .270. Moreover, the effect was statistically significant because the corrected 95% confidence interval did not include zero. There was also a significantly positive relationship between structural holes and performance ($\bar{r}$ = .114). The different correlations of network centrality and structural holes showed that overall, the effect of network centrality is stronger than that of structural holes. The results of the Q test indicate that moderation is likely for the relationships between social capital and performance, especially for that between structural holes and performance. Our analysis shows that the ratio of variance expected from the sampling error to the observed variance is smaller than 75%. According to the 75% rule of thumb (Hunter & Schmidt,

Table 2 Meta-analytic results of social capital and performance

Social Capital	*N*	$\bar{r}$	*Z*	*SE*	95% CI		Q_H
					Lower	*Upper*	
Network centrality	109	.270	.277	.060	.159	.375	36.371
H1:							
Network centrality (China)	48	.262	.268	.074	.122	.391	31.825
Network centrality (West)	37	.232	.237	.036	.164	.298	30.648
Structural holes	50	.114	.115	.024	.067	.161	115.292**
H2:							
Structural holes (China)	12	−.018	−.018	.051	−.117	.081	58.501**
Structural holes (West)	25	.161	.162	.029	.105	.215	46.144**

N Number of samples; $\bar{r}$Sample-weighted correlations; *Z* Effect size of sample-weighted correlations; *SE* Standard error of sample-weighted correlations; Q_H Chi-square statistics for homogeneity

1990; Luo et al., 2012), this suggests that systematic variations exist among the studies on the impact of network centrality on performance, indicating the potential presence of contingency factors in the relationship.

Moderator analyses

Moderation testing in meta-analysis is accomplished through establishing and comparing subgroups. Separate meta-analyses were conducted for these subgroups, and sample-weighted correlations ($\bar{r}$) were estimated for each subgroup. A critical ratio test is then used to determine if sample-weighted correlations ($\bar{r}$) are significantly different. Thus, the term "moderator" is used interchangeably with "subgroup" in the meta-analysis literature (King, Dalton, Daily, & Covin, 2004).

The role of social capital is different in China from its role in the West. Network centrality's positive effect on performance seems to be stronger in China than in the West, since the correlation after the correction for measurement errors was higher in China ($\bar{r}$= .262) than in the West ($\bar{r}$= .232). The *Z* test and *F* test also provide support for the findings (see the Appendix). However, the 95% confidence intervals for the two values suggest that there might not be a statistically significant difference between them. The lower-to-upper range for the Chinese figure is .122–.391, while that for the Western figure is .164–.298. The effect of network centrality seems to be stronger in China, but perhaps not significantly so. Thus, the results are consistent with Hypothesis 1, but they do not allow us to draw a decisive conclusion.

The corrected correlation between structural holes and performance is much greater in the West ($\bar{r}$= .161) than in China ($\bar{r}$−.018), reflecting the greater effectiveness of structural holes in the West. The negative correlation in China indicates a somewhat negative effect. The effect of structural holes was not statistically significant in China, given that the corrected 95% confidence interval included zero. This result indicates that the effect of structural holes may not be consistent in China, which could potentially explain the inconsistencies of previous studies, at least to a certain extent. The *T* test and *F* test (see the Appendix), together with the 95% confidence interval,

show that the differences between the coefficients of structural holes and performance in Chinese and Western contexts are statistically significant. Thus, Hypothesis 2 is supported.

Discussion

The key thesis of social capital theory is that socially embedded relations are vital resources for social actors. Because this thesis has been widely acknowledged across a diverse set of disciplines and applied to everyday practices, social capital as a research field is considered to have reached maturity (Kwon & Adler, 2014; Woolcock, 2010). However, our literature review finds that the empirical results of this thesis are actually mixed, and studies in China (e.g., Xiao & Tsui, 2007) in particular yielded inconsistent results. This discrepancy makes one wonder whether the key thesis of social capital holds in Eastern societies (Chai & Rhee, 2010) as it does in the West, where the majority of social capital studies have been situated. To the best of our knowledge, our meta-analysis of the empirical studies in both China and the West is the first attempt to systematically investigate whether and how structural social capital functions differently between the two societies.

Our meta-analysis results suggest a China-West divide on social capital. In line with the theory, we found that network centrality and structural holes, two divergent social capital functions, both enhance network member performance, but the impact of structural holes is not significant in China. The findings suggest that network centrality is more effective than the bridging of structural holes in China, whereas network centrality and the bridging of structural holes both have a positive impact on performance in the West. Network centrality is effective in both China and the West, but bridging structural holes functions more effectively in the West than in China. The results suggest a conditioning effect of contextual differences on the relationship between social capital and performance. The Chinese data strongly support a model that favors more network centrality in interconnected networks, which is consistent with the cultural value of *guanxi*. In the Western world, network members use a structural hole model even if they do not adhere to it completely.

Overall, our results are consistent with the notion of a conditioning effect of context as a social capital contingency factor. The collectivist culture of China implies a society with high network centrality that can bring individuals into the in-group of trust and reciprocity. In contrast, the bridging of structural holes is less powerful in China than in the West. The effect of the structural holes model is more aligned with Western society, which reflects open markets, free competition and individualism (Burt et al., 2000). An individualist culture is more tolerant of brokering behavior—it sometimes actually encourages people to act as brokers—because these behaviors are consistent with the liberal-individualist values of self-interest (Xiao & Tsui, 2007). In contrast, our meta-analysis results do not lead to a clear conclusion on the impact of structural holes in China. Whereas some empirical studies are consistent with what is typically found in Western society (e.g., Qian, Xu, & Yang, 2010), others yielded the opposite results (e.g., Xiao & Tsui, 2007).

Contributions

Our study makes the following contributions. First, it contributes to the literature of structural social capital because we found that both network centrality and structural holes are beneficial to network members' performance. Additionally, it is interesting to find that the effect size of centrality is greater than that of structural holes, indicating that centrality is more effective than structural holes. It appears that maintaining more relationships and being central in the network are more effective for improving network members' performance than is spanning structural holes.

Second, our study's findings shed light on the contingency value of context on the nature of social capital and thus answer the call for a more contextual approach to conceptualizing social capital's function (Burt, 2000). The finding that network centrality matters more than structural holes in China, in contrast to the West, suggests that social capital's mechanisms are defined by specific cultural and sociological contexts. Our findings also reveal that the impact of structural holes is weaker in China than in Western society, as shown in Table 2. Essentially, in the same spirit as the emerging scholarly efforts to contextualize theories (e.g., Tsui, 2006; Whetten, 2009), our study suggests that social capital's function is more culture-specific than it is universal across cultures (Batjargal, 2007). Unpacking the effect of social networks in different cultures would thus contribute to further theoretical refinements of social capital theory.

Third, our study also offers implications for managerial practice. While it is widely acknowledged that the way of doing business is different between China and the West due to differences in terms of culture, economic development, and political systems, among others, our study demonstrates that there are nuances to this assertion. It is true that the manner in which individuals utilize social relations is expected to vary across societies, as evidenced in our finding that bridging a structural hole is not always as beneficial in China as it is in the West. As such, when Western firms enter China or vice versa, they will have to adjust their networking strategies to adapt to a seemingly alien society (Xu & Meyer, 2013) and pay special attention to the possible negative (or at least not as strong as in the West) impact of bridging social connections. More generally, managers should consider social capital as endogenous and context specific rather than as a set of universal generalizations that are applicable across societies. On the other hand, however, our study also reveals that network centrality is positively related to performance in both China and the West. The results indeed support the generalizability of the benefits of holding a more central position in a network. Taken together, cross-border managers cultivating social capital for competitive advantage need to consider both the similarities and the differences between China and the West in terms of when and how social capital matters.

Limitations and future research directions

This study has several limitations that should be considered when interpreting the findings. First, any meta-analysis is constrained by the nature and scope of the original studies on which it is based (Hunter & Schmidt, 1990). Although we focused exclusively on contextual differences, we acknowledge that performance can also be influenced by other antecedents. For example, network density could be a moderator (Tan et al., 2015), but too few studies included this variable, thereby preventing us from

examining its moderating effect. By focusing on culture, which encompasses a broad set of countries, our model might have paid less attention to between-country variances or between-organization variations (Chai & Rhee, 2010). In addition, while focusing on contextual differences between China and the West, we did not operationalize the factors (e.g., culture, political systems, economic development) to precisely examine how each factor affects the functions and impacts of social capital.

Second, the conclusions drawn from the moderator analysis results are based on a relatively small number of effect sizes and therefore should be interpreted with caution. An inadequate number of samples in the subgroups reduced the power of the analysis, resulting in second-order sampling error (Hunter & Schmidt, 2004). Thus, we call for more primary studies to contribute to these research areas so that more accurate conclusions can be drawn.

Third, the practice of grouping all Western countries together and comparing the West with China risks overlooking the differences across these countries.[5] House et al. (2004) have clearly shown that there are important differences among many Western countries, and countries such as Italy are considered very different from the US and Canada. It is noteworthy that this research project originally began as an ambitious attempt to use meta-analysis to assess how social capital functions differently across different cultures/countries. However, we simply found that there are many studies that are situated in Western countries and many studies that are situated in China, while only a few studies are situated in other countries. This prompted us to narrow the scope of our analysis to a comparison between China and the Western countries. Although we believe that there is indeed a difference between China and the West (e.g., the Hofstede measurement of cultural distances between China and the Western countries included in our analysis are all bigger than two), we think that future research should more directly incorporate the differences across the Western countries, and perhaps even the different regions in China.

Finally, while we reveal the China-West divide regarding social capital in the existing literature, our sample size is not large enough for us to assess the different types of performance that can be affected by social capital or the different levels at which social capital can play a role. Theoretically, it makes sense to do so because social capital indeed functions at different levels and can affect different types of performance. In the sample of this meta-analysis, performance is measured by innovation outputs, knowledge transfer, bonuses, ROA, market share, and so on. Additionally, it is worth noting that social network theory, which originated from individual-level studies, has been applied to the organizational level. However, even though our sample size is too small for us to conduct a multi-level and multi-performance analysis, we believe that the results of the meta-analysis advance social capital theory by providing an overall assessment of the China-West divide. The different measures of performance that are used in existing studies are all the result of competition among social actors, and the actors (individuals, teams, or organizations) all intended to create and maintain an advantage in the competition process. In this way, they are similar in nature. We attempted to further explore the possibility of multi-level and multi-performance. We tried to divide the China sub-sample into a China innovation-performance sub-sample and a China economic-performance sub-sample. We did the same to the Western

[5] We thank the anonymous reviewer for this suggestion.

sample in order to test whether our proposed China-West divide in social capital is conditioned by the type of performance. However, the size of the sub-samples is too small for us to generate reportable results. Similarly, the sample size is too small for us to assess the different levels of social capital. Future studies, when more empirical evidence is available, should further explore the possibility of multi-level and multi-performance.

Despite these limitations, we believe that this work demonstrates a link between the use of social capital theory, culture and behavioral theory. A meta-analysis not only summarizes past research but also highlights directions for future inquiry. Perhaps the most important implication of our results for future research is that merely correlating social capital and performance yields limited insight because a number of mechanisms could have either negative or positive effects (or both). The conditioning factors thus deserve more scholarly attention in the future.

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Appendix

To test whether the differences between the coefficients for Chinese and Western cultures are statistically significant, we use the Z test, T test and F test. As is well known, the Z test, T test and F test are commonly used to test whether the difference in the average value of different groups is significant.

The Z test often applies to a situation where the samples of each group are greater than 30. We can see from Table 2 that the samples on Network centrality and Performance in Western countries and China are both greater than 30. Consequently, we use the Z test to test whether the differences between the coefficients for Chinese and Western cultures are statistically significant. From Formula 1, we can see that the result is significant. Thus, H1 is supported.

$$|Z| = \frac{|0.262-0.232|}{\sqrt{\frac{0.074^2}{48} + \frac{0.036^2}{37}}} = 3.37 > 1.96 \tag{1}$$

The T test often applies to a situation where there are less than 30 samples in each group. We can see from Table 2 that the samples on Structural hole and Performance in Western countries and China are both less than 30. Consequently, we use the T test to determine whether the differences between the coefficients for Chinese and Western cultures are statistically significant. The T test is applicable when the variance between two groups is the same; when the variances are different, T' is often used. From Formulas 2, 3 and 4, we can see that the result is significant. Thus, H2 is supported.

$$t' = \frac{0.161 + 0.018}{\sqrt{\frac{0.051^2}{12} + \frac{0.029^2}{25}}} = 11.31 \tag{2}$$

$$t'_{0.01} = \frac{\frac{0.051^2}{12} \times t_{0.01}(11) + \frac{0.029^2}{25} \times t_{0.01}(24)}{\frac{0.051^2}{12} + \frac{0.029^2}{25}} = 3.06 \tag{3}$$

$$t' > t'_{0.01} \tag{4}$$

Moreover, we also use the F test to directly test the significance of the difference between the effect of social capital on performance in China and Western countries. The P-value for Network Centrality and Performance is .0000204, while that for Structural hole and Performance is .003416.

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