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Reflected Knowledge and Trust in Global Collaboration

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Scholars argue that direct knowledge about distant colleagues is crucial for fostering trust in global collaboration. However, their arguments focus mainly on how trust accrues from knowledge about distant collaborators' personal characteristics, relationships, and behavioral norms. We suggest that an equally important trust mechanism is "reflected knowledge," knowledge that workers gain about the personal characteristics, relationships, and behavioral norms of *their own site* through the lens of their distant collaborators. Based on surveys gathered from 140 employees in a division of a global chemical company, we found that direct knowledge and reflected knowledge enhanced trust in distinct ways. Although both enhanced feelings of closeness with others, results indicate that direct knowledge increased focal actors' understanding of their distant colleagues, whereas reflected knowledge promoted feelings of being understood. We discuss implications of reflected knowledge to theories of trust and interpersonal dynamics in globally distributed collaboration.

Key words: global work; organizational studies; behavior; trust

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1. Introduction

Globalization increasingly requires a distributed workforce to collaborate across far-flung locales. Such distributed collaboration, in which employees work with and depend on distant colleagues on a day-to-day basis, allows firms to leverage their intellectual capital, enhance work unit performance, meet ever-changing customer demands more fluidly, and gain competitive advantage in a dynamic marketplace (e.g., Cummings 2004, Gray and Meister 2004, Jarvenpaa and Leidner 1999, Malhotra et al. 2001, Sole and Edmondson 2002, Townsend et al. 1998).

However, research on distributed collaboration shows that performance frequently suffers because interpersonal trust among distant collaborators is difficult to achieve (Jarvenpaa and Leidner 1999). Interpersonal trust refers to "the extent to which a person is confident in, and willing to act on, the basis of the words, actions, and decisions of another" (McAllister 1995, p. 25). Trust is regarded as the key determinant of the effectiveness of distributed collaborators (Handy 1995, Poole 1999). Researchers have linked trust to heightened cooperation and teamwork (Dirks 1999), improved organizational citizenship (McAllister 1995), as well as enhanced information sharing (Uzzi 1996) and task-related advice (Chua et al. 2008). Organizational scholars have elaborated

extensively on the importance of trust in improving the quality of working relationships (for a review, see Dirks and Ferrin 2001), which tend to be fragile in distributed collaboration (Jarvenpaa and Leidner 1999). In particular, trust-damaging conflicts tend to arise as dispersed collaborators struggle to establish mutual knowledge (Cramton 2001, Hinds and Cramton 2010). Such conflicts spike performance costs associated with increased monitoring, increased work redundancies, and lower satisfaction among workers (Wilson et al. 2006).

For the last two decades, scholars have explored the pivotal relationship between trust and distributed work contexts. Some argue that "firsthand experience," defined as face-to-face exposure gained through time spent at the site of distant collaborators, is of paramount importance to bridging the interpersonal gap between distant workers (Hinds and Kiesler 2002) and mitigating interpersonal trust challenges among them. In an ethnographic study of site visits, Hinds and Cramton (2010) found that firsthand experience demystified colleagues' work practices and increased effective relational coordination. Their findings build on an earlier study of global software companies in which employees with direct experience of their distant partner sites were more generous in sharing resources and expertise (Orlikowski 2002).

Firsthand experience may be an important means to address the limitations that physical distance places on how quickly or how well trust develops between workers.

In line with this notion, some researchers have argued that trust is more easily generated in collocated settings, because collocated workers are better placed than their distributed counterparts to use behavioral cues to read intentions and foster a collective identity (Frank 1993, Wilson et al. 2006). Theorists further argue that trust can be much harder to achieve in distant collaborations because mediated communication can constrain information sharing across sites (e.g., Chidambaram and Jones 1993, Cramton 2001, Hightower and Sayeed 1996). Consequently, information about the social dynamics of distant collaborators (e.g., people, relationships, and norms) is difficult to discern and is susceptible to relational impediments. For example, people who lack social information about their distant coworkers are more likely to interpret those coworkers' actions as reflecting dispositional traits rather than situational factors (Cramton 2001). Moreover, the absence of social cues in computer-mediated interactions may lead to greater depersonalization, less attention to coworkers, and less inhibited behaviors (Kiesler et al. 1985). In conjunction with lower levels of social cohesion and conformity, behavioral invisibility may increase the risk of work-related cheating, neglect, and abuse (Sheppard and Sherman 1998, Wilson et al. 2006).

A number of scholars have furthered the research agenda by incorporating the multidimensional nature of interactions or virtuality (for virtuality reviews, see Bell and Kozlowski 2002, Griffith et al. 2003, Kirkman and Mathieu 2005, O'Leary and Cummings 2007, Zigurs 2003) among distant workers in examining trust in the absence of firsthand experience (Walther 1992, Walther and Burgoon 1992, Weisband and Atwater 1999, Wilson et al. 2006). For example, Walther (1992) drew on social information-processing theory to argue that computer-mediated interactions can foster the same type of relationships afforded by firsthand experience, albeit over a longer period of time. Walther argued that messages exchanged using mediated interactions can contribute to the positive impressions that people form, test, and retain about one another. In a three-week longitudinal experimental study of distributed collaboration, Wilson et al. (2006) tested Walther's proposition, confirming that computer-mediated interactions did eventually yield the same levels of trust as face-to-face interaction. Bos et al. (2002) found similar results when comparing video and audio conference groups with groups who participated on a social task in person. These studies demonstrate that in cases where distributed collaborators are able to exchange adequate information to

achieve mutual understanding, they may be able to build trust without firsthand experience.

2. Information as a Basis for Trust: Direct and Reflected Knowledge

We believe that mutual understanding and trust gained through mediated communication (over time) or firsthand experience benefit from what we call "direct knowledge": information about the personal characteristics, relationships, and behavioral norms of the other collaborators. This social information, when used to build trust, also heightens the sense of comfort and reliability between distant collaborators. As an example, consider the experience of Ben, a product engineer located in the United Kingdom, who travels to Taiwan to spend two weeks working side by side with his Taiwanese counterparts, Yee and Chi-Ming, on a design. During that time, Ben observes his Taiwanese colleagues in their context. For example, he notes how Yee works under pressure, whose counsel Yee solicits when brainstorming, and that Yee goes to lunch with the same group of people daily at the second-floor cafeteria where people often hold working lunches. He notes how Chi-Ming and Yee allocate work between themselves and the contexts in which they turn to Ben for guidance. Such insights help Ben better understand his colleagues as they continue to work together. The more Ben knows about Yee and Chi-Ming, the better his understanding of their attitudes, behaviors, and motivations, and the more likely he is to act on their words and actions—thereby fostering the development of trust.

In addition to direct knowledge, we have identified another important source of knowledge for building trust, which we call "reflected knowledge." Complementary to direct knowledge, reflected knowledge is the information workers gain about the personal characteristics, relationships, and behavioral norms of *their own site* by interacting with distant collaborators. Reflected knowledge is acquired by becoming virtual to one's self—learning to see one's site and work relationships through the eyes of collaborators. In this paper we explore the theoretical context for understanding reflected knowledge, provide evidence that reflected knowledge can improve trust in distant collaborations, and consider the implications of our findings for future studies of distributed work.

We draw inspiration from the work of Cooley (1983) and Mead (1934) to formulate the concept of reflected knowledge, focusing on the social dimensions that pertain to collaboration, where reflected knowledge concerns one's work context rather than self-view. Cooley's (1983) original formulation of "the looking-glass self" asserts that our individual self-view is a social product shaped by the way we

think others perceive us: “We always imagine, and in imagining share, the judgments of the other mind” (pp. 184–185). Operationally, the looking-glass means that our concept of self is developed through interaction with others (Cooley 1983, Mead 1934). Although Cooley and Mead’s conceptualization of the self-view emphasizes individual cognition, for the purposes of this study, we consider reflected knowledge to encompass broader characteristics of a focal actor’s home site as the unit of analysis, namely, personal characteristics, relationships, and behavioral norms.

Reflected knowledge promotes understanding of how distant coworkers experience an actor’s site and related interpersonal factors. For example, Julie, a French chemical engineer who works in Marseilles, spends time at Paul and Steven’s site, her American collaborators in Palo Alto, California. While there, she realizes that the common practice among her French colleagues of only checking and responding to emails first thing in the morning—leaving them the rest of the day for uninterrupted work—adds an overnight delay to correspondence with Paul, Steven, and other colleagues in the United States. Her visit enables her to link the time delay with a new perception of how she and her French colleagues interact with coworkers in California. Such enlightenment, we argue, produces a new understanding that ultimately shapes interpersonal trust outcomes.

Reflected knowledge may also be gained through mediated communication. For example, Julie could also have acquired reflected knowledge when corresponding with Steven and Paul on the phone or via email. It is plausible for Julie to eventually discern how her Palo Alto coworkers experience correspondence from the Marseilles site by accumulating insights gleaned from her email and video-conference interactions with them. The central element in all reflected knowledge is that an actor gains knowledge about his or her own site by taking the viewpoint of his or her collaborators.

We begin to explore reflected knowledge by examining its acquisition firsthand, during site visits, to avoid some of the confounds introduced by the multidimensional nature of virtuality (O’Leary and Cummings 2007). Taking guidance from the literature reviewed earlier, we consider firsthand experience to be a dimension of virtuality that has strong effects on distributed work. Furthermore, understanding the effects of virtuality on distributed collaboration is inherently complex because collaborators have a variety of media to choose from, frequently use multiple media in concert, and dynamically change the configuration of media to suit their individual needs (e.g., Kirkman et al. 2004). For example, many studies of media choice indicate that people select media that they think will ensure accurate interpretation of their

messages (Daft et al. 1987, Trevino et al. 1990). The choice of media can therefore be a deliberate act that shapes communication and relational outcomes.

More recently, scholars have argued that people also combine multiple media that have distinct features, such as instant versus delayed, as a function of precipitating events at the workplace (Leonardi et al. 2012). These approaches in mediated communication research show that workers select and combine media conjunctively during the course of their communication with others. Relative to direct and reflected knowledge, tracing which pieces of knowledge resulted from a particular communication and in what context is daunting, if not impossible, to achieve at this point. We therefore restrict our initial examination of reflected knowledge to the context of firsthand experience, allowing us to develop theoretical insights without introducing potential confounds that arise from the complexity of virtuality in practice. We expect our focus on firsthand experience to provide a fruitful context in which to unpack the way reflected knowledge can boost trust between distant collaborators. We hope that our study of reflected knowledge acquired through firsthand experience will inspire further investigation of how reflected knowledge is acquired and used in all forms of virtual work.

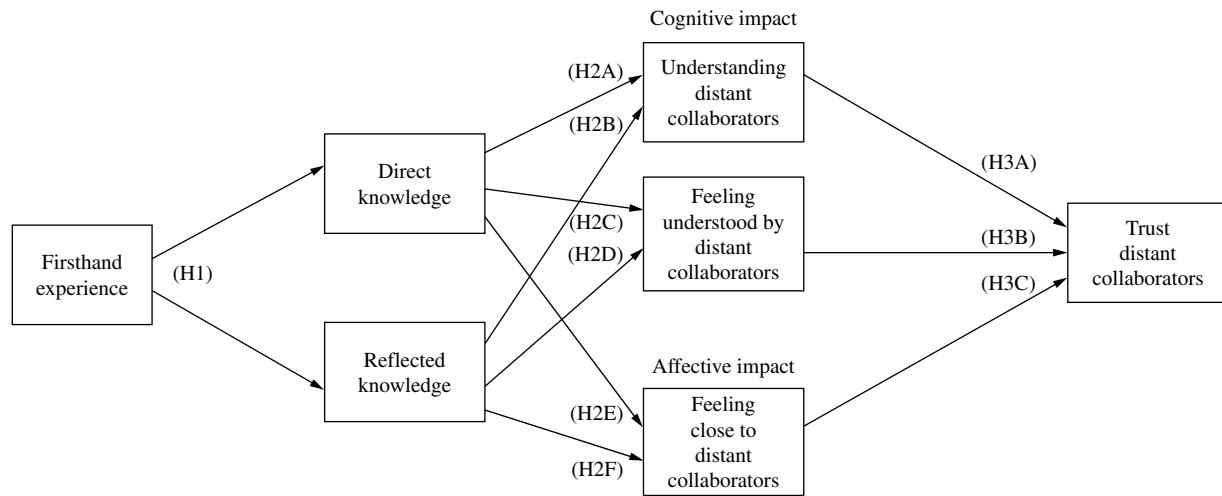
3. A Model of Reflected Knowledge and Trust

The establishment and growth of trust in virtual collaboration hinges on the extent to which distant coworkers perceive their colleagues to be reliable, feel concern for their coworkers’ welfare, and are comfortable in their interactions (Chua et al. 2012). Building on existing theory, we developed a model of the relationships linking firsthand experience, direct knowledge, reflected knowledge, and trust in global collaboration, and tested it using survey data gathered from an entire division of a multinational organization. In the sections that follow, we present the model and our hypotheses as depicted in Figure 1.

3.1. The Role of Firsthand Experience

We accept the link between firsthand experience and direct knowledge—the information about distant collaborators’ personal characteristics, relationships, and behavioral norms gained through unmediated communication (Cramton 2001)—as both intuitive and in line with prior research (see Hinds and Kiesler 2002). When distant coworkers interact face to face, they gain insights and share experiences that enable them to make more informed interpretations of their colleagues’ behavior and intentions. By definition, then, firsthand experience will increase direct knowledge.

Figure 1 Conceptual Model of Relationships



Because the relationship between firsthand experience and direct knowledge has been fairly well delineated, we focus primarily on the relationship between firsthand experience and *reflected knowledge*.

In addition to increasing direct knowledge, firsthand experience can also generate reflected knowledge, defined as the knowledge a worker gains about the personal characteristics, relationships, and behavioral norms of *their own site* by interacting with their distant collaborators. We conceptualize reflected knowledge by building on theories of the reflected self at the individual level (Roberts et al. 2005, Tice and Wallace 2003) and applying them to reflected appraisals of one's own work site. These theories posit that individuals form self-perceptions based in part on how they believe others see them, that the relationships in which individuals become embedded have a major impact on how they define and feel about themselves, and that an individual's self-image is shaped in part by the opinions of those he or she values (Ashford 1986, Bradbury and Lichtenstein 2000, Ely 1994, Gabarro 1990, Gersick et al. 2000, Granovetter 1985, Kahn 1998). In the context of distributed collaboration, we posit that firsthand experience will promote reflected knowledge of the worker's context, which is likely to enhance collaborators' understanding of themselves as their distant colleagues see them.

HYPOTHESIS 1 (H1). *Firsthand experience at a distant site will be positively related to knowledge of how collaborators at the distant site view the interpersonal aspects of the worker's site (reflected knowledge).*

3.2. Impact of Direct and Reflected Knowledge

We focus our model on two types of effects of reflected and direct knowledge: cognitive, in the form of shared or mutual understanding; and affective,

in the form of closeness. There is ample evidence that perceptions of mutual understanding and closeness are critical for successful distributed collaboration (e.g., Hinds and Mortensen 2005, Petronio et al. 1998, Webster and Wong 2008). With respect to cognition, confidence that one not only holds information about oneself and others, but that collaborators do as well, creates expectations that future coordination can move forward based on this mutual understanding (Cramton 2001). With respect to affect, cross-site cohesion and empathy are critical for overcoming dysfunctional tendencies that can arise in distributed collaboration (Cramton and Hinds 2005, Hinds and Mortensen 2005). Accordingly, we hypothesize that reflected and direct knowledge can increase both mutual understanding and closeness.

Turning first to mutual understanding, failures in mutual knowledge are central to difficulties experienced by dispersed collaborators (Cramton 2001). As Olson and Olson (2000) discuss in their review of the distributed teams literature, establishing common ground is essential for communication and productivity across distance. In this literature, however, gaining mutual understanding is linked solely to knowledge of distant others and their contexts. While direct knowledge is important for constructive distributed interaction, the literature has ignored the importance of the reflected appraisals in discussions of globally distributed interactions: individuals' feelings about their own social milieu are shaped in the context of others' perceptions. Below we outline the effects of both direct and reflected knowledge on relational understanding, and their differential impact on cognition.

3.2.1. Cognitive Impact: Understanding Distant Collaborators. We predict that both direct and reflected knowledge provide insights into distant

others' expectations around interactions. Scholars of social information processing and sensemaking have long argued that individuals use cues from their social context to make sense of events and interactions (Salancik and Pfeffer 1978, Weick 1995, Weick and Roberts 1993). These processes are at the core of scholarship on adaptation, the process by which people change their behavior to better match the *expectations* and norms of others. As illustrated in recent reviews of cross-cultural work (e.g., Gelfand et al. 2007), people's attitudes, beliefs, and behaviors are shaped both by their native environment and the foreign cultures to which they are exposed. In particular, Cramton and Hinds' (2005) theory on the drivers of cross-national learning provides insight into how direct and reflected knowledge can aid adaptation. The authors explore the likely determinants of individuals taking an ethnorelativistic perspective (understanding the world, including their own group, through the lens of others)—a core tenet of adaptation (Bennett and Bennett 2004, Bennett 1986)—as opposed to an ethnocentric, nonadaptive perspective. They argue that information promotes a sense of mutual positive distinctiveness, which increases the motivation to engage with and adapt to distant colleagues. Given this line of reasoning, we expect that as collaborators gain more direct information about their distant colleagues they will be more likely to take an ethnorelativistic perspective. In addition, confidence that they understand their distant counterparts better should strengthen their expectations that they can interact effectively with them.

HYPOTHESIS 2A (H2A). *Direct knowledge will be positively related to understanding of distant collaborators' expectations.*

Although knowledge of the social context of another provides insights into how that context shapes their expectations, when considered within the context of global collaboration, it paints an incomplete picture. We hypothesize that both direct and reflected knowledge about distant coworkers promote understanding of the expectations of colleagues, but operate through distinct mechanisms. Within global collaborations, an important component of any individual's social context is the distant collaborators with whom he or she interacts. Reflected knowledge provides individuals with information about how distant collaborators perceive their own site, and we posit that that information plays an important role in driving an individual's sense that they understand distant collaborators' expectations. Taking the perspective of distant collaborators provides insight into the type and nature of information that is likely to matter to coworkers in shaping their expectations.

HYPOTHESIS 2B (H2B). *Reflected knowledge will be positively related to understanding of distant collaborators' expectations.*

3.2.2. Cognitive Impact: Feeling Understood by Distant Collaborators. In addition to increasing one's understanding of distant collaborators, we predict that direct and reflected knowledge will help collaborators feel understood by countering the egocentric biases that increase the likelihood of misunderstandings between sites and the attribution of blame when misunderstandings arise. The tendency for people to hold egocentrically biased assessments has been well documented (Gilovich and Savitsky 1999). Egocentric biases lead individuals to overestimate the extent to which their own behaviors are noticed by others (Epley et al. 2002, Gilovich et al. 2000), to believe that their self-disclosures are more revealing than those of others (Pronin et al. 2008), and ultimately to assume that their own mental states and motivations are more visible to others than they actually are (Savitsky and Gilovich 2003, Vorauer and Cameron 2002). Compounding this problem, individuals routinely overestimate the clarity of their communication via mediating technologies like email (Kruger et al. 2005). Thus, within geographically distributed collaborations, egocentric biases are likely to lead to misunderstandings as collaborators assume their motivations and mental states are more apparent to, and better understood by, their distant colleagues than they actually are. Egocentrism also strengthens individuals' beliefs that they are more likely to be misunderstood by others than vice versa (Pronin et al. 2001). This is in line with findings that distributed colleagues are more likely to avoid responsibility and blame others for their own mistakes than comparable collocated collaborators (Walther and Bazarova 2007). Thus, egocentrism increases the likelihood that misunderstandings arise and will be attributed to distant collaborators misunderstanding them, rather than the reverse.

Direct knowledge provides a mechanism through which distributed collaborators can combat egocentrism and thus the likelihood of feeling misunderstood. Direct knowledge provides insights into the interpersonal characteristics (people, relationships, and work practices) of a distant site. As noted, these characteristics are key elements of the social context that an individual's distant colleagues use to interpret and make sense of events (Salancik and Pfeffer 1978, Weick 1995, Weick and Roberts 1993). Thus, by learning more about their distant colleagues' social context, collaborators better understand what shapes those colleagues' understanding of their interactions.

HYPOTHESIS 2C (H2C). *Direct knowledge will be positively related to perceptions of being understood by distant collaborators.*

Reflected knowledge goes a step further by focusing on the most directly relevant aspects of that context—colleagues' understanding of the focal actors' own site. Social information-processing theory holds that an individual's distant colleagues interpret that individual's actions based on their social context (Salancik and Pfeffer 1978). However, it is important to remember that the social context of those distant colleagues includes their interactions with the individual's own site. Furthermore, it stands to reason that when forced to interpret a given interaction, an individual will look to the most directly relevant aspects of his or her social environment to draw insights (Fiske and Taylor 2008). We would therefore expect the knowledge that distant collaborators hold about the focal individual's own site to play a more central role in how they interpret cross-site interactions. In turn, we would expect that the more an individual learns about how distant colleagues view his or her own site—views which will shape the interpretation of cross-site interactions—the more they will feel understood by those distant colleagues.

HYPOTHESIS 2D (H2D). *Reflected knowledge will be positively related to perceptions of being understood by distant collaborators.*

3.2.3. Affective Impact: Feeling Close to Distant Collaborators. We suggest that direct knowledge of distant collaborators increases the collaborators' sense of closeness, defined as feelings of personal connection to individuals at the other site. Research on intergroup contact posits that greater exposure to another group increases affiliative ties and closeness to that group and its members (for a meta-analysis, see Pettigrew and Tropp 2006). Wilder (1986) argues that knowledge about other group members leads to the perception of others as more individually distinct, thereby deemphasizing group-level boundaries and distinctions. Furthermore, knowledge about others may increase the perception that distant collaborators are indeed beneficially distinctive—yielding a sense of positive interdependence and complementarity, which has also been linked to stronger affinity (Brown and Wade 1987, Dovidio et al. 1998). Indeed, Pettigrew (1998) proposes that learning about others is a critical step through which contact improves intergroup relations. Building on the arguments that increased familiarity with other group members increases closeness, we hypothesize that direct knowledge of distant collaborators will promote closeness.

HYPOTHESIS 2E (H2E). *Direct knowledge will be positively related to closeness to distant collaborators.*

Interpersonal closeness—the converse of social or interpersonal distance—has been studied extensively in both collocated and distributed contexts. It is

frequently linked to cohesion, either conceptually (e.g., Seashore 1954) or by definition (e.g., Huang et al. 2002), and is also tightly linked to identification: Close others are spontaneously incorporated into conceptualizations of the self (Aron et al. 1992), resulting in a positive relationship between closeness and identification (De Cremer 2003). In fact, measures of closeness are often used as proxies for, or components of, identification (Hinds and Mortensen 2005, Rockmann et al. 2007).

In traditional contexts, closeness has been shown to influence a range of cognitive, interpersonal, and group-level processes and states. It increases individual and group cognitive overlap (Aron et al. 1991, Smith et al. 1999), a state in which individuals share similar cognitive models whereby they see themselves to be similar to others (De Cremer 2003). Closeness among distributed collaborators reduces conflict (Hinds and Mortensen 2005), improves teamwork quality (Hoegl and Gemuenden 2001), and increases both satisfaction (Chidambaram 1996) and performance (Lurey and Raisinghani 2001, Maznevski and Chudoba 2000, Wong 2004). Conversely, lack of cross-cultural empathy may contribute to destructive team dynamics (Earley and Mosakowski 2000). Work by Gudykunst and Kim (1984) stresses the importance of taking on others' viewpoints as a means to empathize with partners in a cross-cultural setting, a point which is also made in subsequent studies by Hammer (1989) and Gibson and Manuel (2003). Gaining reflected knowledge through the belief that one shares the perspectives of distant collaborators is likely to create a sense of shared experience and a basis for closeness and identification. We therefore expect reflected knowledge to promote closeness.

HYPOTHESIS 2F (H2F). *Reflected knowledge will be positively related to closeness to distant collaborators.*

3.3. The Mediated Impact of Knowledge on Trust Researchers have identified complementary cognitive and affective bases from which people decide whether to trust others (McAllister 1995). Essential to these mechanisms is their ability to mitigate emotional risks and minimize uncertainty around both their own behaviors and those of others, which are essential to the development of trust (Jones and George 1998, Sheppard and Sherman 1998). Key preconditions for trust include the ability to gather evidence of others' trustworthiness, the knowledge that breaches of trust may irreparably damage valued affective bonds, and the reinforcing effects of prior experiences of trust (Lewis and Weigert 1985). These preconditions are considered to be both the most essential and most difficult to establish in dispersed teams (Joshi et al. 2009). We argue that increased understanding and closeness engendered by both direct and reflected knowledge

may therefore mitigate the risks of global collaboration and foster trust between collaborators.

3.3.1. Understanding Others and Trust. When expectations about attitudes and behavior between distant collaborators are not met, misunderstandings arise, leading to cycles of distrust. As Lewis and Weigert (1985) posit, individuals choose to trust based on evidence of trustworthiness that stems from mutual understanding. Conversely, numerous scholars have emphasized the importance of feedback loops, arguing that prior trust-related experience helps to shape future trusting behavior—trust begets trust, whereas failures of trust undermine it (Mayer et al. 1995, Philipson 2002, Pratt 2000). As Cramton (2001) argues, poor knowledge sharing, commonly found in distributed collaboration, may be particularly disruptive to the development of trust, especially when perceived to be due to unreliability on the part of the distant collaborators. Indeed, understanding the challenges faced by others has been shown to minimize the tendency for such dispositional attribution (Epley et al. 2002).

Accordingly, knowing how distant colleagues function in the workplace—and knowing that one's behavior can be adapted to cohere with their functioning—makes interpersonal interaction more predictable and enhances confidence between participants. For example, Oertig and Buergi (2006) found that face-to-face contact was crucial for distributed teams because it provided the opportunity to make sense of the rules for interaction. In fact, strangers are more likely to trust each other to the extent that they are certain of the other's intention (Ho and Weigelt 2005). In the absence of predictable communication that promotes mutual understanding, Jarvenpaa and Leidner (1999) found that trust in distributed groups suffered. We therefore predict that understanding promotes trust.

HYPOTHESIS 3A (H3A). *Understanding distant others will be positively related to trust.*

3.3.2. Feeling Understood and Trust. Another determinant of trust is having confidence that one's situation is understood, because this enables collaborators to align their behavior and diminishes uncertainty about each other's actions. Armed with greater knowledge of how others view us, we are able to foresee how those collaborators might respond to our own actions. In turn, when collaborators take on their distant partners' perspective of themselves, they are increasingly able and willing to align their behavior to fit their partners' expectations in the context of this knowledge. The less uncertainty actors experience about their partners' and their own behaviors, the more accurately they can make the social predictions that underline trust (Lewicki et al. 2006).

Minimizing this uncertainty is paramount, given that doubts about collaborators' intentions and reliability are central risk factors in building trust (Rousseau et al. 1998).

Moreover, confidence that one's own motivations are understood is likely to increase the perception of a collaborator's trustworthiness and, potentially, the obligation to reciprocate. For example, recent research on teams suggests that when "one partner perceives another partner's perception [of trustworthiness]," this perception increases overall trust (Yakovleva et al. 2010, p. 80), because partners feel obligated and motivated by the trust of another (Pillutla et al. 2003).

HYPOTHESIS 3B (H3B). *Feeling understood by distant others will be positively related to trust.*

3.3.3. Feeling Close and Trust. Closeness with distant others provides the emotional connection that influences trust (for a discussion, see Williams 2001). As noted by Jones and George (1998, p. 534), "[p]eople often decide if they can initially trust someone by examining the feelings they have toward that person." Furthermore, affective attachment drives positive behaviors that in turn foster trust (Mayer et al. 1995, McAllister 1995). Closeness provides a basis for such feelings because people associate positive feelings with those they identify with (Brewer 1979). Two common desires—to maintain social attachments and to be part of a collective—elicit trusting behavior (Granovetter 1985, Hodson 2001, Leicht and Fennell 2001). Conversely, distrust can arise when people are categorized as distant and belonging to a different group (Gibson and Manuel 2003, Spears and Lea 1992). In addition, closeness tends to further engender trust on the basis of wanting to maintain (not threaten) existing relationships. As noted by Jones and George (1998), betraying emotionally based trust has been shown to trigger a strong emotional response, signaling the need to attend to and potentially reevaluate those relationships (Hurlbert 1991). Thus, through both an initial positive connection and the fear of damaging existing relationships, closeness to distant collaborators provides a basis for trust. We therefore predict that closeness will be positively related to trust in distant collaborators.

HYPOTHESIS 3C (H3C). *Closeness to distant others will be positively related to trust.*

4. Methods

To test our hypotheses, we conducted a survey study within the "MD" division of "ChemiCo," a large multinational chemical company. We followed up with 77 interviews across six countries to verify the findings from the survey data and to enrich our understanding of the collaborators and their experiences.

4.1. Research Setting

The MD division of ChemiCo is responsible for the research, development, and manufacturing of specialty chemicals used in the production of consumer electronics. Produced primarily for a small number of large manufacturers with whom MD has longstanding relationships, the division's products are highly customized. As a result, members of the MD division work closely with customers to identify their ongoing requirements and tailor MD's basic offerings to each client's needs. Primary research and development occurs at ChemiCo headquarters in Germany, with advanced research and development conducted at a research facility in the United Kingdom. ChemiCo headquarters also houses the production facility that creates MD's baseline chemical mixtures. Because MD's major customers are based almost exclusively in Asia, the division maintains country offices in Korea, Taiwan, Japan, and China (Hong Kong), which handles customer relations as well as final customization.

The German headquarters, UK research and development facility, and Asian country offices are highly interdependent, with a complex flow of information and materials circulating among them. The following typical scenario for a product order provides a sense of this complexity. Research and development in the United Kingdom designs a new mixture, which it sends to headquarters. Headquarters uses the design to construct a basic product and sends the recipe and product specifications to the country offices. The latter work closely with local clients to determine customization requirements, which are then transmitted to the laboratories at headquarters, where final design specifications are determined, samples created, and tests run. The samples, along with final design specifications for the required customizations, are then transmitted to the country offices along with generic base mixtures. The country offices are responsible for the final manufacturing process, which involves recombining the generic base chemicals. Thus, whereas their roles are distinct (research and development versus sales and production), MD's sites are highly interdependent, requiring significant interactions among collaborators.

Given the dispersed structure of research and development, with basic production in Europe and sales and final production in Asia, management of the MD division recognizes the importance of coordinating work across sites, the impact of cultural differences, and the importance of facilitating interactions and connections between sites. It sees firsthand experience and knowledge as a means of promoting awareness and understanding. To this end, assignments at other sites are common and successful completion of at least one expatriate assignment is required for advancement to division-level management.

4.2. Procedure and Sample

All ChemiCo MD division employees were informed by an executive via email that they would be contacted by researchers to complete a Web survey on the topic of global collaboration. Employees were assured that their participation would be confidential and voluntary. Shortly afterward, we contacted employees who had been identified by management as collaborating across sites. Initially, we approached 213 of the approximately 250 members of the division, and we received 159 responses, yielding a response rate of 75%. Dropping incomplete responses resulted in a final survey sample of 140.¹ Respondents were distributed across six country offices as follows: Taiwan (39), Germany (26), Japan (21), Korea (21), United Kingdom (17), and China (Hong Kong) (16). They worked in a wide range of positions and were highly educated, with the majority holding some form of graduate degree: bachelor (37%), masters (31%), or doctorate (26%).

As noted, we supplemented our survey data with both face-to-face and telephone interviews with a total of 77 ChemiCo employees across the six country offices. Interviewees included individuals who had firsthand experience at another office location as well as those who had no such experience. Our intention was to familiarize ourselves with the work context and employees' experiences, as well as to gain a greater understanding of how respondents thought about direct and reflected knowledge. Interviews were audiotaped and transcribed.

4.3. Measures

Distant collaborators. Respondents were asked early in the survey to identify the distant office with which they most often interacted ["With which office (not including your home office) do you have the most interaction on a daily basis?"]. Our underlying conceptualization of distant collaborators, then, was framed at the level of the site rather than the individual collaborator. We also chose to focus on the site in which respondents interacted the most to avoid confounds in our analyses based on respondents' differing patterns and strength of interactions with members across locations. Thus, "distant collaborators" referred to the set of individuals with whom an actor interacted the most at a given site. All subsequent questions in the survey were tailored to refer to that site. For example, a respondent who interacted most with the Japan office would receive questions of the type: "What is the total amount of time you have spent visiting the *Japan* office?" [emphasis added]. This strategy ensured that

¹ Although additional information on nonrespondents was not available, member and manager interviews suggest these nonrespondents were not systematically different from the rest of the population.

respondents' answers related to a specific and consistent target, referred to in the remainder of this section as the "distant" office.

Firsthand experience of distant collaborators. To assess firsthand experience, we asked respondents to report the total length of time they had spent at the site of the distant collaborators. Responses were standardized into a per-month measure that ranged from 0 to 138 months. Moreover, to characterize the firsthand experience among ChemiCo collaborators, we coded a subset of our interview data. Firsthand experience manifested as joint problem-solving efforts that took four forms:

1. Expatriate assignments that required an extended stay at a distant collaborator's site (e.g., a lab manager assigned to serve as a peer coach to develop custom material on quality control and safety issues for a multimillion dollar project that a Taiwanese lab manager oversaw).

2. Assignments that required collaborators to travel to a site several times per year (e.g., an engineer worked at a collaborator's site two weeks at a time, up to seven times per year, to focus on a joint project).

3. Customer problem-solving assignments that involved mini technical-development processes (e.g., a collaborator travelled to a site to engage in technical development with a customer on a six- to eight-week cycle that included joint problem investigation, new sample production, testing, and results diagnosis).

4. Ongoing engagement as part of a customer account team (e.g., an intellectual property lawyer who drew up a contract and reengaged with account managers and scientists at specific junctures).

These four categories of firsthand experience were common at ChemiCo given the nature of their business.

Reflected knowledge of distant collaborators. To measure the extent to which respondents learned about themselves and their home site from visiting their distant collaborators, we asked them: "To what extent has visiting helped you to better understand [the following items] of/at your office?" We focused on three interpersonal dimensions about their site: *personal characteristics*, made up of one item: "people (e.g., identities, personalities, values, and roles)"; *interpersonal relationships*, comprising two items: "relationships (e.g., friendships or sources of advice)" and "reporting relationships (i.e., who reports to whom)"; and *work norms*, using the following item: "work culture (e.g., norms and expectations)." Respondents rated how much understanding they had gained about each dimension on a seven-point Likert scale, anchored by 1 = "not much" and 7 = "a lot." We found the resulting measure to be reliable ($\alpha = 0.86$), and thus used the mean of the three dimensions as a measure of reflected knowledge.

Direct knowledge of distant collaborators. We assessed direct knowledge using a measure similar to the one used to assess reflected knowledge: "How much do you know about [the following items] of/at the distant office." (As noted, the word "distant" was replaced with the country office they visited.) Respondents were asked to rate how much they knew about their distant collaborators with respect to the same three dimensions as for reflected knowledge, using the same items, again anchored by 1 = "not much" and 7 = "a lot." We used the mean of the three dimensions as a reliable ($\alpha = 89$) measure of direct knowledge.

Understanding distant collaborators. To measure individuals' knowledge of appropriate interactions with and expectations of distant collaboration partners, we asked them to rate the accuracy of four statements ("I know how to give effective feedback to colleagues from the [distant] office"; "I adjust my behavior to let colleagues know that I respect them"; "I know what kind of questions are culturally acceptable in the [distant] office"; "I know how to address people of different levels in the [distant] office"). The scale was anchored by 1 = "not at all true" and 7 = "very true." We found the mean of the four items to be reliable ($\alpha = 0.85$) and used it as the measure of understanding the distant other.

Feeling understood by distant collaborators. To measure the extent to which they felt understood by distant coworkers, we asked respondents to rate the accuracy of four statements: "Colleagues from the [distant] office misunderstand my intentions" (reverse scored); "I have been misunderstood by colleagues in the [distant] office" (reverse scored); "I feel confident that my colleagues in the [distant] office clearly understood me after our meetings"; "I get confused after speaking to my colleagues in the [distant collaborator's] office" (reverse scored). The scale was again anchored by 1 = "not at all true" and 7 = "very true." The mean of the four items was deemed a reliable index ($\alpha = 0.74$) and used as the measure of feeling understood by distant collaborators.

Feeling close to distant collaborators. We assessed closeness with a pictorial measure of interpersonal closeness correlated with feelings and behaviors of interconnectedness as used in several other studies (Aron et al. 1992, Hinds and Mortensen 2005, O'Leary and Mortensen 2010, Tropp and Wright 2001). We provided collaborators with a set of six graphical representations of relationships between "self" and "other," and asked them to select the number of the picture that most closely matched their relationship with the other site and its members (1 = "very distant," 6 = "very close").

Trusting distant collaborators. To measure trust, we adapted the interpersonal trust scale of Cook and

Wall (1980), asking respondents to rate the accuracy of eight statements (e.g., “I can trust the people I work with in the [distant] office to help me if I need it” and “I feel quite confident that my colleagues at the [distant] office will always try to treat me fairly”). The scale was again anchored by 1 = “not at all true” and 7 = “very true.” The mean of the eight items was reliable ($\alpha = 0.92$) and used as the measure of trust.

To ensure that our measures captured distinct constructs, we ran a factor analysis with varimax rotation on the scale items for reflected and direct knowledge, understanding, feeling understood, and trust.² The analysis generated a five-factor solution in which the scale items loaded onto factors that corresponded to our constructs. In addition, we used our pre- and postsurvey interviews to verify that subjects viewed the constructs distinctly.

5. Results

To test our proposed model, we used structural equation modeling with maximum-likelihood estimation. We used SPSS Amos (Byrne 2001) version 18 to analyze the saturated measurement model, the structural model corresponding to the full set of hypotheses, and to analyze individual hypotheses (see Table 1 for correlations between key variables).³

We assessed model fit using several statistics. First, we used the chi-square test that assesses the goodness of fit between the reproduced and observed correlation matrices. The nonsignificant chi-square [$\chi^2(10) = 14.017, p = 0.08$] here indicated that the departure between the model in this study and the data is not significant (see Figure 2).⁴

² The measure for closeness was not included in our factor analyses because it was based on a pictorial representation.

³ We assessed variable normality and found nonnormal distributions for firsthand experience, reflected and direct knowledge, understanding, feeling understood, and trust. Transforming these variables successfully reduced skewness and kurtosis, and models with transformed and untransformed variables were identical with respect to significance of both model and individual weights. We report results for transformed variables because they yielded models with slightly better overall fit.

⁴ Because the chi-square test is highly sensitive to sample size—with models fitting the data reasonably well rejected due to the moderate to large size of the test sample—we also used four other widely used goodness-of-fit criteria that are not sensitive to sample size: normed fit index (NFI) (Bentler and Bonett 1980), incremental fit index (IFI) and Tucker–Lewis index (TLI) (Bollen 1989), and comparative fit index (CFI) (Bentler 1990). These indices have expected values of 1.00 when the hypothesized model is true, and a value of 0.90 or higher suggests an adequate fit (Bentler and Bonett 1980). The values for all four within the saturated model indicated an excellent fit (NFI = 0.94, IFI = 0.97, TLI = 0.92, and CFI = 0.97). Finally, we used the root mean squared error of approximation (RMSEA) (Steiger and Lind 1980), which is an estimate of the discrepancy between the original and reproduced covariance

matrices in the population. An RMSEA of under 0.05 represents a close fit and an RMSEA of 0.08 represents a reasonable fit (Browne and Cudeck 1993). Our saturated model yielded an RMSEA value of 0.07.

However, in examining the significance of the paths in our model, we discovered that two hypothesized relationships were not significant: the path linking reflected knowledge to understanding distant collaborators (H2B) and the path linking direct knowledge to feeling understood by distant collaborators (H2C) ($\beta = 0.08$, n.s., and $\beta = 0.02$, n.s., respectively). In the interest of parsimony, we created and tested a revised model with those two paths removed (see Figure 2) and found the resultant model was a better fit for the data ($\chi^2(10) = 15.240, p = 0.128$; NFI = 0.93, IFI = 0.98, TLI = 0.95, and CFI = 0.97; RMSEA = 0.06) and the pattern of significance for all other relationships remained unchanged. Given its better fit, we use the revised model—excluding the nonsignificant relationships—to evaluate the rest of our hypotheses. We explore potential explanations for the nonsignificant paths in our discussion section.

To ensure that our model was superior to other alternative models, we tested a series of alternative models including: direct paths from firsthand experience to trust; paths from reflected knowledge to understanding; paths from understanding to feeling understood; and closeness as an antecedent, rather than effect, of reflected and direct knowledge. We found all alternative models either to be a poorer fit for our data—based on indices of fit—or to not change the pattern of significance among the paths in the model presented. Thus, we found the model we presented to be the best fit for our data.

In H1 we predicted that firsthand experience would be positively related to individuals’ reflected knowledge. As expected, the path was significant in the model ($\beta = 0.43, p < 0.001$), providing support for H1. Firsthand experience also increased direct knowledge ($\beta = 0.39, p < 0.001$).

In H2A–H2F we predicted that direct and reflected knowledge would be positively related to understanding (H2A and H2B), feeling understood by (H2C and H2D), and feeling close to (H2E and H2F) distant collaborators. As noted, neither the path linking reflected knowledge to understanding distant collaborators nor the path linking direct knowledge to feeling understood by distant collaborators were significant in our original model, providing no support for H2B and H2C, respectively. We found significant positive paths linking direct knowledge and understanding collaborators ($\beta = 0.53, p < 0.001$) and linking reflected knowledge to feeling understood by distant others ($\beta = 0.28, p < 0.05$), providing support for H2A, H2C, and H2D, respectively. The paths leading to closeness from both direct ($\beta = 0.28, p < 0.01$)

matrices in the population. An RMSEA of under 0.05 represents a close fit and an RMSEA of 0.08 represents a reasonable fit (Browne and Cudeck 1993). Our saturated model yielded an RMSEA value of 0.07.

Table 1 Correlations Between Variables

Variable	Mean	Std. dev.	1	2	3	4	5	6
1 <i>Firsthand experience</i>	1.19	0.90						
2 <i>Reflected knowledge</i>	27.94	15.97	0.43***					
3 <i>Direct knowledge</i>	21.66	10.96	0.39***	0.48***				
4 <i>Feeling understood</i>	9.08	6.53	0.07	−0.21*	−0.12			
5 <i>Feeling close</i>	3.71	1.12	0.14	0.37***	0.39***	−0.14		
6 <i>Understanding</i>	4.83	1.14	0.23**	0.32***	0.54***	−0.26**	0.27**	
7 <i>Trusting</i>	30.31	9.52	−0.03	0.11	0.30***	−0.38***	0.34***	0.31***

Note. This table represents transformed values.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

and reflected ($\beta = 0.23$, $p < 0.01$) knowledge were both positive and significant, providing support for H2E and H2F, respectively. In H3A–H3C, we predicted that understanding coworkers (H3A), as well as feeling understood by (H3B) and close to (H3C) distant colleagues would be positively related to trust. All three hypotheses were supported, with all paths significant and in the expected direction (understanding distant others: $\beta = 0.17$, $p < 0.001$; feeling understood by distant others: $\beta = 0.30$, $p < 0.001$; closeness: $\beta = 0.25$, $p < 0.01$). Thus, the revised model was supported, as were all individual paths.

5.1. Supplemental Analyses

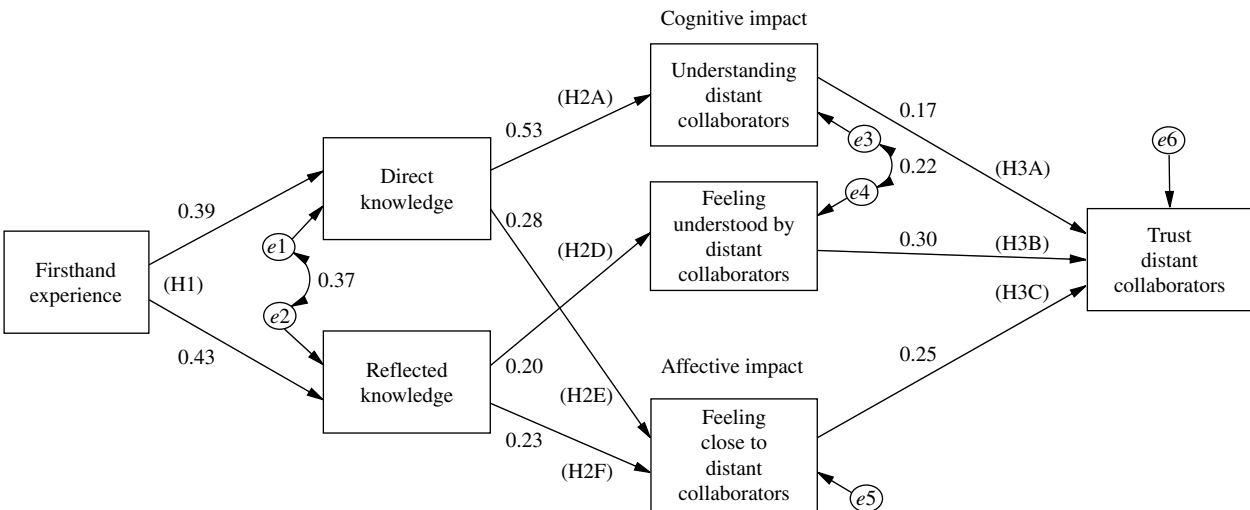
In addition to the analyses predicting the primary relationships in our model, we examined three sets of complementary models designed to exclude alternative explanations and clarify the role of phenomena well established in the literature. In these models we examine the roles of cultural intelligence, mediated communication, and experiences while visiting distant colleagues.

5.1.1. Supplemental Analysis: The Role of Cultural Intelligence. An important question to consider is whether the effects we observe arise from

knowledge about one's specific distant collaborators or from generalized knowledge gained from exposure to different cultures. In support of this line of reasoning, scholars of cultural intelligence (Earley and Ang 2003, Triandis 2006) have found that individuals in cross-cultural interactions can benefit greatly from generalized knowledge about other cultures. Defined as a "person's capability to adapt effectively to new cultural contexts" (Early and Ang 2003, p. 59), cultural intelligence has been shown to be most easily, effectively, and commonly gained through exposure to other cultures. Given this research, it is reasonable to expect an alternative path leading from firsthand experience, through cultural intelligence, to trust. To test this we created an alternative model, based on the one presented earlier, which included paths linking firsthand experience, through cultural intelligence, to the cognitive and affective impacts that lead to trust. We also included paths from direct and reflected knowledge to cultural intelligence, as one would expect that increased knowledge of distant collaborators would increase generalized understanding of other cultures.

To measure cultural intelligence, we adapted a measure from Ang et al. (2007) asking respondents to rate

Figure 2 Structural Equation Model of Effects of Reflected and Direct Knowledge



the accuracy of 14 statements (e.g., “I enjoy interacting with people from different cultures,” and “I change my nonverbal behavior when a cross-cultural situation requires it”). The scale was again anchored by 1 = “not at all true” and 7 = “very true.” The measure held together well ($\alpha = 0.89$) and the subscales (cognitive, motivational, and behavioral) all yielded similar patterns of significance in the model. Thus, we used the full 14-item index as our measure of cultural intelligence. We tested our revised model and found it to be a better fit for our data than our original model ($\chi^2(10) = 14.831$, $p = 0.190$; NFI = 0.95, IFI = 0.99, TLI = 0.96, and CFI = 0.98; RMSEA = 0.05). Dropping nonsignificant paths (between reflected knowledge and cultural intelligence, and between cultural intelligence and both feeling understood by distant collaborators and feeling close to distant collaborators) yielded a model with comparable fit ($\chi^2(10) = 15.864$, $4p = 0.322$; NFI = 0.944, IFI = 0.994, TLI = 0.99, and CFI = 0.99; RMSEA = 0.03) on which we based our additional analyses (see Figure 3).

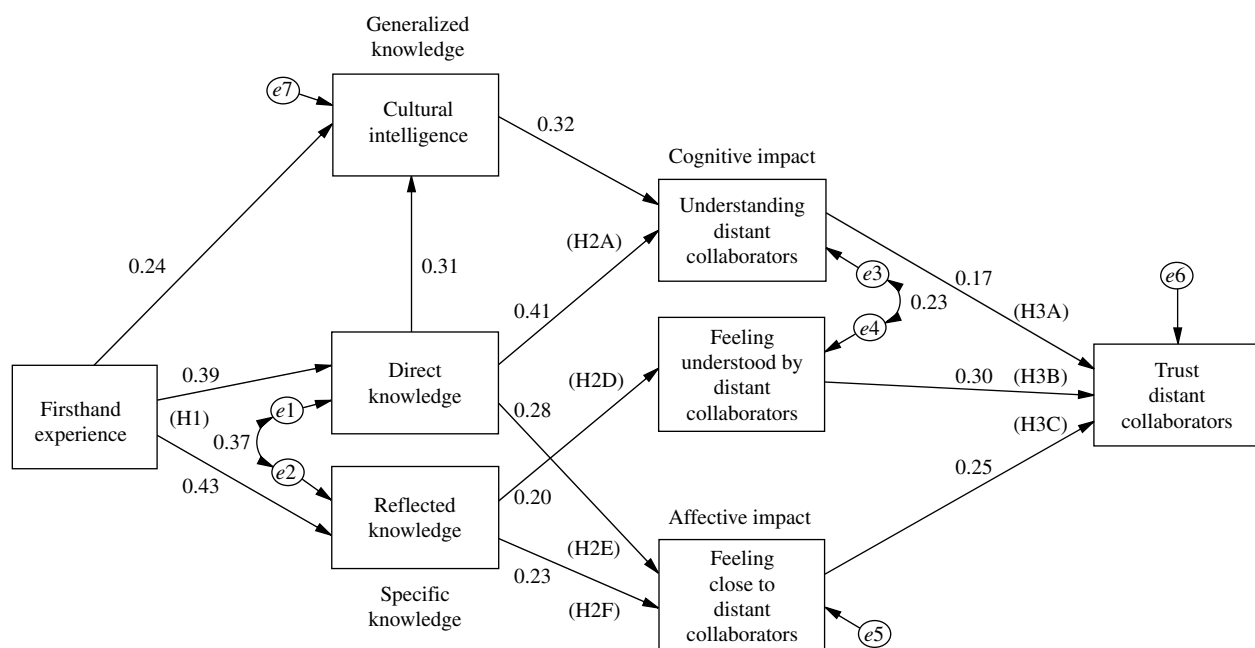
Importantly, this analysis suggests an additional, complementary path through which firsthand experience increases trust in global collaborations. As this model indicates, firsthand experience increases both specialized knowledge about one’s particular distant collaborators in the form of direct and reflected knowledge, and generalized knowledge about distant collaborators more broadly in the form of cultural intelligence. In line with existing research, cultural intelligence increases individuals’ understanding of their distant collaborators. All other paths in the model remain significant, however, suggesting that

generalized knowledge is a complementary rather than alternative mechanism, operating in parallel to direct and reflected knowledge as a driver of trust in global collaborations.

5.1.2. Supplemental Analysis: The Role of Mediated Communication. Because of the complex, multidimensional, and dynamic nature of mediated communication use within global collaborations, we have so far restricted our analyses to knowledge gained through firsthand experience (face-to-face interaction). A large body of existing scholarship on virtual work, however, suggests that there is good reason to expect that mediated communication may also transmit and shape direct and reflected knowledge. Walther (1992) argued that, over time, mediated communication can foster the same type of relationships that are afforded in firsthand experiences. Since then, others have validated Walther’s supposition (e.g., Bos et al. 2002, Wilson et al. 2006). At the same time, research on media richness has consistently found that media differ in their ability to transmit cues (Daft et al. 1987, Trevino et al. 1990), thereby affecting which and how direct and reflected knowledge is transmitted. Given research findings that trust is more easily generated in collocated settings (Frank 1993, Wilson et al. 2006) and that mediating technologies increases egocentrism (Kruger et al. 2005), we would further expect the effects of direct and reflected knowledge to be particularly critical for combating the negative effects of egocentrism on trust within mediated interactions.

We created two alternative models to explore the relationship between mediating technology and direct

Figure 3 Structural Equation Model Including Cultural Intelligence



and reflected knowledge. In the first, we replaced firsthand experience with mediated communication as the source of both direct and reflected knowledge—to assess direct and reflected knowledge without firsthand experience. In the second, we included mediated communication in parallel with firsthand experience—to assess mediated communication as a moderator of face-to-face interactions. To measure mediated communication, we asked respondents how frequently they interacted with colleagues at the distant site via five modalities: face-to-face, video conference, phone, instant messaging, and email. In addition to measures of each technology independently, we also created three composite measures: (1) mediated communication, (2) synchronous and asynchronous communication, and (3) richness of cues conveyed during communication. In all cases we created the compound measures as the mean of the sum of communication across all modalities. Fit indices for all the models (replacing and in parallel with firsthand experience, using all communication media, and using all compound measures) indicated that all tested models were reasonable fits for our data. However, in no models were paths linking measures of mediated communication and reflected knowledge significant.

Although our supplemental analyses find no support for a link between mediated communication and reflected knowledge, it is important to recognize that our communication data captures frequency rather than aggregate amount of communication via a given medium. This distinction is important given that the work of Walther (1992) and others suggest that mediated communication can approach the relational characteristics of face-to-face interaction over time. It is likely that the absence of a significant relationship between mediated communication and reflected knowledge is due to the absence of longitudinal data in our study that could capture mediated interactions over time.

5.1.3. Supplemental Analysis: The Role of Experiences. An important additional question is the extent to which the relationships that we found are contingent on the nature of an actor's experience when visiting their distant colleagues. We therefore explored the role of two additional factors: interdependence with colleagues at the distant site, and social integration in the distant site. To assess the former, we examined models that included a measure of how heavily respondents relied on their colleagues at the distant office. To assess the latter, we examined models that included measures of how well respondents developed networks of friendships and of support relationships. Consistently, however, none of these constructs were significantly related to reflected knowledge in any of the valid models,

suggesting that the effects in our data were driven primarily by presence at the other location, irrespective of actors' particular experiences while there.

6. Discussion

In this study we demonstrate how distributed collaborators can gain trust through a new source of information—reflected knowledge—based on insights about focal actors' own work site and relationships as seen through the eyes of collaborators. Our findings suggest that whereas direct knowledge of the personal characteristics, relationships, and behavioral norms at distant collaborators' site helps focal actors understand those colleagues' expectations, understanding their perception of the same characteristics of the focal actors' home site (reflected knowledge) increases the focal actors' confidence in being understood. Interestingly, we did not find that direct knowledge led to feeling understood, nor that reflected knowledge led to understanding of collaborators' expectations. This finding, however, is not completely counterintuitive. Although we would expect both direct and reflected knowledge to affect both understanding and feeling understood, the paths which were supported in our analyses were those most closely related.

In understanding distant collaborators, direct knowledge provides information about the context within which distant colleagues operate on a daily basis. Although reflected knowledge provides information on elements of their social context, it provides a less proximate perspective that shapes distant colleagues' perceptions. Immediate social context may therefore be the stronger driver of distant colleagues' general behavior and expectations. The reverse appears to be true when considering the specific domain of distant colleagues' cross-site interactions. We find, however, that reflected knowledge drives the feeling of being understood by distant colleagues, whereas direct knowledge does not. This suggests that reflected knowledge provides insights that are more uniquely tailored to the cross-site interaction itself—providing better insight into focal actors' colleagues' view of focal individuals' own site. Importantly, this reinforces the distinctiveness of direct and reflected knowledge, which have different empirical effects and underlying mechanisms. Drawing on these differences, our study makes contributions to theory and research on trust, global collaboration, and reflected appraisals in several ways.

First, our model locates the antecedents to trust in the knowledge gained through vicarious experience of others' perceptions. The existing literature on the development of trust has mostly emphasized direct knowledge of trustworthiness. Although our findings support prior research in this vein, we also expand on and refocus the foundational model of organizational

trust formulated by Mayer et al. (1995), both in content and unit of analysis. In a meta-analytic review of the organizational literature on trust, Colquitt et al. (2007) found unique and enduring effects of trustee characteristics, such as benevolence and integrity, on the development of trust, through both cognitive and affective means. Our research expands this important finding for cross-cultural collaboration. Increased interpersonal connections known to foster trust do not occur merely through increased knowledge of others' trustworthiness, but also in the knowledge garnered by taking on others' perspectives. Reflected—in addition to direct—knowledge shapes the perception of the trustworthiness of others.

Along these lines, we have shown the impact of these forms of knowledge to be conceptually and empirically distinct: self- versus other-directed knowledge generation. For example, in their study of the impact of communication frequency on perceived trustworthiness between managers of a multinational corporation, Becerra and Gupta (2003) argue that frequency of communication mediates the level of perceived trustworthiness. They argue that greater communication allows managers to gain greater information about other manager's *individual characteristics*, and thus their capacity to be trusted. We have shown that the increase in trustworthiness found in this study, and the development of trust in general, is likely due to this direct knowledge, but also to knowledge gained about focal individuals' home site from those interactions. Managers' greater frequency of communication is likely to elicit greater reflected knowledge with a concomitant impact on thoughts and feelings about each other's sites.

Second, and perhaps more interestingly, our research shows that the development of trust does not lie solely in perceptions of others that the focal actor trusts, but also in how focal actors feel about their own social contexts through vicarious self-knowledge. Although research in domains like perspective taking has highlighted the multiple benefits of stepping into others' shoes (Galinsky and Moskowitz 2000, Galinsky and Mussweiler 2001), it has focused on a broad set of effects that arise primarily from being exposed to others' experience. In short, by experiencing the environment of others, people can better understand the behavior of others—in effect counteracting the fundamental attribution error (Ross 1977). As such, the benefit occurs because people possess more information about the others. We, in contrast, suggest that benefits from reflected knowledge also occur because the focal actors gain information—filtered through the view of their distant colleagues—about their own work context. In fact, our results suggest that feeling understood has a greater impact on trust formation than mere understanding of others

alone. Hence, by missing the importance of reflected perceptions, organizational research that emphasizes the relational nature of the development of trust, either conceptually (e.g., Jones and George 1998) or empirically (e.g., Yakovleva et al. 2010), overlooks the extent to which trust-building occurs through reflected knowledge, and not just through direct knowledge. It is not just that we know others better and are thus more likely to trust them; trusting relationships, we argue, are also developed through how we come to think about our own social environments by stepping into others' shoes.

Third, research on global teams has emphasized the importance of developing mutual knowledge, shared context, and shared identity for successful distributed work (Cramton 2001, Hinds and Mortensen 2005). Our results contribute to this literature by shedding light on a mechanism that is probably as important for these processes in general as it is for the development of trust in distributed teams in particular. Common in scholarship on distributed teams is the idea that understanding, adapting to, and empathizing with distant others is crucial to avoid conflict and enable productive work process, as these capacities undermine the tendency for in-group biases, ethnocentrism, and faultlines to emerge (Cramton and Hinds 2005, Polzer et al. 2006, Salk and Brannen 2000, Von Glinow et al. 2004). While the capacity to understand distributed colleagues' context and the ability to connect under a common identity are critical to cross-cultural collaboration, knowledge of others' work is only part of the equation. Our research has uncovered the extent to which reflected knowledge deepens distributed colleagues' feeling of closeness to their distant colleagues and perceptions of shared understanding.

Moreover, by distinguishing between direct and reflected knowledge, our approach provides insight into how misunderstandings can arise in distributed collaboration. Cramton (2002) argues that misunderstandings surface because of reduced social knowledge about collaborators. Our findings suggest, however, that, in at least some cases, the lack of reflected knowledge may lead to misunderstanding. In so doing, we provide an alternative and complementary explanation for how the type of knowledge (direct versus reflected) may shape mutual (mis)understandings among collaborators.

Fourth, our findings identify a type of information that may contribute to perspective taking, a mechanism often theorized to be of importance for distributed teams, for cross-cultural collaboration. For example, Cramton and Hinds (2005, p. 238) describe the potential of ethnorelativistic thinking—"taking the perspective of the other group and understanding the world, including one's own group,

through the other group's eyes"—to foster greater cross-cultural learning. However, they emphasize behavioral adaptation and empathy as critical outcomes of that perspective taking. Although adjusting to and identifying with distant coworkers is indeed important, our research also details the ways in which gaining greater understanding of focal actors' own home site through the perspective of collaborators creates the conditions for enhancing relationships in cross-cultural teams.

Finally, an additional contribution of this research is to further the conception of reflected knowledge, which has tended to emphasize the looking-glass *self* in the context, for example, of intimate relationships or perceived attractiveness (Felson 1985, Tice and Wallace 2003). In contrast, by operationalizing reflected knowledge about one's home office, we further the theory on looking-glass *selves*, because individuals interpret reflected knowledge not only about themselves as individuals, but also themselves as identified with their work context. The tendency for subgrouping in distributed teams may mean that reflected knowledge about one's subgroup, rather than oneself, is even more critical for breaking down the barriers cultural and national distinctions tend to raise. Further research is needed to fully develop the relative impact of reflected knowledge internalized about the self versus a group to which one belongs.

6.1. Limitations and Conclusion

Like all sampling strategies, our decision to focus at the level of the site carries limitations. In focusing our analyses at the level of the site, rather than the individual collaborator, we obscure the effects of variation in the level of interaction across different collaborators at that site. Although this serves as an important scoping constraint, we potentially lose valuable information: it is possible, for example, that a focal actor may have different experiences, and may gain substantially different knowledge from different members of a given site—variations which we are unable to capture. Similarly, whereas focal actors might interact with multiple distant sites, with our sampling frame we are only able to capture the knowledge gained from one of those sites. While this is a reasonable simplification given our field site—in which employees consistently worked with only one distant site—in other organizations and contexts this may not be the case. Thus further research exploring intrasite variance in interaction and collaborations with multiple distant collaborators is warranted.

In addition, we do not address questions about the extent to which actors can and do generalize their experiences across multiple and varied distant sites, nor the effects of potential misapplications of that information. In this particular context it is not clear,

for example, whether firsthand experience gained by an individual from Germany who spends time in the Japan office would result in better (or worse) understanding of the context and issues in the Taiwan office. This may hinge on the extent to which that individual can and does generalize (or differentiate) knowledge across sites. Such experience may, in fact, have a negative effect if it leads collaborators to over-generalize and assume they have a better understanding of a related, yet distinct, context than is actually the case (e.g., assuming that knowledge gained about Japan will translate to the Taiwanese context). Related research on perspective taking has suggested that, although it increases sensitivity to the target group, that sensitivity does not necessarily translate to other similar groups, and may actually decrease such sensitivity (Galinsky 1999) or lead to preferential treatment (Batson et al. 1995). We would expect such a bias to be driven by the extent to which an individual differentiates between the "other" contexts, but there is a need for further examination of the way individuals define and distinguish between their distant collaborators.

Finally, we do not examine the effects of negative firsthand experiences on collaborations. Although firsthand experience has the potential to be both positive and negative, the sentiment throughout the MD division of ChemiCo was that it was beneficial to working relationships; site visits were conceived as a means of improving relations. In contrast, where experience arises from emergency "fire-fighting" visits, it could be expected to have negative effects on closeness, and might or might not affect cross-cultural relationships. The available data, however, did not allow us to examine such situations.

Global collaborations are on the rise in today's economy. However, research indicates that global collaborators constantly struggle to establish mutual understanding and trust when working across far-flung locales. This study introduces the concept of reflected knowledge and illustrates the critical role it can play in cultivating trust among global collaborators. Reflected knowledge provides focal actors with information not simply about their distant counterparts (direct knowledge), but about the way those counterparts perceive focal actors. When people have such insights, they are likely to adjust their behaviors in ways that cultivate interpersonal trust and improve global collaboration.

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