Beyond Being There: The Symbolic Role of Communication and Identification in the Emergence of Perceived Proximity in Geographically Dispersed Work

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Abstract:

We develop the concept of perceived proximity, understood as a symbolic representation of one's faraway coworkers. We build on Wilson et al. (2008), present new validated measures of perceived proximity, and compare how perceived proximity and objective distance relate to relationship outcomes between geographically dispersed work colleagues. Our results show strong support for a symbolic view of work relationships. Indeed, it is the symbolic meaning of proximity and not physical proximity itself that affects relationship outcomes. Also, the symbolic meaning of proximity is defined not by physical proximity, but by people's sense of shared identity and by their use of (mostly synchronous) communication media. Furthermore, we find that how the sense of proximity is symbolically constructed mediates the effects of communication and identity on relationship outcomes.

Keywords:

Proximity, distance, geographically dispersed work, virtual work, teams, relationships

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INTRODUCTION

Age-old wisdom and a solid stream of research on social relationships hold that we feel close to those who are in close physical proximity to us (Allen 1977; Festinger 1951; Kiesler and Cummings 2002). However, another school of thought has pointed out that people can develop feelings of proximity or sociomental bonds across spatial distance (Chayko 2002; Chayko 2007). Also, current developments such as the increased incidence of collaboration across geographical distance and the intensification of communication have changed our feelings of proximity towards these faraway others. Often, people come to feel closer to people whom they see rarely if ever. The very meaning of distance and of distance collaboration may be changing. We draw on the symbolic interactionist perspective in order to understand the meanings people attach to their distant and proximate collaborators.

Previous research has tended to privilege objective distance (primarily spatial, but increasing temporal, configurational, and cultural), but some have noted the need for a clearer sense of how objective and subjective interact (Gibson, Gibbs, Stanko, Tesluk and Cohen 2011; Orlikowski and Yates 2002), and the role that technology plays in that interaction (O'Leary and Cummings 2007). Although scholars initially tended to pit "virtual" teams against face-to-face (FTF) teams in head-to-head comparisons, more recently, scholars have begun to treat virtuality as a continuous and multi-dimensional concept, and noted that many teams are not purely collocated or purely virtual (Griffith, Sawyer and Neale 2003; O'Leary and Mortensen 2010). In this study, we build on that research and as well as the model proposed by Wilson et al. (2008) to

explore the idea that perceptions of proximity (a dyadic and asymmetric construct which reflects one person's perception of how close or how far another person is) more powerfully affect the outcomes of workplace relationships between geographically distant colleagues than objective geographic proximity does. We focus on dyadic relationships, although they could be in the context of teams. We gauge relationship outcomes in terms of respondents': 1) satisfaction with the relationships, 2) learning from their distant colleagues, 3) desire to work with the distant colleagues again in the future, which we adapted to the dyadic level from the three outcomes that comprise the major elements of team effectiveness (Hackman 1990). Furthermore, we explore the role that different forms of communications and shared identity play in these relationships.

Our results strongly support the notion of perceived proximity as a symbolical concept that has little to do with physical proximity, but is built through communication and identification processes. We also find that perceived proximity – and not objective proximity – affects relationship outcomes. In this sense, perceived proximity is much more than (and much more important than) just "being there" (Hollan and Stornetta 1992). By shifting the focus from objective to perceived proximity, we broaden the organization studies' theoretical understanding of one of the fundamental concepts underlying social and work life and add an important component to the discussion of how information systems can support remote activity (Agerfalk 2004) and the development of mutual understanding and relationships between communicators (Te'eni 2006). By understanding what leads to perceived proximity, we also believe that managers can achieve many of the benefits of co-location without actually having employees work in one place.

HYPOTHESES

Organizations – and social life more generally – are systems of meaning (Fine 1993; March and Olsen 1976; Weick 1979; Weick 1995). One way in which the view that organizations are fundamentally subjective has gained important ground is through the reconceptualization of a number of fundamental notions that were previously seen as objective and unidimensional. Thus, the concepts of time (Ancona, Goodman, Lawrence and Tushman 2001; Hall 1983; Saunders 2007), money (Mitchell and Mickel 1999; Zelizer 1994), price (Beunza, Hardie and MacKenzie 2006), identity (Burke and Stets 2005), and technology have all come to be seen as complex and profoundly social notions to which people attach various, sometimes even contradictory meanings.

The concept of technology has been a main beneficiary of a symbolic view. From an independent phenomenon assumed to affect a variety of organizational outcomes (Blau, Falbe, McKinley and Tracy 1976; Huber 1990), technology has come to be seen as systems for social (symbolic) interaction (Goldkuhl and Lyytinen 1982; Star and Ruhleder 1996; Suchman 1987). Thus, work in a symbolic interactionist perspective has examined the meanings that emerge as people make sense of new information systems (Prasad 1993). Scholars drawing on structuration theory (Giddens 1984) have produced a particularly rich understanding of the mutually constitutive relationship between technology and structure in organizations (Markus and Robey 1988). For example, studies have shown that the design and use of technology change the nature of work itself (Orlikowski 2000), and that the use of technology reorganizes organizational relations (Barley 1986; Barley 1990; DeSanctis and Poole 1994; Walsham 1993). Thus, work in this realm shows that information systems and information have high symbolic value because

they enable the building of identities and the coordination of relationships, and sense-making processes (Feldman and March 1981). An important part of this sense-making process is the representations that people form about their collocated and distant collaborators.

Just like the concept of technology or time, the concept of proximity – which is fundamental for understanding communication and collaboration – has recently been enriched by work that takes into account the profoundly social, symbolic meanings people attach to their collaborators. Traditionally, distance in work groups has generally been considered in primarily objective and spatial terms, with spatial distances assumed to be experienced equally by all members of a team (O'Leary and Cummings 2007). Slowly, scholars have started noticing that perceptions of proximity do not increase linearly with actual proximity (Hansen and Lovas 2004) and raised the possibility that objective proximity might be less consequential for important work outcomes than its subjective counterpart .

Most prominent among these studies is the recent theoretical work by Wilson et al. (2008), which has confronted the basic premise that collocation equals perceived proximity. These authors developed a concept of perceived proximity that is steeped in the view that all action is symbolic. Starting from the observation that some people feel closer to faraway others as opposed to collocated collaborators, Wilson et al. (2008) defined perceived proximity as a dyadic and asymmetric construct that reflects one person's perception of how close or how far another person is. Like many other perceptions and attitudes (Amason and Sapienza 1997; Moorman 1993), perceptions of proximity have both a cognitive component and an affective component. The cognitive component refers to a mental assessment of how distant a teammate seems. The affective component recognizes that people's sense of perceived proximity is not a purely conscious or rational assessment; it is subject to emotions and feelings. Furthermore,

Wilson et al. developed a model of perceived proximity with communication and identification processes at the core of people's representations of their co-workers' proximity (and several other factors at the individual, team, and organizational levels also playing roles in the emergence of perceived proximity).

The move towards a richer, more socially informed concept of proximity is extremely valuable as it has the potential to revitalize scholarly views of distance. At the same time, this new richer concept raises several important issues. The first has to do with *the relationship between objective and perceived proximity*. How are they related, i.e. to what extent does physical proximity (still) constitute a basis for the subjective feeling of proximity? For a long time, scholars have held that we feel closer to those who are physically close to us (Allport 1954; Kiesler and Cummings 2002; Newcomb 1956). However, the current work environment of intense connectivity may have lessened this connection (Kolb, Collins and Lind 2008). As people interact frequently and intensely with co-workers or members of their online communities, they may create a sense of closeness that is not dependent of physical proximity. For example, free and open source software developers perceive high levels of proximity because of strong and intense communication, and strong 'hacker' (i.e. knowledgeable software developer committed to the free sharing of software) identities (Raymond 1999). Members of formal organizations may also overcome the impact of physical proximity as modern corporations mitigate physical proximity through a variety of structural and communicative mechanisms such as travel, talk, and common standards (Amin and Cohendet 2004). Beyond very low levels of distance, one's sense of the distance to a colleague is based on a multitude of factors, of which objective distance exerts a relatively small influence (Mooney, Sherman and Lo

Priesto 1991; Neyer and Lang 2003). In spite of these recent examples and developments, we formulate our first hypothesis on the basis of a widely held view that:

H1: Objective distance is negatively related to perceived proximity,

This and our other hypotheses are depicted in Figure 1. The hypotheses are based on previous research and theory, but they are also grounded in the authors' studies of a wide variety of dispersed work. For example, Metiu (2006) dealt with software developers working in subgroups on the West Coast of the US and in Bangalore, India. For them, physical between the subgroups led to perceived distances between subgroups that were as considerable as the 14,000 km separating them. However, for other developers – working on open source projects like Linux and Apache, Metiu (2006) noted high levels of perceived proximity among people who never met face-to-face. In these two cases, both groups had little proximate interaction, but perceived proximity was higher among the open source developers – seemingly because they had stronger communications and shared identification. Empirical examples like these helped inform our understanding of the relationships presented in the following hypotheses.

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Insert Figure 1 about here

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Another important issue concerns *how* these subjective, fluid processes – perceived and objective proximity, communication, and identity – constitute one another. The relationship between communication and perceived proximity has been shown to be strong (Newcomb 1956).

As communication becomes more frequent, deeper in substance (i.e., more personal and more personally significant), and more interactive (i.e., characterized by more interdependent and reciprocal communicative exchanges), physically distant colleagues will seem more proximal (Burgoon, Bonito, Ramirez, Dunbar, Kam and Fischer 2002). These characteristics of communication affect perceptions of proximity through three mechanisms: increasing cognitive salience, reducing uncertainty and envisioning the other's context. At the same time, communication frequency and interactivity are also related to objective distance, as a host of studies have shown (Kiesler and Cummings 2002; Olson and Olson 2000; Olson, Teasley, Covi and Olson 2002). However, these two aspects of communication practices – frequency and interactivity – may affect differently subjective and objective proximity. While some studies found that objective distance is associated with less communication (Cummings 2004; Sosa, Eppinger, Pich, McKendrick and Stout 2002; Van den Bulte and Moenaert 1998), others have found that over time, collaborative technology can improve satisfaction and create cohesion in culturally diverse teams (Carte, Chidambaram and Becker 2006; Staples and Zhao 2006). Overall, we consider that the frequency of communication across all media is positively related to perceived proximity, but negatively related to objective distance, with colleagues who are farther apart needing to communicate more but actually communicating less. At the same time, the frequency of synchronous media – such as face-to-face and the telephone – is more strongly associated with subjective proximity than with objective distance. As studies have shown, teams communicating via face-to-face and videoconferencing achieved higher cohesion than teams using less synchronous media (Hambley, O'Neill and Kline 2007).

H2: Communications frequency is a) negatively related to objective distance, but b) positively related to perceived proximity.

Identification processes and perceived proximity are naturally related. Identification is a process of self-categorization with respect to others (Dutton, Dukerich and Harquail 1994) and it is also an outcome of that process. The process and resulting state of identification affects a perception of proximity between two people through three mechanisms: by creating a basis for common ground, by reducing uncertainty (just as communication does), and by engendering positive attributions when real data are absent. At the same time, shared identity is negatively related to objective distance. As a host of studies have shown, distributed teams experience difficulties forming a sense of shared identity and are prone to conflict and reduced team identification (Hinds and Mortensen 2005; O'Leary and Mortensen 2010; Polzer, Crisp, Jarvenpaa and Kim 2006; Wiesenfeld, Raghuram and Garud 2001).

H3: A sense of shared identity is a) negatively related to objective distance, but a) positively related to perceived proximity.

Yet another important question is *how do both forms of proximity affect important organizational outcomes?* In spite of much research building on the idea that objective proximity is lawfully related to critical work processes and relationships (Lardner 1992), empirical studies on the effects of physical proximity on a variety of group outcomes have produced conflicting results. While some researchers have found a negative relationship between physical distance and factors such as interpersonal liking and other desired outcomes in work and social settings

(e.g., Allen 1977; Festinger 1951; Short, Williams and Christie 1976), others have found that dispersed teams ultimately achieve equivalent or higher levels of quality and performance (Cummings 2004; Walther 2002). We believe that these conflicting findings may be due partly to the emphasis on objective distance and lack of consideration given to how that objective distance is manifested as perceptions of proximity.

H4: Relationship outcomes are: a) positively related to perceived proximity, and b) negatively related to objective distance.

Finally, we are concerned with *the effects of communication and identification processes, on relationship outcomes among dispersed co-workers*. As we argued above in Hypotheses 2 and 3, identification and communication have a positive impact on perceived proximity. At the same time, these processes also affect relationship outcomes. Thus, both facilitate coordination (Hinds and McGrath 2006) and the solving of interpersonal conflict (Hinds and Mortensen 2005). These effects should impact relationship outcomes positively.

H5: Relationship outcomes are positively related to a) communications frequency and b) shared identity between dispersed co-workers.

At the same time, the effects of communication and identification on relationship outcomes are not direct, but operate through the mediating effect of perceived proximity. Indeed, we contend that communication and identification affect relationship outcomes insofar as they lead to perceived proximity.

H6: Perceived proximity mediates the effects of communications and identification on relationship outcomes between dispersed co-workers.

METHODS

To test these hypotheses and better understand the dynamics of perceived proximity, our study is based on an international survey of people's impressions of both dispersed and collocated work relationships.

Sample

We recruited respondents online through Amazon's Mechanical Turk (MTurk) system, an online forum through which people can choose to participate in studies for payment (Buhrmester, Kwang and Gosling 2011). In comparison to other, more typical subject pools, respondents obtained via MTurk have been found to be older and at least as representative of the U.S. population traditional subject pools (Paolacci, Chandler and Ipeirotis 2010), more ethnically diverse, and have more work experience (Behrend, Sharek, Meade and Wiebe 2011). Recent studies have also found that the reliability of the data obtained from MTurk respondents is as good or better than those from more traditionally obtained samples, and meets or exceeds the standards of published psychological research (Behrend *et al.* 2011; Buhrmester *et al.* 2011).

Consistent with recent research and methodological recommendations (Huang, Curran, Keeney, Poposki and DeShon 2011; Kittur, Chi and Suh 2008), we used a warning, the Response Time Approach, Response Pattern Approach, and two "captcha" or "reverse Turing" questions (Mason and Suri 2011), to deter and detect insufficient effort responses (i.e., careless, random, or

haphazard responses to expedite survey completion). Based on answers to these questions, we dropped a half dozen responses. This ratio is similar to those found in previous studies of this type, allaying concerns that online respondents might simply answer randomly or haphazardly to complete the survey. After agreeing to participate, respondents were re-directed from the MTurk site to our survey. The re-direction helped maintain the complete anonymity of our respondents. Given the nature of our study and interest in a diverse sample, we did not limit our responses to those in certain countries, but we did screen English language abilities and employment.

Our sample included 400 respondents, reporting on their relationships with 400 distant colleagues and 400 collocated colleagues. Of the 400 respondents, 5.6% were not at least somewhat fluent in English and 5.0% were unemployed. We removed them from our analyses, leaving us with a final sample of 375 responses. These respondents were 30.2 years old on average, 58.8 percent male, 16% from the United States and 84% from 25 other countries. They were fairly well educated, with 50.7 having bachelor's degrees, 30 having graduate degrees, and all but 12.3 having an associate's degree or at least some college education.

Measures

We used a combination of new and existing measures for objective distance, perceived proximity, communications, and identification. We began by asking respondents to name three "colleagues with whom you work regularly in your own office building or office complex." To minimize bias in the respondents' choice of colleagues, we then randomly chose one of the three whom they listed and asked the remaining survey questions in regard to that one particular colleague (inserting the colleague's name in subsequent survey questions as a reminder to the respondent). We also asked respondents to name three "colleagues with whom you work

regularly, but who are in a different location/s (i.e., not in your office building or office complex).” Again, we randomly chose one of those three distant colleagues and asked a similar series of questions about that particular colleague. We randomly asked half our respondents about their collocated colleagues first, and half about their distant colleagues first. They reported knowing their distant colleagues for an average of 5.3 years and worked with them for 3.9 years.

Objective Distance

For the distant colleagues, we asked respondents to list the city in which the colleague was located. On that basis, we computed the “crow flies” distance between them. On average, our respondents were 825 miles from their dispersed colleagues. Because temporal separation has different effects than spatial separation (Espinosa, Cummings and Pickering 2011; O'Leary and Cummings 2007), we also asked how many time zones separated our respondents from their dispersed colleagues. Given the number of missing responses and responses that were incorrect given the cities respondents listed, we did not conduct further tests using a temporal measure of dispersion. Respondents’ apparent inability to report time zone separation correctly may be consistent with reports regarding the challenges of keeping track of which colleagues are how many hours away at any given time (Carmel, Espinosa and Dubinsky 2010; Rutkowski, Saunders, Vogel and van Genuchten 2007; Saunders, Van Slyke and Vogel 2004).

Perceived Proximity

We developed a measure of perceived proximity based on existing theory and related research (Wilson *et al.* 2008). In developing the measure, we followed recommended procedures for item construction (Warwick and Lininger 1975). First, we wrote items to cover each of the two dimensions of perceived proximity: cognitive and affective. Respondents rated the items on

a 5-point scale. We conducted pilot tests of the items using a think aloud procedure to identify points of confusion or misunderstanding (Ericsson and Simon 1993). Based on the pilot test, we deleted and modified items before arriving at an initial 19-item measure for our survey.

Communications and Shared Identity

We used standard Likert-type items to measure communications frequency by medium for FTF, email, telephone, video, IM, chat, SMS, and "other" forms of communications. We measured shared identity by asking respondents to rate their similarity to their colleague on the basis of age, gender, marital status, ethnic background, personalities, personal values, attitudes toward school and education, priorities, commitment to their work, and differences in their project's goals. These represented both surface and deep level bases for identification and common ground.

Relationship Outcomes

To test the role of perceived proximity on relationships between dispersed co-workers, we adapted Hackman's (1990) widely used dimensions of team effectiveness for use at the dyadic level, which led us to gauge relationship outcomes in terms of respondents': 1) satisfaction with the relationships, 2) learning from their distant colleagues, 3) desire to work with the distant colleagues again in the future. We analyzed our data separately for each of these three dimensions. There were only minor differences between them, so we report our results for an average of the three.

Controls

In all of our models, we controlled for the number of years that respondents had known and worked with each other – under the assumption that more established relationships are likely

to be highly correlated with feelings of greater perceived proximity and relationship outcomes (despite the potential for old colleagues to become tiresome or to be a burden around some people's necks).

Results

Preliminary Analysis

Following procedures suggested by Bollen (2011) we evaluated the validity of our measure of perceived proximity by assessing the face validity of the indicators, examining the fit of the model and, finally, embedding the measure in a fuller model with additional causes and consequences. We used the original 19 items in the survey, but submitted the item responses to a confirmatory factor analysis to examine the dimensionality of the measure. Confirmatory factor analysis based on the unstandardized data using the covariance matrix and maximum likelihood estimation (Gefen, Straub and Rigdon 2011) showed good fit for a two factor model [X^2 = 30.4, df = 13, p < .004; RMSEA = .05] with a subset of 7 of the original 19 items and a relatively large sample size. The reliability coefficients for the retained items ranged from .47 to .70, which is within the acceptable range for measures of this length (Lord and Novick 1968). We conducted our remaining analyses with the final seven items. They included statements such as "When I think of <distant colleague>, the distance between us seems small" for the cognitive dimension and "Even when we are not working in the same place, I still feel close to <distant colleague>" for the affective dimension. Based on our initial analyses, the cognitive and affective dimensions did not differ. Thus, we collapsed these two dimensions into a single seven-item measure of perceived proximity in all of the results reported below. Table 1 shows the descriptive statistics and bivariate correlations for all study variables.

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Insert Table 1 about here

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Factors Affecting Perceived Proximity and Their Effect on Relationship Outcomes

As noted in Wilson et al. (2008), there are two paradoxical combinations of physical and perceived proximity – i.e., those with low physical proximity, but high perceived proximity, and those with high physical proximity but low perceived proximity. The first category includes those working on globally dispersed projects who still feel close to each other despite the geographic distance separating them. The second category includes people who are physically collocated, but do not feel close to their colleagues. In addition to examining the dynamics of perceived proximity in our respondents' dispersed relationships; we also asked them about perceived proximity with their collocated colleagues. This allows us to compare perceived proximity for both 375 dispersed work relationships as well as 375 collocated work relationships. Our data indicate that the levels of perceived proximity are almost identical for these two sub-samples. The average for the affective dimension of perceived proximity between dispersed colleagues was 3.35; for collocated colleagues, it was 3.37. For the cognitive dimension of perceived proximity, the averages for collocated and dispersed colleagues were the same (3.38). In summary, on average, respondents did not perceive themselves to be closer to their completely collocated colleagues than they did to their geographically distant colleagues. Furthermore, the amount of objective geographic distance (in "as the crow flies" miles between the two) between dispersed colleagues was not correlated with respondents' perceptions of proximity to those colleagues (for cognitive perceptions of proximity, $r = .003$, $p =$ n.s.; for affective perceived

proximity, r= -.088, p = n.s.). In short, we find no evidence that perceived proximity is related to objective geographic distance. Thus, Hypothesis 1 was not supported – but the paradox articulated by Wilson et al. (2008) is.

We also hypothesized that objective distance would be associated with less frequent communications (H2b), but that frequent communications would be associated with higher perceived proximity (H2a). As the correlations in Table 1 indicate, perceived proximity was related to more frequent communications (supporting H2b), but objective distance was not (i.e., H2a was partially supported).

Hypothesis 3 contended that shared identification would be a) negatively related to objective distance, but b) positively related to perceived proximity. Objective distance was negatively related to shared identification as expected, but the relationship was small ($r = -0.055$) and not statistically significant. However, as shown in Table 1, perceived proximity and shared identification were significantly related ($r = 0.411$, $p < 0.01$), supporting H3b.

Based on Hypothesis 4, we expected that relationship outcomes would be a) positively related to perceived proximity, but b) negatively related to objective distance. The results in Table 1 support H4a ($r = 0.639$, $p < .01$) but not H4b ($r = -0.023$, p = n.s.). Perceived proximity was significantly positively related to relationship outcomes, but objective distance was insignificantly negatively related to relationship outcomes.

In Hypothesis 5a and 5b, we expected that both communications frequency and shared identification would be positively related to relationship outcomes. Both of these hypotheses were supported by the correlations shown in Table 1 ($r = 0.130$, $p <.05$ and $r = 0.507$, $p < .01$, respectively). The regression results in Table 2 provide further support for most of our hypotheses, controlling for other factors.

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Insert Table 2 about here

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In Table 2, Model 1 includes only the controls for relationship and work duration. Model 2 adds the objective distance (in crow-flies miles) between the respondents and their distant colleagues. Objective distance has no significant relationship with relationship outcomes (thus failing to support Hypothesis 4b).

The addition of four types of communication frequencies in Model 3 improves the overall model ($p < .001$), with the most synchronous of the four communication media (phone and video) being most statistically significant (partially supporting H5a). Model 4 adds four bases for shared identification (age, gender, values, and commitment to their mutual work), with all four being statistically significant (supporting H5b), and the overall model improving significantly again.

As shown in Model 5, perceived proximity is powerfully related to relationship outcomes ($p<.001$), after controlling for relationship duration, objective distance, communication frequency, and shared identification. Its addition dramatically increases the overall quality of the model. This supports Hypothesis 4a.

In Model 5, the addition of perceived proximity improves the model significantly, with the two types of communications and identification remaining significant as well. Additional regression results (not presented here) with perceived proximity as the dependent variable provide additional support for the role of communications and identification in making distant colleagues seem more proximate, while objective distance continues to have no significant

influence on perceived proximity. Finally, strong Sobel test results support the prediction (H6) that perceived proximity mediates the relationships between communications, shared identity, and relationship outcomes.

In summary, in contrast to much previous research, we found little support for connections between objective geographic proximity and communication, identification, and relationship outcomes. Also, somewhat to our surprise, we found no relationship between objective proximity and perceived proximity. Among the distant colleagues in our sample, objective proximity's effects seem to pale in comparison to those of the more symbolically-laden and malleable perceived proximity. It appears that perceived proximity is tightly linked to a sense of common ground. Communications matters as well, but a sense of shared identity (based on various factors including surface-level demographic characteristics as well as common values and commitments) powerfully affects perceived proximity.

DISCUSSION

Without rejecting the importance of objective proximity (Allen, 1977; Van den Bulte and Moenart 1998, etc.), our study shows that perceived proximity is a powerful force, which can outweigh objective proximity. As Wilson et al. (2008) and others have argued, teams can be designed with objective proximity in mind, but managers also would be well advised to understand what shapes perceived proximity. It appears to have an important influence on work relationships and appears to be powerfully related to communications and shared identity.

Our study makes several contributions. We find support for an important new concept in distributed collaborations – actually in collaboration in general. Just as organizational scholars

recognize that subjective culturally bound perceptions of time may be the most consequential (Ancona, Okhuysen and Perlow 2001), we have shown how perceptions of proximity influence relationship outcomes. The notion of perceived proximity broadens organizational studies' theoretical understandings of proximity and the results of our study contribute to our understanding of how human action is driven by the meanings people give to their context (Blumer 1969).

Our findings also add to a stream of literature that has held that people can form strong bonds with absent others (Chayko 2002). While this work is largely theoretical and only suggestive of the factors that may play a role in the formation of such bonds – vivid images for instance, or perceived similarities – our study uncovers some of the specific mechanisms through which perceived proximity develops.

If the phenomenon of perceived proximity is a general one that has existed since the beginning of inscribing technologies (Chayko, 2002), its extent in the world of work collaborations remains surprising. One interpretation is that perceived proximity is highly symbolic. Paraphrasing Feldman and March (1981), perceptions of proximity are not only a basis for action. They are an affirmation of one's identity as a connected, active, 'always on' participant in fluid processes in a world without borders. These are core values of current ideology, and it is in this sense that collaboration across distance and feelings of proximity to them are highly symbolic.

Our findings have broad relevance for current collaborations in organizational and non-organizational settings using Facebook and other social media where people forge strong relationships with faraway others. New technologies are also instantiating our sense of perceived proximity. For example, Google+ allows users to arrange their contacts in circles, which

represent varying degrees of perceived proximity and allow users to share certain information with only certain circles of people. Conceptually, they draw on metaphors like one's "inner circle" to characterize those whom we perceive to be most proximate. Although Google+ is still a new product, it is not hard to envision its structurational qualities (Giddens 1984; Jones and Karsten 2008; Lamb and Kling 2003) – whereby the mere assignment of people to circles represents our thoughts and feelings about them, but also reinforces those perceptions. Putting someone in my inner circle is likely to create or reinforce an expectation about how closely I identify and communicate with them. Similarly, the diagrams of our networks that sites like LinkedIn create on the fly are likely to instantiate our own perceptions about proximity.

There is also historical resonance in our findings about how people feel connected to distant others and how communication technology plays a role in the development those feelings. As Habermas (1989) showed, the invention of the printing press and the diffusion of print media enable the creation of a community of people, throughout Europe (and beyond) who woke up to read the same journals, about the same issues. As a result, they came to share a mindset in spite of their dispersed locations and the lack of a common language. Today, different technologies affect our sense of connection in similarly (if not more) powerful ways.

Limitations and Directions for Future Research

Despite the theoretical, methodological, and managerial implications of this study, it is not without its limitations. First, our study is subject to potential common method, common source biases (Siemsen, Roth and Oliveira 2010). Such biases rarely invalidate results, but future work should certainly strive to offset their potential effects (Brannick, Chan, Conway, Lance and Spector 2010; Johnson, Rosen and Djurdjevic 2011).

Second, although our study was explicitly about dispersed relationships, and although we did have a very international sample (with a minority of U.S. residents), we did limit our sample to fluent English speakers. Future studies could develop alternative language versions of our perceived proximity items and validate these results with respondents who are not fluent in English. Furthermore, given the primacy of communications in our model, future research could assess the effects of the language fluency of the distant co-workers. We only gathered data on the fluency of the respondents themselves.

Third, the addition of qualitative and longitudinal data would allow us to develop a more refined sense of how proximity emerges and evolves. We showed how it relates to a variety of key factors, but we were not able to explore fully how particular types of communications media (social and "traditional") enable collaborators to imbue their messages with the rich symbolic meaning that contributes to perceptions of proximity. We also believe it will be important for future research to explore not only how communications media affect perceived proximity but also how perceived proximity in turn affects the use of communications media.

Fourth, although we gauged the frequency of FTF communications and dispersed colleagues did have some (albeit infrequent) in-person interactions, we did not assess the timing of those (or any other interactions). In addition to the frequency, the specific timing might have an important influence. For example, some have claimed that FTF interactions are especially important at the beginning of otherwise dispersed collaborations; others have noted that the specific rhythm of distant and FTF interactions is also important (Maznevski and Chudoba 2000).

Fifth, as with many symbol-laden processes, we expect there are important feedback loops, whereby perceived proximity affects people's sense of shared identification at the same

that the shared identification is building and reinforcing perceptions of proximity. The same is likely to be true with communications: the closer people feel, the more frequently they may communicate, and the more frequently they communicate, the closer they will feel. In this sense, the causal arrows implied in our model might best be depicted with arrows at both ends and perceived proximity as both the symbolic result of communications and identification as well as force that boosts them both.

FIGURE 1: MODEL OF OBJECTIVE DISTANCE, PERCEIVED PROXIMITY, AND RELATIONSHIP OUTCOMES

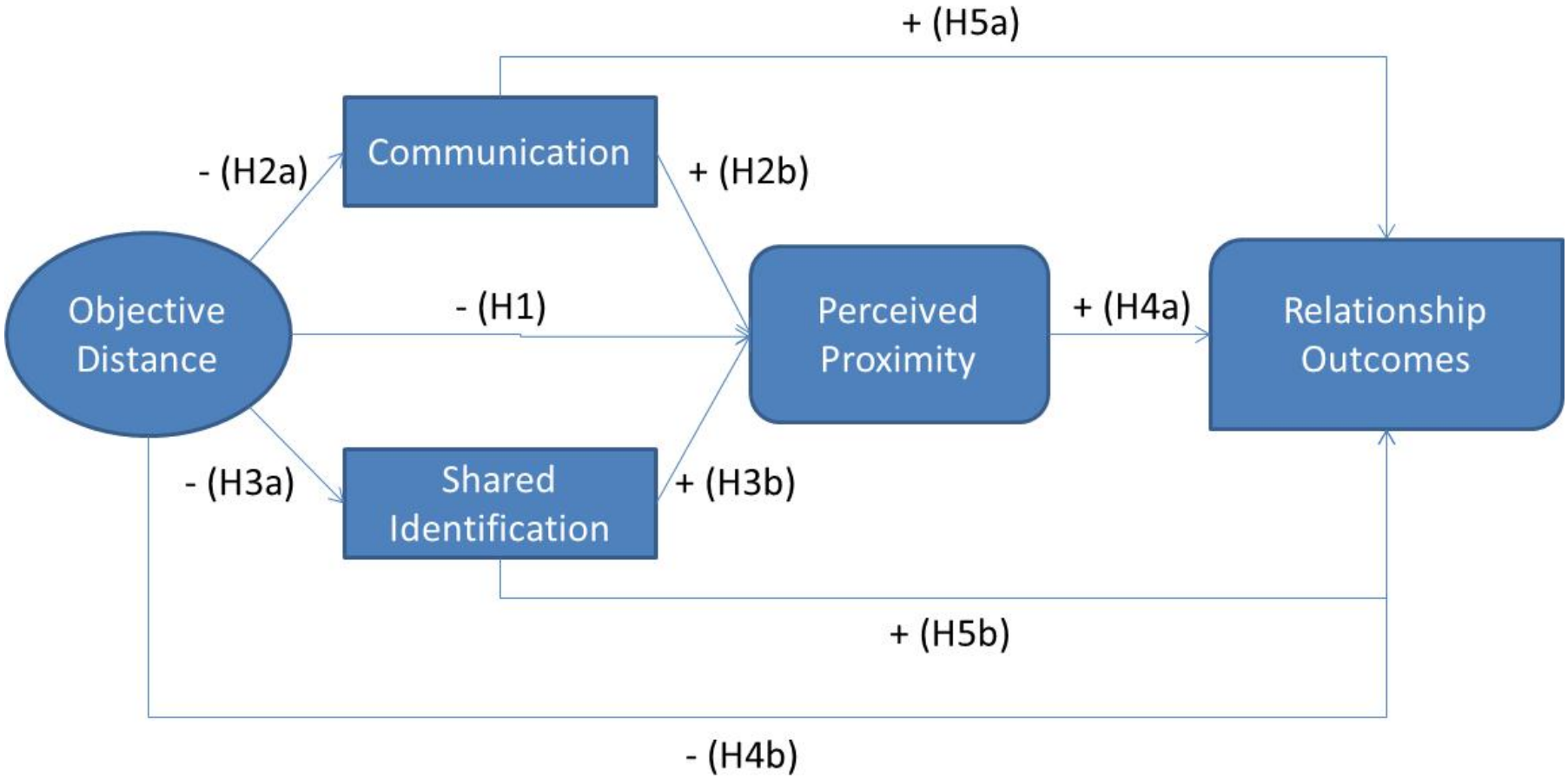

TABLE 1: MEANS, STANDARD DEVIATIONS, AND CORRELATIONS

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Years Known	5.27	6.70	--											
2. Years Worked with	3.85	5.53	.87**	--										
3. Miles to Distant Colleague	825	2,327	-0.07	-0.05	--									
4. Perceived Proximity	3.39	.68	0.03	0.00	-0.05	--								
5. Phone Frequency	3.77	.88	0.04	-0.01	-0.02	.64**	--							
6. Video Frequency	3.33	1.38	0.09	0.09	-0.05	.37**	.24**	--						
7. Email Frequency	2.05	1.34	0.04	0.10	0.00	0.09	-0.03	.29**	--					
8. Chat, SMS Freq.	3.39	1.39	-0.05	0.02	0.04	.18**	.12*	.39**	.42**	--				
9. Shared Age	3.33	1.68	0.04	0.08	-0.03	.24**	.16**	.44**	.41**	.52**	--			
10. Shared Gender	3.54	1.19	-0.02	-0.07	0.01	.27**	.31**	.17**	-0.03	0.05	.13**	--		
11. Shared Personal Values	3.65	1.62	-0.05	-0.06	-0.06	.13*	.21**	0.07	-0.09	-0.04	0.00	.27**	--	
12. Shared Commitment to Work	3.35	1.13	-0.07	-0.09	-0.03	.34**	.37**	.12*	.12*	.14**	.13**	.27**	0.01	--
13. Mean Relationship Outcomes	3.47	1.14	-0.03	-0.01	0.00	.31**	.41**	.13*	-0.01	.14**	-0.02	.13*	0.06	.32**

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

TABLE 2: RESULTS OF REGRESSION PREDICTING INFLUENCES ON RELATIONSHIP OUTCOMES

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variables	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**
Years Worked with Distant Colleague	-.03	.02	-.03	.02	-.03*	.01	-.02	.014	-.02	.01
Years Known Distant Colleague	.03*	.01	.03*	.01	.03*	.01	.02*	.011	.02†	.01
Miles to Distant Colleague			.00	.00	.00	.00	.00	.000	.00	.00
Phone communications frequency					.13***	.04	.08*	.03	.07	.03
Video communications frequency					-.10**	.04	-.08*	.03	-.07*	.03
Email communications frequency					.04	.04	.00	.03	.00	.03
IM, SMS, Chat communications frequency					.06†	.03	.07*	.03	.04	.03
Shared age							.09**	.04	.05†	.03
Shared gender							.07**	.03	.06*	.02
Shared personal values							.18***	.04	.09**	.03
Shared commitment to the work							.23***	.04	.15***	.03
Perceived Proximity to Distant Colleague									.64***	.06
R-Squared	.011		.012		.089		.332		.507	
Sig. F Change	.124		.755		.000***		.000***		.000***	

† p < .10; * p < 0.05; ** p < 0.01; *** p < 0.001

REFERENCES

Agerfalk, P.J. 2004. "Investigating actability dimensions: a language/action perspective on criteria for information systems evaluation," *Interacting with Computers* (16), pp. 957-988.

Allen, T.J. 1977. *Managing the Flow of Technology*, Cambridge, MA: MIT Press.

Allport, G. 1954. *The Nature of Prejudice*, Cambridge, MA: Addison-Wesley.

Amason, A.C., and Sapienza, H.J. 1997. "The effects of top management team size and interaction norms on cognitive and affective conflict," *Journal of Management* (23), pp. 495-516.

Amin, A., and Cohendet, P. 2004. *Architectures of Knowledge: Firms, Capabilities, and Communities*, Oxford, UK: Oxford University Press.

Ancona, D., Goodman, P., Lawrence, B., and Tushman, M. 2001. "Time: A new research lens," *Academy of Management Review* (26), pp. 645-663.

Ancona, D., Okhuysen, G., and Perlow, L. 2001. "Taking time to integrate temporal research," *Academy of Management Review* (26), pp. 512-529.

Barley, S.R. 1986. "Technology as an Occasion for Structuring: Evidence from Observations of CT Scanners and the Social Order of Radiology Departments," *Administrative Science Quarterly* (31), pp. 78-108.

Barley, S.R. 1990. "The Alignment of Technology and Structure Through Roles and Networks," *Administrative Science Quarterly* (35), pp. 61-103.

Behrend, T., Sharek, D., Meade, A., and Wiebe, E. 2011. "The viability of crowdsourcing for survey research," *Behavior Research Methods*, pp. 1-14.

Beunza, D., Hardie, I., and MacKenzie, D. 2006. "A price is a social thing: Towards a material sociology of arbitrage," *Organization Studies* (27), pp. 721-745.

Blau, P.M., Falbe, C.M.H., McKinley, W., and Tracy, P.K. 1976. "Technology and organization in manufacturing," *Administrative Science Quarterly* (21), pp. 20-40.

Blumer, H. 1969. *Symbolic interaction*, Englewood Cliffs, NJ: Prentice Hall.

Bollen, K.A. 2011. "Evaluating effect, composite, and causal indicators in structural equation models," *MIS Quarterly* (35), pp. 359-372.

Brannick, M.T., Chan, D., Conway, J.M., Lance, C.E., and Spector, P.E. 2010. "What Is Method Variance and How Can We Cope With It? A Panel Discussion," *Organizational Research Methods* (13), pp. 407-420.

Buhrmester, M., Kwang, T., and Gosling, S.D. 2011. "Amazon's Mechanical Turk: A New Source of Inexpensive, Yet High-Quality, Data?," *Perspectives on Psychological Science* (6), pp. 3-5.

Burgoon, J.K., Bonito, J.A., Jr., Ramirez, A., Dunbar, N.E., Kam, K., and Fischer, J. "Testing the Interactivity Principle: Effects of Mediation, Propinquity, and Verbal and Nonverbal

Modalities in Interpersonal Interaction," in: *Journal of Communication*, 2002, pp. 657-677.
Burke, J.E., and Stets, P.J. 2005. "New Directions in Identity Control Theory," *Advances in Group Processes* (22), pp. 43-64.
Carmel, E., Espinosa, J.A., and Dubinsky, Y. 2010. "Follow The Sun: Workflow In Global Software Development: Conceptual Foundations," *Journal of Management Information Systems* (27), pp. 17-37.
Carte, T.A., Chidambaram, L., and Becker, A. 2006. "Emergent leadership in self-managed virtual teams - A longitudinal study of concentrated and shared leadership behaviors," *Group Decision and Negotiation* (15), pp. 323-343.
Chayko, M. 2002. *Connecting: How we form social bonds and communities in the Internet age*, Albany, NY: State Univ of New York Press.
Chayko, M. 2007. "The portable community: envisioning and examining mobile social connectedness," *International Journal of Web Based Communities* (3), pp. 373-385.
Cummings, J.N. 2004. "Work Groups, Structural Diversity, and Knowledge Sharing in a Global Organization," *Management Science* (50), pp. 352-364.
DeSanctis, G., and Poole, M.S. 1994. "Capturing the complexity in advanced technology use: Adaptive structuration theory," *Organization Science* (5), pp. 121-147.
Dutton, J.E., Dukerich, J.M., and Harquail, C.V. 1994. "Organizational images and member identification," *Administrative Science Quarterly* (39), pp. 239-263.
Ericsson, K.A., and Simon, H.A. 1993. *Protocol analysis: verbal reports as data*, Cambridge, MA: MIT Press.
Espinosa, J.A., Cummings, J.N., and Pickering, C. 2011. "Time Separation, Coordination, and Performance in Technical Teams " *IEEE Transactions on Engineering Management*, p in press.
Feldman, M.S., and March, J.G. 1981. "Information in Organizations as Signal and Symbol," *Administrative Science Quarterly* (26), pp. 171-186.
Festinger, L. 1951. "Architecture and Group Membership," *Journal of Social Issues* (7), pp. 152-163.
Fine, G.A. 1993. "The sad demise, mysterious disappearance, and glorious triumph of symbolic interactionism," *Annual Review of Sociology* (19), pp. 61-87.
Gefen, D., Straub, D.W., and Rigdon, E.E. 2011. "An Update and Extension to SEM Guidelines for Admnistrative and Social Science Research," *MIS Quarterly* (35), pp. iii-xiv.
Gibson, C.B., Gibbs, J.L., Stanko, T.L., Tesluk, P., and Cohen, S.G. 2011. "Including the “I” in Virtuality and Modern Job Design: Extending the Job Characteristics Model to Include the Moderating Effect of Individual Experiences of Electronic Dependence and Copresence," *Organization Science* (22), pp. 1481-1499.
Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Berkeley: University of California Press.
Goldkuhl, G., and Lyytinen, K. "A Language Action View of Information Systems," 3rd International Conference on Information Systems, Ann Arbor, MI, 1982, pp. 13-29.
Griffith, T.L., Sawyer, J.E., and Neale, M.A. 2003. "Virtualness and Knowledge in Teams: Managing the Love Triangle of Organizations, Individuals, and Information Technology," *MIS Quarterly* (27), pp. 265-288.

Habermas, J. 1989. *The structural transformation of the public sphere*, Cambridge, MA: MIT Press.

Hackman, J.R. 1990. *Groups That Work (and Those That Don't): Creating Conditions for Effective Teamwork*, San Francisco, CA: Jossey-Bass.

Hall, E.T. 1983. *The dance of life: The other dimension of time*, Garden City, NY: Doubleday.

Hambley, L.A., O'Neill, T.A., and Kline, T.J.B. 2007. "Virtual team leadership: Perspectives from the Field," *International Journal of e-Collaboration* (3), pp. 40-64.

Hansen, M.T., and Lovas, B. 2004. "How Do Multinational Companies Leverage Technological Competencies? Moving From Single to Interdependent Explanations," *Strategic Management Journal* (25), pp. 801-822.

Hinds, P., and McGrath, C. "Structures that Work: Social Structure, Work Structure and Coordination Ease in Geographically Distributed Teams," CSCW '06, ACM, Banff, Alberta, Canada, 2006, pp. 1-10.

Hinds, P.J., and Mortensen, M. 2005. "Understanding conflict in geographically distributed teams: The moderating effects of shared identity, shared context, and spontaneous communication," *Organization Science* (16), pp. 290-307.

Hollan, J., and Stornetta, S. "Beyond Being There," in: *Proceedings of the ACM CHI '92 Conference on Human Factors in Computing Sytems* P. Bauersfeld, J. Bennett and G. Lynch (eds.), ACM, Monterey, CA, 1992, pp. 119-125.

Huang, J., Curran, P., Keeney, J., Poposki, E., and DeShon, R. 2011. "Detecting and Deterring Insufficient Effort Responding to Surveys," *Journal of Business and Psychology*, pp. 1-16.

Huber, G.P. 1990. "A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making," *Academy of Management Review* (15), pp. 47-71.

Johnson, R.E., Rosen, C.C., and Djurdjevic, E. 2011. "Assessing the impact of common method variance on higher order multidimensional constructs," *Journal of Applied Psychology* (96), pp. 744-761.

Jones, M.R., and Karsten, H. 2008. "Giddens's structuration theory and information systems research," *MIS Quarterly* (32), pp. 127-157.

Kiesler, S., and Cummings, J.N. "What do we know about proximity and distance in work groups? A legacy of research," in: *Distributed Work*, P.J. Hinds and S. Kielser (eds.), MIT Press, Cambridge, MA, 2002, pp. 57-82.

Kittur, A., Chi, E.H., and Suh, B. "Crowdsourcing user studies with Mechanical Turk," in: *Proceeding of the twenty-sixth annual SIGCHI conference on Human factors in computing systems*, ACM, Florence, Italy, 2008, pp. 453-456.

Kolb, D.G., Collins, P.D., and Lind, E.A. 2008. "Requisite Connectivity: Finding Flow in a Not-So-Flat World," *Organizational Dynamics* (37), pp. 181-189.

Lamb, R., and Kling, R. 2003. "Reconceptualizing users as social actors in information systems research," *MIS Quarterly* (27), pp. 197-236.

Lardner, J. "Communication barriers to effective manufacturing," in: *Manufacturing Systems: Foundations of World-Class Practice*, J. Heim and W. Compton (eds.), National Academy Press, Washington, D.C., 1992.

Lord, F.M., and Novick, M.R. 1968. *Statistical theories of mental test scores*, Reading, MA: Addison Wesley.

March, J.G., and Olsen, J.P. 1976. *Ambiguity and choice in organizations*, Bergen: Universitetsforlaget.
Markus, M.L., and Robey, D. "Information technology and organizational change: Causal structure in theory and research," in: *Management Science*, 1988, pp. 583-598.
Mason, W., and Suri, S. 2011. "Conducting behavioral research on Amazon's Mechanical Turk," *Behavior Research Methods*, pp. 1-23.
Maznevski, M.L., and Chudoba, K.M. 2000. "Bridging space over time: Global virtual team dynamics and effectiveness," *Organization Science* (11), pp. 473-492.
Metiu, A. 2006. "Owning the Code: Status Closure in Distributed Groups," *Organization Science* (17), pp. 418-435.
Mitchell, T.R., and Mickel, A.E. 1999. "The meaning of money: An individual-difference perspective," *Academy of Management Review* (24), pp. 568-578.
Mooney, S.P., Sherman, M.F., and Lo Priesto, C.T. 1991. "Academic locus of control, self-esteem, and perceived distance from home as predictors of college adjustment," *Journal of Counseling & Development* (69), pp. 445-448.
Moorman, R. 1993. "The influence of cognitive and affective based job satisfaction measures on the relationship between satisfaction and organizational citizenship behavior," *Human Relations* (46), pp. 759-775.
Newcomb, T.M. 1956. "The Prediction of Interpersonal Attraction," *American Psychologist* (11), pp. 575-586.
Neyer, F.J., and Lang, F.R. 2003. "Blood Is Thicker Than Water: Kinship Orientation Across Adulthood," *Journal of Personality & Social Psychology* (84), pp. 310-321.
O'Leary, M.B., and Cummings, J.N. 2007. "The Spatial, Temporal, and Configurational Characteristics of Geographic Dispersion in Teams," *MIS Quarterly* (32), pp. 433-452.
O'Leary, M.B., and Mortensen, M. 2010. "Go Con(Figure): Subgroups, Imbalance, and Isolates in Geographically Dispersed Teams," *Organization Science* (21), pp. 115-131.
Olson, G.M., and Olson, J.S. 2000. "Distance Matters," *Human-Computer Interaction* (15), pp. 139-179.
Olson, J.S., Teasley, S., Covi, L., and Olson, G.M. "The (Currently) Unique Advantages of Collocated Work," in: *Distributed Work*, P. Hinds and S. Kiesler (eds.), MIT Press, Cambridge, MA, 2002, pp. 113-136.
Orlikowski, W.J. 2000. "Using technology and constituting structures: A practice lens for studying technology in organizations," *Organization Science* (11), pp. 404-428.
Orlikowski, W.J., and Yates, J. 2002. "It's About Time: Temporal Structuring in Organizations.," *Organization Science* (13), pp. 684-699.
Paolacci, G., Chandler, J., and Ipeirotis, P.G. 2010. "Running experiments on Amazon Mechanical Turk," *Judgment and Decision Making* (5), pp. 411-419.
Polzer, J.T., Crisp, B., Jarvenpaa, S.L., and Kim, J.W. 2006. "Extending the Faultline Concept to Geographically Dispersed Teams: How Colocated Subgroups Can Impair Group Functioning," *Academy of Management Journal* (49), pp. 679-692.
Prasad, P. 1993. "Symbolic processes in the implementation of technological change: A symbolic interactionist study of work computerization," *Academy of Management Journal* (36), pp. 1400-1429.
Raymond, E.S. 1999. *The Cathedral and the Bazarre: Musings on Linux and Open Source by an Accidental Revolutionary*, Sebastopol, CA: O'Reilly & Associates.

Rutkowski, A.-F., Saunders, C., Vogel, D., and van Genuchten, M. 2007. ""Is It Already 4 a.m. in Your Time Zone?" Focus Immersion and Temporal Dissociation in Virtual Teams," *Small Group Research* (38), pp. 98-129.

Saunders, C. "Perspectives on Time," in: *MIS Quarterly*, 2007, pp. iii-xi.

Saunders, C., Van Slyke, C., and Vogel, D.R. 2004. "My time or yours? Managing time visions in global virtual teams," *Academy of Management Executive* (18), pp. 19-31.

Short, J., Williams, E., and Christie, B. 1976. *The Social Psychology of Telecommunications*, Chichester, UK: John Wiley & Sons.

Siemsen, E., Roth, A., and Oliveira, P. 2010. "Common method bias in regression models with linear, quadratic, and interaction effects," *Organizational research methods* (13), p 456.

Sosa, M., Eppinger, S.D., Pich, M., McKendrick, D., and Stout, S. 2002. "Factors that influence technical communication in distributed product development: An empirical study in the telecommunications industry," *IEEE Transactions on Engineering Management* (49), pp. 45-58.

Staples, D.S., and Zhao, L. 2006. "The Effects of Cultural Diversity in Virtual Teams Versus Face-to-Face Teams," *Group Decision and Negotiation* (15), pp. 389-406.

Star, S.L., and Ruhleder, K. 1996. "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces," *Information Systems Research* (7), pp. 111-134.

Suchman, L. 1987. *Plans and Situated Actions: The Problem of Human–Machine Communication*, Cambridge, England: Cambridge University Press.

Te'eni, D. 2006. "The language-action perspective as a basis for communication support systems," *Commun. ACM* (49), pp. 65-70.

Van den Bulte, C., and Moenaert, R.K. 1998. "The effects of R&D team co-location on communication patterns among R&D, marketing, and manufacturing," *Management Science* (44), pp. S1-S18.

Walsham, G. 1993. *Interpreting information systems in organizations*, Chichester, England: Wiley.

Walther, J.B. "Time Effects in Computer-Mediated Communication: Past, Present, and Future," in: *Distributed Work*, P. Hinds and S. Kiesler (eds.), MIT Press, Cambridge, MA, 2002, pp. 235-258.

Warwick, D.P., and Lininger, C.A. 1975. *The sample survey: Theory and practice*, NY: McGraw-Hill.

Weick, K.E. 1979. *The social psychology of organizing*, Reading, MA: Addison-Wesley.

Weick, K.E. 1995. *Sensemaking in organizations*, Thousand Oaks: Sage Publications.

Wiesenfeld, B.M., Raghuram, S., and Garud, R. 2001. "Organizational identification among virtual workers: the role of need for affiliation and perceived work-based social support.," *Journal of Management* (27), p 213.

Wilson, J.M., O'Leary, M.B., Metiu, A., and Jett, Q.R. 2008. "Perceived Proximity in Virtual Work: Explaining the Paradox of Far-but-Close," *Organization Studies* (29), pp. 979-1002.

Zelizer, V.A. 1994. *The Social Meaning of Money*, NY: Basic Books.

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