WHEN COMPETENCE IS IRRELEVANT: THE ROLE OF INTERPERSONAL AFFECT IN TASK-RELATED TI

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When Competence is Irrelevant: The Role of Interpersonal Affect in Task-Related Ties

Abstract

This paper examines the role of interpersonal affect (i.e., an individual’s generalized positive or negative feelings toward another person) in networks of task-related action in organizations. We aim to answer the following question: how does interpersonal affect modify the impact of task competence on the formation of task-related ties? We develop a theory according to which negative interpersonal affect renders task competence virtually irrelevant in the selection of partners for task interaction, potentially leaving organizations with a significant reservoir of untapped knowledge. Likewise, we propose that positive interpersonal affect increases the reliance on competence as a criterion for task interaction, thereby facilitating access to the task-related resources that reside in organizations. Based on a methodology that draws from social psychological models of interpersonal perception and hierarchical Bayesian models for social network analysis, we find consistent support for this theory in social network data from three organizations: an entrepreneurial computer technology company, staff personnel at an academic institution, and employees in a large information technology corporation. The findings indicate that a critical facet of an organization’s social structure (i.e., informal patterns of interaction), is the organization’s affective structure (i.e., patterns of interpersonal affect among organizational participants), an object of study with the potential to influence academic discourse on the interplay of psychological and structural dimensions of organizational life.
1 Introduction

Mark is a software engineer in an entrepreneurial technology company. His latest project requires knowledge of a new and unfamiliar set of software tools. Mark knows two people in the company who are familiar with the software. Mark views the first of the two, Andrew, as highly skilled and experienced with the set of tools, but considers him an unpleasant person. In contrast, Mark views the second coworker, John, as only moderately familiar with the tools and a below-average programmer. But Mark likes John and thinks he is a delight to be around. Who is Mark more likely to seek out for his project: Andrew or John?

The purpose of this article is to shed light on the role of interpersonal affect in task-related action in organizations. Task-related (i.e., instrumental) ties are relationships arising in the course of performing assigned work roles. Interpersonal affect, as we define it, refers to an individual’s generalized positive or negative feelings toward another person.

Network researchers often distinguish between task-related ties and expressive ties based on interpersonal attraction, with the implication that emotions enter primarily the personal, rather than the task-related, sphere of social action (Gouldner 1954; Blau 1955; Lincoln and McBride 1985; Podolny and Baron 1997; Gibbons 2004). Yet organizational and network scholars have documented a significant overlap between personal and task-related networks (Allen and Cohen 1969; Brass 1984; Burt 1992; Ibarra 1992; Haythornthwaite and Wellman 1998). This overlap is consistent with the notion of affective and instrumental interdependence proposed by Homans (1950), who treats task-related and affective motivations as unavoidably intertwined in any social interaction (Lindenberg 1997). The notion of interdependence between task-related and affective structures is not foreign to organizational discourse. In early organizational research, Roethlisberger and Dickson (1939) characterized the emergence of informal structures within organizations as the manifestation of workers’ natural tendency to introduce a “logic of sentiments” into the “logic of cost and efficiency” represented by formal organizational structures. More recently, with the concept of embeddedness, network scholars have offered an explicit theoretical treatment of the overlap between work-related transactions and personal relations of friendship and kinship (Granovetter 1985; Uzzi 1996; Uzzi 1997).
While the existing evidence indicates that people combine instrumentality and affect in their work relationships, little is known about the trade-offs they make. Such trade-offs are the focus of this paper. We aim to answer the following question: how does interpersonal affect modify the impact of task competence on the formation of task-related ties? We propose a theory according to which negative interpersonal affect renders task competence virtually irrelevant in the selection of partners for instrumental interaction, potentially preventing a significant reservoir of task-relevant knowledge from being tapped in organizations. Likewise, we propose that positive interpersonal affect encourages instrumental action, thereby facilitating access to the task-related resources that reside in organizations.

By demonstrating how interpersonal affect alters the way people seek out and access the resources necessary to perform their job, we aim to highlight the central role of affect in a range of organizational processes that hinge on informal networks, including coordination, collaboration, and innovation. Consider, for example, cross-functional teams as channels for knowledge transfer and integration across organizational boundaries. Both scholars and practitioners typically approach the design of cross-functional teams from a functional viewpoint, in which integration is a matter of linking nodes with the greatest amount of task-relevant resources. However, to the extent that interpersonal affect colors instrumental ties, and modifies the very relevance of task-related knowledge in instrumental action, the effectiveness of integration efforts in organizations could suffer without the explicit inclusion of affective mechanisms in the management of cross-boundary ties.

We test our theory with social network data from three organizations: an entrepreneurial computer technology company, staff personnel at an academic institution, and members of a strategic alliance team in a large information technology corporation. Our statistical modeling approach departs from conventional frequentist methods commonly used in organizational network research. We develop a methodology drawing from social psychological models of interpersonal perception (Kenny 1994) and hierarchical Bayesian models (Gelman, Carlin, Stern, and Rubin 1995) for social network analysis, which allows us to provide statistically sound answers to the substantive questions of interest.
2 Theory

2.1 Affect and competence in interpersonal perception

Mark’s evaluations of Andrew and John along the dimensions of competence and likeability are rooted in universal principles of person perception. With remarkable consistency, independent streams of research in psychology, sociology, and organizational theory have identified two fundamental dimensions of interpersonal evaluations: one that concerns liking and social desirability, and another that concerns competence and intellectual desirability.

In psychology, early research on the structure of personality impressions (Asch 1946) identified two primary dimensions of person perception: social good-bad, including traits such as sociable, good-natured, happy and helpful, and their opposites; and intellectual good-bad, including traits such as intelligent, scientific, skillful and industrious, and their opposites. Around the same time, sociological studies of interactive small groups by Bales (1950) and Slater (1955) similarly identified socio-emotional orientation and task orientation as the two dimensions along which group members formed impressions of others, with socio-emotionally-oriented individuals personally liked best by other group members, and task-oriented individuals rated most highly on task ability. In this research, general positive and negative feelings toward others are conceptualized as liking and disliking, consistent with a long-standing tradition in sociology (Heider 1958; Homans 1961; Sampson 1968).

More recent psychological studies of social cognition have established the existence of two fundamental dimensions of human social perception, whereby “people everywhere differentiate each other by liking (warmth, trustworthiness) and respecting (competence, efficiency)” (Fiske, Cuddy, and Glick 2006). The warmth dimension captures traits related to perceived intent for good or ill, including friendliness, tolerance, helpfulness, and sociability. The competence dimension captures instead perceived ability to act on those intentions, including intelligence, skill and efficacy. The warmth and competence dimensions of person perception differ substantially on their relative affective and cognitive content, with warmth judgments—those related to liking—more saturated with affect than competence judgments (Wojciszke, Bazinska, and Jaworski 1998).\(^1\)

\(^1\)According to psychological theory on attitudes, interpersonal judgments have three components: cognitive responses to a person (which represent what one thinks of a person), affective responses (which represent what one feels about a person), and behavioral responses (which represent what one does or intends to do with regards to a
Similar categories have emerged in organizational research on interpersonal trust, where scholars distinguish between affect-based trust and cognition-based trust (McAllister 1995). Affect-based trust refers to emotional bonds between individuals that presuppose genuine care and concern for the welfare of partners. Cognition-based trust is based on knowledge and expectations concerning an individual’s competence and performance reliability. Similarly, Mayer et al. (Mayer, Davis, and Schoorman 1995) have identified benevolence and competence as primarily affective and cognitive dimensions of trust, respectively.

Across these largely independent research traditions, a common thread clearly emerges, according to which people form judgments of others along two universal dimensions. The first dimension, which is primarily affective, centers on liking and warmth, and captures perceived intent for good or ill. We conceptualize this dimension as interpersonal affect. The second dimension, which is primarily cognitive, centers on competence and efficiency, and captures perceived ability to act on those intentions. The two dimensions tend to correlate positively, due to the well-known halo effect (Dion, Walster, and Berscheid 1972; Ambady and Rosenthal 1993), but are conceptually and empirically distinct.

2.1.1 Interpersonal affect and related constructs

Psychological research on social judgment from thin slices of behavior shows that people judge others as likeable, warm, or enthusiastic based on fleeting glimpses of behavior or mere glances that require no direct interaction (Ambady, Bernieri, and Richeson 2000). While strikingly reliable and predictive of long-term judgments based on extensive exposure, these judgments are formed with extreme rapidity (Ambady and Rosenthal 1993; Ambady, Hallahan, and Rosenthal 1995). Interpersonal affect includes, though it is not limited to, emotional reactions that develop quite rapidly, without extensive or profound interaction. Several psychological processes can account for these instantaneous evaluations. Reciprocity of perceived liking is one such process (Curtis and Miller 1986; Gold, Ryckman, and Mosley 1984; Kenny and Voie 1982). We expect people who appear to be warm and friendly to like us, and be good to us, and we instantaneously like them in return, even when we have had no direct interaction with them. Similarly, stereotyping based on an individual’s membership in a social group (Jones and McGillis 1976; Fiske, Neuberg, Beattie, and person) (Eagly and Chaiken 1998).
Milberg 1987) can produce rapid affective evaluations, whereby similar others are seen as likeable and warm based on the assumption that they will treat members of their social group favorably.

The potential for negative and positive affective judgments to develop rapidly in the absence of direct interaction distinguishes interpersonal affect from the network-theoretical concepts of “strong tie” and “friendship tie”. Granovetter (1973) included emotional intensity as an essential characteristic of strong ties. By definition, this affective component contributes to tie strength when the relationship involves intimacy (mutual confiding) and a significant investment of time. Interpersonal affect, by contrast, can develop without any such intimate personal engagement. Similarly, the oft-studied relational construct of friendship includes behavioral requirements, such as a history of interaction (Krackhardt 1992), that are absent from the construct of interpersonal affect. Personal likes and dislikes predict behavioral friendship patterns, but they are conceptually distinct from them. As noted by Krackhardt (1992), while there is such thing as instant liking there is no such thing as instant friend. By the same token, interpersonal affect also differs from the notion of affect-based trust, which invokes “emotional bonds between individuals,” where “people make emotional investments in trust relationships, express genuine care and concern for the welfare of partners, believe in the intrinsic value of these sentiments, and believe that these sentiments are reciprocated” (McAllister 1995). Interpersonal affect has no similarly stringent requirements for relational depth.

Interpersonal affect is also distinct from mood affect. First, mood affect is an intra-psyche affective state, whereas interpersonal affect is inherently other-directed. Second, the structure of interpersonal affect and mood affect differ substantially. A large part of the literature on mood affect has converged on the notion that mood is most accurately represented by an affective circumplex structured along two orthogonal bipolar dimensions, although scholars have debated what these two dimensions are (Barrett and Russell 1998; Larsen and Diener 1992; Cropanzano, Weiss, Hale, and Reb 2003) and the assumption of bipolarity itself has been challenged with a view of positive and negative affect as independent dimensions (Cacioppo, Gardner, and Berntson 1997). In contrast with the complexity and controversy surrounding the structure of mood affect, the liking/warmth

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2One view proposes that the two dimensions be hedonic tone (pleasantness-unpleasantness) and affect intensity (activation-deactivation) (Russell 1979; Russell 1980; Diener and Emmons 1984). An alternative view claims that the dimensions are Positive Affectivity (PA) and Negative Affectivity (NA) as measured in the commonly used PANAS scale (Watson and Tellegen 1985; Clark and Watson 1988).
dimension of person perception is consistently described as unidimensional, whereby an individual elicits in another either positive or negative feelings along a single good-bad continuum (Asch 1946; Bales 1950; Slater 1955; Fiske, Cuddy, and Glick 2006).

2.2 Affect as a moderator of task competence

The notion that interpersonal affect, competence, and related constructs, such as affect-based trust and cognition-based trust, have additive effects on task-related interaction is well established (Roethlisberger and Dickson 1939; Homans 1950; Bales 1950; Slater 1955; McAllister 1995; Hinds, Carley, Krackhardt, and Wholey 2000; Levin and Cross 2004). By contrast, the possibility that interpersonal affect and competence may have multiplicative effects on task interaction has not been investigated.

Both sociology and psychology offer theoretical perspectives that suggest the plausibility of a multiplicative relationship between interpersonal affect and competence. The first of these perspectives is Collins’s (1981) microsociology of social interaction. Collins (1981) observes that “the most basic emotional ingredient in interactions is a minimal tone of positive sentiment toward the other,” and theorizes that the positive affect experienced in social interaction stems from the subjective perception of being welcomed in the relationship, and the consequent confidence in the ability to enjoy the potential rewards from the interaction. Such confidence encourages social action based on the expectation that some possible future can be brought into the present (Barbalet 1998). The formation of social ties, therefore, hinges not simply on the identification of desired resources, but also on the subjective feeling that those resources are potentially accessible. Applied to task interaction, this argument implies that positive and negative sentiment toward others tells us whom to approach and whom to avoid based on perceptions of access to task resources potentially available from the interaction. This notion stems directly from the definition of interpersonal affect as the emotional manifestation of perceived intent for good or ill. An individual may recognize someone’s competence at the task, but may perceive that person as ill-intended, and thus unwilling to provide access to his or her task knowledge. It follows that, lacking a minimal tone of positive sentiment toward a potential task partner, task competence may fail to trigger instrumental action.

The second theoretical perspective germane to a model of interpersonal affect as a moderator of competence in task interaction stems from neuropsychological theories of behavioral self
regulation (Davidson, Ekman, Saron, Senulis, and Friesen 1990; Gray 1994). Common to these theories are two basic notions: first, behavior reduces to approach and avoidance tendencies; second, affect motivates people to act (Carver, Sutton, and Scheier 2000). In articulating the relationship between approach and avoidance behaviors, and the affect that underlies them, this research has documented the existence of two distinct self-regulatory systems (Davidson, Ekman, Saron, Senulis, and Friesen 1990; Gray 1994). The behavioral activation system (BAS) responds to incentives, such as signals of rewards or lack of punishment. The positive affect experienced in response to such incentives stimulates activity in the BAS and triggers action toward goals. The behavioral inhibition system (BIS) responds instead to threats, such as signals of punishment or lack of rewards. The negative affect experienced in response to such threats stimulates activity in the BIS, and stifles action toward goals (Davidson, Ekman, Saron, Senulis, and Friesen 1990; Gray 1994). Behavioral self-regulation theories can readily be applied to task interaction. In this context, positive and negative affect directed at interaction partners constitute relevant emotional correlates of approach and avoidance behaviors. Specifically, in the presence of negative interpersonal affect, access to the task-related resources available from the interaction is doubtful in the eyes of potential work partners. As a result of the perception that the task-related goal is out of reach or that unpleasant outcomes are likely, the negative affect experienced in the relationship activates the behavioral inhibition system, thus inducing withdrawal behavior and stifling movement toward goals. Consequently, negative affect and related negative perceptions concerning work-partner behavior can diminish the relevance of task competence as a criterion for the formation of instrumental ties, for the dual reason that task resources are perceived as unavailable in the exchange, and goal pursuit is inhibited. In parallel fashion, positive interpersonal affect comes with the perception that a partner’s task-related resources will be accessible. The positive affect associated with the feeling that the instrumental goal is within reach activates the behavioral approach system that allows for access to the resources available in the exchange to be pursued. Positive affect, therefore, increases the reliance on task competence as a criterion for task-related interaction, for the dual reason that task resources are perceived as available in the exchange, and goal pursuit is stimulated.\(^3\)

\(^3\)Besides perceived access to task resources, decreasing marginal returns from affect and competence could also result in non-linear effects. An increase in affect, that is, may have a decreasing marginal effect on task interaction as the competence available in the exchange decreases. Similarly, an increase in competence may have a decreasing marginal effect on task interaction as the socio-emotional rewards from the exchange decrease. However, there are no
Hypothesis: The positive association between Alter’s task competence and Ego’s likelihood of seeking Alter out for task-related interaction is smaller in the presence of Ego’s negative affect for Alter than in the presence of Ego’s positive affect for Alter.\(^4\)

That is, when someone is disliked, it is of little relevance whether he or she has resources to contribute to the task: the person is unlikely to be sought out for task-related interactions. In contrast, when someone elicits positive feelings in others, colleagues seek out any and all task-relevant resources at his or her disposal.

3 Methods

3.1 Studies

We tested our prediction with data from three studies of task-related interaction in an entrepreneurial IT company, staff personnel at an academic institution, and members of a strategic alliance team in a large IT corporation. The data from the entrepreneurial IT company and the academic institution preexisted the development of our theory, and provided proxy measures of dependent and predictor variables that partially captured the theory’s key constructs. In contrast, the data collection in the large IT corporation was designed expressly to test the proposed moderation effect, allowing for a measurement strategy more consonant to the theory. We report on the two pilot studies, in addition to the primary study, for two reasons. First, the additional evidence from the pilot studies has the potential to enhance the external validity of our findings by establishing their generalizability across a variety of work contexts. Second, this supplementary evidence offers unique insight into the robustness of our findings across a variety of measures of the primary constructs. Below, we describe in detail the setting, sample, procedure, and measures we used in the three studies.

\(^a\) prior theoretical arguments to suggest that affect and competence would have such non-linear effects, above and beyond their main effects on task interaction.

\(^4\)The terms Ego and Alter are commonly used in the social networks literature to denote what psychologists often label, respectively, rater or perceiver, and ratee or target.
Pilot 1: Entrepreneurial IT company

The survey used in this study was conducted as part of the performance-appraisal process of a small technology company. The exercise in this study can be seen as a type of so-called “360-degree” performance appraisal, but with the evaluations being network-centered and nonhierarchical in nature. Rather than having a few co-workers preselected for the rating process based on the organizational chart, employees were asked to report the frequency of interaction with every other employee, and then to rate those with whom they had non-negligible interaction.

Sample The entrepreneurial information technology company in this study occupies a dominant and profitable position in a stable niche market. At the time of the survey, the company included 59 employees, including the three founding managers. Out of these, 42 participated as survey respondents, yielding a 71% response rate. Each rated on average 27 other employees, ranging from a minimum of 6 to a maximum of 52 (10th and 90th percentiles were 11 and 45), for a total of 1,120 ratings. All departments and functions were surveyed, including engineering, operations, sales, technical support, finance, and marketing. These functions are mostly divided by physical location, but with some overlap, and with some employees having fluid roles.

Procedure The head of human resources invited all employees to complete an online survey, which was described as an experimental (and not mandatory) component of the performance-appraisal process. The survey clearly stated that all individual ratings were confidential, but management and HR would receive information about each employee’s reported frequency of interaction with others.

Variables All ratings were on a 7-point Likert scale, with “1” indicating strong disagreement and “7” indicating strong agreement with a statement. We chose to include a minimal number of survey items, with the goal of increasing participation and the number of people rated by each participant, so as to collect a dense network including information about less frequent interactions. As a first step, people were given a roster and asked to check boxes for those with whom they had work-related interactions over the previous year. Three statements were then presented for each person selected: 1) “We interact at work” which was accompanied by a supporting text explaining that any kind of work-related interaction, whether formal or informal, was to be included, but not
any other unrelated socializing; 2) “Is competent,” for a general measure of perceived effectiveness; and 3) “Is enjoyable to work with,” for a general measure of interpersonal affect. The text for this last survey item was dictated by the company’s management to relieve respondents of the pressure to express personal judgments about their colleagues. As a consequence, this item inherently confounds enjoying a colleague as a person with enjoying the work relationship with them, and serves as a proxy for interpersonal affect, rather than being a direct measure of it. Similarly, the item “we interact at work” amounts to a generic measure of task-related interaction, because it specifies neither the nature of the task nor the direction of the tie. As described below, we addressed the limitations of these measures of interpersonal affect and task-related interaction in the main study.

Pilot 2: Academic institution

The second pilot study was to assess the generalizability of the findings from pilot 1 by analyzing a larger sample in an organization with a fundamentally different task environment, organizational structure and culture, and institutional environment. Pilot 2 was conducted as an experimental part of the performance-appraisal process according to the same procedure followed in pilot 1.

Sample The sample consisted of staff employees of an academic institution. There were 188 staff employees in the organization. All of them were asked to participate and all could be rated by survey respondents. The staff functions ranged broadly, including student offices and program management, library and faculty support, development and fundraising, marketing, accounting, and human resources. Among the staff employees, 84 participated in the survey as raters, yielding a 45% response rate. Each participant rated on average 46 employees, ranging from a minimum of 1 to a maximum of 158 (10th and 90th percentiles were 13 and 85), for a total of 3,868 ratings.

Variables As in pilot 1, we included a small number of survey items to encourage participants to rate more employees. All ratings were on a 7-point Likert scale, with “1” indicating strong disagreement and “7” indicating strong agreement with a statement. The survey items were 1) “We interact at work” (a supporting text explained that any kind of work-related interaction, whether formal or informal, was to be included, but not any other unrelated socializing), 2) “Is competent”, in this case, validated with the additional job-effectiveness measure 3) “Gets the job done”. The
competence and job-effectiveness items aimed to measure, respectively, skills and knowledge, and 
attitude and motivation. As in pilot 1, we measured affect with the item 4) “Is enjoyable to work 
with.”

**Main study: IT corporation**

With the main study, we aimed to complement pilot 1 and pilot 2 in four ways. First, we wished to 
account for the possibility that the performance-evaluation component of the two pilot studies might 
have biased responses. Unlike research-only studies, data produced as part of an organization’s 
performance-appraisal process may reflect more focused and thoughtful responses, because the 
ratings can have an impact on the employee’s career. This possibility might reduce response 
errors from cognitive constraints and limited effort. A possible adverse consequence of using these 
data, however, is that participants may purposefully inflate or deflate their responses to benefit or 
damage a colleague, respectively. In addition, employees may feel heightened concerns regarding 
confidentiality. The main study, therefore, was conducted without pursuing performance-evaluation 
goals. Second, we wished to distinguish between work interactions initiated by Ego (that is, where 
Ego seeks Alter as a work partner) from work interactions initiated by Alter. By contrast, the first 
two studies measured work ties without specifying their directionality. Third, the first two studies 
did not specify the type of work interaction between any two individuals. In the main study, we 
defined the functional task with greater nuance. Fourth, in contrast with pilots 1 and 2, in the 
main study we adopted a multi-item approach to the measurement of interpersonal affect, and 
distinguished affective responses to the person from affective responses to the interaction.

**Sample** The sample consisted of 36 employees of a large IT organization who formed a team 
responsible for managing a business partnership with another large IT organization. The main goal 
of the partnership was to develop and market joint IT solutions for corporate customers. Because 
of the considerable size of the two companies and the extensive range of their products and services, 
the team was created to identify and coordinate joint opportunities across multiple decentralized, 
yet interdependent, business units and markets. Depending on their formal role, members of 
the alliance team were responsible for different aspects of the partnership (ranging from strategic 
planning to field sales management) and different products and services, and therefore interfaced
with different units within their company and the partner organization. Of the 36 members of
the alliance team, 33 returned complete questionnaires, for a 92% response rate. Each participant
rated on average 28 employees, ranging from a minimum of 4 to a maximum of 88 (10th and 90th
percentiles were 6 and 72), for a total of 924 ratings.

**Procedure**  The manager of the alliance team invited his subordinates to complete an online ques-
tionnaire. In his invitation, the manager stated that the survey aimed to collect information on the
network of work ties between the two companies, and thus provide members of the alliance team
with better informal channels to reach different units and people in the partner organization. The
manager also made clear that participation in the study was voluntary. The survey included ques-
tions concerning the respondent’s network of work partners within both companies, and his or her
professional and personal opinions regarding each of these relations. The survey clearly stated that
such opinions would be treated as strictly confidential, while data on the inter-organizational work
network aggregated across respondents would be distributed to all survey participants. Respond-
dents were asked to return their completed survey directly to the researcher in order to guarantee
the confidentiality of their responses.

**Variables**  We measured all variables with 7-point Likert scales expressing the respondent’s agree-
ment with a given statement, with “1” denoting strong disagreement and “7” indicating strong
agreement. Unlike pilots 1 and 2, the main study allowed respondents to rate any employee of
either company, so that respondents could rate individuals who were not survey participants. This
implies that, for each rating that Ego provided about Alter, Alter’s responses concerning Ego were
often unavailable. Reciprocal ratings were also missing in pilots 1 and 2, but to a much lesser
degree than in the main study.

We focused on informal work-related advice seeking and problem solving as the instrumental
tasks of interest. With these two variables, we aimed to measure both day-to-day job-related
interactions as well as work interactions concerning non-routine aspects of the task. Task advice
was measured with the following item: “When I have a question or issue about my alliance-related
activities, I choose to go to this person for advice or help.” Problem solving was measured with
the survey item: “When I need to engage in creative problem solving regarding my job, I choose
to go to this person to help me think out of the box and consider different aspects of the problem
innovatively."

We measured interpersonal affect with three survey items. The first item was “I personally like this individual.” In addition to this measure, we also wished to account for the possibility that interpersonal affect may be structured along two bipolar dimensions similar to the ones documented in the literature on intra-psychic mood affect. The abundance of evidence for a bipolar structure of mood affect makes exploring this possibility in the context of interpersonal affective responses a potentially fruitful exercise. To that end, we measured interpersonal affect with two additional items: “I find my interactions with this person pleasant” and “When I interact with this person, I feel energized.” With these items, we aimed to capture, respectively, the pleasantness and activation dimensions of the affective circumplex as specified by Russell, Diener, and their colleagues (Russell 1979; Russell 1980; Diener and Emmons 1984).

Finally, a relevant measure of the potential partner’s ability to perform the functional task, in this context, was Ego’s evaluation of Alter’s job effectiveness. We constructed this variable with the survey item: “In carrying out his/her job within the business alliance, I consider this person effective.”

### 3.2 Modelling approach

To model accurately the survey responses in our studies, we developed a methodology drawing from interpersonal perception models (Kenny 1994), social network analysis (Wasserman and Faust 1994), and Bayesian data analysis (Gelman, Carlin, Stern, and Rubin 1995).

**Structure of interpersonal judgments**  Kenny (1994) provides a treatment of ratings of the sort people express in network surveys by distinguishing among four components of interpersonal judgments: (1) a *source effect*, whereby people use the survey scale differently, in that some tend to enter systematically higher ratings than others; (2) a *target effect*, whereby some people are rated in systematically different ways by the group, with certain individuals being generally more sought after or more liked, for instance; (3) an *item effect*, whereby some survey questions elicit different responses than others (for instance, affective judgments may be generally higher than competence judgments in a given organizational context); and (4) a *relationship effect*, which is the component of the rating that is unique to two specific people, beyond the biases associated with the survey
item and beyond the way the two individuals rate and are rated by others.

Theoretically, we are interested in the relationship effect, as we are concerned with dyadic choices of interaction partners. The way people are generally perceived by the workgroup as a whole, however, may be relevant to an individual’s choice of interaction partner. For this reason, we tested our prediction with a model which includes additive biases to control for item and source effects, and where task-related interaction is a response to the combined relationship and target effects.

Motivation for the Bayesian approach The motivation behind the departure from conventional frequentist analyses stems from two fundamental characteristics of the network data we used to test our theory, which make the Bayesian approach appropriate.5

First, because we asked survey participants to rate only people with whom they had some level of work-related interaction, the number of responses provided by survey participant varied greatly. Some rated close to a hundred people, while others provided ratings for just a handful of individuals in the organization. This implies that the amount of information at our disposal to estimate source and target effects varied considerably across respondents. Bayesian statistics is well suited to such a structure, in that it produces estimates of coefficients and confidence ranges that directly reflect the differing amounts of information available. By contrast, commonly used frequentist methods for network analysis, such as the Quadratic Assignment Procedure (QAP), assume equal amounts of information for each node in the network (Krackhardt 1988).

The second fundamental data characteristic we model concerns the structural constraints on work-partner choice in a given work setting. Such choices are constrained by the formal structure

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5Beyond our wish to model correctly the specific characteristics of our data, Bayesian and frequentist statistics answer different questions regarding the substantive phenomena of interest. In simple terms, the frequentist approach to hypothesis testing is interested in determining the probability of the observed data given that some population parameter of interest equals zero (the null hypothesis). In contrast, Bayesian statistics answers a different question: what is the probability that the population parameter has a given value, given the observed data? This is the question of interest in scientific inquiry, and the ability to answer this question can be argued to make Bayesian statistics preferable to a frequentist approach from the point of view of both statistical and social theory (Krackhardt 2005). Bayesian methods are still largely absent in organizational and network research, possibly because of the difficulty of implementation of Bayesian methods, rather than theoretical controversy regarding their advantages over frequentist statistics (Robert 1994).
of the organization and by its informal network structure. For instance, people working in the same organizational sub-unit are more likely to have work interactions than people working in different sub-units. In this issue, the Bayesian approach is particularly helpful, as it allows us to account for structural confounds as they emerge in a purely data-driven approach. In contrast, statistical procedures such as QAP make assumptions about the correlation structure that may not be reflected in the actual interaction behavior of participants. By contrast, our model accounts for correlation patterns that emerge from the data themselves. We do so by including structural bilinear terms, which can be understood as latent groups in which each survey participant has a differing degree of membership. When the frequency of interaction among a group of people is observed to be disproportionately high, our model ‘discounts’ the frequency of interaction between any two of those people as an artifact of their common membership to a latent group—e.g., a department, a work team, or a collocated group of employees. The latent groups the structural bilinear terms control for can also stem from homophilous affiliations based, for instance, on gender, race, extracurricular interests, etc. Controlling for homophily makes for a conservative test of our prediction, because it strips the measure of affect of an affective component that is very much integral to it. Our model assumes that any latent group structure in the organization is not affective, and therefore reduces the imputed impact of affect on instrumental ties.

Data-generation model and parameter estimation  To properly account for structural confounds and varying amounts of information on members of the organization, we developed a hierarchical Bayesian model with the goal of obtaining reliable and theoretically sound estimates of variances and coefficients, and of associated confidence ranges. In general terms, our parametric model describes how different effects are expected to influence the survey responses. Based on this model and on the observed responses, we infer the model parameters. We are primarily concerned with first- and second-order effects associated with each node as source and target. The questions of interest in our work are related to those addressed by the social relations model (Kenny 1994) commonly used for interpersonal-perception data, which corresponds to an assumption of independent normal error terms with identical variance, and independent model parameters (target and perceiver effects) with a uniform improper prior. The social relations model is not hierarchical, how-

\[ \text{For a detailed account of the limitations of the Quadratic Assignment Procedure in the analysis of social network data, see Lobo and Casciaro (2008).} \]
ever, and correlations are estimated based on maximum-likelihood estimates of the effects, which require an additional ‘disattenuation’ step (Kenny 1994). Our model addresses these limitations of the social relations model, and also extends extant Bayesian models for network data, which have focused on binary, rather than valued, data (Butts 2003). To account and control for higher-order structural confounds beyond source effects, we proceeded by estimating structure from the survey data. We did so by including a sum of bilinear terms in the data-generation model, which provides the necessary restriction in complexity of the structural description. This approach relates closely to the estimation of probabilities of membership in latent groups developed by Nowicki and Snijders (2001). If two people have high degrees of membership in the same group, an increased frequency of interaction between them is expected. The relationship effects then model the remaining deviations. Our approach is similar to Hoff’s (2005), who provided theoretical justification for the appropriateness of a bilinear model for network data, and found it to account well for the data of the networks tested. Our model also uses a simpler linkage function, and models the covariance structure across multiple networks (i.e., the different survey items).

In addition, to test the predicted moderation effect, the model estimates the probability of the affective content of each tie being negative or positive in nature, and then estimates different response coefficients for competence for negative and positive ties. This approach is preferable to testing the moderation with a multiplicative term for affect and competence, because a variety of moderation patterns could underlie a statistically significant multiplicative term. To shed light on the specific functional form the moderation took in our studies, we proceeded as follows. Based on the target and relationship effects for each directed tie, we computed the posterior probability that the tie has negative affective content, subject to the prior belief that a given percentage of ties are negative, and the remainder positive. We then estimated a model with separate regression coefficients for competence for each subset.

Prior beliefs about the percentage of negative and of positive ties used to estimate this model can be defined in various ways. The most straightforward approach is to use the distribution of raw survey scores, such that the percentage of responses falling below or above a given point

7To ensure the absence of bias in this procedure, we generated random datasets with similar characteristics; that is, with the same covariance matrices and the same level of censoring, which is to say with the same proportion of observations at 7, but with no asymmetry or interaction effects. We ran an entirely identical analysis on these datasets, and observed no bias.
of the Likert scale is used as the prior belief about the percentage of negative and positive ties. In choosing this threshold, neutral scores (in our case, level 4 on the 7-point Likert scale) could plausibly be included in either the positive or the negative subset of ties. This is because, theoretically, the incentives the BAS responds to include either signals of rewards or lack of punishment. Similarly, the threats the BIS responds to include either signals of punishment or lack of rewards. Both lack of punishment and lack of rewards can be conceptualized as eliciting neutral affective responses. If neutral survey scores were operationalized as positive responses, the percentage of 1 through 3 scores in the 7-point Likert scale would be used as the threshold along which to split the distribution of affective responses. Existing empirical studies indicate, however, that negative relationships in most organizations make up between 1 and 8 percent of the distribution of ties in the organizational network (Baldwin, Bedell, and Johnson 1997; Labianca, Brass, and Gray 1998; Gersick, Bartunek, and Dutton 2000; Labianca and Brass 2006). Given the low proportion of negative affective judgments in most empirical settings, choosing this proportion as the size of the negative subset is not advisable, on both conceptual and methodological grounds. Conceptually, failing to tap into the knowledge of a few very disliked individuals may not be particularly consequential for an organization when the task resources of most people are regularly sought out and accessed. Methodologically, as we detail below, our statistical model requires the estimation of a large number of parameters, and a small number of observations in the negative subsets of responses would excessively reduce statistical power. For these reasons, we chose the size of the negative subset to match the percentage of negative plus neutral responses in the data.

We use the following indexing variables: $i \in \{1, 2, \ldots, N\}$ for the person being rated (or ratee, target, alter), $j \in \{1, 2, \ldots, N\}$ for the rater (or perceiver, source, ego), $k \in \{1, 2, \ldots, K\}$ for the survey question (where we chose $k = 1$ to denote the work-tie strength item, $k = 2$ to denote the affective response item, and $k = 3$ to denote the competence assessment item), and $l \in \{1, 2, \ldots, L\}$ for the bilinear term (a group estimated from the data). The response model includes the following terms.

- $c_k$, the constant for each question (or item effect).
- $b_{jk}$, the rater bias (or source effect, perceiver effect).
- $u_{ij}$ and $v_{ji}$, the degrees of membership as receiver and sender, and $\lambda_{lk}$, the degree to which the structural term $l$ is present in network $k$ (with $\lambda_{11}$ normalized to one).
- $H_{ij} \in \{1, 2\}$, the indicator of whether each directed tie is negative ($H_{ij} = 1$) or positive ($H_{ij} = 2$) in its affective content.

- $d_1$ and $d_2$, the mean affective responses in negative and positive ties, indexed in the model by the indicators, $d_{H_{ij}}$.

- $\alpha$, the work-tie formation coefficient for affect (the units are expected change in survey-scale points in the work-tie formation item per each point change in the affect item).

- $\beta_1$ and $\beta_2$, the work-tie formation coefficient for competence, when the relationship is negative and when it is positive (the units are expected change in survey-scale points in the work-tie formation item per each point change in the competence assessment item). These coefficients are indexed in the model by the indicators, i.e., $\beta_{H_{ij}}$.

- $e_{ijk}$, the relationship-plus-target effects.

The data-generation model for the survey responses is then:

$$
    y_{ij1} = c_1 + b_{j1} + \sum_{l=1}^{L} u_{il} v_{jl} + \alpha (d_{H_{ij}} + e_{ij2}) + \beta_{H_{ij}} e_{ij3} + e_{ij1}
$$

$$
    y_{ij2} = c_2 + b_{j2} + \sum_{l=1}^{L} \lambda_{l2} u_{il} v_{jl} + d_{H_{ij}} + e_{ij2}
$$

$$
    y_{ij3} = c_3 + b_{j3} + \sum_{l=1}^{L} \lambda_{l3} u_{il} v_{jl} + e_{ij3}
$$

Prior to the observations, each $H_{ij}$ is assumed independent and equal to 1 with probability $\pi$.

The source effects for each participant are modeled as jointly normal and correlated across survey items, with the covariance matrix $\Sigma_b$ to be estimated from the data. Likewise, for each $l$, $u_{il}$ and $v_{il}$ are jointly normal with zero mean and covariance matrix $\Sigma_{uvl}$, $e_{ij1}$ is normal with zero mean and variance $\sigma_{e1}^2$, and $e_{ij2}$ and $e_{ij3}$ are jointly normal with zero mean and covariance matrix $\Sigma_{e23}$.

We use improper uninformative uniform priors for the $c, d, \alpha, \beta$, and $\lambda$. The posterior distributions of the parameters are estimated by Markov-chain Monte-Carlo simulation with Gibbs sampling. In each step of the chain, the parameters in each of the following blocks are sampled from their full conditional distribution given the current values of the remaining model parameters.

- $\Sigma_b$, $\Sigma_{uvl}$, $\sigma_{e1}^2$, and $\Sigma_{e23}$, sampled from inverse-Wishart distributions.

- $\alpha$, $\beta$, and $\lambda$, sampled from a normal distribution.
- $H$, sampled from a Bernoulli distribution.

- $c$, $b$, $d$, and $u$, sampled from a normal distribution.

- $c$, $b$, $d$, and $v$, sampled from a normal distribution.

Note that the sampling distributions that include the $u$ and $v$ cannot be derived assuming a zero-mean prior, since $u$ and $v$ are correlated through the $\Sigma_{uv}$. While $\pi$ could also be estimated from the data (with a beta-binomial model), we opted to take the proportion of negative relationships as fixed for comparability of results across datasets and survey items.

4 Results

Table 1 presents the cumulative distribution of raw survey scores for each of the 7 points of the Likert scale. The percentage of negative scores (i.e., 1 through 3 scores from the 7-point Likert scale) for the measures of interpersonal affect was 6.2 and 6.5 in pilots 1 and 2, respectively, and 2.3, 2.1 and 5.3, for liking, pleasantness, and activation measures of affect in the main study. The distributional properties of our measures of interpersonal affect were consistent with existing empirical evidence indicating that negative relationships in most organizations account for 1 to 8 percent of ties (Baldwin, Bedell, and Johnson 1997; Labianca, Brass, and Gray 1998; Gersick, Bartunek, and Dutton 2000; Labianca and Brass 2006).

Tables 2 to 4 present descriptive statistics for the distribution of raw survey scores. The correlation between affect and competence was consistently high, ranging from 0.64 in pilot 1 to 0.73 for the activation measure in the main study. In general, interpersonal judgments tend to co-vary, so that a variety of individual characteristics, such as intelligence, likeability, warmth, and competence tend to be highly correlated in people’s judgments of others (Dion, Walster, and Berscheid 1972; Ambady and Rosenthal 1993). Therefore, while affective judgments and competence evaluations are distinct theoretical constructs, it is necessary to parse out their common foundations, a concern we addressed in our statistical models.

As for the correlation among measures of the same underlying construct, evaluations of competence and effectiveness in pilot 2 overlapped considerably (.83 correlation). Similarly, the two measures of task-related interaction in the main study were very highly correlated (.84), indicating a tendency on the part of respondents to seek out the same people for both routine task advice
and creative problem solving. The correlations among the three measures of interpersonal affect in the main study ranged from a .72 correlation between the pleasantness and the activation measures and a .82 correlation between the pleasantness and the liking measures, suggesting that the activation measure may be capturing a component of interpersonal affect somewhat distinct from liking and pleasantness. These differences notwithstanding, we found no evidence for activation and pleasantness as orthogonal dimensions, consistent with a conceptualization of interpersonal affect as unidimensional.8

<table>
<thead>
<tr>
<th>Study</th>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot 1</td>
<td><em>We interact</em></td>
<td>11.7</td>
<td>25.7</td>
<td>40.4</td>
<td>55.5</td>
<td>68.1</td>
<td>80.2</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>Is enjoyable</em></td>
<td>0.8</td>
<td>2.5</td>
<td>6.2</td>
<td>14.4</td>
<td>28.4</td>
<td>56.2</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>Is competent</em></td>
<td>0.5</td>
<td>1.1</td>
<td>2.9</td>
<td>9.8</td>
<td>27.3</td>
<td>57.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Pilot 2</td>
<td><em>We interact</em></td>
<td>9.0</td>
<td>25.7</td>
<td>43.3</td>
<td>59.2</td>
<td>75.2</td>
<td>88.3</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>Is enjoyable</em></td>
<td>1.2</td>
<td>3.2</td>
<td>6.5</td>
<td>14.2</td>
<td>27.6</td>
<td>53.7</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>Is competent</em></td>
<td>0.6</td>
<td>1.5</td>
<td>3.7</td>
<td>10.5</td>
<td>25.4</td>
<td>58.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>Is effective</em></td>
<td>0.5</td>
<td>2.1</td>
<td>4.9</td>
<td>12.1</td>
<td>27.8</td>
<td>58.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Main Study</td>
<td><em>I go to for problem-solving</em></td>
<td>3.2</td>
<td>11.4</td>
<td>16.1</td>
<td>40.3</td>
<td>67.1</td>
<td>84.9</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>I go to for advice</em></td>
<td>2.4</td>
<td>8.1</td>
<td>12.7</td>
<td>30.8</td>
<td>59.2</td>
<td>83.1</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>I personally like</em></td>
<td>0.3</td>
<td>1.2</td>
<td>2.3</td>
<td>21.7</td>
<td>40.3</td>
<td>82.0</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>I find pleasant</em></td>
<td>0.5</td>
<td>0.9</td>
<td>2.1</td>
<td>17.6</td>
<td>32.4</td>
<td>79.4</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>I feel energized</em></td>
<td>0.9</td>
<td>2.1</td>
<td>5.3</td>
<td>29.0</td>
<td>53.7</td>
<td>85.4</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td><em>I consider effective</em></td>
<td>1.0</td>
<td>1.9</td>
<td>4.1</td>
<td>23.6</td>
<td>43.4</td>
<td>79.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1: Cumulative distribution of survey responses (percentage of responses less or equal than).

**Main effect of interpersonal affect on instrumental ties**  We expected interpersonal affect to have a direct association with task interaction. Tables 5 and 6, contain robust evidence for

8We also conducted principal component and factor analyses of the responses to the six survey items in the main study, after controlling for source effects. Both the first three components in the eigenvalue decomposition (which explain 91% of the variance) and the loadings in the first three factors after varimax rotation support the following three main dimensions in the data: one that includes the two measures of task interaction, another that includes pleasantness, liking and activation, and a third for job effectiveness.
the positive relationship between affect and task-related ties, after controlling for source effects, network structure, and the main effect of task competence on work interaction. The values of the coefficients should be interpreted as the expected increase in work interaction, expressed in Likert scale points, for each point increase in the affect or competence measure.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. We interact</td>
<td>4.23</td>
<td>1.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Is enjoyable</td>
<td>5.93</td>
<td>1.30</td>
<td>0.14</td>
<td>0.64</td>
</tr>
<tr>
<td>3. Is competent</td>
<td>6.01</td>
<td>1.12</td>
<td>0.11</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Table 2: Descriptive statistics for raw survey data, Pilot 1 (all correlation coefficients are positive to \( p < 0.001 \)).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. We interact</td>
<td>4.02</td>
<td>1.84</td>
<td>0.11</td>
<td>0.66</td>
<td>0.83</td>
</tr>
<tr>
<td>2. Is enjoyable</td>
<td>5.94</td>
<td>1.35</td>
<td>0.11</td>
<td>0.71</td>
<td>0.83</td>
</tr>
<tr>
<td>3. Is competent</td>
<td>6.00</td>
<td>1.15</td>
<td>0.14</td>
<td>0.66</td>
<td>0.83</td>
</tr>
<tr>
<td>4. Is effective</td>
<td>5.95</td>
<td>1.22</td>
<td>0.11</td>
<td>0.71</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Table 3: Descriptive statistics for raw survey data, Pilot 2 (all correlation coefficients are positive to \( p < 0.001 \)).

Common-method variance can account for the positive impact of affect and competence on instrumental ties, however, as task competence, interpersonal affect, and task interaction were all measured based on the subjective responses of survey participants regarding their coworkers. In light of this concern, it is more interesting to note that, in the main study, the difference in the size
of the coefficients for affect and competence was significant for most measures of affect and task-related interaction (Table 6). In contrast, the difference in the size of the coefficients for affect and competence was not significant in the pilot studies and in the main study when using the activation measure. Two factors may account for these results. First, the measure of task-related ties in the pilot studies concerned the existing frequency of interaction (we interact at work), while in the main study the measures related to the subject’s choice of work partners (e.g., I choose to go to for advice). We would expect results in the pilot studies to be more influenced by constraints outside of the subjects’ control, and results in the main study to reflect personal preferences. Second, in the pilot studies, interpersonal affect was measured as enjoyment of the work relationship, thus potentially confounding personal affect with task success and failure. In contrast, in the main study, the measures of interpersonal affect did not refer to the work relationship, thus allowing for a clearer distinction between response to affect and response to competence. Related to this point, the activation measure of interpersonal affect may reflect task successes and failures more heavily than liking and pleasantness measures, as people may feel energized when they are successful at the task. In light of these differences in measurement in the three studies, the results indicate that liking and pleasantness measures of affect were more strongly associated with patterns of instrumental interaction than measures of task competence.

The methodological challenges involved in producing a direct assessment of the relative im-

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I go to for problem-solving</td>
<td>4.79</td>
<td>1.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I go to for advice</td>
<td>5.03</td>
<td>1.46</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I personally like</td>
<td>5.52</td>
<td>1.11</td>
<td>0.51 0.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I find pleasant</td>
<td>5.67</td>
<td>1.08</td>
<td>0.47 0.47 0.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I feel energized</td>
<td>5.23</td>
<td>1.21</td>
<td>0.49 0.45 0.77 0.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I consider effective</td>
<td>5.45</td>
<td>1.22</td>
<td>0.46 0.47 0.71 0.63 0.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Descriptive statistics for raw survey data, Main Study (all correlation coefficients are positive to $p < 0.001$).
Portance of affect and competence in task-related action are significant. Differences in the way competing theories are operationalized and measured, and characteristics of the contexts in which theories are tested, often make a direct comparison based on the strength of statistical associations unwarranted and potentially misleading (Fichman 1999). We made a variety of methodological choices in order to address these concerns and produce a fair comparison. First, we ensured contextual fairness by adopting a multi-study design, which allowed us to test the competing theories in three different contexts. Second, we took steps to ensure procedural equivalence. We measured both affect and task competence with comparable survey items, lest we confer an apparent advantage to the measurement of either affective or competence evaluations. In addition, across the three studies, we measured multiple aspects of affective and task competence evaluations, as well as different types of instrumental tasks. This approach was intended to capture the general constructs as richly as possible, and minimize the risk of selecting aspects of affective and competence evaluations that would favor either set of explanations unfairly. Finally, we satisfied requirements for distributional equivalence, as the resulting variables had similar variance in all studies (see Tables 2-4). In light of these precautions, our findings are suggestive, if not conclusively supportive, of the dominance of affect over competence in task-related ties.⁹

<table>
<thead>
<tr>
<th>Measure of task-related tie</th>
<th>Pilot 1</th>
<th>Pilot 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>we interact</td>
<td></td>
<td>we interact</td>
</tr>
<tr>
<td>Measure of affect</td>
<td>enjoyable</td>
<td>enjoyable</td>
</tr>
<tr>
<td>Measure of competence</td>
<td>competent</td>
<td>competent</td>
</tr>
<tr>
<td>Response to affect</td>
<td>0.13</td>
<td>0.08</td>
</tr>
<tr>
<td>Response to competence</td>
<td>0.13</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Table 5: Main effects after control for source effects and network structure, Pilots 1 and 2 (all coefficients are positive to $p < 0.01$).

⁹We also tested for the possibility that affect may mediate the effect of competence on task interaction. We also considered the reverse mediation path, with competence mediating the association between affect and task interaction. Neither mediation pattern was significant.
Affect as a moderator of task competence  Our central hypothesis concerned an interaction effect, according to which the impact of task competence on the likelihood of work interaction would be smaller in the presence of negative affect than in the presence of positive affect.

To implement our data-generation model and parameter estimation in the context of the data obtained in the three studies, we observed the distribution of raw survey scores across our measures of interpersonal affect. As Table 1 indicates, 1 through 4 scores out of the 7-point Likert scale include a minimum of 14.2% of the distribution (in pilot 2) to a maximum of 29% (in the main study, with activation as the measure of affect). To adopt consistent threshold levels across all studies, we tested our prediction utilizing two cut-off points, such that prior beliefs about the proportion of negative (or neutral) responses were set as, respectively, the bottom 15% and 30% of the distribution of affective judgments. Conditional on these priors, we computed the posterior probability of the tie having negative affective content, based on the target and relationship effects for each directed tie. We then estimated a model with separate regression coefficients for competence for each subset.10 This operationalization produced conservative tests of our prediction, because the negative subset of responses included neutral to mildly positive evaluations as the cut-off point increased. The pilot studies and the measure of pleasantness in the main study—where the bottom 30% of raw survey scores included the largest proportion of mildly positive responses—yielded the

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10We also tested this prediction by including a multiplicative term for affect and competence in our statistical model. The coefficient for the interaction term was positive and significant across all studies and measures, after controlling for the main effects of affect and competence, and structural confounds.
most conservative tests of our prediction. Conceptually, this approach allowed us to explore the boundaries of the phenomenon. Finding evidence for the hypothesized moderation effect when negative affect includes neutral to mildly positive affect would suggest that, for competence to be fully tapped in organization, not being disliked may be insufficient. It may instead be necessary to actively like someone for their competence to trigger task-related action.

Tables 7 and 8 include the results of models that defined negative affect as the bottom 15% of the distribution of affective responses. In all three studies, and across all measures of the main constructs, affect enabled the response to competence. In the pilot studies, and in the main study when affect was measured as liking, the regression coefficient for competence was close to zero in the low-affect condition, indicating that even significant increases in competence evaluations had virtually no positive impact on the likelihood of work-related interactions. Conversely, under conditions of positive affect, the response to increases in task competence was consistently strong. The size of the coefficient for competence in the low-affect condition was larger when affect was measured as pleasantness and activation. Still, these coefficients were not significantly different from zero, possibly because of the reduced sample size in these models.

<table>
<thead>
<tr>
<th>Measure of task-related tie</th>
<th>Pilot 1</th>
<th>Pilot 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of affect</td>
<td>we interact</td>
<td>we interact</td>
</tr>
<tr>
<td>Measure of competence</td>
<td>enjoyable</td>
<td>enjoyable</td>
</tr>
<tr>
<td>Response to competence</td>
<td>given low affect</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>given high affect</td>
<td>0.21**</td>
</tr>
</tbody>
</table>

Table 7: Competence effect conditional on low and high affect, Pilots 1 and 2, with 15% of relationships taken as low affect (** p < 0.01). The difference within each pair of competence coefficients (conditional on low and on high affect) is significant to p < 0.01.

Tables 9 and 10 present the results obtained when we treated the bottom 30% of ties as negative affect. These results are consistent with the findings obtained using 15% as the cut-off point. Again, across all studies and all measures, the response to competence was strongly moderated by affect. In pilots 1 and 2, the size of the coefficients for competence given low affect was still virtually zero.
Table 8: Competence effect conditional on low and high affect, Main study, with 15% of relationships taken as low affect (*** p < 0.01). The difference within each pair of competence coefficients (conditional on low and on high affect) is significant to p < 0.01.

<table>
<thead>
<tr>
<th>Measure of task-related tie</th>
<th>I go to for problem-solving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of affect</td>
<td>like pleasant energized</td>
</tr>
<tr>
<td>Measure of competence</td>
<td>effective</td>
</tr>
<tr>
<td>Response to competence</td>
<td>given low affect</td>
</tr>
<tr>
<td></td>
<td>0.03 0.11 0.07</td>
</tr>
<tr>
<td></td>
<td>given high affect</td>
</tr>
<tr>
<td></td>
<td>0.34*** 0.41** 0.45**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measure of task-related tie</th>
<th>I go to for advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of affect</td>
<td>like pleasant energized</td>
</tr>
<tr>
<td>Measure of competence</td>
<td>effective</td>
</tr>
<tr>
<td>Response to competence</td>
<td>given low affect</td>
</tr>
<tr>
<td></td>
<td>0.01 0.13 0.12</td>
</tr>
<tr>
<td></td>
<td>given high affect</td>
</tr>
<tr>
<td></td>
<td>0.29*** 0.37*** 0.48**</td>
</tr>
</tbody>
</table>

This was not the case in the main study, where setting the cut-off point at 30% allowed for the response to competence to become significantly positive for both components of the distribution of affect. This is not surprising, given that the bottom 30% of responses included mild positive affect, which we expected to induce feeling of accessibility to the task resources of a work partner. The only exception to this pattern in the main study was the coefficient of competence when affect was measured as liking and task interaction was problem-solving. In that case, the size of the response to competence given low affect was still close to zero—a manifestation of the irrelevance of competence evaluations as a stimulus for task-related action even in the presence of mildly positive sentiment.\textsuperscript{11}

The plots in figure 1 provide a graphical summary of the results for the main study. The

\textsuperscript{11}For completeness, we also performed the moderation analysis with the data split based on competence, using both the 15% and the 30% cut-off points. By mathematical necessity, if affect moderates competence, competence in turn moderates affect, and indeed, in these supplementary analyses, competence enabled the response to affect. However, as illustrated in Figure 1, the response to affect when competence was low was always significantly larger than the response to competence when affect was low, consistent with the predicted moderation pattern.
Table 9: Competence effect conditional on low and high affect, Pilots 1 and 2, with 30% of relationships taken as low-affect (** $p < 0.01$). The difference within each pair of competence coefficients (conditional on low and on high affect) is significant to $p < 0.01$.

<table>
<thead>
<tr>
<th>Measure of task-related tie</th>
<th>Pilot 1</th>
<th>Pilot 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of affect</td>
<td>we interact</td>
<td>we interact</td>
</tr>
<tr>
<td>Measure of competence</td>
<td>competent</td>
<td>effective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response to competence</th>
<th>given low affect</th>
<th>given high affect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot 1</td>
<td>0.04</td>
<td>0.24**</td>
</tr>
<tr>
<td>Pilot 2</td>
<td>0.03</td>
<td>0.19**</td>
</tr>
</tbody>
</table>

Top three graphs illustrate the findings for task advice interaction, while the bottom three graphs regard problem-solving interaction. The three-dimensional plane in each of the six graphs is split four-ways by two lines separating, respectively, the bottom 15% distribution of competence and affect responses. The top left graph includes labels for the resulting four sections of the distribution of responses. Section B corresponds to people like John in our opening scenario: liked but seen as mediocre at the task. Section C corresponds to people like Andrew: rated as competent but disliked on a personal level. Section B and C contain approximately the same number of observations.

Three patterns emerge from the graphs. First, section B of the plane corresponds to a higher probability of task interaction than section C. Respondents, that is, consistently showed a preference for people they liked but considered mediocre at the task over competent but unpleasant people. Second, the response to affect when competence is low tends to be steep, while the response to increases in competence when affect is low is virtually flat. Third, advice-seeking and problem-solving elicit very similar patterns of responses, suggesting that people tend to seek out the same work partners irrespective of the nature of the work. These patterns are especially stark when affect is measured as liking someone personally. Of the three measures of interpersonal affect, this is the one that more directly captures affective reactions to the person, as opposed to responses to the relationship. The pleasantness measure of affect produced responses comparable to, though not quite as striking as, those elicited using the liking measure. The only exception to these patterns is visible in the bottom right graph, which represents the likelihood of seeking someone for problem
Table 10: Competence effect conditional on low and high affect, main study, with 30% of relationships taken as low-affect. (** p < 0.01). The difference within each pair of competence coefficients (conditional on low and on high affect) is significant to p < 0.01.

<table>
<thead>
<tr>
<th>Measure of task-related tie</th>
<th>main study (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of affect</td>
<td>would go to for problem-solving</td>
</tr>
<tr>
<td>Measure of competence</td>
<td>like pleasant energized</td>
</tr>
<tr>
<td>Response to competence</td>
<td>effective</td>
</tr>
<tr>
<td>given low affect</td>
<td>0.12* 0.19** 0.16**</td>
</tr>
<tr>
<td>given high affect</td>
<td>0.35** 0.40** 0.48**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measure of task-related tie</th>
<th>main study (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of affect</td>
<td>would go to for advice</td>
</tr>
<tr>
<td>Measure of competence</td>
<td>like pleasant energized</td>
</tr>
<tr>
<td>Response to competence</td>
<td>is effective</td>
</tr>
<tr>
<td>given low affect</td>
<td>0.07 0.19* 0.22**</td>
</tr>
<tr>
<td>given high affect</td>
<td>0.28** 0.37*** 0.49**</td>
</tr>
</tbody>
</table>

Table 10: Competence effect conditional on low and high affect, main study, with 30% of relationships taken as low-affect. (** p < 0.01). The difference within each pair of competence coefficients (conditional on low and on high affect) is significant to p < 0.01.

solving with affect measured as feeling energized by the interaction. Once again, the activation measure of affect deviated from an otherwise highly consistent patterns of results.

We also entertained the possibility that the direction of causality may be reversed to explain our findings. As illustrated in figure 2, reverse-causality arguments are theoretically hard to sustain in this context. The left-hand graph in figure 2 shows on a two-dimensional space the affective moderation of competence we document. According to our prediction and findings, under conditions of positive affect (like), increases in competence raise sharply the level of task interaction. Conversely, under conditions of negative affect (dislike), increases in competence have virtually no effect on the level of task interaction. The right-hand graph in figure 2 illustrates the form that this moderation effect would take if the direction of causality were reversed and task interaction predicted evaluations of competence. In this scenario, in the presence of negative affect, task interaction would be very unlikely. However, rare occurrences of interaction would be sufficient to induce a large change in Ego’s evaluation of Alter’s competence. Ego, that is, would go from considering Alter very in-
competent to evaluating Alter as exceptional at the task. This is an implausible pattern. According to solidly documented consistency theories, people selectively seek out, notice, and interpret data in ways that reinforce their existing attitudes (Festinger 1957; Abelson, Aronson, McGuire, Newcomb, Rosenberg, and Tannenbaum 1968). When Ego dislikes Alter, the notion that a few instances of task interaction will trigger a large change in the assessment of Alter’s competence is untenable. Reversing the direction of causality, therefore, produces implausible theoretical explanations for the moderation effect we document.

5 Discussion

Because informal work relationships are such a consequential part of organizational life, reaching a thorough understanding of the bases for their formation is critical to the elaboration of accurate theories of organizations. The general aim of this study was, therefore, to investigate the role of affect in structural theories of instrumental relationships, which have often treated the affective bases for task-related action “obliquely and unsystematically, as if reluctant to concede more than

Figure 1: Graphical representation of response with the different measures, Main study.
slight importance to such a psychological factor” (Shott 1979).

The results of this research show how the coexistence of affective and instrumental goals within the same social tie introduces interpersonal affect as a critical component of task-related action in organizations. Across the tasks and contexts investigated, positive and negative sentiment among social actors consistently emerged as an important predictor of task interaction, beyond actors’ competence and other structural constraints on the formation of work ties. Indeed, in our main study, liking and disliking someone on a personal level had a significantly larger association with task interaction than evaluations of task-related competence.

The findings concerning affect as a moderator of competence in task-related ties were consistent in all three studies, and robust across a variety of analytical approaches. Negative affect reduced the reliance on task competence as a criterion for the choice of work partners. By contrast, positive affect for someone enhanced the impact of his or her task competence on the likelihood of seeking him or her out for task-related interaction.

Four aspects of these findings are worth highlighting. First, our results suggest that competence
may be irrelevant not just when outright dislike colors a relationship, but also in the presence of neutral or mildly positive feelings. People appear to need active liking to seek out the task resources of potential work partners and fully tap into the knowledge that resides in organizations. Second, affect strongly moderates competence whether the task interaction involves routine advice or creative problem-solving. This hints at the possibility that the way people form work relationships may follow laws of social interaction that are not highly susceptible to contingent characteristics of the task. Third, the affective moderation of competence was particularly striking when affect was measured as liking someone personally, as opposed to measures of affective responses to the interaction. Personal like and dislike, respectively, boosted and flattened the response to competence the most. Measuring interpersonal affect in terms of liking and disliking someone as a person may therefore be preferable, on both conceptual and methodological grounds. Fourth, while pleasantness and liking had entirely consistent behavior in our data, the activation measure of affect deviated somewhat from the other two measures of affect, and elicited the weakest (although still significant) affective moderation of competence. This is unsurprising considering that, in the literature on mood affect, activation and pleasantness are characterized as conceptually, if not empirically, orthogonal (Barrett and Russell 1998; Cropanzano, Weiss, Hale, and Reb 2003). While we found no evidence of pleasantness and activation as orthogonal dimensions of interpersonal affect, our findings do indicate that affective activation may underlie psychological processes somewhat distinct from those associated with liking and pleasantness. Specifically, the energy people receive from a task interaction may be more closely associated with task success, which would confound affect with competence.

The results of this research are germane to several streams of organizational inquiry. With regards to network research, we point to the theoretical relevance of a conceptualization of the affective content of social ties in terms of interpersonal likes and dislikes. This conceptualization used to figure centrally in sociological research (Slater 1955; Heider 1958; Homans 1961; Sampson 1968), but has been largely supplanted by the current focus on friendship, closeness, and trust as the key affective constructs in network studies. Empirically, we did not measure trust, friendship or closeness, and it is entirely possible that liking may overlap quite significantly with these complementary affective constructs. Conceptually, however, relational depth in the form of friendship, trust, and closeness is not required for affect to play a significant role in a task-related network.
Rather, visceral likes and dislikes that may develop in the absence of frequent interaction or mutual confiding broaden substantially the affective domain in network research, and can contribute to uncovering important affective underpinnings of organizational networks that may not emerge with narrower conceptualizations of interpersonal sentiment. This characterization of affect also validates recent research that has appropriately introduced negative ties in the discourse on organizational networks, and highlighted the notion that positive relationships do not necessarily offer an accurate window into the negative sphere of informal social behavior in organizations (Labianca, Brass, and Gray 1998; Brass and Labianca 1999; Sparrowe, Liden, Wayne, and Kraimer 2001; Labianca and Brass 2006).

Our findings also extend the burgeoning psychological literature on affect in organizations (Brief and Weiss 2002; Lord, Klimoski, and Kanfer 2002; Barsade, Brief, and Spataro 2003). While not investigating directly the role of affect in the structuring of task-related networks, this literature has compellingly linked affect and emotions to many inherently relational phenomena, including performance evaluations (Robbins and DeNisi 1994; Staw, Sutton, and Pelled 1994), leadership and follower behavior (George 2000), prosocial and helping behaviors (Isen and Levin 1972; George 1991), negotiation (Pillutla and Murnighan 1996), workplace aggression (Neuman and Baron 1998), customer service (Morris and Feldman 1996), and emotional contagion in groups (Barsade 2002; Totterdell, Wall, Holman, Diamond, and Epitropaki 2004; Sy, Côté, and Saavedra 2005). Our study contributes to this literature a structural perspective on the interplay of cognitive and affective domains of task-related behavior in organizations. We also complement research on information seeking that has highlighted the importance of information accessibility—not just quality—in people’s choice of information sources (O’Reilly 1982; Vancouver and Morrison 1995). This research has focused primarily on logistical and technical obstacles to information access, and the first-order effects of accessibility on information seeking.\footnote{Vancouver and Morrison (1995) did include relationship quality—a plausible proxy for interpersonal affect—among their predictors of feedback seeking, but they did not investigate the moderating effect of relationship quality on expertise as a criterion for choosing feedback source. In addition, hypotheses were tested with data on behavioral intentions expressed by undergraduate students in response to hypothetical scenarios.} Our results extend this work by underscoring the interpersonal affective foundations of perceived information access, and specifying the psychological mechanisms through which perceived access does not simply have additive effects on knowledge seeking, but also has multiplicative effects that can transform the very relevance of information
quality for how people seek out task-relevant knowledge.

In addition to these theoretical contributions, our findings have basic implications for the functioning of organizations. In our samples, liked but less competent people were more likely to be sought out for task interaction than competent but disliked individuals, on average. This pattern of behavior is contingent on the specific distribution of interpersonal affect and task competence in the three organizations we analyzed. It is conceivable that, in organizations populated by incompetent people, the few individuals capable of adequate performance would be in such high demand as to overcome the impact of any negative affect coworkers may feel in their regard. Since rampant incompetence is unlikely to be either widespread or sustainable in organizations, however, the three samples we studied arguably displayed a range of task competence and interpersonal affect not uncommon in the general population. With much of an organization’s ability for coordination, collaboration, and innovation hinging on informal networks of task-related ties, these findings suggest that the unchecked development of affect-based task relationships might be detrimental to organizational effectiveness. To the extent that affect-seeking behavior in instrumental action is pervasive, and negative affect renders task competence virtually irrelevant in the selection of work partners, those who are most competent at the task are not necessarily the most sought out for task interaction. This implies that, in most organizations, the reliance on affective evaluations in the choice of work partners may divert instrumental action away from the requirements of the task in favor of tangential considerations. On the other hand, affect-based work ties may also help manage the coordination requirements entailed by task interdependence. For instance, to the extent that positive interpersonal affect increases access to the resources available in the exchange, choosing liked but not very competent individuals over competent but unpleasant people may be rational, at the individual level. It might be preferable, that is, to have full access to limited task resources, than to have limited access to abundant task resources. Whether or not the pervasive influence of interpersonal affect documented in this paper facilitates or hinders the pursuit of instrumental goals remains an open question. Given the competing effects of affect-seeking mechanisms on the effectiveness of instrumental action, future research should clarify the organizational conditions under which the reliance on interpersonal affect for the creation of informal work ties should be constrained or encouraged.

Our investigation can also be extended in other directions. We began the study of the role of
interpersonal affect in work networks by first focusing on dyadic ties, the building blocks of network structures. It is the case, however, that much of the unique contributions of social network research to organizational theory is based on the analysis of structural forces beyond the dyad. Future efforts in this domain would benefit from extending our analysis to the study of triads, groups, and larger network structures.

Both interpersonal affective reactions and instrumental tasks can be operationalized with more nuance than we provided in this research. Specifically, the task can be characterized by varied forms of interdependence that may be of great consequence for the tenor of the instrumental relationship. For instance, in early exchange-theoretic work, Thibaut and Kelley (1959) drew a distinction between pure coordination tasks, and mixed coordination and conflict tasks. In the latter case, the desired outcome is achieved by leveraging power differentials. It is possible, therefore, that affective motivations may play a different, and lesser, role in conflict tasks than in pure coordination tasks.

Similarly, meaningful distinctions can be drawn between specific interpersonal emotional responses. The basic positive and negative evaluations on which we focused cannot fully capture the great complexity of the interpersonal affective experience, as they do not discriminate between specific emotional responses, such as pity, envy, admiration, or contempt. A recent study by Cuddy, Fiske and Glick (2007) began to move in this direction by investigating the discrete emotional mechanisms linking warmth and competence judgments to intergroup behavioral intentions. Further elaboration on the role of distinct emotions in approach and avoidance behaviors can be found in the psychological literature on self-regulation theory (e.g., Carver & Scheier, 1998), and self-regulatory focus theory (e.g., Higgins, 1997). These theories share with Davidson and Gray (1990, 1994) the notion that there are two self-regulatory systems associated with both action and affect. What the theories diverge about is their characterization of affect. In self-regulation theory (e.g., Carver & Scheier, 1998), and self-regulatory focus theory (e.g., Higgins, 1997), approach (promotion) and avoidance (prevention) behaviors are each associated with a distinct dimension of affect: pleasantness-unpleasantness for approach, and activation-deactivation for avoidance. As a result, both approach and avoidance can be associated with either positive or negative emotions, in contrast with the characterization of the BAS and BIS systems as mapping onto positive and negative affect, respectively. Future research can productively move beyond the simple positive-negative
affect dichotomy to specify discrete emotional correlates of approach and avoidance behavior that may differentially inform the structure of task-related ties in organizations.

Finally, in correlational studies such as these, causality cannot be established unambiguously. Hence, we cannot shed light on the extent to which affect precedes or follows interaction. Our investigation is consistent with the notion that the outcome of work relationships induces affective reactions. However, a variety of factors suggest that interpersonal affect is a determinant, as well as a consequence, of work relationships. For instance, psychological research on affective primacy (Zajonc 1980) shows that positive and negative affective reactions can be evoked instantaneously with minimal stimuli and virtually no cognitive processing (Murphy and Zajonc 1993). Future research would benefit from a thorough account of the how affect and interaction shape each other recursively.

Issues concerning the direction of causality between affect and interaction did not influence the interpretation of the moderation effect we documented, however. We were interested in the tradeoffs between affective and instrumental considerations that people make in performing their work in organizations. Taken as a whole, the evidence we provided for the impact of interpersonal affect on how people in organizations seek out task resources to perform their job introduces the notion that a critical facet of an organization’s social structure (i.e., informal patterns of interaction), is the organization’s affective structure (i.e., patterns of interpersonal affect among organizational participants), an object of study with the potential to influence academic discourse on the interplay of psychological and structural dimensions of organizational life.
References


