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

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This paper examines the role of a person's generalized positive or negative feelings toward someone (interpersonal affect) in task-related networks in organizations. We theorize that negative interpersonal affect renders task competence virtually irrelevant in a person's choice of a partner for task interactions but that positive interpersonal affect increases a person's reliance on competence as a criterion for choosing task partners, facilitating access to organizational resources relevant to the task. Using social psychological models of interpersonal perception and hierarchical Bayesian models, we find support for this theory in social network data from employees in three organizations: an entrepreneurial computer technology company, staff personnel at an academic institution, and employees in a large information technology corporation. The results suggest that competence may be irrelevant not just when outright dislike colors a relationship. Across organizational contexts and types of task-related interaction, 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. We discuss contributions of our study to research on the interplay of psychological and structural dimensions of organizational life.●

Network researchers often distinguish between task-related ties that arise in the course of performing assigned work roles and expressive ties based on interpersonal attraction, assuming that emotions primarily influence 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 (instrumental) networks (Allen and Cohen, 1969; Brass 1984; Burt, 1992; Ibarra, 1992; Haythorn-thwaite and Wellman, 1998). This overlap is consistent with Homans' (1950, 1961) treatment of instrumental and affective motivations as unavoidably intertwined in any social interaction (Lindenberg, 1997). The idea that task-related and affective structures are interdependent is not new to organizational discourse. In early organizational research, Roethlis-berger and Dickson (1939) characterized the emergence of informal structures in 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 theory of the overlap between work-related transactions and personal relations of friendship and kinship (Granovetter, 1985; Uzzi, 1996, 1997).

Though the existing evidence indicates that people combine instrumentality and affect in their work relationships, little is known about the trade-offs they make in doing so. As an example, consider a software engineer in an entrepreneurial technology company whose latest project requires knowledge of a new and unfamiliar set of software tools. The software engineer knows two people in the company who are familiar with the software. He views the first of the two as highly skilled and experienced with the set of tools but con-

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siders him an unpleasant person. In contrast, he views the second coworker as only moderately familiar with the tools and a below-average programmer but a delight to be around. Whom the software engineer will seek out for his project will depend on the way he treats task competence and his personal feelings for the two coworkers as criteria to inform his choice. To investigate such trade-offs, we conceptualize the affective content of a network tie as a person's generalized positive or negative feelings toward a coworker and theorize that this interpersonal affect can modify the impact of task competence on the formation of task-related ties. Negative affect could make 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, positive affect could encourage instrumental action, facilitating access to organizational resources relevant to the task.

How interpersonal affect alters the way people seek out and access the resources necessary to perform their work is relevant to a range of organizational processes that hinge on informal networks, including coordination, collaboration, and innovation. For example, cross-functional teams are seen as channels for knowledge transfer and integration across organizational boundaries, and 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. To the extent that interpersonal affect colors instrumental ties and modifies the relevance of task-related knowledge in instrumental action, however, the effectiveness of integration efforts in organizations could suffer if affective mechanisms are not explicitly considered in the management of cross-boundary ties. We do so here by examining the role of interpersonal affect in the formation of task-related ties with social network data from employees in 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.

INTERPERSONAL AFFECT IN TASK-RELATED TIES

Affect and Competence in Interpersonal Perception

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, generalized positive and negative feelings for 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: 77). The warmth dimension captures traits related to the perceived intent for good or ill, including friendliness, tolerance, helpfulness, and sociability. The competence dimension captures the 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. 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 regard to a person) (Eagly and Chaiken, 1998). Warmth judgments—those related to liking—are more saturated with affect than competence judgments (Wojciszke, Bazinska, and Jaworski, 1998).

Similar categories have emerged in organizational research on interpersonal trust, in which scholars have distinguished 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, 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 the 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 the 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.

Related Constructs

Psychological research on social judgment shows that people judge others as likable, warm, or competent based on fleeting glimpses of behavior or mere glances that require no direct interaction (Ambady, Bernieri, and Richeson, 2000). Though they are strikingly reliable and predict long-term judg-

ments based on extensive exposure, these judgments are formed extremely rapidly (Ambady and Rosenthal, 1993; Ambady, Hallahan, and Rosenthal, 1995). Interpersonal affect includes, though it is not limited to, emotional reactions that develop rapidly, without extensive or deep interaction. Several psychological processes can account for these near-instantaneous evaluations. The reciprocity of perceived liking is one such process (Kenny and La Voie, 1982; Gold, Ryckman, and Mosley, 1984; Curtis and Miller, 1986). 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 et al., 1987) can produce rapid affective evaluations, whereby similar others are seen as likable 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 without 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 Krackhardt (1992) noted, although there is such a thing as instant liking, there is no such thing as an instant friend. By the same token, interpersonal affect also differs from the notion of affect-based trust, which invokes "emotional bonds between individuals," in which "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: 26). Interpersonal affect has no similarly stringent requirements for relational depth.

Interpersonal affect is also distinct from mood affect, which is an intra-psychic affective state not directed at a specific object, whereas interpersonal affect is inherently other-directed. In addition, 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 (Larsen and Diener, 1992; Barrett and Russell, 1998; Cropanzano et al., 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 to the complexity and controversy surrounding the structure of mood affect, the liking/warmth

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).

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 interactions is well established (Roethlisberger and Dickson, 1939; Homans, 1950; Bales, 1950; Slater, 1955; McAllister, 1995; Hinds et al., 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. Yet 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' (1981) microsociology of social interaction. Collins (1981: 1001) observed that "the most basic emotional ingredient in interactions is a minimal tone of positive sentiment toward the other" and theorized that the positive affect experienced in social interaction stems from the subjective perception of being welcomed in the relationship and 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 identifying 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 or to avoid based on perceptions of our access to the 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 interactions stems from neuropsychological theories of behavioral self-regulation (Davidson et al., 1990; Gray, 1994). Common to these theories are two basic notions: that behavior reduces to approach and avoidance tendencies, and 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 et al., 1990; Gray, 1994). The behavioral activation system 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 behavioral activation system and triggers action

toward goals. The behavioral inhibition system 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 behavioral inhibition system and stifles action toward goals. Behavioral self-regulation theories can readily be applied to task interactions. In this context, positive and negative affect directed at interaction partners constitute relevant emotional correlates of approach and avoidance behaviors. When interpersonal affect is negative, potential work partners doubt their access to the task-related resources available from the interaction. As a result of perceiving 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, inducing withdrawal behavior and stifling movement toward goals. Consequently, negative affect and related negative perceptions concerning work partners' behavior can diminish the relevance of task competence as a criterion for forming instrumental ties because task resources are perceived to be 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 reliance on task competence as a criterion for task-related interaction because task resources are perceived to be available in the exchange, and goal pursuit is stimulated. In the social networks literature, the two people involved in an interaction are commonly referred to as ego and alter, denoting what psychologists often label, respectively, rater or perceiver, and ratee or target. Because our study concerns social networks, we use these terms in formulating our hypothesis:

Hypothesis: The positive association between alter's task competence and ego's likelihood of seeking alter out for task-related interaction is smaller when ego has negative affect for alter than when ego has positive affect for alter.

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 task-relevant resources at his or her disposal.

Besides the perceived access to task resources, decreasing marginal returns from affect and competence could also result in non-linear effects. That is, an increase in liking 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. But there are no a priori theoretical arguments to suggest that affect and competence would have such non-linear effects beyond their main effects on task interaction.

METHOD

We tested our prediction with data from three studies of task-related interaction in an entrepreneurial information technology (IT) company, staff personnel at an academic institution, and members of a strategic alliance team in a large IT corporation. Data collection from the entrepreneurial IT company and the academic institution preceded the development of our theory and provided proxy measures of the 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 us to develop measures more consonant with the theory. We report on the two earlier studies, in addition to the primary study, for two reasons. First, the additional evidence from the earlier 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 insight into the robustness of our findings across different measures of the primary constructs. These methodological precautions are particularly important when assessing the relative importance of affect and competence in task-related action because differences in the way competing predictors are operationalized and measured and characteristics of the contexts in which the theory is tested would otherwise make a direct comparison based on the strength of statistical associations unwarranted and potentially misleading (Fichman, 1999).

Study 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 non-hierarchical. Rather than having a few coworkers 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 percent response rate. Each rated 27 other employees on average, ranging from a minimum of six 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 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 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 of expressing 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.

Study 2: Academic Institution

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

Sample. The sample consisted of staff employees of an academic institution. All of the 188 staff employees 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, yielding a 45 percent response rate. Each participant rated 46 employees, on average, ranging from a minimum of one to a maximum of 158 (10th and 90th percentiles were 13 and 85), for a total of 3,868 ratings.

Variables. As in study 1, we included a manageable 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 an additional job-effectiveness measure; and (3) "Gets the job done." The competence and job-effectiveness items aimed to measure, respectively, skills and knowledge, and attitude and motivation. As in study 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 studies 1 and 2 in four ways. First, we wished to account for the possibility that the performance-evaluation component of the first two 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 have heightened concerns about confidentiality. The main study, therefore, was conducted without pursuing performance-evaluation goals. Second, we wished to distinguish between work interactions initiated by ego, in which 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 the first two studies, in the main study, we adopted a multi-item approach to measuring 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 interacted 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 percent response rate. Each participant rated 28 employees, on average, ranging from a minimum of four 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 electronic questionnaire. 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 questions concerning the respondent's network of work partners within both companies and his or her professional and personal opinions about each of these relations. The survey clearly stated that such opinions would be treated as strictly confidential, while data on the interorganizational work network aggregated across respondents would be distributed to all survey participants. To guarantee confidentiality, respondents were asked to return their completed survey directly to the researcher.

Variables. We measured all variables with 7-point Likert scales expressing the respondent's agreement with a given statement, with 1 denoting strong disagreement and 7 indicating strong agreement. Unlike the first two studies, 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 the first two studies but to a much smaller 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 and work interactions concerning non-routine aspects of the task. We measured task advice 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." We measured problem solving with a 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. 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 and Diener and their colleagues (Russell, 1979, 1980; Diener and Emmons, 1984).

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

Modeling 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 et al., 1995).

Structure of interpersonal judgments. Kenny (1994) provided 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 were interested in the relationship effect, as we were 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 an interaction partner. For this reason, we tested our prediction with a model that included additive biases to control for item and source effects and in which task-related interaction was a response to the combined relationship and target effects.[1]

The Bayesian approach. We used Bayesian, rather than frequentist (classical) statistics, to model our data. Bayesian and frequentist statistics answer different questions. In simple terms, the frequentist approach to hypothesis testing focuses on determining the probability of the observed data given that some population parameter of interest equals zero (the null hypothesis). Bayesian statistics answer 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 it arguably makes Bayesian statistics preferable to a frequentist approach from the point of view of both statistical and social theory (Krackhardt, 2005). Two characteristics of the network data we used to test our theory made the Bayesian approach particularly appropriate in our studies. 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 participants 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 analysis is well suited to such a structure, in that it produces estimates of coefficients and confi-

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We also tested our theory with a model that included additive biases to control for item, source, and target effects and in which task-related interaction was a response to the relationship effects only. These additional analyses produced results consistent with those of the analyses we report.

dence 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 data characteristic we modeled concerns the structural constraints on the choice of work partners in a given setting. Such choices are constrained by the formal structure of the organization and by its informal network structure. For instance, people working in the same organizational subunit are more likely to have work interactions than people working in different subunits. For 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 (Lobo and Casciaro, 2008). To account for correlation patterns that emerge from the data themselves, we included in our model 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, the model "discounts" the frequency of interaction between any two of those people as an artifact of their common membership in a latent group, such as 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 such as those based on gender, race, or extracurricular interests. 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 inferred the model parameters. We were primarily concerned with first- and second-order effects associated with each node as source and target. Our model is related to 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, however, 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 estimated structure from the survey data by including a sum of bilinear terms in the data-generation model, which provides the necessary restriction in complexity of the structural description. Our approach relates closely to Hoff's (2005) method for estimating the probabilities of membership in latent groups. 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. Hoff (2005) 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 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 a negative affective content, subject to the prior belief that a given percentage of ties are negative and the remainder are positive. We then estimated a model with separate regression coefficients for competence for each subset.[2]

Prior beliefs about the percentage of negative and 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 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 because, theoretically, the incentives the behavioral activation system responds to include either signals of rewards or lack of punishment. Similarly, the threats the behavioral inhibition system 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 Dut-

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To 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.

ton, 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 either conceptual or methodological grounds. Conceptually, failing to tap into the knowledge of a few highly 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: $i \in \{1,1,....,N\}$ for the person being rated (or ratee, target, alter), $j \in 1,1,....,N\}$ for the rater (or perceiver, source, ego), $k \in \{1,1,....,K\}$ for the survey question (in which we choose $k = 1$ 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 $l \in \{1,1,....,L\}$ for the bilinear term (a group estimated from the data). The response model includes the following terms: c_k is the constant for each question (or item effect); b_{jk} is the rater bias (or source effect, perceiver effect); u_{il} and v_{jl} are the degrees of membership as receiver and sender, respectively, and λ_{lk} is the degree to which the structural term l is present in network k (with λ_{l1} normalized to one); $H_{ij} \in \{1,2\}$ is 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 are the mean affective responses in negative and positive ties, indexed in the model by the indicators, i.e., $d_{H_{ij}}$ is 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); β_1 and β_2 are the work-tie formation coefficients for competence, when the relationship is negative and when it is positive, respectively (the units are expected change in survey-scale points in the work-tie formation item per each point change in the competence assessment item), and these coefficients are indexed in the model by the indicators, i.e., $\beta_{H_{ij}}$; and e_{ijk} is the relationship-plus-target effect. 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 to be independent and equal to 1 with probability π. The source effects for each participant are modeled as jointly normal and correlated

across survey items, with the covariance matrix $\Sigma_{\mathbf{b}}$ to be estimated from the data. Likewise, for each l, u_{il} and v_{il} are jointly normal with zero mean and covariance matrix $\Sigma_{\mathbf{uvl}}$, e_{ij1} is normal with zero mean and variance $\sigma^2_{\mathbf{e}1}$, and e_{ij2} and e_{ij3} are jointly normal with zero mean and covariance matrix $\Sigma_{\mathbf{e}23}$. We use uninformative improper uniform priors for the c, d, α, β, and λ. 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: $\Sigma_{\mathbf{b}}$, $\Sigma_{\mathbf{uvl}}$, $\sigma^2_{\mathbf{e}1}$, and $\Sigma_{\mathbf{e}23}$ are sampled from inverse-Wishart distributions; α, β, and λ are sampled from a normal distribution; H is sampled from a Bernoulli distribution; c, b, d, and u are sampled from a normal distribution; and c, b, d, and v are 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 $\Sigma_{\mathbf{uvl}}$. Though π could also be estimated from the data (with a beta-binomial model), we opted to take the proportion of negative relationships as fixed to compare results across datasets and survey items.

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 is 6.2 and 6.5 in studies 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 are 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; Labianca and Brass, 2006).

Tables 2 to 4 present descriptive statistics for the distribution of raw survey scores. The correlation between affect and competence is consistently high, ranging from .64 in study 1

Table 1

Cumulative Distribution of Survey Responses*

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

* Percentage of responses less than or equal to Likert-scale point.

Table 2

Study 1: Means, Standard Deviations, and Correlation of Variables in Raw Survey Data*

Variable	Mean	S.D.	1	2
1. We interact	4.23	1.99		
2. Is enjoyable	5.93	1.30	.14	
3. Is competent	6.01	1.12	.11	.64

* All correlation coefficients are significant at $p < .001$.

Table 3

Study 2: Means, Standard Deviations, and Correlation of Variables in Raw Survey Data*

Variable	Mean	S.D.	1	2	
1. We interact	4.02	1.84			
2. Is enjoyable	5.94	1.35	.11		
3. Is competent	6.00	1.15	.14	.66	
4. Is effective	5.95	1.22	.11	.71	.83

* All correlation coefficients are significant at $p < .001$.

Table 4

Main Study: Means, Standard Deviations, and Correlation of Variables in Raw Survey Data*

Variable	Mean	S.D.	1	2	3	4	5
1. I go for problem solving	4.79	1.53					
2. I go for advice	5.03	1.46	.84				
3. I personally like	5.52	1.11	.51	.52			
4. I find pleasant	5.67	1.08	.47	.47	.82		
5. I feel energized	5.23	1.21	.49	.45	.77	.72	
6. I consider effective	5.45	1.22	.46	.47	.71	.63	.73

* All correlation coefficients are significant at $p < .001$.

to .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.

Correlations among measures of the same underlying construct are high. Table 3 shows that evaluations of competence and effectiveness in study 2 overlapped considerably (.83 correlation). Similarly, the two measures of task-related interaction in the main study are very highly correlated (.84), indicating respondents' tendency 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 range 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

Table 5

Studies 1 and 2: Main Effects after Controlling for Source Effects and Network Structure*

	Study 1	Study 2	
Measure of task-related tie	We interact	We interact	
Measure of affect	Enjoyable	Enjoyable	
Measure of competence	Competence	Competent	Effective
Response to affect	.13	.08	.07
Response to competence	.13	.10	.07

* All coefficients are significant at $p < .01$.

Table 6

Main Study: Main Effects after Controlling for Source Effects and Network Structure*

Measure of task-related tie	Problem solving			Advice		
Measure of affect	Like	Pleasant	Energized	Like	Pleasant	Energized
Measure of competence	Effective					
Response to affect	.56	.53	.39	.59	.50	.28
Response to competence	.21	.29	.30	.16	.28	.35

* All coefficients are significant at $p < .01$.

orthogonal dimensions, consistent with a conceptualization of interpersonal affect as unidimensional.[3]

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 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.

Common-method variance can account for the positive impact of affect and competence on instrumental ties, however, as measures of task competence, interpersonal affect, and task interaction were all based on the subjective responses of survey participants about their coworkers. Yet, in the main study, the size of the coefficients for liking and pleasantness measures of affect is significantly larger than the size of coefficients for task competence with either measure of task-related interaction. In contrast, the difference in the size of the coefficients for affect and competence is not significant in the first two studies or 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 first two 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 this person for advice"). We would expect results in the first two 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 first two studies, interpersonal affect was measured as

[3]
We 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 percent 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.

enjoyment of the work relationship, 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, 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 larger main effect of liking and pleasantness measures of affect than measures of task competence is suggestive, if not conclusively supportive of the dominance of affect over competence in task-related ties.

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 task interaction would be smaller when affect was negative than when affect was positive. To implement our data-generation model and parameter estimation with 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 percent of the distribution (in study 2) to a maximum of 29 percent in the main study, with activation as the measure of affect. To adopt consistent threshold levels across all studies, we tested our prediction using two cut-off points, such that prior beliefs about the proportion of negative (or neutral) responses were set as, respectively, the bottom 15 percent and 30 percent 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.[4] 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 first two studies and the measure of pleasantness in the main study—in which the bottom 30 percent of raw survey scores included the largest proportion of mildly positive responses—yielded the 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 an organization, not being disliked may be insufficient. It may instead be necessary to actively like someone for his or her competence to trigger task-related action.

Tables 7 and 8 include the results of models that defined negative affect as the bottom 15 percent of the distribution of affective responses. In all three studies, and across all measures of the main constructs, affect moderates the response to competence. In the first two studies and in the main study when affect is measured as liking, the regression coefficient for competence is close to zero in the negative-

4
We 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.

Table 7

Studies 1 and 2: Competence Effect Conditional on Negative and Positive Affect with 15% of Relationships Taken as Negative Affect*

	Study 1	Study 2	
Measure of task-related tie	We interact	We interact	
Measure of affect	Enjoyable	Enjoyable	
Measure of competence	Competent	Competent	Effective
Response to competence given negative affect	.01	.00	-.04
Response to competence given positive affect	.21●●	.15●●	.11●●

●● $p < .01$.
* The difference within each pair of competence coefficients conditional on negative and on positive affect is significant at $p < .01$.

Table 8

Main Study: Competence Effect Conditional on Negative and Positive Affect with 15% of Relationships Taken as Negative Affect*

Measure of task-related tie	Problem solving		
Measure of affect	Like	Pleasant	Energized
Measure of competence		Effective	
Response to competence given negative affect	.03	.11	.07
Response to competence given positive affect	.34●●	.41●●	.45●●
Measure of task-related tie	Advice		
Measure of affect	Like	Pleasant	Energized
Measure of competence		Effective	
Response to competence given negative affect	.01	.13	.12
Response to competence given positive affect	.29●●	.37●●	.48●●

●● $p < .01$.
* The difference within each pair of competence coefficients conditional on negative and on positive affect is significant at $p < .01$.

affect condition, indicating that even significant increases in competence evaluations have virtually no positive impact on the likelihood of work-related interactions. Conversely, under conditions of positive affect, the response to increases in task competence is consistently strong. The size of the coefficient for competence in the negative-affect condition is larger when affect is measured as pleasantness and activation. Still, these coefficients are not significantly different from zero, possibly because of the reduced sample size in these models.

Tables 9 and 10 present the results obtained when we treated the bottom 30 percent of ties as having negative affect. These results are consistent with the findings obtained using 15 percent as the cut-off point. Again, across all studies and all measures, the response to competence is strongly moderated by affect. In studies 1 and 2, the size of the coefficients for competence given low affect was still virtually zero. This was not the case in the main study, in which setting the cutoff point at 30 percent 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 percent of responses included mild positive affect, which we expected to induce feelings of accessibility

Table 9

Studies 1 and 2: Competence Effect Conditional on Negative and Positive Affect with 30% of Relationships Taken as Negative Affect*

	Study 1	Study 2	
Measure of task-related tie	We interact	We interact	
Measure of affect	Enjoyable	Enjoyable	
Measure of competence	Competent	Competent	Effective
Response to competence given negative affect	.04	.03	-.02
Response to competence given positive affect	.24[••]	.19[••]	.15[••]

[••] $p < .01$.
* The difference within each pair of competence coefficients conditional on negative and on positive affect is significant at $p < .01$.

Table 10

Main Study: Competence Effect Conditional on Negative and Positive Affect with 30% of Relationships Taken as Negative Affect*

Measure of task-related tie	Problem solving		
Measure of affect	Like	Pleasant	Energized
Measure of competence		Effective	
Response to competence given negative affect	.12[•]	.19[••]	.16[••]
Response to competence given positive affect	.35[••]	.40[••]	.48[••]
Measure of task-related tie	Advice		
Measure of affect	Like	Pleasant	Energized
Measure of competence	Effective		
Response to competence given negative affect	.07	.19[•]	.22[••]
Response to competence given positive affect	.28[••]	.37[••]	.49[••]

[•] $p < .05$; [••] $p < .01$.
* The difference within each pair of competence coefficients conditional on negative and on positive affect is significant at $p < .01$.

[5]
For completeness, we also performed the moderation analysis with the data split based on competence, using both the 15 percent and the 30 percent cut-off points. By mathematical necessity, if affect moderates competence, competence in turn moderates affect, and indeed, in these supplementary analyses, competence did enable the response to affect. The response to affect when competence was low was always significantly larger than the response to competence when affect was low, however, consistent with the predicted moderation pattern.

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.[5]

The plots in figure 1 provide a graphical summary of the results for the main study. The three graphs on the right illustrate the findings for the task-advice interaction, while the three graphs on the left show the results for the problem-solving interaction. The three-dimensional plane in each of the six graphs is split four-ways by two lines separating the bottom 15 percent distribution of responses on competence and affect, respectively. The top-left graph includes labels for the resulting four sections of the distribution of responses. Section B corresponds to people who are liked but rated as mediocre at the task. Section C corresponds to people who are seen as competent but are disliked on a personal level. Sections B and C contain approximately the same number of observations.

Figure 1. Graphical representation of the moderation effect using different measures, main study.

PROBLEM SOLVING   ADVICE SEEKING
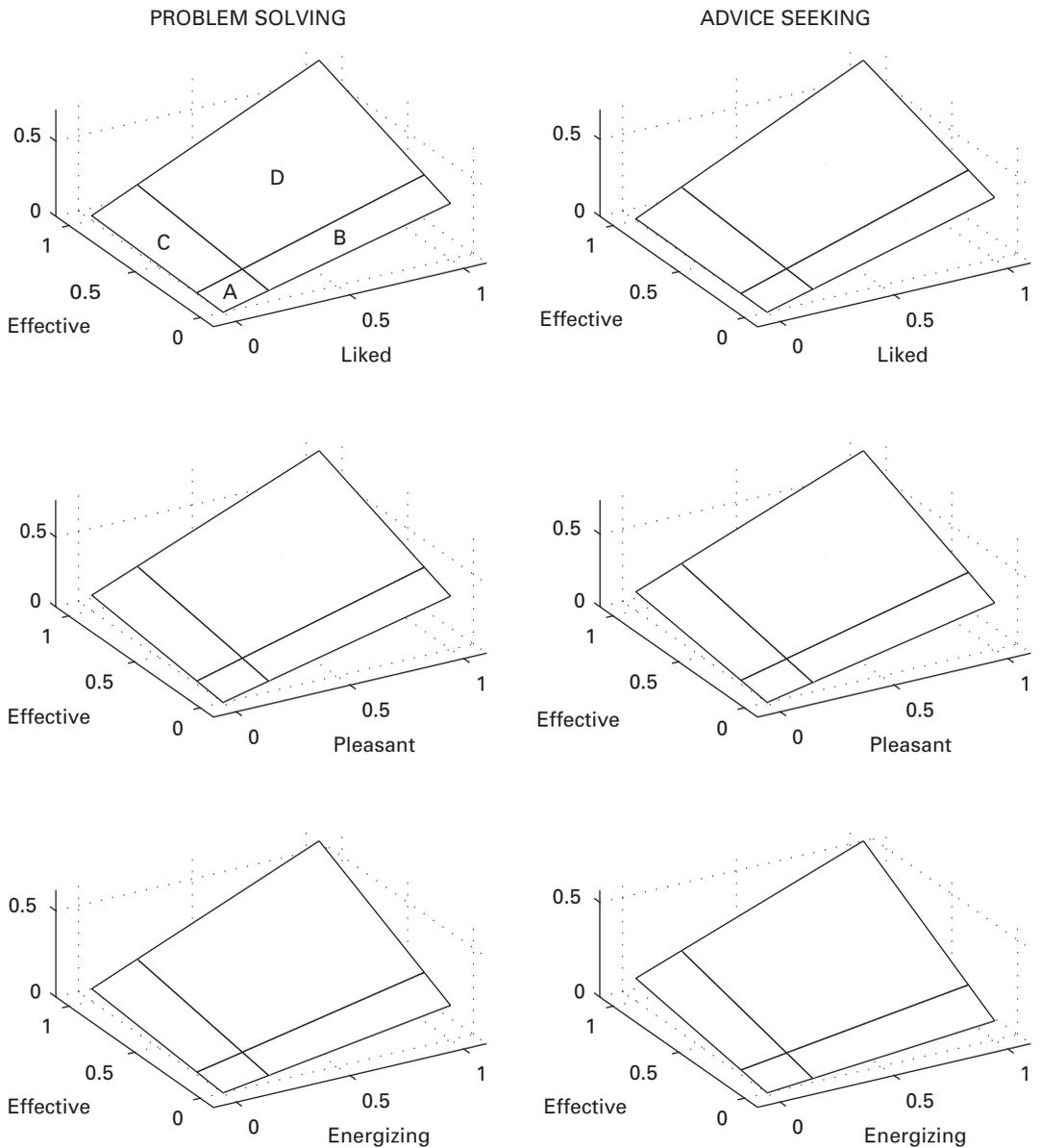
Three patterns emerge from the graphs. First, section B of the plane corresponds to a higher probability of task interaction than section C. Respondents consistently showed a preference for people they liked but considered mediocre at the task over competent but unpleasant people. Second, the response 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 as striking as those elicited using the liking measure. The only exception to these patterns is visible in the bottom left graph, which represents the likelihood of seeking someone for problem solving, with affect measured as feeling energized by the interaction. Once again, the activation measure of affect deviated from an otherwise consistent pattern of results.

We also entertained the possibility that the direction of causality may be reversed to explain our findings. As illustrated in figures 2a and 2b, reverse-causality arguments are the-

Figure 2a. Affect as a moderator of task competence in predicting task interaction.
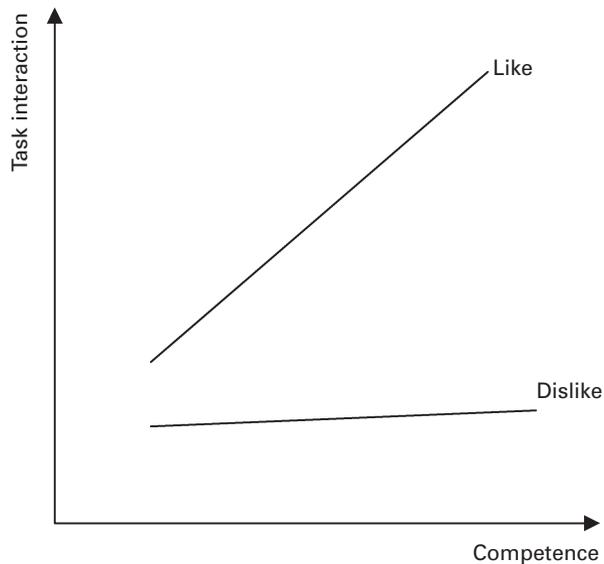
Figure 2b. Reverse causality: Affect as a moderator of task interaction in predicting competence.
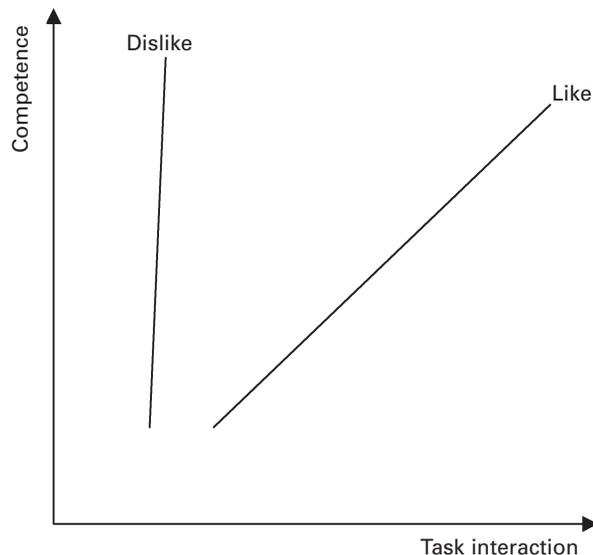
oretically hard to sustain in this context. Figure 2a shows on a two-dimensional space the affective moderation of competence we document. According to our prediction and findings, under conditions of positive affect (like), increases in competence raise the level of task interaction sharply. Conversely, under conditions of negative affect (dislike), increases in competence have virtually no effect on the level of task interaction. Figure 2b 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, negative affect would make task interaction very unlikely. Even rare occurrences of interaction, however, would be sufficient to induce a large change in ego's evaluation of alter's competence, so ego would go from considering alter very incompetent 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 et al., 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.

Finally, we tested for the possibility that affect may mediate the effect of competence on task interaction and also considered the reverse mediation path, with competence mediating the association between affect and task interaction. Neither mediation pattern was significant.

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 elaborating accurate theories of organizations. The results of this research contribute to that understanding by showing 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 were 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, affect's moderation of competence was particularly striking when affect was measured as liking someone personally, rather than as affective responses to the interaction. Personal like and dislike, respectively, boosted and dampened 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 resulted in consistent behavior in our data, the activation measure of affect deviated somewhat from the other two measures of affect and elicited affect's weakest (although still significant) 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 et al., 2003). Although 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 regard to network research, they demonstrate the theoretical relevance of conceiving 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 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 substantially broaden 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 et al., 2001; Labianca and Brass, 2006).

Our findings also extend the burgeoning psychological literature on affect in organizations (Brief and Weiss, 2002; Lord, Kilmoski, and Kanfer, 2002; Barsade, Brief, and Spataro, 2003). Though it has not investigated the role of affect in the structuring of task-related networks directly, 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 et al., 2004; Sy, Côté, and Saavedra, 2005). Our study adds 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 the accessibility of information, not just its 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. Our results extend this work by underscoring the interpersonal affective foundations of perceived information access and specifying the psychological mechanisms through which perceived access has multiplicative effects on knowledge seeking that can transform the relevance of information quality to how people seek out task-relevant knowledge.

In addition to these theoretical contributions, our findings have basic implications for the functioning of organizations. On average, liked but less competent people were more likely to be sought out for task interaction than were people who were competent but disliked. This pattern of behavior was 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 about them. Because 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, relying 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. At the same time, however, affect-based work ties may also help manage the coordination 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 from the individual's perspective. It might be preferable to have full access to limited task resources than to have limited access to abundant task resources. Whether the pervasive influence of interpersonal affect documented in this paper facilitates or hinders the pursuit of instrumental goals remains an open question. Future research should clarify the organizational conditions under which relying on interpersonal affect in creating informal work ties should be constrained or encouraged.

Our investigation can also be extended in other directions. We began the study of interpersonal affect in task networks by focusing on dyadic ties, the building blocks of network structure, yet many contributions of social network research to organizational theory are based on the analysis of structural forces beyond the dyad, and the dyadic behavior we document can take a variety of complex forms at the group level of analysis. For example, organizational subgroups can have consistent or inconsistent affective responses toward a current or potential group member, with affective heterogeneity either facilitating or hindering the group's ability to leverage the member's task knowledge. From Heider's (1958) balance theory to recent advances on emotional contagion (Barsade, 2002; Totterdell et al., 2004; Sy, Côté, and Saavedra, 2005) and theorizing on the effects of positively and negatively connected networks on the diffusion of emotions across dyadic exchange relationships (Lawler, 2001), sociologists and psychologists have demonstrated the relevance of emotions for the functioning of triads and groups. These contributions can be integrated with our dyadic theory to specify the complex structural forms through which affect shapes task-related action at the group level of analysis.

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 greater or less 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 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) has moved 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 and Scheier, 1998) and self-regulatory focus theory (e.g., Higgins, 1997). These theories share with Davidson et al. (1990) and Gray (1994) the notion that there are two self-regulatory systems associated with both action and affect. Where the theories diverge is in their characterization of affect. In self-regulation theory (Carver and Scheier, 1998) and self-regulatory focus theory (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 behavioral activation system and the behavioral inhibition system 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, yet 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 how affect and interaction shape each other recursively.

Issues concerning the direction of causality between affect and interaction did not influence our interpretation of the moderation effect we documented, however. We were interested in the trade-offs between affective and instrumental considerations that people make in performing their work in organizations. Taken as a whole, our evidence for the impact of interpersonal affect on how people seek out coworkers with task-relevant resources indicates that a critical facet of an organization's network structure is the affective structure of positive and negative feelings linking organizational participants, a theoretical lens with the potential to advance scholarly understanding of the interplay of psychological and structural dimensions of organizational life.

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